

tion that the accumulation of fluid at the exterior of the retina, between it and the choroid, indicated the existence there of a partial tension greater than that on the inner surface of the retina, Sir William Bowman founded the idea of making an opening in that membrane which might cause equalisation of the pressure on its two aspects, from which a subsidence of the uplifted retina might be expected. The immediate effects were in some instances an appreciable enlargement of the visual field, referable probably to the unmasking of normal retina previously hidden by the elevated detached portion; this, however, was generally only transitory. Thinking that a permanent opening might render the improvement lasting, this was effected, but without better results. An account of these trials appeared in the *Ophthalmic Hospital Reports*, vol. iv., 1864.

The treatment of glaucoma by iridectomy instituted by Albrecht von Graefe was taken up with deep interest by Sir William Bowman; he commenced at once an extensive trial of the operation at the Royal London Ophthalmic Hospital, which ceased only with his retirement from the active staff. His great example and influence, together with those of colleagues, soon won for it here the general assent it yet retains. His publications on the subject are a paper on "Iridectomy in Glaucoma," in the *Medical Times and Gazette*, 1860; "On Glaucomatous Affections and their Treatment by Iridectomy," the *Association Journal*, Oct. 11th, 1862, and "Glaucoma and Iridectomy," *Ophthalmic Hospital Reports*, vol. iv., 1863; to which may be added a series of "Cases of Misplaced, Malformed, and Dislocated Lenses, in some of which Glaucomatous Symptoms Developed," *Ophthalmic Hospital Reports*, vol. v., and also his Remarks in the Discussion on Glaucoma in the Section of Ophthalmology, at the annual meeting of the British Medical Association, held at Cambridge in 1880.

In concluding, Mr. Hulke dwelt upon the great obligation of the Society to Sir William Bowman for his fostering, generous care in its early years, and the valuable addresses with which he opened its first three annual sessions. The esteem in which Bowman and his works were held wherever ophthalmology has votaries was shown by the acclamations which greeted his election to the presidency of the Section in the International Congress held in the metropolis in 1881.

SPINAL CARIES; PRESSURE PARAPLEGIA; RESECTION OF LAMINÆ.

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HOWEVER hopeless may be the prospects of good from the operation of trephining the spine in most cases of traumatic lesion of the spinal cord, there can be no question that considerable success has attended it for the relief of pressure symptoms in the course of tubercular disease. Thus, of the thirteen cases collected by Mr. Thorburn last year in his valuable work on the surgery of the spinal cord, there was most obvious relief in seven, in three there was none, in two the operation apparently did harm, while in the remaining case a relapse followed the very marked improvement which the operation had induced. The last case referred to in his table was one by his colleague, Mr. Wright of Manchester, in 1889, and as far as I can find there have been published since that time nine cases: two by Arbuthnot Lane,¹ in both of which there was marked relief; one by Richardson,² fatal; one by Thompson³ of Hull, in every way successful; two by White,⁴ in one of which there was relief, the other being fatal; and three by Kraske,⁵ related at the last Congress of German Surgeons, in one of which there was relief, in the second case temporary relief only, as also in his third, with relapse, however, following in two, and death from phthisis in seven, months.

Here are in all twenty-three cases, inclusive of my own, in twelve of which the operation was productive of good; or, if we exclude Mr. Lane's first case, because from a later

note⁶ the improvement given by the operation had not been maintained, nearly 50 per cent. in which the operation was clearly beneficial, and in some was unquestionably the starting point towards recovery. If it were certain that these were all the cases in which the operation had been done, the record would be distinctly promising, but it is more than ever essential in so serious a matter that unsuccessful, even fatal cases, shall be published. I am told of two cases where there was no relief, which will presently be published, and statistical conclusions from the twenty-three cases now on record are therefore premature and valueless. Furthermore, it is no less imperative, as witness the first case of Mr. Lane, that the successful cases be not published too soon, or at any rate that some record be furnished of their subsequent condition and progress. The case I have here to publish was one in which no relief was brought by the operation. The reasons for this will become obvious in the course of the history.

