CASES OF OPHTHALMOPLEGIA, COMPLICATED WITH VARIOUS OTHER AFFECTIONS OF THE NERVOUS SYSTEM.

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THE cases, on which mainly this paper is based, were of long continued and great interest to those who watched their progress while they were under my care. They were cases of ophthalmoplegia; but, like so many cases of ocular paralysis, they were something more; and the other phenomena exhibited by them were probably even more interesting than those presented by the eyes.

The first case was in St. Thomas's for two years, and ultimately ended fatally there. But I did not know until, I think, after the death of the patient, that her case had already been published by Dr. Warner, in the 66th volume of the 'Medico-Chirurgical Transactions;' nor did I know of some of the facts concerning her which he records, and which give additional interest to her case. His paper is entitled "Ophthalmoplegia Externa, complicating a case of Graves's Disease," and the following is a brief abstract of it. Marion H. had had good health until February 1877, when the catamenia became scanty; and in November she was admitted under Sir Andrew Clark for tonsillitis, and was then found to present exophthalmos with considerable enlargement of the thyroid. In 1878 she was again admitted for Graves's disease, and suffered from palpitation, dyspnœa, bronchitis, and slight blood-spitting. The temperature sometimes rose as high as 103° without any inflammatory cause. Suffering from the above symptoms, she acted as a hospital nurse for some considerable time. About January 1880, she first suffered from diplopia, which lasted only for a few weeks. In November she began to notice that she was unable to move her eyes properly, and that to look at any object she had to turn her

head. She was admitted again in March 1881, and remained seven months under observation. During this time the signs of Graves's disease were present, but not excessive; she was very nervous and irritable; she had frequent attacks of palpitation, dyspnœa, headache and insomnia, during which the temperature often rose to 102°; she also suffered from gastric crises, marked by vomiting, diarrhœa, epigastric tenderness, blood-spitting, and thirst. While in the hospital, she was much troubled with inflammation and ulceration of the corneæ; and presented double ptosis, with a double external squint, and incomplete paralysis of all the external ocular muscles. She seems to have improved in health under treatment, and the goître is said to have disappeared wholly. But the paralytic condition of her eyes and the proptosis remained without material change. It was thought that there was weakness of the 7th and 5th pairs of nerves, with general restriction of sensibility.

She was admitted into St. Thomas's about a couple of months after she left the London Hospital. At that time she had obvious but not extreme exophthalmos, double incomplete ptosis, and almost complete fixation of the eyeballs; but there was no defect of accommodation or of the action of the pupils, and the deeper parts of the eyes were healthy. It was soon discovered, also, that she had complete and absolute right hemianæsthesia, with colour-blindness of the right eye, and loss of smell and taste on the same side. But she had no loss of power in the right arm or leg, and could use them as well as the opposite limbs. It did not appear to us that there was involvement of the 5th or 7th pair. The thyroid was not obviously enlarged, and there was no evidence of disease in the thoracic or abdominal organs. She complained of headache in the occipital region, and on the left side of the head.

At this time I knew nothing of her having suffered from Graves's disease; and I was inclined to attribute her ophthalmoplegia externa and right hemianæsthesia to some degenerative change occupying the floor of the anterior part of the fourth ventricle and the walls of the iter, with extension into the neighbouring sensory tract on the left side, and her exophthalmos to paralytic weakness of the ocular muscles.

About two months after admission she had some inflammation connected with the right ear, attended with deafness; and she began shortly afterwards to discharge blood from this ear, and somewhat later from the right nostril. These discharges were continued henceforth to the end of her life; and six months before her death similar bleeding came on from the opposite ear. The exact sources of these hæmorrhages were never ascertained. But their persistence and abundance led me to suspect that my original view was wrong, and that there might be some slow-growing tumour in the situation where I had thought there was degeneration, and some similar growth implicating the dura-mater in the neighbourhood of the petrous bones, and invading the bones themselves. This opinion was not quite gratuitous; but was based upon the facts of a case admitted about the same time as this patient, in which the concurrence of discharge from one ear, with ocular and other paralyses, was found to be due to the association of a tumour springing from the floor of the fourth ventricle, with similar growths originating in the dura-mater of the several fossæ of the skull. The case is published in the 22nd number of 'BRAIN.'

In June 1882 the patient vomited for the first time while under my care; and from that time she continued to vomit for the most part two or three times a day. At the end of August in the same year she had an epileptic fit; and two months later a second, which was succeeded by loss of voluntary power and rigidity in the already anæsthetic right arm and leg. The paralysis and rigidity continued henceforth. In January 1883 she had her third fit; and, from that time, fits recurred every two or three weeks. It is important to observe that from time to time new nervous symptoms were added to those already present, but that no such symptom, of any importance, that had once developed ever subsided. During the patient's two years' residence in the hospital, she suffered as she had done, when under Dr. Warner's care, with ulceration of the corneæ; she was for the most part irritable and difficult to manage, and occasionally manifested delusions; and she had attacks of tonsillitis, and of bronchitis.

A very noticeable phenomenon in her case was the almost

constant presence of a temperature which ranged between 100° as its lower limit, and 103, 104 or even 105° as its higher limit. This had no direct relation to her fits, and was not referrible to any inflammatory condition.

