ON

OPHTHALMOPLEGIA EXTERNA

OR

SYMMETRICAL IMMOBILITY (PARTIAL) OF THE EYES, WITH PTOSIS.

BY

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THE cases to which I have to ask the attention of the Society are characterised by a very peculiar group of symptoms. Drooping of the eyelids, so as to give to the face a half-asleep expression, is usually the first, and it is soon accompanied by weakness of all the muscles attached to the eyeball, so that the movements of the latter become much restricted, or even wholly lost. The condition is usually bilateral, though it is not always exactly the same in degree on the two sides. Its symmetry probably denotes that it is of central origin. It by no means always happens that all the ocular muscles are alike affected, or that they are attacked simultaneously, still it is a very marked feature of the malady, that the muscles fail in groups, and not singly. Non-symmetrical paralysis of single ocular muscles is, of

course, very common, especially in connection with syphilis and locomotor ataxy, but such cases are to be distinguished from those which I am now describing: first, by the fact of non-symmetry: secondly, by the early completeness of the paralysis; and, thirdly, by the ease with which, very frequently, they are cured. In a majority of them, there is, perhaps, good reason to suspect that a gumma in the nerve trunk is the cause. In the symmetrical cases now under consideration, however, the changes probably begin centrally; they are usually slow in progress, and are often difficult of relief. They agree with the single nerve cases in that they occur chiefly to those who have had syphilis. Although I have ventured to speak of immobility of the eyeballs, I by no means wish to imply that it is usually complete. On the contrary, incompleteness in the degree of paralysis is almost as marked a feature as is the tendency to affect many muscles at the same time. Although the eyelids droop, there is seldom complete ptosis; great limitation of the range of motion of the eyeballs is more common than fixation. The degree, however, varies with the stage, and at a late period the paralysis may be absolute. The third, fourth and sixth nerves are of course those which are involved, but not unfrequently in the early stage one or more of these may wholly escape. Occasionally the optic nerve itself is involved, and sight is lost. I am making these statements from the observation of only a limited number of cases, for the condition is but seldom seen. I have as yet witnessed only a single fatal case, and in it evidence was afforded of extension of disease downward into the motor tracts of the cord, and the man lost the use, first of his upper, and subsequently of his lower extremities.

In a former paper[1] I have ventured to propose the name Ophthalmoplegia Interna, for cases supposed to depend upon disease in the lenticular ganglion, in which the internal muscles of the eye (the iris and ciliary muscles) are together involved in paralysis. If in contradistinction with these, I may now be permitted to suggest that of Ophthalmoplegia

[1] 'Med.-Chir. Trans.,' vol. lxi, p. 215.

Externa for those in which the external muscles of the eyeball fail in power, it must be with the full admission that these latter often, indeed usually, include the internal muscles also. With paralysis of the third nerve, the circular fibres of the iris and the ciliary muscle must of course fail, but the defect in these parts in this class of cases is, usually, as I have asserted of the recti and levators, incomplete. In this incompleteness, at any rate in the early stages, it differs from what we see in cases of supposed disorganisation of the lenticular ganglion. Nor does it always happen, even when in ophthalmoplegia externa the third nerve root to the ciliary ganglion is involved, that the vaso motor filaments suffer too, and in this we find a further difference from what would be expected if the ganglion itself were attacked.

The cases in question are probably closely allied in nature to what is known as progressive muscular atrophy, their peculiar feature being, that only one special set of muscles (or rather nerves) is at first attacked. We have, probably, in them, a very close parallel to the so-called bulbar paralysis, the labio-glosso-laryngeal paralysis of Duchenne. In it, as in ophthalmoplegia externa, central degeneration-changes occur, and the result is the paralysis of a set of associated muscles. It may be plausibly conjectured, that the initial lesion is inflammation of the nuclei of the affected nerves, which, in a slowly serpiginous manner, creeps from place to place, along certain definite anatomical paths. Within certain limits its directions of spreading, and its progressive tendency may vary in different cases, but speaking generally, the cases are remarkably same in their features. In exceptional instances, definite symptoms of locomotor ataxy are present, and in others still more rare, the fifth nerves, or the seventh, or even the eighth may be involved. Although, so far as I am aware, this group of cases has not as yet found any record in English medical literature, it has not escaped notice in Germany. Graefe described examples of it in 1867, and employed the word ophthalmoplegia in reference to them, and Eulenberg in his work on 'Functional Nerve Disorders' devotes a short chapter to the subject, which, however, con-

sists chiefly of an abstract of Graefe's communication. By both these authors it is spoken of as sometimes syphilitic, and sometimes rheumatic, and occasionally without assignable cause.

The clinical part of my paper consists of the narrative of fifteen examples of the malady. Several of these cases extend over many years, and are very detailed. I have done my best at abbreviation, but am very conscious that I shall still need the Society's indulgence in this matter.

