was a divergence of both eyes, but of the right more than of the left; treatment, to closely bandage the right eye.

Jan. 8, 1842. Position of both eyes very central; association not quite natural, the covered cornea being slightly diverged; convergence full at one inch; repulsion alternate, slight, and unsteady, and in the left more frequent and full; inversion complete and equal; sight, with both eyes open, more perfect than it has been at any time since he first applied to me; distant objects are remarkably distinct, but very near objects are not quite so; the sight of each eye is equally perfect, and if one eye be used at a time, both near and distant objects are seen with natural clearness; closure of the left eyelid is attended by pain over the right eye, which subsides on the left being reopened.

22. Position and association natural; convergence full; repulsion slight, alternate, and unsteady; sight improved; near objects are seen more clearly; no pain in the head or eyes after exertion, and the pains of late have not been felt in the early part of the morning.

29. Sight still improved in its clearness and brightness; he can see to read during as many hours as he pleases without dimness of vision or pain being produced; he only would feel drowsy; the sight in each eye is now equal to that of both eyes; a few wandering pains through the head are occasionally felt, but their degree is so slight as not to cause him any uneasiness, or interruption to his occupation.

REMARKS.

If the facts of the above described case be briefly stated, it will appear that a healthy young man, of about twenty-one years of age, by trade a cabinet-maker, came from the country to London for employment, his sight being at that time perfectly well, and that he did not work long at his business in his new situation, which was in London, before he felt that his sight was not capable of so much exertion as formerly. The sight from that time gradually became more and more defective, with respect to its clearness, during exertion of the eyes, and, at about the expiration of one twelvemonth, its defect was such that he applied for its relief to a surgeon of an eye hospital, which application was made in the spring of 1841. He remained under the treatment of that surgeon till September of the same year, and, in the interval, paid the utmost attention to his eyes, by attending the surgeon regularly, following his directions strictly, and by most carefully resting his eyes during three months of the time. The treatment consisted of the usual remedies which are tried for the cure of his complaint—namely, a course of mercury, and one of tonics, accompanied by severe counter-irritation. The results of his more than six months' treatment was a very considerable increase of impairment of health, sight, and pain; and when he applied to me in September, 1841, a gaze of a few minutes at any object caused his sight to become dim, and his head and eyes extremely painful, and an attempt to work at his trade, from seven o'clock in the morning till seven at night, would only allow him to execute about two hours of work; his frequent rests of his eyes, to relieve their sight and pain, required so much time.

On October the 4th I divided the left internal rectus muscle; on the 25th of the same month, the left external rectus; on the 6th of December, the right external rectus, and, on the 27th of the same month, the right internal rectus. Previously to the first operation, the usual position of the eyes was central and natural; after the first operation the left eye diverged, and after the second converged; after the third both eyes converged, and after the fourth both diverged; and before each operation, and in a few days after the last, the positions of the eyes were central and natural, and their motions perfect to a natural extent. By the first operation the sight of both eyes was much improved as to clearness and power of continued exertion; small print could be read during two hours at a time, and the pains were lessened. By the second the sight of each eye was used separately, and was improved, but not quite so perfect as it had been if both eyes were open, and his pains lessened. By the third the sight, with both eyes open, was improved, that of the left made more perfect than that of the right, and his pains greatly lessened. By the fourth and last operation, his sight was made as perfect as he has ever known it to be, equal in strength in each eye, and capable of enduring the longest exertions without dimness being produced; also, his pains were so far removed that they were but very occasionally felt, and then in a degree so slight as not to cause him uneasiness, or any interruption to his occupation. So that instead of losing his sight after a short gaze at an object, and being capable of only executing two hours of work at his trade in the space of twelve hours, he can now view, for a natural time, the finely engraved letters of the Lord's Prayer, as engraved in a circle of less size than a fourpenny piece, with distinctness and comfort, and he can see to do as long a day's work at his business as he ever could.

CASE

OF

TUMOUR DEVELOPED IN THE MIDST OF THE CAUDA EQUINA.