George —, aged twenty, a messenger, had been admitted into St. Mary's Hospital under the care of Dr. Lees in April, 1889, and was transferred to my wards with a view to operation early in July. His health had been good until five years previously, when he fell from a van and struck the upper dorsal region of his spine. He did not think he had been hurt, and it was not until two months afterwards that he began to have pain in the back and to feel ill. It appears that a Sayre's jacket was provided for him soon afterwards, but there is no evidence when the spinal deformity was first noticed. Suffice it that when he became an in-patient in 1889 he had a projection or so-called curvature in the mid-dorsal region, the angle of which was between eighty and ninety degrees. He gave this further history, that towards the end of December, 1888, he had begun to feel weakness in his legs. This gradually increased, and about the middle of March, a month that is before coming to the hospital, he first had incontinence of urine. This recurred occasionally, but it was not until April 20th that he completely failed to walk. His whole muscular system seemed flabby and wasted, more especially marked in the legs, where also there was distinct rigidity—of the left leg rather more than the right. The knee-jerks were exaggerated and clonic, and there was ankle-clonus on both sides. The epigastric, cremasteric, and abdominal reflexes were absent. Sensations of pain and touch in the legs were both impaired and unquestionably delayed. Over the lumbar back and the lower abdomen there was also some impairment of sensation. In attempting to walk he had to be held up, and was quite unable to raise his feet from the ground. Iodide of potassium was given him, and he was kept at rest in bed. His symptoms showed no signs of improvement, and I rather gather from the notes that during May and June his general tendency was to become worse, for the limbs were more rigid, there was occasional incontinence of urine, and his voluntary power of moving his legs was decidedly not so good. The derangements of sensation were more or less variable both in character and degree, and on no two days were they exactly the same. He occasionally had tinglings down the thighs and feet, but otherwise he was free from pain. Once or twice his evening temperature rose to 100° F., but commonly the range of it was not higher than 99°. There was no material change in his condition when he was transferred to the surgical ward on July 11th. The spinal projection involved the vertebræ from the fifth to the tenth dorsal, the apex of the angle being formed by the eighth. Above this point there was also some lateral curving to the right. There was marked rigidity of the dorsal spine, and the vertebræ seemed ankylosed together at the seat of the angle. There was slight tenderness on percussion, but no other pain at the part. Nevertheless, he could not sit up without support. It being believed that the symptoms were mainly due to a pressure lesion of the cord at the site of the spinal bend, and it being, moreover, evident that there was no sign of change for the better, I agreed with Dr. Lees in the propriety of opening the spinal canal, with a view to relieve the cord from injurious pressure, either of inflammatory products, or of the vertebral arch in the now greatly deformed position of the spine. And even though some of the symptoms were rather suggestive of secondary degeneration than of a circumscribed lesion, it was thought that no harm could ensue from removing the cause of local pressure, where certainly the mischief had begun. Accordingly the spinal

¹ British Medical Journal, April 20th, 1889, and THE LANCET, July 5th, 1890.

² Brooklyn Medical Journal, 1889, p. 401.

³ THE LANCET, vol. ii. 1889, p. 315. ⁴ Annals of Surgery, vol. ix., p. 425

⁵ Centralblatt f. Chir., No. 25, 1890.

⁶ THE LANCET, vol. ii. 1889.

canal was opened on July 30th, Mr. Silcock assisting me. A longitudinal median incision, at the centre of which was the spinous process of the eighth dorsal or most prominent vertebra, five inches in length, together with two horizontal incisions through the muscles only, one to the left at the upper end of the longitudinal incision, the second to the right at the lower end of it, and the rapid dissection up of the muscular mass on either side of the spine, cleared the bones. There was next to no bleeding, and not a single ligature was required. The periosteum having been stripped back, two spinous processes of the seventh and eighth dorsal were removed with bone forceps, and then with a double Hey's saw the laminae of these same vertebrae were divided. All the bony parts here were firmly ankylosed together and the bone was decidedly sclerosed. With chisel and mallet the remainder of the work was finished and the dura was exposed. It was not adherent to the bone and in itself showed no pathological changes. There was no undue projection of it, and therefore there seemed to be no call for laying it open. Immediately to the right, however, of the exposed dura there was seen in the bone the point of a focus of inflammation and softening. A probe passed into this gave exit to a small quantity, say a couple of drops, of pus-like caseous matter. The probe was now passed without difficulty along a bony sinus which led to the front of the spinal canal, obviously into the bodies of the vertebrae, into a place where it would have been absolutely impossible to reach any mass of tubercular matter without injury to the spinal cord. Reluctantly, therefore, the wound had to be closed, and the parts having been thoroughly cleansed and dried, the muscular and cutaneous structures were brought into accurate apposition with deep and superficial sutures. It should be stated that during the removal of the bony arch, and especially when the mallet was being used, there were considerable muscular twitchings of the legs.