At the end of her two years, she seemed as well in general health as when she first entered the hospital: but she was suffering from headache, sickness, ophthalmoplegia externa, complete anæsthesia of the right side with rigid paralysis of the arm and leg, and repeated hæmorrhages from both ears.

What was the matter with her? I still concluded that the disease, whatever it was, occupied that portion of the brain which, in the first instance, I thought must be its seat. But I was divided in opinion between the presence of sclerosis and that of some kind of tumour. Against the existence of a tumour were, the absence of optic neuritis, and the fact that none of the cerebral nerves besides those of the external muscles of the eyes had become implicated. On the other hand, the persistent headache and sickness, and the involvement of the ears, seemed to me to point to tumour; and on the whole I leant to that view.

The patient went home; but just a month later was brought back to the hospital, moribund from an attack of bronchitis. I need scarcely say that the post-mortem examination was looked forward to with extreme interest. There were the evidences of the acute bronchitis of which she died. But the most diligent naked-eye search failed to detect even a trace of disease in the brain or cord, or any of the intracranial tissues. And, after hardening and staining, the most careful microscopic examination revealed no morbid changes whatever in any part of the cord, medulla, or mesocephale. There was no tumour, there was no recognizable degeneration. And, further, the hæmorrhage from the ears remained unaccounted for. But I am inclined to suspect that this part of the autopsy was not made with the same care as the rest of it.

It is a curious fact that a second case, clinically almost identical with the last, came under my care while this was still in the hospital. Early in January 1883, Gertrude H., a girl of fifteen, was admitted. She had been ill for about a month; and was suffering from headache, giddiness, paresis

of the external recti, and weakness and numbness of the right arm. The temperature was normal; there was no optic neuritis, and the pupils acted to light and accommodation. By the autumn, without much change in other respects, she had lost voluntary power over all the external ocular muscles, and the eyes presented a downward and inward squint. Early in 1884, she was still suffering from headache and ophthalmoplegia externa; she was giddy, and staggered in walking; she complained of nausea, but had not been sick; her right arm was weaker than it had been, and her leg also was weak; further, there was impairment of sensation on the right side, mainly observed in the neck and chest, and in the area of distribution of the ulnar nerve. At the end of February, it was noticed that the tongue pointed to the right when protruded; and, in March, she had an attack of left-sided chorea. While suffering from chorea she was sick for the first time, and a day or two afterwards had an epileptic fit. From this time onwards, she suffered severely from headache and giddiness, and from groups of epileptic attacks coming on every week or two, and preceded by aggravation of headache and sickness. Some time in May 1884, after one of her fits, her right arm and leg were found completely paralysed and rigid, the hand being clenched; and they remained in this state henceforth. About this time, also, she had to take to her bed. When she was discharged from the hospital in February of 1885, her general health seemed fairly good. But still she had ophthalmoplegia externa, without any affection of the internal structures of the eyes; her tongue was protruded to the right; her arm and leg were not under her control, and more or less rigid; her anæsthesia continued without much change; and she suffered from headache and giddiness and periodical fits, the headache and giddiness for the most part coming on before a fit appeared.

The close likeness between these two cases is certainly very singular. In both there was almost complete ophthalmoplegia externa, in both there was paralysis with rigidity of the right arm and leg, and in both there was more or less complete right-sided hemianæsthesia; moreover both patients suffered severely from headache and sickness, and frequent fits of an epileptiform

character. But there were also interesting, even if they were unimportant, differences between them. In the first case, there was constant bleeding from the ears; and there were also colour-blindness, and loss of taste and smell on the right side; all of which were wanting in the second case. And in the second case there was paralysis of the right side of the tongue, which was not observed in the other.

It is an interesting fact, too, that the progress of the second case was attended, as was that of the first, by frequent febrile rises of temperature. But, while in the first the elevation of temperature was more or less persistent, and had no apparent relation to anything in particular, in the other it was comparatively rarely present excepting as the forerunner of epileptic fits. The temperature in this case, as a rule, began to rise one, two, three, or even four days before a fit, and on the occurrence of the fit fell almost suddenly to the normal.

The nearly exact resemblance in respect of symptoms and progress of the second case to the first, makes it fairly certain that the resemblance extends to their ætiology and morbid anatomy, and that if the nervous centres of Gertrude could be examined, they would be found, like those of Marion, to all appearance healthy. It is of course impossible to say that there may not have been in the case of Marion minute structural defects in certain parts of the nervous system, which closer scrutiny, guided by a more profound acquaintance with pathology than we at present possess, might have enabled us to recognise. But the same may be said of cases of epilepsy, hysteria, and megrim, in which up to the present time no causative morbid nervous changes have ever been found. And on the same ground of morbid anatomy that justifies us in considering these to be functional diseases, we are justified, I think, in regarding as functional the affections for which Marion and Gertrude were under treatment. That there was something which it is customary to call neurotic in either case is shown by the circumstance, that both patients suffered at one time or another from functional nervous disorders, that had no apparent relation to the special groups of symptoms for which they sought my advice. Marion had for several years laboured under Graves's disease in a

well-marked form; and Gertrude was seized, while under my care, with an apparently imitative attack of chorea of short duration