CASE 1.—My first case occurred in 1862, and has special interest, because I am able to produce a photograph of the patient. A printing-house porter, aged 52, applied at Moorfields almost blind with white atrophy of the optic nerves. His eyelids drooped a little on both sides, and he was obliged to elevate his head, and use the occipito-frontales in order to see. The eyes were almost fixed in the orbits. The photographer to whom I sent him, reported him "an unusually good sitter, for he never moved his eyes." Both eyes diverged, the left especially. On both sides all the third nerve muscles were paralysed completely, excepting the levator. On the left side, the fourth nerve was paralysed, and the only muscle which he retained was the external rectus. On the right side, the sixth nerve was paralysed, and the only muscle which he retained was the superior oblique. In both eyes the discs were white and the retinal arteries small. He was not deaf, his faculties, excepting sight and smell, were good, and he had excellent health. He had never had "a fit" nor any limb paralysis, and he had never suffered from pains in his head.

The case was remarkable on account of the long interval between the paralysis of the muscles, and the failure of sight. The progress of symptoms in the early stages appeared to have been very slow. The history as to syphilis was that in 1834 (that is thirteen years before his first eye-symptoms) he had a long treatment by mercury for a chancre with buboes. He was salivated. No secondary symptoms were remembered. In addition to the eye-symptoms his smell had failed,

Ammonia made him sneeze, but he could detect no odour in hyoscyamus. He considered his taste perfect.

This man remained under my observation from January, 1862, to July, 1864. In August, 1863, he began to complain that fluids in swallowing came through his nose. His speech was thick, and the palate appeared very deficient in sensation. His pupils were quite motionless, and of medium size. His uvula could not be made to move. In July of 1864 he was in the same state. The left external rectus, and the right superior oblique, still acted well. The muscles of his palate did not act, but tickling it, although but little felt, caused sickness. His cheeks hung loose as if partially paralysed, but nothing positive could be proved. He could still whistle.

After 1864 this patient ceased to present himself. From inquiries at the workhouse I believe that he died in 1866.

Case 2.—My second case is that of a young physician who, in 1871, put himself under my care for symmetrical paralysis of the third nerves. He was thirty years of age, and had been treated seven years before for a chancre (by the late Mr. Gascoyen). No secondary symptoms followed, but he had since had frequent reminders in the form of psoriasis palmaris, &c. He had also been liable to "rheumatic pains," which were always relieved by iodide of potassium. About a week before I saw him he began to be troubled with morning sickness, then his eyelids felt heavy, and next they drooped, and he began to see double. When he came to me he had slight ptosis on right and complete on the left. On the right the pupil was dilated and fixed, and accommodation lost; whilst in the left the pupil was normal and accommodation was perfect. The internal rectus was very defective on both sides. On the left the superior and inferior recti were almost wholly paralysed, whilst the superior oblique was perfect. On the right these recti were weak, but only to a slight degree, but a fortnight later the ptosis on this side also became complete, and all the recti, excepting the external, were absolutely paralysed. Both eyes diverged, and, on the right side, he had entire loss of accommodation,

At this period he complained much of "horrible muscular pains" in his legs, which were relieved by exercise. He had also morning sickness, almost exactly like that of pregnancy, and some frontal headache. Subsequently there was general dulness of sensation in the lower extremities. Dr. B. remained under drug treatment almost continuously for two years and a half. We gave mercury in various forms, and the iodide in very diverse doses. Sometimes, after an interval, five-grain doses produced very definite results, and at one period he had got up to *an ounce and a half in the twenty-four hours* without feeling any discomfort beyond lassitude. The sum of our experience was, that the iodide did more good than mercury, but that it was useless unless the dose was frequently and liberally increased. The functions of accommodation and the use of the internal recti varied much from time to time, and always afforded us a good test of the efficiency of treatment. I never, in any other case, pushed the iodide to anything like the extent to which it was given in this instance. The result, however, was most satisfactory. Dr. B. lost all his ataxic symptoms, he regained perfect accommodation, and most of the ocular muscles recovered their power. He is now, seven years after the conclusion of treatment, in good health, and has never been threatened with any relapse. It should be added that we had the advantage of sea-air at the time that the largest doses were given, and without its aid I much doubt whether the result would have been as satisfactory as it was.

Case 3.—The following case was under my observation from its commencement, in 1869, to its end, in 1876, and it is of especial value as the only one in which I have obtained a *post-mortem*. The symptoms, which began with ocular paralysis and amaurosis, were slowly progressive, and the case in part resembled locomotor ataxy, and, in part, progressive muscular atrophy.