By W. W. FISHER, M.D.,

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The case I am about to communicate came under my observation in January, 1840. The name of the individual affected was Taylor; he was thirty-eight years of age, was a tailor by trade, and had been intemperate in his habits for some time previous to the commencement of his illness. He had about three years before (i.e. in 1837), injured, whilst riding, the lower part of the loins by the back part of the saddle, and from that period he began to suffer from pain in the lumbar and sacral regions, which was attributed to rheumatism; the pain gradually became more violent, and extended down the legs, which began to swell. He was obliged to give up work in June, 1839, and became bed-ridden in the September of the same year; he could not, however, lie down, but rested on

his hands and knees, in which position I found him when I first saw him. He was then unable to move either his loins or lower extremities; but he had the free use of neck, shoulders, and arms. The pain, which had formerly been chiefly confined to the region of the sacrum, was now more particularly felt across the seat, extending from one ischium to the other. There was great numbness throughout the lower extremities; and although no sensation was in the left leg or toes by touch, nevertheless he complained strongly of a feeling of heat in the parts. There was some degree of feeling, on touch, left in the right leg. The legs were very œdematous; there were large ulcerations on those parts of the knees on which he rested, yet he did not experience pain from them. He was generally sleepless, but did not suffer from headache; his breathing was easy, his pulse undisturbed, and his appetite good. He had difficulty in making water; and his bowels were generally confined, and at times so obstinately constipated as to resist the action of cathartics and purgative injections. An issue had been placed on the region of the sacrum, the discharge from which was thin; this was rendered of a more purulent character by the use of iron, from which he seemed to derive more benefit than from any other medicament, especially as regarded the making of water.

His death took place in May last. He had been able, about a fortnight before it occurred, to place himself on his back, after which the œdema of the legs subsided; there was, however, incontinence of the urine, which was at times mixed with blood. He slept better, and was even able to assist in making a waistcoat about a week before he died.

Post-mortem.—Owing to peculiar circumstances, I was only able to examine the back; imperfect, however, as the investigation was, it furnished me with a morbid product sufficient to account for the peculiarity of the symptoms, and the situation and structure of which must be a matter of interest in pathology. The sacrum seemed more protuberant than usual; this appearance, however, arose from the loins being more depressed. The arches of the dorsal and lumbar vertebræ and the posterior wall of the sacrum were removed; the laminae of the lumbar vertebræ, as well as their bodies, were partially affected with caries.

Viewed posteriorly, the dura mater appeared to be in its natural state until it reached the extremity of the spinal cord; but from that point to the end of the sacrum it was wanting, so that the mass of tumours, was exposed to view. The growth extended more towards the left than the right side of that portion of the spinal canal in which it was situated. The spinal cord was cut across, about the middle of the back, and inferior portion of it was removed; nearly the whole of the diseased mass came along with it. The dura mater was laid open posteriorly. The cord appeared to be quite sound throughout. The diseased mass had a lobulated form, and was involved in the cauda equina; and although it was traversed by a few of the nerves, nevertheless the greater portion of the latter could be detached from it.

It was difficult to determine the seat of the tumour when examined posteriorly; but anteriorly the dura mater was sound throughout; and the arachnoid membrane, especially at the upper portion of the tumour, could be traced intact between the latter and the dura mater. Here and there processes were observed to pass from the arachnoid to the diseased structure, but they were similar to those met with between the arachnoid and the pia mater in their natural state. The tumour, or rather mass of tumours, on which a great number of vessels were spread, was, as I observed before, surrounded on all sides by the roots of the nerves forming the cauda equina. The lower portion of this morbid growth had the form of a tubercle. It presented several traces of vascularity in the centre, and had a scirrhus appearance; I could not however make anything out satisfactory with regard to its minute structure. The upper portions of the tumour were softer, and were involved in a fine glistening covering; sections of several portions of them showed them to be composed of a grey, semi-transparent, jelly-like substance, infiltrated amidst reticulated tissue, and marked with sanguineous striæ, several of which appeared like true vessels.

I had not an opportunity of having any part of this morbid growth analysed. I plunged a portion of it in pure alcohol, and as it retained its semi-transparency, I concluded it was not albuminous.

Notwithstanding the researches I have made, I have not yet been able to meet with any case on record similar to the one just described. Amongst the many points of interest which the tumours offer—as, for instance, the region they occupy, the peculiarity of their structure, the symptoms they gave rise to—I shall on the present occasion allude more particularly to one, that is to say, the tissue in which they were developed. There can be little doubt that the disease was seated in the pia mater, a vascular web in which morbid products are more frequently formed than in either of the other membranes of the brain. I have observed in a diseased state of the pyloric extremity of the stomach, the walls of which were greatly thickened, a morbid product, which was seated between the serous and muscular layers, and of which the minute structure was similar to that of the section of the tumour in question.

There exists a great analogy between the pia mater of the brain and spinal cord and the subserous tissue of other organs; and, indeed, where the former is united with the arachnoid, the analogy becomes complete. Observation has led me to consider the subserous cellular tissue as being more frequently than any other tissue of the human frame the seat of morbid products. I shall not however enter at length into this subject on the present occasion, but shall defer till another the statement of the facts on which this opinion is grounded.—*Transact. of Prov. Association*, Vol. X.