If the symptoms which my patients presented are to be looked upon as functional, may they also be regarded as hysterical? The answer to this question must depend, of course, on the meaning we attach to the word "hysterical." If every presumably functional nervous disorder occurring in women, to which as yet no other specific name has been given, is to be included in this term, then my cases were, perforce, hysterical. But the reasons for not regarding them as hysterical, in the common though somewhat vague meaning of the term, far outweigh, as it seems to me, the reasons adducible on the other side. It might, no doubt, be argued, that Marion's mental condition was exactly that which characterises many hysterical patients; that her hemianæsthesia resembled accurately the hemianæsthesia not unfrequently met with in hysteria; and that Gertrude's symptoms, following upon those of the other, and developing in the same ward, were imitated from them. But, on the other hand, Gertrude was a uniformly bright, sensible, placid girl, always grateful for whatever was done for her, and a general favourite with the nurses; hemianæsthesia, with involvement of the special senses on the same side, is not necessarily hysterical; and again, though Gertrude knew something of the other patient's symptoms, she did not know them all, or any of them accurately, and those in which she most resembled her were those she could not possibly have imitated, either consciously or unconsciously. The chief reasons, however, against the hysterical hypothesis are:—(1) the gradual and uniform progress of the symptoms from bad to worse (there was never any variability, never any shifting of paralysis or anæsthesia; whatever fresh symptoms accrued were permanent); (2) the character of the fits, which was clearly epileptic; (3) the remarkable prevalence of febrile temperatures without any obvious cause: and lastly, the character of the symptoms and their grouping, which formed a picture such as I have never read of as occurring, and have never seen, in any case of what has been termed hysteria.

Assuming the disease in either case to be functional, there is

still reason, I think, to believe that the functional disturbance on which the symptoms depended occupied mainly the region in which, during Marion's lifetime, I had assumed there was either progressive degeneration or progressive invasion by morbid growth—namely, the floor of the fourth ventricle and walls of the iter, with extension into the neighbouring sensory, and possibly even into the neighbouring motor, tracts. The hypothetical heat-centre lies in the neighbourhood; and, granting its existence, the explanation of the phenomenal temperatures present becomes easy. The relation of the rising temperature in Gertrude's case to the occurrence of fits reminds one of the similar sequence of phenomena met with in connection with the characteristic fits of general paralytics. In the latter instance, however, the rise of temperature is mostly, if not always, of comparatively short duration. May not the pre-epileptic rises, in the case of Gertrude, be essentially heat auræ?

A practical advantage in regarding the cases I have cited as functional is, that it fortifies us in the hope, so long as the survivor lives, that she may yet recover, and that many other cases of obscure and progressive brain-disease, which do not seem to be hysterical, and which simulate organic disease, may also prove amenable to treatment or the influence of time. I may here recall attention to a case in point, which I recorded in the last number of this periodical.

My third case is that of a man who was under my care for eight months, contemporaneously with Gertrude. His illness seems to have begun about five months previously. He first complained of drooping of the eyelids, and shortly afterwards of occipital headache, giddiness, and vomiting. He also suffered from what was called "inflammation of the stomach." While in St. Thomas's he laboured under occipital headache and giddiness; he had double ptosis and external squint; there were upward movement of the right eye, very slight outward movement of both eyes, and rotation of both eyes outwards and downwards, obviously effected by the obliqui superiores; the pupils were dilated and motionless, and he had no power of adjusting his eyes to distance; but in other respects his sight was perfect, and there was no inflammatory or degenerative

change at the back of the eyes; it was questionable whether there was any weakness of the 7th pair, or of the motor branches of the 5th, but there was marked impairment of sensation over the head and neck and upper part of the trunk. While under treatment, he suffered from occasional gastric crises, which were very severe, and once or twice of several days' duration; he had one or two epileptic attacks; and he suffered from frequent paroxysms of alarming dyspnœa, lasting from a few seconds to some minutes. The last were found to be due to paralysis of the abductors of the vocal cords. This patient seems to have had syphilis; but there was no evidence of secondary consequences.

Is this also an example of functional disorder of the nervous centres? If I had not had experience of the other two cases, I should unhesitatingly have attributed this patient's symptoms to sclerosis, affecting the nerve-nuclei in the floor of the fourth ventricle and iter, and extending downwards so as to involve the pneumogastrics and spinal accessories, and the sensory regions of the upper part of the cord. As it is, I confess I strongly incline to that explanation. At the same time, it cannot be denied that there is close resemblance between this case and the other two; and it is noteworthy that there were no symptoms referrible to the extremities suggestive of disease of the spinal cord.

I have added to my paper the brief details of two other cases of ophthalmoplegia, the one associated with wasting palsy, the other with locomotor ataxy; and in which, presumably, degenerative changes are in progress in the regions special to these affections, and in those presiding over the motor mechanism of the eyes.