Robert S—, æt. 48, a very healthy-looking man from the country, formerly a policeman, now a gardener, was sent to me by my late colleague, Mr. Dixon, in March, 1869. He

had a slight defect of his right sixth nerve, and could not abduct the globe well. There was slight convergence, and he complained of seeing double. The right pupil was rather larger than the other. He complained that he did not see well by artificial light, and that he could not read long at a time. He had enjoyed good sight until six weeks before, and had never used glasses. I found that without glasses he could, by effort, with left eye read No. 10, but with right only 14. For a minute or two he could puzzle out smaller print, and it appeared that his defect was wholly due to weak muscles of accommodation, for with +16 glass he read No. 1 easily with either eye, and his distant vision was almost perfect.

I could not arrive at any opinion as to the cause of the rather sudden onset of symptoms. He denied having ever had syphilis, and he had been married early and had seven living children. He had never had any injury to his head more serious than the blows to which policemen are liable, nor had he had gout. Of late he had suffered a good deal from what he called "rheumatism" between his shoulders and had also had giddiness and much pain across his forehead. I prescribed iodide of potassium, and during a six weeks' treatment with it he made some improvement, and I then lost sight of him. I am sorry that I cannot state the exact degree or kind of improvement, but he became able to continue his work as gardener with comfort, and, as he lived at a distance, he was anxious to avoid journeys to town.

Four years later, in October, 1873, Robert S— again came to me at Moorfields. In the interval his sight had steadily deteriorated, and with the right eye he had now only bare perception of light, whilst with the left he could scarcely spell No. 20. He could not abduct either eye, and the right was habitually crossed inwards. There was no positive paralysis of any of the other ocular muscles, but they all acted feebly, and he had the same sleepy look observed in other cases, from not being able to keep his upper eyelids properly elevated. He could, however, by effort, lift his eyelids. His left internal rectus seemed weaker than the rest. The optic

discs were both very pale, and the artery and vein much reduced in size. The atrophy was more advanced in the right. He still enjoyed good health, and, in spite of being almost blind, still acted as gardener and groom. I could not make out much as regards other evidences of disease of the nervous system. He was liable to attacks of severe pain in his forehead, sometimes lasting a week or more. For seven or eight years he had been liable, he said, to cramp in his legs at night. His bowels were constipated, but not extremely so. At this date his pupils did not act in the least—the left being of medium size, and the right rather larger. He had no habitual headache. I now prescribed mercury and pushed it to ptyalism, but with no definite benefit.

During the spring of 1874 I saw him repeatedly in the country, and about March the following note was made:—Pupils motionless. External recti paralysed, and all the others imperfect. The superior oblique appear to be also weak, but as he can still use the inferior recti a good deal it is difficult to test them. His bowels have been very costive, and he complains much of tightness round the abdomen as if a strap were round him, and also of numbness in the skin of abdomen and face. There is also slight numbness in hands and a little in feet. Up to this date the man had been able to get about, and used to drive himself in a pony carriage a distance of seven or eight miles to see me. Not long afterwards, however, an aggravation of symptoms took place and he became confined to his house. After this I did not see him again. I was informed that he had a "sort of choking fit" and soon after became absolutely blind. His extremities next failed him, and he had to keep his bed. He now suffered from dreadful pain in his head, and was frequently "out of his mind," and liable to use most violent language. He could speak well and swallow easily, and used to eat largely. His lower extremities became quite useless and were usually "icy cold." In this condition he died in May, 1876, about seven years after the commencement of his symptoms.*

* The following particulars were kindly obtained for me by Dr. Sloman, of Farnham. "About Christmas, 1874, loss of power in his arms was

Two very remarkable coincidences occurred in this case and by their aid I am enabled to complete its narrative. They are so peculiar that I must ask the Society's excuse if I briefly mention them. I had been very desirous to know whether this man had suffered from syphilis; as stated, he stoutly denied it, and he appeared to be straightforward. I got him to bring me two of his children and neither of them showed anything in the least suspicious. So matters stood when in April, 1876, Dr. Horace Jeaffreson of Wandsworth wrote to me that he had under his care a maid-servant who was the daughter of a man in whom I had taken much interest and that the girl was now suffering from inflamed eyes. He sent to me Robert S—'s eldest child, a girl of twenty, with *notched teeth and a most characteristic condition of syphilitic keratitis.*

This girl, who became my patient at Moorfields, informed me from time to time of her father's condition. I was very anxious to get Dr. Hughlings Jackson to see him, and for a year or more we had it in contemplation to go some day to Farnham and ascertain the present state of his symptoms. One Saturday afternoon in the spring of 1876 we accomplished our intention, and having found the man's cottage ascertained that he had died the day before. After much persuasion we succeeded in getting permission for a post mortem, and brought his brain home with us.