The patient bore the operation well, and was free from pain after it. Nor, with the exception of slight tension inflammation in the line of one of the deep sutures, was there any interference with the immediate and complete healing of the wound. It was dressed for the first time on August 4th. So far all was well; but on the day after the operation and up to the 6th his urine had to be drawn off by catheter, and from this date onwards it was passed involuntarily and without his knowledge. He never completely regained power over his bladder while he was in the hospital, and on September 27th there were evidences of some, not very severe, cystitis in ammoniacal alkalinity, pus, mucus, and bacilli. From the day of the operation until Aug. 9th his temperature was high, never below 99°F. in the morning, and up to 101° on the evenings of the 2nd and 3rd, and even 103° on the 6th and 7th, and 102° on the 8th. Thereafter it was normal throughout, the 20th, 22nd, and 23rd of the month of August excepted, when for unknown reasons it rose to 101.5°. The rise directly after the operation was not due, as far as one could see, to anything wrong with the wound. For the first two days after the operation he was annoyed with tickling sensations in both his legs and in his soles, and with twitchings in the muscles of the right leg. These twitchings drew up this leg—flexing it, that is, at both thigh and knee—and so interfered with the needful quietude that it had to be fastened down with a bandage. This jumping of the legs gradually diminished, and had practically disappeared by Aug. 16th. It was thought on this day that the knee-jerks were not so exaggerated as formerly, and that the ankle-clonus was likewise less. He had, however, no voluntary power of moving his legs, and it was abundantly clear that the operation had done him no good. On Aug. 14th a plaster jacket was applied, and on the 17th he was allowed to be up in a chair. Some numbness and hyperaesthesia, which he complained of at this time in his arms and hands, were due, I think, to pressure from the plaster jacket, and did not continue. From the day of his getting out of bed he seemed distinctly to improve, for he made fewer mistakes in the localisation of sensory impressions, and had certainly some power of moving his legs, the right rather better than the left. One curious mistake which he frequently made was the reference of the sensation of touch on the right thigh and leg to corresponding positions on the left. It was noted on Aug. 29th that whenever he tried to move his right leg the left was invariably moved with it, to a lesser degree, but quite involuntarily. The jacket

became uncomfortable, and when it was removed on Sept. 9th it was found that a small pressure-sore had been made, and this unfortunately prevented the application of another until Oct. 10th. The absence of a jacket was clearly detrimental to him, for in this period he was more troubled with jumpings of the legs, and the improvement which had been noted both in motion and sensation came to a standstill—rather, perhaps, there was retrogression.

When he left the hospital on Oct. 19th he had to some extent regained power over his bladder, and his urine no longer ran from him; but in all other respects the amount of improvement was, to my mind, trifling, although he himself was glad at being so much better. In January of this year he was again in the hospital for a few days, in order that he might be fitted with a felt jacket. He was then decidedly better in every way, and the improvement was even more marked when I saw him at his own home in the summer. My last opportunity of seeing him was on Oct. 29th, when he came to the hospital to be examined. With the aid of two sticks he had come by himself by train, walking at least a quarter of a mile on the way. He lifts his feet well off the ground in walking, and can even go without his sticks. The left leg feels weaker, and is obviously more defective than the right. In this leg there is still a certain amount of rigidity, and it is colder and smaller than the right. Ankle-clonus can, moreover, be readily elicited, and occasionally troubles him in walking. The left knee-jerk is also much increased, and is decidedly clonic in character. There is no ankle clonus on the right leg, and the knee-jerk, although more than it should be, is much less than that of the left. The plantar reflex is natural, and there is no impairment of ordinary sensation. There is some slight frequency of micturition, but he has complete command over the bladder. I was unable to see any of his urine, but he says there is no sediment or smell, and I should judge that there is now no cystitis. He is free from pain, and there is no spinal tenderness. The deformity remains exactly as it was, and the gap which was made by the operation is perfectly filled with bone. He bore firm pressure on the part without the least sense of discomfort. He is in good health, and there is no indication of active caries, though I am sorry to say that he thinks his left leg is not quite as well as it was. At any rate, it has not improved in the last six weeks.