CASE I.—*Graves's disease, followed by ophthalmoplegia externa, right hemianæsthesia, with involvement of organs of special sense, headache, sickness, and persistent high temperature, and subsequently by right hemiplegia, epileptic fits, bleeding from the ears, &c.—Death from Bronchitis.—Autopsy.*

MARION H., a single woman, formerly a hospital nurse, aged 25, was admitted into St. Thomas's under my care on the 18th of March, 1882

She stated, that she had never had any serious illness until two years ago, when she had an attack of bronchitis; that eighteen months ago she began to suffer from shortness of breath and palpitation; and that four months ago she first observed drooping of the upper-eyelids, and double vision, which at the beginning were occasional only. She thought that her eyes had been unduly prominent for the previous twelve months. Four days before admission she took cold in her eyes from sleeping at an open window. There was no history of syphilis.[1]

On admission, she was a well-nourished, and, on the whole, healthy-looking woman. She was complaining of headache, and of inflammation of both conjunctivæ. In addition to which there was marked prominence of the eyeballs, incomplete double ptosis, and almost absolute immobility of both eyes, which looked very nearly straight forwards. But the pupils were equal, and acted to light and accommodation. There was no enlargement of the thyroid body. She said she suffered from dyspnœa and palpitation at times; but there were no present signs of these affections. The heart and lungs appeared to be healthy; there were no indications of abdominal disease; and the urine was normal. Tongue clean, appetite good, slept well.

For some weeks after admission she suffered mainly from ophthalmia, which proceeded to ulceration of the corneæ; and for some days she suffered also from inflammation with excoriation of the tonsils. For the former affection she was placed under Mr. Nettleship's care, who found it necessary to stitch her eyelids together in order to ensure complete rest. During the time she was under treatment for the eye-affection no very minute investigation of her case was made in reference to other matters. It was noticed, however, that there was anæsthesia of the upper part of the right side of the face; and it was hastily assumed that she had some affection of the fifth nerve, and the corneal ulceration was attributed to this circumstance.

In the early part of May, at which time the inflammatory affection of the eyes had in great measure subsided, the patient's condition was investigated with much greater care than had hitherto been possible; and the following were the results, which were verified over and over again during the remainder of her life.

She complained of headache, which was variable; sometimes being very severe, sometimes disappearing wholly, and referred either to the occipital region or to the region of the left parieto-occipital suture. There was moderate but marked exophthalmos.

[1] This history is inaccurate and incomplete; but is corrected in the earlier part of this paper.

The upper eyelids drooped over the eyeballs so as to cover the pupils to a large extent; but could be raised (though very slightly) by the action of the occipito-frontales. The ptosis was incomplete; but the levatores palpebrarum could not raise the lids. The eyes looked very nearly straight forwards; could not be elevated or depressed; and could be moved outwards and inwards only within a very minute arc. The pupils were equal, and acted readily to light and accommodation. She saw double, but her sight in most other respects was good, and there was no sign of disease at the fundus of the eyes. There was absolute anæsthesia of the whole of the right side of the body up to the middle line. Nowhere on this side, neither in the conjunctiva, nostril, or mouth, nor in the face, nor in the arm, leg, or trunk, could she feel if she was touched or pricked, or if galvanism, heat or cold, was applied. The parts, however, looked healthy, and there was no difference in temperature, or as regards perspiration, between the two sides; and she had perfect voluntary power over the anæsthetic parts—she could move her arm and leg freely, could stand and walk without difficulty, and could feed herself with her right hand, and do needlework, so long as she saw what she was doing. Indeed, the readiness and accuracy with which she used her right arm and leg, made us doubt for some time whether or not the anæsthesia was real, or at any rate complete, the more so that she herself tried to conceal this infirmity, and consequently often answered questions about it untruthfully, There was a tendency for food to collect, unknown to her, in the right buccal pouch; and she stated on some occasions that, when drinking, the cup felt to her lips as if it were broken. The anæsthesia involved also the organs of special sense. She was never able to distinguish odours with the right nostril; nor could she at any time recognise the taste of sugar, mustard, salt, or any other sapid substance with the right half of the tongue. With her right eye she could distinguish forms quite as well as with her left, but was completely colour-blind; and while with the left she could sort coloured wools with the utmost nicety, with the right she failed to recognise any colours; and, without exception, when asked to put together those skeins which most resembled one another, selected the brightest scarlet and the brightest green. It was always very amusing to observe her endeavours, in the first place, to use the left eye surreptitiously when the right eye was being tested, and her look of disgust when on opening both eyes she found enclosed in her hand the inevitable red and green skeins. Indeed, she never would admit her colour-blindness, and always had some excuse to make for her error. There was no muscular paralysis excepting

of the ocular muscles; and the tendon-reflexes on both sides were normal.

About the middle of May, the patient complained of a painful swelling of the right cheek a little in front of the ear, and about the same time had a little watery discharge, tinged with blood, from the right auditory meatus. The swelling of the cheek soon subsided; but she suffered a good deal for the next few weeks from severe pain in the right ear and right side of the head; and soon had a pretty constant and pretty abundant discharge of blood, partly fluid, and partly clotted, from the ear; and she became deaf. I believe she was partially deaf of this ear previous to this attack. Mr. Clutton was consulted, and reported that the patient was suffering from acute external auditory catarrh; but he was not sure whether or not it was secondary to similar disease of the middle ear. The acute symptoms disappeared after a time; but henceforth to the end of her life she had an almost constant and abundant discharge of blood from the ear. Generally she passed a few drachms daily; but occasionally she went for two or three days or more without passing any, and under such circumstances usually complained of increasing headache, which was relieved when the discharge reappeared. Before long, blood came from the right nostril as well as from the right ear; and it was assumed that it reached the nostril from the Eustachian tube. It was never determined satisfactorily whether there was any perforation of the membrana tympani. Her deafness became aggravated after the commencement of the discharge; and soon the deafness on that side became absolute.