Dr. Gowers was kind enough to make for me a detailed microscopic examination of the cerebral nerves and their nuclei, and I append his report. It will be seen that degenerative changes precisely similar to those of progressive

noticed; he would drop a cup or anything he was trying to drink from. In January, 1875, his legs became weak, and he took to bed at the end of January or beginning of February; he was constantly in bed after that. During this time his arms and legs would from time to time "fly up" (as his wife expresses it), and as suddenly drop again. His lower limbs were constantly cold. He had no constant paralysis of the sphincters, but very occasionally urine was passed unconsciously. The bowels never acted at all without medicine. He could swallow perfectly, and also speak and taste. He had no paralysis or loss of sensation in muscles of face. He used to suffer much from headache."

muscular atrophy were found. These changes implicated the optic nerves and the third, fourth, and sixth. The fifth were slightly affected, but all the others were healthy. We had not been able to obtain any part of the spinal cord. From the nuclei of all the nerves mentioned the cells had disappeared.

Examination of the brain by W. R. Gowers, M.D.

The brain, when received, was somewhat softened from commencing decomposition, and the following facts are all that could be ascertained with certainty. The cranial nerves were examined microscopically, in the fresh state; the pons and medulla after hardening.

Nothing abnormal was observed in the convolutions. The corpora striata were apparently normal, the only exception being the presence of a hyperæmic patch in the left lenticular nucleus. The optic thalami were of normal size and consistence, except that the posterior tubercles were perhaps a little smaller than normal, and a little softer. Microscopical examination did not show any special change. The corpora quadrigemina were of nearly normal size; the posterior only being distinctly smaller than natural, but on microscopical examination they appeared healthy. The pons and medulla were of the usual size, and the only abnormality was an unusually deep central sulcus of the floor of the fourth ventricle, but this was found, on further examination, to be independent of any change in the structure of the pons.

Cranial nerves and their nuclei.—The *olfactory nerve* appeared normal. The *optic nerves,* and chiasma were uniformly grey, but of fair consistence. The optic bracts were also grey, but in places presented a white almost nacreous striation. Microscopical examination of the nerves and tracts showed many fat globules and degenerating fibres, but also a large number of healthy fibres. *Third nerves.*—Smaller than natural, grey and translucent. Very few healthy fibres could be seen in them; some fibres were seen undergoing degeneration, and there was a large number of

connective tissue nuclei. In the crura cerebri the passage of the tracts of fibres of origin was indicated by lines of connective tissue fibres in which scarcely any nerve fibres could be seen. Their nuclei beneath the nates presented striking changes. Almost all the large multipolar nerve cells had disappeared, two or three only were to be seen in each section. A few cells were seen of some size, but without processes. Others appeared represented by minute angular cells not larger than connective tissue nuclei. The latter were very abundant throughout the tract.

Fourth nerves.—No trace of these could be seen. They had probably become reduced to fine connective tissue threads, indistinguishable from the fibres of the pia mater. Their nuclei beneath the testis presented a similar degeneration to those of the third nerves in the anterior part of the same tract.

Fifth nerves.—The upper fibres of the large root appeared healthy, but the lower fibres had a grey appearance and presented granular degeneration and segmentation on microscopical examination. Within the pons there was little recognisable alteration in the fibres of the nerve, and the nucleus was for the most part normal. Here and there were patches of disintegration. The nucleus of the motor root of the fifth was in all respects normal.

Sixth nerves.—These were reduced to fine grey threads in which, under the microscope, scarcely a single nerve-fibre could be seen. They were made up of nucleated connective tissue, with here and there a row of granules to indicate the position which had been occupied by a nerve fibre. Within the pons lines of connective tissue alone indicated the course of their tracts of origin to the nuclei beneath the eminentiæ. These, the so-called "conjoined nuclei" presented general degeneration; most of the large nerve cells had disappeared and only granules, nuclei, and small angular cells remained.

Facial nerves.—Perfectly normal, both in their trunks and roots of origin within the pons.

Auditory nerves and nuclei normal.

Glosso-pharyngeal nerves and nuclei normal.

Pneumogastric nucleus normal.

Hypoglossal nucleus normal.

Throughout the medulla, pons, and corpora quadrigemina the perivascular erosions, so frequently met with, were very large and numerous. In the lower part of the floor of the fourth ventricle there were some areas of disintegration, in the grey substance just beneath the lining membrane; and the surface, partly from this cause, was more than usually irregular. One such area appeared to have been caused by a small hæmorrhage.

Remarks.—The degeneration of the nerve roots, and disappearance of the nerve cells from their nuclei of origin, are precisely similar to the changes seen in other parts in progressive muscular atrophy. There was no indication of pressure upon the nerves, nor of any acute change in their nuclei, nor in any centre. The disintegration and connective tissue changes are constantly met with in the grey matter of the cord in progressive muscular atrophy.