This case must obviously be classed with those in which no relief was given by the operation; but unless the increased bladder trouble ought to be so accounted, no apparent harm was done by it. The question will very rightly be put whether the operation should ever have been done at all. In favour of it was the long history of increasing weakness until there was almost complete paraplegia; the practical certainty that the symptoms were due to a pressure lesion; and the hope held out by the history of other cases that removal of the cause of the pressure might rapidly promote a cure. Against these were to be set the severity of the operation itself, and, above all, the knowledge that so many of these cases of pressure paralysis in the course of spinal caries undergo spontaneous recovery in course of time. But, looking back on things as they were presented to us when the lad first came under my care, I am of opinion that the operation was justified, and was one which could be properly advised. No man could have foreseen the precise condition which was found on opening the spinal canal, and it is eminently unfortunate that in this particular instance the position and character of the pathological changes rendered relief beyond attainment. I do not see how one could have gained such access to the front of the spinal column, whither the probe led, as to deal with the caries in that position or with the inflammatory products there collected, and I believe the right course was adopted when the wound was closed. Any gouging away of bone to reach the front of the spine would have exposed the cord to great additional danger, and seriously imperilled the chances of recovery, if not indeed the patient's life. The case, therefore, is worthy of record on this ground only, as showing what sort of difficulty the surgeon may have to encounter after the spinal canal has been entered. As to the operation itself there is little to be said. It required care, but presented no great difficulties. The wound healed as wounds should heal; and it is satisfactory to know that there has been no weakening of the spinal column, and that the gap has been filled up with new bone. I should be sorry if the history of

this case were to be a bar to operation in any case which may seem suitable for it, but we need to know all about such cases, and, successful or not, their publication is necessary. And although in this instance the trephining of the spine was merely a sort of episode in the course of a history of pressure paraplegia, the case is assuredly not without interest, or unfit to be numbered with those which have been already placed on record.

INTENSE HYPERÆSTHESIA OF THE STOMACH, ASSOCIATED WITH AN EXCESSIVE FORMATION OF ACID.

By J. CLEASBY TAYLOR, M.B., C.M. EDIN., M.R.C.S.

I AM induced to relate the following case on account of the long duration and severity of the symptoms and their relief by very simple remedies.

G. F—, twenty years of age, occupied in a London office, came under my care on Jan. 23rd last, with a history of intense abdominal pain of a duration of two years and a half, unknown as to its cause and unrelieved by any remedy. The family history was very good, but with a tendency to gout on the father's side. Before the commencement of the present illness there was nothing particular in the history of the patient. Without any exciting cause he began to be troubled with pain in the epigastric and left hypochondriac regions. The pain from the beginning was always severe, with a tendency to be worse during the night, and to disappear or abate during the day. Sometimes he would be free for a week or more; but the symptoms always returned with their usual vehemence. Latterly the intensity of the pain seemed to have been increasing. The locality appeared to have been always the same, and to be represented by the outer two-thirds of the left costal margin and downwards for about two fingers' breadth. If a paroxysm increased in violence, pain began to be felt in the lower dorsal region, and as it grew worse pain spread upwards in a line along both sides of the spinal column, and when at its worst the sensation was described "as if a red-hot needle was being run up and down the middle of the back." This was localised as being directly beneath the neural spines of the vertebral column. There had never been any increase of pain on pressure, nor had pressure ever relieved a paroxysm. During the short intervals of pain he would be fairly well, and put on flesh, but on the return of pain appetite and sleep would go, with consequent loss of weight. There was no history of jaundice, vomiting, nausea, distension, hæmatemesis, flatulence, or waterbrash, and most emphatically was I informed that never had it been possible to detect any relation between pain and food, nor had different varieties of diet affected the pain in the slightest. The only other point in the history was that in June, 1889, there had been an ill-defined febrile attack lasting some three or four weeks, and since then the pain had been more or less constant, and the patient gradually going downhill.