About the middle of June she began to vomit occasionally. The sickness recurred from time to time, but often at considerable intervals. On the whole, however, it increased upon her; and for many months before her death she vomited nearly every day, and sometimes several times a day. Nevertheless she maintained a good appetite.

Early in July it was noticed that she rambled occasionally; and towards the end of the month she complained, for many nights in succession, that an old woman, with something black over her head, was sitting by her bedside, and leaning over her. From this time onwards, and even to the end of her life, she was for the most part perfectly sensible; but she occasionally suffered from delusions; and became more and more irritable and exacting, not unfrequently flying into a violent passion, and using the grossest language towards the nurses and others who were waiting upon her.

On the 31st of August she had for the first time an epileptic

fit. She was generally convulsed; and passed water into the bed; but she did not utter a cry or bite her tongue. It lasted a few minutes. When she emerged from the fit her right arm and leg were found to be partially paralysed, the fingers being flexed; but there was no involvement of the facial muscles or of the tongue.

On the 25th of October she had a second fit of the same character as the first, excepting that it was preceded by a cry. It lasted about five minutes, and the patient went off into a profound sleep of several hours' duration. Subsequently she became delirious, violent and noisy, continually crying out, "My head, my head!" After this fit, the paralysis of arm and leg was complete, the two limbs were rigid, and the arm was kept extended while the fingers were strongly flexed. When the arm was raised from her side, it presented very rapid and very fine tremors. The condition of the limbs remained henceforth wholly without change. She never regained even a trace of power over them, and they were always rigid and finely tremulous.

The third fit occurred in January 1883, from which date the fits attacked her, not quite regularly, every two or three weeks. Sometimes they were solitary, sometimes in groups of two or three. They were often ushered in with a cry, and often her urine escaped from her during the attack. She once or twice bit her tongue, but was always more or less violently convulsed, for the most part equally on both sides, and very often at the moment when the fit was coming on threw herself out of bed on to the floor. The occurrence of fits was often preceded by increase of headache, and cessation for a day or two of hæmorrhage from the ear. Generally also about the time of the fits, and more after than before, the patient became noisy and fractious: and occasionally about this time suffered from hallucinations.

Very little change of any real importance occurred in the condition of the patient subsequently to her second epileptic fit, after which the right arm and leg became rigid as well as paralysed. All the symptoms of interest that were present on her admission, or had developed later, continued. But during her long residence in the hospital various minor complications arose. Her general health varied, and observations were from time to time made in confirmation or correction of previous examinations.

Among the complications referred to may be mentioned, first, an attack of tonsillitis with bronchial complication in November 1882; second, the appearance, about the end of March 1883, of bed-sores on the right buttock and sacrum, which, however, never attained a large size, and were healed in the course of a couple of months.

As to her general health, it may be mentioned that, towards the

latter part of 1882 and in the early part of 1883, she seemed to be losing flesh and strength; but that, subsequently, she improved in both of these respects, and then (excepting that she was pale from continued loss of blood) remained almost without change to the end of her life.

The state of the eyes was examined over and over again. The ptosis and exophthalmos presented slight changes from time to time, and were not always symmetrical; but there was never any definite improvement. The balls of the eyes were almost completely immovable, and looked very nearly straight forwards. It was generally noticed, however, that there were variable, and very slight, lateral movements in both; and that especially there was a slight degree of power in the left external rectus, and consequently an occasional slight outward squint of the left eye. There was sometimes observed a little inequality in the pupils; but it was confirmed that the intra-ocular muscles acted to light and accommodation. She could see distinctly with both eyes; but the fields of vision (and especially that of the right eye) were contracted. The colour-blindness continued in the right eye; but the left was never similarly affected. The fundus of the eyes remained healthy. The corneal ulceration and conjunctival inflammation were not finally cured until the end of August 1882.

The discharge of blood from the right ear and right nostril continued without abatement, even after all signs of inflammation in the outer ear had abated. Mr. Clutton believed that there was perforation of the membrana tympani. She became stone-deaf with this ear. In the beginning of October 1883, bleeding for the first time took place from the left ear also. And from this time forwards the discharge of blood from this ear, like that from the right, was nearly constant, though less copious. The hearing on this side also became impaired.

She never recovered feeling or smell in the right nostril, or feeling or taste in the right half of the mouth, including the lips, cheek, and tongue.

The anæsthesia on the right side of the body persisted. It is stated, however, in the notes that on some occasions there was slight evidence of sensation in the right foot.

The right-sided paralysis involved only the arm and leg, and never extended to the facial muscles or to the tongue. The paralysed limbs did not waste relatively to the others; their tendon reflexes, however, were somewhat more marked, and they occasionally presented both ankle- and knee-clonus. It was observed by Dr. Hadden, during the patient's stay, that the "paradoxical contraction" could be obtained in the paralysed limbs. Also,

the electrical reactions were investigated by Dr. Kilner with the following results:—

With faradism, all muscles require a strong current. With continuous current muscles of left side require a stronger current than those of right:—

Right upper arm .	7·500—	·7·500+	Left upper arm .	3·500—	3·500+
„ forearm flexors	2·503—	·975+	„ forearm flexors	5·100—	5·100+
„ „ extensors	2·550—	2·000+	„ „ extensors	5·100—	5·100+
„ thigh . .	5·200—	5·200+	„ thigh . .	6·100—	6·100+
„ leg . .	3·100—	3·100+	„ leg . .	5·300—	5·300+

The headache, usually referrible to the occipital region, sometimes to the right side, sometimes to the left, and liable to severe exacerbations, continued during her whole illness; and for the greater part of her residence in the hospital she was sick once or more every day. Yet, notwithstanding this, she did not lose flesh.