CASE 4.—In the following case no history of syphilis was acknowledged. It was, however, very closely similar to the others which were syphilitic; and when we remember what occurred in the preceding case in this matter, we cannot trust much to negative statements.

Abstract.—Almost complete paralysis (not equal) of all the ocular muscles, with the exception of the inferior rectus on right, and external and inferior on the left. Slow failure of sight in both eyes, but not symmetrical. Atrophy of discs with but little diminution of central vessels. A feeling of tightness across forehead and great irritability of temper. Patient a man of middle age in good health. Insanity threatened.

William M—, a florid healthy-looking man, æt. 45, came under my care in January, 1875. He considered that he ailed nothing whatever excepting his loss of sight. His pupils were of medium size and quite motionless. With his left eye he could see a hand, but could not count fingers, whilst with the right he could just spell out *No.* 20. His

manner was slow and dull; he answered me in monosyllables, and his wife said that at home he would often sit for hours and not speak. He slept much. He complained occasionally of dizziness, and said that he frequently had "a sort of tight pain" across his forehead. He had no pain in his limbs or joints. The account which he gave of his first failure of sight was, that it occurred when he felt quite well. He began to find his eyes dull, and they felt as if sand were in them. He had no sickness and could walk well. The left eye failed first. He attended at Guy's Hospital in 1873, and took phosphorus and nux vomica. A note on his Guy's paper, stated that "the optic discs were white and atrophic, blood supply to retina good." In June, 1874, he had an eruption on his legs, which he thought was due to the medicine. He describes it as purpuric.

When he came to me his expression was somewhat sleepy, from his not opening his eyes well, but there was no positive ptosis. The left globe oscillated somewhat from side to side. Many of his ocular muscles were paralysed. Thus, on the right side, the only muscle which enjoyed any material power was the inferior rectus. The others, although not absolutely paralysed, were almost so. On the left side the external rectus acted well, and the inferior fairly, but all the others only very slightly. When told to look upwards he simply converged his eyes. None of the muscles were absolutely paralysed, excepting, perhaps, the right external rectus.

The pupils dilated well with atropine. The optic discs were both of them pale, the left being much whiter than the other. The branches of the artery were but little diminished.

M. was by occupation a dock labourer, but he said that he often did not work more than two days a week, as he was lame in consequence of a compound fracture of one leg. He had been well fed and had a good appetite. He had always been temperate in stimulants, and had never smoked. His smell, taste, and hearing were perfect. He denied having ever had syphilis, or that he had experienced any sexual

failure, but in these matters he was not communicative. He had married, for the first time, eight years before I saw him. His wife was older than himself.

In March of same year he was in much the same state. His club doctor had certified that he was insane; but his wife denied it, and although irritable, he had always to me appeared rational.

CASE 5.—The case of F. W. M—[1] is a very characteristic one. He was an engine-fitter, æt. 39, in apparently good health, and free from symptoms of spinal disease. He had suffered from complete syphilis twenty-two years before the eye symptoms began. The latter, although ultimately symmetrical, were not so at first. In the beginning all the recti on the left side failed, the pupil became dilated and fixed, and accommodation was lost. Amaurosis on the same side followed, and two years later similar symptoms were developed on the right side, and in the same order. Under a prolonged but perhaps too mild anti-syphilitic treatment his disease advanced very slowly. Six years after his admission, and nine from the commencement of his symptoms, he was quite blind, and his eyes almost fixed. He still possessed, however, slight power over certain of the recti. Excepting some occasional shooting pains in the head, and a degree of numbness of the forehead, he had not experienced any other nerve-symptoms, and was when last seen in good general health.

CASE 6.—The case of John H—[2] a labourer in wine-vaults, æt. 34 is of special interest, because symptoms of locomotor ataxy preceded those of ophthalmoplegia. It was not certain that he had ever had syphilis, and excess in venery, alcohol, and tobacco were amongst the possible causes. Obstinate constipation, retention of urine, impotence, and weakness of the lower extremities, were his earliest symptoms. Then followed symmetrical amaurosis and paralysis of the recti muscles on both sides. The pupils

[1] Detailed notes of this case extending over nearly six years were appended to the paper.

[2] Notes of this case also accompanied the paper.

had become dilated and motionless before the ocular muscles failed. He ultimately became almost blind.

Case 7.—The next case which I shall mention is the last which has come under my notice, a very definite example, and one in which I had the pleasure of producing the patient for the examination of the Society on a former occasion. The patient is a butler in a country house. He is thirty-four years of age, and about ten years ago he went through a sharp attack of syphilis. He has now been for three years or more the subject of ophthalmoplegia externa in combination with some symptoms of ataxia. I have had him under treatment for about a year, and under specifics in full doses he has greatly improved, but the movements of his eyeballs are still in all directions much restricted. None of the muscles are absolutely paralysed, but all are very feeble. It is important to note that his pupils act fairly, and that his accommodation is perfect. His lower extremities were, at one time, very weak, and liable to much aching pain. He walked badly, and used occasionally to fall. These symptoms have now passed off, and he walks well, and appears to be in excellent health. This patient had taken the iodide before I saw him, and there is every reason to believe that it has been the means of saving his life, for, at one time, the symptoms were rapidly progressive, and he was confined to bed.