On examination I found G. F— to be 5 ft. 10 in. in height, and to weigh 124 lb. The features had a blue, pinched appearance the hands were blue and cold, the skin dry, harsh, and shrivelled, with rather a tendency to eczema. His expression, with the lines of pain, and a stoop he had contracted gave him the appearance of an elderly person. The tongue was fairly clean, giving no indication; the temperature was subnormal, even in the evening; the pulse was 80, rather feeble. There was a tendency to asthma, but no cough or nocturnal perspiration. The appetite was bad, and there was also a tendency to constipation. The circulatory system was found normal; no marked anæmia. There was perfect expansion of the whole chest; no sign of any deformity; no dulness on percussion, but on auscultation rhonchi were heard here and there over the whole of the lungs; vocal resonance and fremitus were normal. Inspection, palpation, and percussion of the abdomen failed to elicit anything; pressure certainly had no effect on the pain. The urine was straw-coloured, neutral, and slightly acid; sp. gr. 1010. On coming under my care, I tried various tonics, antacid, antiseptic, anti-spasmodic, and cathartic remedies, in conjunction with various diets, but all to no purpose; in fact, the patient

grew gradually but steadily worse. Opium by the mouth having no effect, on Jan. 27th I began hypodermics of morphia; at first one-sixth of a grain, but soon one-fourth of a grain was required, and repeated two, three, or more times in the twenty-four hours. Even then the greater part of the time there was more or less pain. The aspect of the tongue all this time remained the same, and, as far as could be judged, food had no effect on the symptoms. As this line of treatment did not appear very successful, I proposed to wash out the stomach, but the patient after the first time refused to submit to it again. In the beginning of February I commenced to feed the patient by the rectum in order to see whether giving the stomach a complete rest would give him relief. Commencing with enemata early one morning, when free from pain, he was easy all that day, but about six in the evening a feeling of emptiness was experienced, and, yielding to the patient's entreaties, I allowed him a small quantity of weak beef-tea, but no sooner was a table-spoonful swallowed than he was again writhing in pain. Under the influence of a hypodermic, in three or four hours the paroxysm had somewhat abated, and a drink of aerated water was given, and again a severe paroxysm came on; this, though relieved by a hypodermic, yet lasted four or five hours. Early on the following morning I gave him a drink of cold water, and again a paroxysm of equal severity was brought on. Thinking over these symptoms, I decided to give an antacid, but in much larger doses than formerly prescribed. I gave bicarbonate of soda, and commenced with sixty grains, the effect was simply astonishing; in two or three minutes there was an eructation and total relief of pain. After this the hypodermics were stopped, and sixty grains of the antacid given whenever the symptoms recurred. The result was always the same—viz., relief in from three to five minutes with an eructation, but the length of time between the doses varied from thirty minutes to four or five hours. For the first few days eleven or twelve doses in the twenty-four hours were necessary, and after a week eight or nine were the average. The greater number were taken during the night, and these between 1 A.M. and 4 A.M. The result was the same whether no food was taken after 3 P.M., or whether food was taken as late as 9 or 10 P.M.

Having under my care at this time a patient suffering from persistent neuralgia of the posterior tibial nerve who had been completely relieved by a few doses of sulphonal, I gave G. F— on Feb. 24th twenty grains with a very good result. Instead of five or six doses of the antacid being required during the night, a night of almost unbroken sleep was obtained, and no antacid was required on the following day. The sulphonal was continued every night, but in diminished doses. I found ten grains were sufficient, with an occasional dose of antacid; but if diminished further or omitted, then three, four, or more doses of the antacid had to be given during the night; further than this I could not get, and my patient again seemed to come to a standstill. Finally, in the beginning of March, I fell back on my old treatment of an antiseptic, and gave three-minim doses of carbolic acid three times a day two or three hours after food. Immediately this had the desired effect. After one day's use no antacid was required; after two or three nights the sulphonal was also omitted; and in a week's time the medicine was only taken once a day, more as a precaution than being required. The diet, which previously was limited and rigorously enforced, was now relaxed, the patient being able to take without harm a greater quantity and variety of food. In addition, he began to increase in weight; the asthma, the old haggard look, the stoop of the shoulders, the blueness of the hands, the harshness of the skin, and the subnormal temperature, all disappeared; in fact, he grew into a youth again almost unrecognisable by anyone who had known him when ill. So far there has been no return of the symptoms, and he has been able to return to his work, from which he had been almost constantly laid aside for nearly three years.

The diagnosis and treatment of this case presented considerable difficulties. The patient in his illness of two years and a half had been in many and various hands, who had diagnosed tubercular disease, malaria, hysteria, &c., and who had suggested many remedies, all to no purpose. Finally, change of air to a warm climate, the *ultima spes* of so many cases, was thought to be the only chance. On observing the case I felt able to eliminate gastric ulcer, gastritis, and glandular disease of the posterior mediastinum. I was much more suspicious of glandular disease in the