A remarkable feature in her case was the almost constant prevalence of high temperature. Occasionally, and even for a few days together, it would go down to the normal. But almost always it ranged between 100 as the lower limit, and 103, 104 or even 105 as the higher limit. The cause of this was not apparent. It had no relation to the epileptiform attacks. There was never anything specially noticeable as regards the condition of the thoracic and abdominal viscera, the pulse or urine.

She was discharged on the 23rd of February, 1884, having been in the hospital just one year and eleven months; at which time she seemed on the whole as well, and as likely to live, as she had done a year previously.

On the following 25th of March she was brought to the hospital suffering from bronchitis, and in a moribund condition. She died early the next morning. It was ascertained that she had had several fits while at home, of which the last occurred a week before admission. The affection from which she died came on at that time.

Autopsy.—There was accumulation of mucus in the bronchial tubes, and distension of the lungs with air. A few granulations were found on the auricular aspect of the mitral valve; but this was neither contracted nor incompetent. The right side of the heart was somewhat dilated and thickened. The tonsils were large, with patches of secretion adherent to the surface. The uterus was retroflexed. All other organs in the chest and abdomen were healthy.

Calvaria, dura-mater and other membranes of brain healthy. There was no flattening of the convolutions; no affection of arteries or nerves; no congestion; no accumulation of serum, either in the

ventricles or in the subarachnoid tissue. And generally the substance of the cerebrum and cerebellum was healthy. On making sections of the floor of the fourth ventricle, two symmetrical dots of black pigment were seen, situated just below the surface, and immediately behind the corpora quadrigemina. And just outside that, on the left side, and a little deeper placed than it, was a larger patch of the same kind. The optic tracts, corpora quadrigemina, crura cerebri, and other parts in the neighbourhood all seemed healthy. There were, however, some doubtful sclerotic changes in the left anterior pyramid, and in the crossed pyramidal tract on the right side. The cord, medulla oblongata, mesocephale and other parts, were removed and hardened, and subsequently stained and sliced. A most minute and careful microscopical examination was made by Dr. Hadden and others; but nothing whatever was found indicative of morbid change. Every part appeared to be absolutely healthy; and the suspicions expressed with respect to one or two points at the time of the autopsy were not confirmed.

There was a great deal of fat in the orbits; and the ocular muscles were unusually pale, and seemed stretched. The right membrana tympani was perforated, but no disease of the middle or external ear was found on either side. There was some blood in the right meatus. But the source of the hæmorrhage during life was not discovered. The lobes of the thyroid body were somewhat large.

CASE II.—*Ophthalmoplegia externa, right hemiplegia, headache and sickness, followed by partial right hemianæsthesia, and epileptic fits preceded by prolonged rises of temperature.—Chorea during the progress of patient's illness.—No result.*

GERTRUDE H., aged 15, was admitted under my care on the 4th of January, 1883.

On the whole she had been a healthy girl; but had had fits from the age of 18 months to that of 5 years; and, about three months ago, a slight sore throat, which did not require medical treatment. Never had rheumatism or scarlet fever.

After suffering for about a week from giddiness, and headache referred to the right side, she was attacked suddenly on the 1st of December last with an internal squint of the right eye. And on, or about, the 30th of the month she first complained of weakness, numbness and tingling of the right arm. She had no sickness.

She was a pale, but healthy-looking girl; complaining of headache on the right side, double vision, and weakness and numbness of the right arm. She kept her right eye closed voluntarily;

because by so doing she prevented giddiness and saw better. There was obvious weakness of both external recti; but the left was distinctly feebler than the right; and she saw double when both eyes were open. The pupils were equal, and acted naturally. There was no affection of the optic discs. The right arm was partially paralysed, and the grasp of the hand was very feeble compared with that of the left. There was also some numbness in it; and it was thought that (though the patient did not acknowledge loss of feeling on the right side generally) there was less accurate tactile discrimination on this side than on the other. There was no facial or lingual paralysis, or paralysis of the leg; and no deafness, colour-blindness, or loss of smell or taste.

She sojourned in the hospital for two months; during the whole of which time her condition remained practically unchanged. The paralysis of the external recti and right arm persisted; she complained more or less constantly of pain on the right side of the head, and frequently of giddiness. She often suffered from nausea; but was sick on only one or two occasions. No affection of the pupils, and no optic neuritis, ever appeared. It was ascertained that the reason why she kept the right eye closed in preference to the left (which was the less paralysed one) was that the vision of the right eye, owing to short-sightedness and astigmatism, was less perfect than that of the left. There was no discovered disease of the abdominal or thoracic viscera. Her mental condition was good; but she was a little inclined to be low-spirited.