Case 8.—Mr. Ilott, of the Bow Workhouse Infirmary, sent me in 1878 an interesting example of this malady in connection with a syphilitic history, and with modified symptoms of locomotor ataxy. The patient was an actor, æt. 30, of much intelligence, who had already been under hospital treatment, and who told me spontaneously that he had suffered from syphilitic disease of the brain. He had had syphilis eight years before, and at the time that his nerve symptoms began he was under Mr. World's treatment for a tertiary ulcer on the leg. The onset of his symptoms was, according to his account, sudden. He one day felt a "click" in his head and fell down in the street. He got up,

walked to an omnibus, and went home, but ever afterwards one eyelid drooped; a few weeks later the other eyelid drooped, and for a time both eyes were closed. Under treatment by iodide of potassium, extending over a year, he recovered, and when he came to me he considered himself well, and was not taking medicine. I found his pupils motionless, and of medium size, but accommodation almost perfect in both. His lids drooped to a moderate degree, and, excepting the internal rectus on each side, almost all his ocular muscles were more or less paralysed. The conditions were almost symmetrical. He could see well, and suffered no pain. His gait was decidedly ataxic, and he complained that his legs were weak. The sexual function was almost wholly in abeyance.

The subject of the above case was presented before this Society last year, and a week afterwards Dr. Gowers was kind enough to send to me for examination the subject of the following as an example of similar disease.

Case 9.—A servant girl named B—, æt. 27, had been under Dr. Gowers' treatment for several years. Four or five years ago, after much headache, both eyelids began to droop, and subsequently the ocular muscles on both sides became involved. Her pupils continued to act well, and she retained sight and accommodation. At the time of my examination almost all the muscles were defective, and some almost completely paralysed. The inferior recti and the inner rectus on right side had most nearly escaped. There were some indications of ataxy. Her lower limbs were weak, and she walked badly, complaining that she could not go up stairs easily, and that sometimes her legs seemed to give way. Once she had tripped and fallen. I did not ask direct questions as to syphilis, and there was no other clue to it.

I am indebted to my colleague, Mr. Waren Tay, for the notes of two cases in which young children were the subjects of symmetrical paralysis of the muscles of the eyeball. In neither of them was there any proof of inherited syphilis, but in one the paralysis passed away under treatment by specifics in a manner which was very suggestive.

CASE 10.—A female infant, æt. 9 months, under care in 1876, at the London Hospital, had symmetrical ptosis and almost complete paralysis of all the ocular muscles. The lids drooped so as almost to cover the eyes. It was very difficult in so young a child to test each muscle, but so far as could be ascertained the paralysis was almost absolute, with the exception that the left eye moved a little both outwards and inwards. The condition had existed for fourteen days. The child was pale and fretful, but showed no signs of syphilis. There was an elder child, æt. 3, also healthy, but both of them had suffered from "thrush." Iodide of potassium and mercury were ordered, and at the end of four months all trace of the paralysis had disappeared, and the child was cheerful and in good health. Five months after treatment was laid aside the child was seen again, and continued quite well. Two months after this, however, it was taken ill again, wasted, had convulsions, and died, but no information of this illness was given to Mr. Tay until some time after the death.

CASE 11.—The subject of Mr. Tay's second case was a girl, æt. 3, named A—, under care in March, 1878. Both eyelids drooped considerably, and several of the recti on both sides were paralysed. With the left eye she could look outwards but not in other directions, and with the right inwards and outwards fairly, but not in other directions. The pupils were of medium size, and sluggish. The symptoms had been coming on for six week, and there was a history of a slight fall. The child was fretful, but there were no indications of syphilis. A boy two years older than the patient was quite healthy. Iodide was ordered. Death occurred on April 19th, 1878, but no details of the latest symptoms are forthcoming, nor was a post-mortem obtained.

CASE 12.—I have met with one instance of this malady which was unquestionably in connection with inherited syphilis.

Abraham F— is at present unable to use any of the recti

muscles excepting to a slight degree, and his eyes are almost fixed in a divergent position. He is quite blind, and both discs are in an advanced state of atrophy. He has been at different times during the last few years under many of the ophthalmic surgeons of London, and also under Dr. Hughlings Jackson, by whom he was sent to me. He is florid and healthy-looking, but with a suspicious forehead, and quite characteristic teeth.

At the age of 13 his sight began to fail, and squint was noticed, and from this time his symptoms steadily advanced. For two years and a half he has been, as he is now, totally blind, with fixed eyeballs, and slightly drooping lids. There has been no evidence of increasing disease of the centres, and he still walks well, and has perfect use of all his faculties. He sleeps and eats well, and goes regularly to a blind school, where he reads by touch. He has now no headache, but in the earlier stages he had much headache and occasional "shiverings." His age is now 16.

His right eye is usually on a lower level than the left. He can only by great difficulty lift his lids so as to expose the whole of the cornea, and when at rest the corneæ are half covered, and he looks as if just going to sleep. Both eyes diverge. Both inferior recti are wholly paralysed, and both superior almost wholly so, the left being rather better than the right. The internal rectus of the right side is quite paralysed, and that of the left nearly so. The external rectus of the right is very feeble, but that of the left still acts moderately, being much the most active muscle on either side. All the obliques are paralysed.

CASE 13.—*Symmetrical and almost complete ophthalmoplegia externa without implication of the iris or ciliary muscle, but with defect of all muscles supplied by the fifth, and, in slight degree, of those by the seventh. No history of syphilis.*

A young man named George S— came to Moorfields in October, 1877, and was admitted under Mr. Waren Tay's care. He showed no signs of inherited syphilis. He was only 19, and entirely denied any history of acquired taint.

He was from Devonshire and of healthy family. In addition to investigations by Mr. Tay and myself, his symptoms were carefully studied by Dr. Hughlings Jackson, Dr. Barlow, and others. On both sides his eyelids drooped so as to almost cover the eye, and all the muscles of the eyeballs were exceedingly feeble. His pupils, however, acted well, and accommodation was perfect (entire absence of ophthalmoplegia interna, and probable integrity of the lenticular ganglion). The ocular muscles were somewhat more completely paralysed on the right side than the left, and the lid drooped more, but on both sides the degree of weakness was almost complete, and involved all the muscles. In addition to the muscles of the eye, all those supplied by the fifth nerve were on both sides defective, but their paralysis was not nearly complete, and on both the muscles supplied by the facial were also slightly weak. There was no defect of sensation, nor any symptoms referable to the spinal cord. The vision and other special senses were perfect, and the man appeared to be in good general health. There had never been much headache.

The symptoms above mentioned had been present six months, and were supposed to be consequent on a trivial blow from a piece of wood on the left temple. There had been an interval of three weeks between the blow and the first drooping of the eyelids, and the blow itself was so slight that it may be reasonably doubted whether it had any connection with the paralysis.

Through the kindness of Mr. Fernie, of Barnstaple, under whose care the man is, I am enabled to state that at the present date, fifteen months since he was under care at Moorfields, the symptoms remain without advance, but with some improvement. Treatment by iodide of potassium has been pursued, but not regularly, nor in large doses.

I may suitably place in juxta-position with this case one in which, as in it, the fifth-nerve muscles were involved in association with those of the eyeball. It differs, however, definitely from the preceding one in that there can be no doubt that the patient is the subject of syphilitic taint. It is a very

remarkable case, but I must state its facts as briefly as possible.

CASE 14.—Madame de T— æt. about 30 years, and in good bodily health. She has notched teeth, and has suffered a severe attack of interstitial keratitis. A sister, like herself, is the subject of inherited syphilis. Before, however, we confidently attribute her nerve-symptoms to inherited taint, I am bound to state that her husband believes that she has had acquired disease as well. About this no certainty is attainable. She is at present the subject of paralysis of all the ocular muscles on the left side, with only slight weakness of these on the right, but with double paralysis of the fifth, both motor and sensory, and some defect of both facials. She was formerly hemiplegic in her right limbs, but this has passed off. The account of the development of her symptoms is obscure, but the paralysis of the cranial nerves preceded the "fit." She has already derived much benefit from treatment by large doses of iodide of potassium. The non-symmetry of the ophthalmoplegia, and the occurence of hemiplegia, separate this case somewhat from the group under our consideration.

I have seen double paralysis of the ocular muscles once—and only once—in association with a history of apoplexy, and the case, although probably not very closely cognate to the others, must be briefly mentioned.

CASE 15.—Abraham B—, a healthy-looking old man, æt. 72, came under care in 1874, having, on the right side, paralysis of all the muscles of the eyeball, except the internal rectus. The condition was symmetrical, but on the left side the degree of paralysis was not so great. The eyeballs were converged, so as to be almost buried in the inner canthi. Accommodation was lost, but vision almost perfect. He was partially hemiplegic in the left limbs, and the muscles supplied by the right facial were weak. The history was, that the symptoms had followed a fit which had occurred suddenly three or four years ago. There was no history of syphilis, but its possibility was not denied. His vision failed

during the period that he was under observation, but in other respects his symptoms were stationary. It is difficult on any hypothesis of hæmorrhagic disorganisation to explain such a group of symptoms, and it is, after all, quite possible that the apoplexy was an accidental concomitant, and that the ophthalmoplegia was of the same nature as in the other cases.