Her treatment consisted first in the use of tonics, later in that of iodide of potassium; and in the application on one or two occasions of leeches and counter-irritants to the temples.

On March 3rd, she was sent to a convalescent home, where she remained for a month without benefit. Shortly after her return, she came up to see me, when I found the right pupil dilated and immovable. This affection, however, was only temporary; and at the next visit the pupils were again equal and active. There was still no optic neuritis.

From this time to February 1884, she came to me as an out-patient at irregular intervals. Her general health remained much as it had been, and she continued to suffer from headache, referrible sometimes to the right side, sometimes to the back of the head, and occasionally extending to the back of the neck, variable in intensity and often very severe; from giddiness; from occasional nausea, but never sickness; and from weakness in the right arm. But the paralysis of the ocular muscles slowly extended; so that by the autumn there was paralysis of all those which move the eyeballs; and the eyes were fixed in the downward and inward direc-

tion, and the lids drooped. There was no affection of the muscles of the irides or of accommodation, and none of the fundus of the eyes. She still, as a rule, kept her right eye closed.

On February 5th, 1884, she was readmitted, and she remained in the hospital until February 2nd, 1885. The following is a statement of her condition at the earlier of these dates. She was a well-nourished, well-behaved, and happy-dispositioned girl. She complained of pain at the back of the head, and of giddiness, in consequence of which she staggered in walking. She suffered from occasional nausea, but not actual sickness. The right arm was weak, and the grasp of the hand much less powerful than that of the other. The right leg also was somewhat weak. There was some impairment of sensation on the right side of neck and upper part of right side of chest, and in the distribution of the right ulnar nerve; and generally also over the right side the power of localising impressions was imperfect. No wasting of muscles, no rigidity. The knee-jerks were exaggerated; and ankle-clonus was obtainable on both sides, but chiefly on right. There was slight double ptosis, and almost complete immobility of the eyeballs, which looked downwards and inwards, the right being most affected. The pupils were equal, and acted normally; accommodation was perfect; and there was no trace of optic neuritis. No paralysis of face or tongue. Taste, smell, and hearing apparently good. Eyesight also good; no colour-blindness. In reading, her habit was to keep her face still, and to move the book horizontally in front of her eye, so as to bring each word of a line successively into the line of vision. It was observed at this time, as it had been when she was an out-patient, that, though she appeared to have no voluntary power over the eyeballs, they occasionally executed involuntary movements. Her appetite was good, her bowels regular, her urine normal.

About the end of February, it was noted that her arm and leg had become somewhat weaker, that the arm occasionally trembled, and that she protruded her tongue towards the right.

On March 6th she began to have choreic movements of the left arm and leg. These increased rapidly during the next few days, and soon involved the muscles of the head and neck, and of expression, but did not extend to the right arm or leg. The tongue was protruded in characteristic choreic fashion, but pointed now strongly to the right, and, on being withdrawn, its point swept round to the left angle of the mouth, before it completely disappeared between the lips. It was now stated that she had had chorea when she was ten years old. And it may be added that her present attack of chorea followed on the admission of a

case of chorea into an adjoining bed. The attack was not a severe one, and had subsided by the 19th of March. No cardiac complication was discovered.

On the evening of March 9th she was sick for the first time since admission; and the next morning her headache was unusually severe. On the night of the 12th she, for the first time, had a fit, which lasted for about eight minutes. It began with sighing and crying, and rigidity of right arm and leg, the left arm and leg presenting choreic movements. She was insensible for five minutes. She did not bite her tongue, or pass her water into the bed, nor did she become livid. She had very intense headache afterwards, and scarcely slept all night. On the 18th she was again sick, and early on the morning of the 22nd had another fit, much like the former one. During its progress the right limbs first became rigid, and subsequently the left limbs. The conjunctivæ were found to be insensible.

From this time forwards the sickness became frequent; the fits recurred at intervals, varying from a few days to a fortnight; the headache grew very severe, especially in connection with the attacks of vomiting and the fits; and she had increased giddiness. Indeed from about the middle of April she was unable to stand or walk without assistance, and consequently had to remain in bed. The sickness was independent of food, and did not as a rule interfere with her appetite. The fits for a time were exact counterparts of those above described. But before long they began to occur in groups of two or three, and to present other features of interest. While at first there was no affection of temperature before, during, or after the fits, about the middle of May, and always subsequently, the temperature would begin to rise two or three or four days before the occurrence of the fits, so that as a general rule we could foretell their occurrence. With the onset of the fits, and during their progress, the temperature would fall; until on their subsidence it was found normal or subnormal. The fits came on at various times of the day, but mostly in the evening, and sometimes while she was asleep. They were generally preceded by intense headache, giddiness and vomiting. She was quite unconscious during their progress, which varied between five minutes and half an hour; and was generally more or less violently convulsed, the convulsions being general, and involving the facial muscles. The left arm and leg often became rigid and extended, and the hand clenched. On several occasions she passed water during the fits, and once bit her tongue. After all except the very earliest fits, she remained in a semi-comatose condition for twelve or twenty-four hours, or longer, during which time her pulse often rose to 130 or 140; she was apt to be restless, to pull

at her hair, to moan, and to cry out in low tones, "Nurse, dear," "nurse," "quick," "oh, my head!" "mother," &c. The left arm and leg on several occasions remained rigid for some time after a fit.