P.S.—Since my paper was sent in I have found in my note-books two cases of this affection which I have omitted to mention.

Case 16.—The subject of the first is a married lady whom I attended with Dr. Hughlings Jackson some years ago. She had double ptosis, with incomplete paralysis of most of the ocular muscles, fixed pupils, and loss of accommodation. She had been liable, previously, to most violent attacks of vomiting ("abdominal crises"). She improved very much under specifics. She became subsequently hemiplegic. She is still living (ten years after the first symptoms), but is confined to her room, and many of her ocular muscles still paralysed. There is much reason to suspect syphilis.

Case 17.—The subject of the second is a sailor, who had syphilis six years ago, and in whom both-sided paralysis of the eye-muscles with ptosis set in rather suddenly after two months' premonitory symptoms in the form of failing accommodation.

I have detailed notes of both these cases, but must not further trespass on the patience of the Society. It will be seen that these add two more to the list of those in whom the disease appears to be due to syphilis.

Comments on the Series.

The facts are too few to permit of statistical analysis, but a brief summary may, perhaps, be useful. Of the fifteen cases four only occurred in females, and two of these were young children. One of the males was a boy the subject of inherited taint, and the remaining ten were all adults. In eight of the fifteen it seemed certain that syphilis was the

cause, in six acquired, and in two inherited. Of the remaining seven it may be said that a reasonable suspicion of syphilis might be entertained in several. Had it not been for an almost accidental revelation of the truth in the case of the man S— after prolonged fruitless investigation, I should certainly have asked the Society to believe that his was an example of the disease without any probability of syphilis. With such a fact in mind, one feels that it is almost impossible to make the negative even fairly probable. In Case 9 no direct question was asked, the patient being a single woman. In the two young children, although nothing could be proved, there were some suspicious facts, and one recovered under the iodide. The case in which evidence is most conspicuously absent is No. 13, but in this the patient is a young man, who may have denied the true history, or who may have either inherited a taint or had the acquired disease in some irregular way, of which he knew nothing. On the whole, the evidence which connects this affection with syphilis is exceedingly strong, and that which favours the belief that it can occur independently of it, must be held to be open to some doubt.

In five of the patients (all but one, known to be subjects of syphilis), the optic nerves were affected, and blindness, with white atrophy, resulted. In two cases the fifth nerves were symmetrically affected, and in two there was slight affection of the facials. The almost constant escape of the facials must be held to be a remarkable fact. In one case the palate was affected, and in one, the same patient, smell was lost. None of the patients were deaf and none had lost taste, and in only one was there any material anæsthesia of the skin of the face. In six cases the lower extremities were more or less weak, and liable to pain, the condition approaching more or less closely to locomotor ataxy. I much regret that, owing to imperfect knowledge on my part at the time of their occurrence, the details of facts in reference to this disease are often incomplete. There can, however, be no doubt that ophthalmoplegia externa is sometimes a part of the general malady known as progressive locomotor ataxy,

especially when that disease is due to syphilis. One of the patients became insane, and another was before death liable to attacks of violent mental excitement. Four of the fifteen are known to be dead, but of these a post mortem was obtained in only one. In several cases, owing either to the blindness or the youth of the patient, it was impossible to estimate the state of the accommodation, but in a certain number it was proved to be perfect, in a few it was absent, and in a few it was impaired. The pupil, never contracted, was almost always sluggish and of medium dilatation. In one well-marked case it acted fairly. In no single case was it very widely dilated. From these facts we may infer that the lenticular ganglion is often free from disease, and that the vaso-motor filaments, although often enfeebled, are not usually paralysed.

It is difficult to make any confident statements as to the progressive tendencies of the malady of which external ophthalmoplegia is a symptom. It is very definitely influenced for good by treatment, and in nearly every case specific measures were adopted. We may conjecture, however, from what happened in several, that in most instances it is an aggressive malady, and would end fatally if treatment were not resorted to. The effects of remedies in several of the cases were very remarkable, the patient being rescued from a very dangerous condition. At the time that most of the cases were under treatment my opinions, as regards the nature of the malady, were far less clear than at present, and hence a hesitancy in treatment, which was probably often prejudicial. The patients were benefited up to a certain point, but relapses occurred, and the remedy was not pushed sufficiently. It would seem that iodide of potassium is by far the best means of treatment, and that it ought to be given over very long periods, and in increasing doses without any limit as to precise quantity, excepting its effect on the symptoms. Although relapses are common, yet in several of the cases narrated a complete arrest appears to have occurred, no treatment having been resorted to for several years. In none, however, was the recovery complete.