After a group of fits on the 4th of May it was observed that she had lost power wholly in the right arm, and almost wholly in the right leg. The limbs were rigid, extended, and the fingers clenched. These limbs also were slightly tremulous when lifted from the bed. These phenomena persisted with little change.

There was little subsequent change in her condition. The following was her state when she was discharged on the 2nd of February. She was still a fairly healthy-looking and plump girl; and cheerful and sensible when free from pain and fits. The muscles of her eyeballs were affected, as they had been all along; and she had a persistent double downward and inward squint. The ptosis was less marked than on admission; and occasionally still the eyeballs would move apparently independently of her will. She read, as she had done at first, by moving her book, and not her head or eyes. The pupils were equal and active. There was no loss of accommodation. No affection of the fundus had arisen. She had no colour-blindness. The tongue was still protruded strongly to the right, and its tip swept from right to left on being withdrawn. The right arm did not respond to voluntary impulses; and it remained more or less rigid and extended with the hand clenched. The right leg had perhaps undergone some slight improvement. The condition of the arm and leg was maintained during sleep. There were always exaggerated tendon-reflexes in both lower extremities, and occasionally ankle-clonus could be obtained, more especially on the right side. The impairment of sensation persisted on the right side; and continued chiefly deficient on the right side of the neck, and upper part of the same side of the chest, behind the right ear, and in the distribution of the right ulnar nerve. It was discovered also that the right side of the tongue was insensible to tactile impressions, and that the right half of the soft palate and the epiglottis were in the same condition. There was impaired sensibility also over the whole of the larynx. Smell and taste were defective on the right side. She still remained liable to fits; was rarely free from headache, which was often exceedingly intense; was frequently sick; complained of giddiness; and remained confined to bed. There was no wasting of muscles, no loss of power over the emunctories. The catamenia appeared for the first time while she was under treatment.

There are several points in the case that call for more detailed consideration than has yet been given.

(1.) The fits appeared to me to be true epileptic fits; but there

were features about them which gave them a special interest. The first fit occurred, as has been stated, late in the evening of March 12th. It began with sobbing; was attended with rigidity, convulsions, and insensibility; lasted a few minutes; and was succeeded by intense headache. This fit came on while she was suffering from chorea. The succeeding few fits were of the same character; but it is said of one or two of them that, though insensible, she sighed during their whole continuance; and the later of them were succeeded not only by intense headache, but by a semi-comatose state, lasting for some hours, in which she was constantly moaning, and making low ejaculations, mainly complaints as to her head, and appeals to her mother and the nurse.

On the night of May 12th she had a series of three fits, and it was noticed (and I believe occurred) for the first time that the temperature (which had previously been normal) gradually rose for six-and-thirty hours previous to the fits, and fell rapidly to the normal after them. This phenomenon attended all subsequent outbreaks; and for the most part we were enabled henceforth to predict the supervention of fits, two, three, or even four days before they actually occurred. The temperature began to rise at a time when she was feeling fairly well; but its increase was always associated with increasing cephalalgia, giddiness and sickness, and general sense of illness. At the time of its highest elevation the explosion of fits occurred. During their continuance the temperature tended to fall; and as they subsided the fall was rapid. And for the most part it remained normal, or subnormal, during the day or so of semi-consciousness which always supervened. The temperature, at the moment of the occurrence of the fits, varied considerably on different occasions. The lowest was about 101°, and the highest about 105°.

I add, by way of illustration, some selected temperature charts in connection with the fits, and some of the descriptions given of the fits.

On May 29th the temperature in the morning was normal, and she seemed fairly well. In the evening it had risen to 101·4, and she was complaining of headache and giddiness. On the evening of the 30th it had reached 102·4, and her symptoms were aggravated. The next morning it was 103·8. At 8.30 that evening she had a fit, which was followed in the course of the night by two others. Her temperature was not taken during the fits, but the next morning it had fallen to 98. She remained semi-comatose until the evening. (Chart 1.)

On the morning of June 5th she was free from headache and giddiness; and her temperature was 98·4. The temperature rose rapidly during the day, and in the evening was 104. The next

morning it reached 104·2, and in the evening 104·8. Shortly after the last temperature was taken, that is about 8 P.M., she had a fit. A second fit occurred at midnight, and a third the following morning at 7. She remained semi-comatose till late in the afternoon of the 7th, at which time her temperature was normal. (Chart 2.)

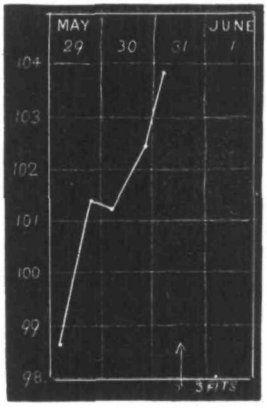

CHART 1.

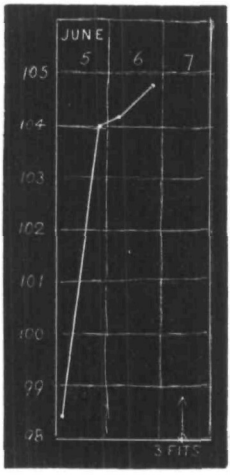

CHART 2.

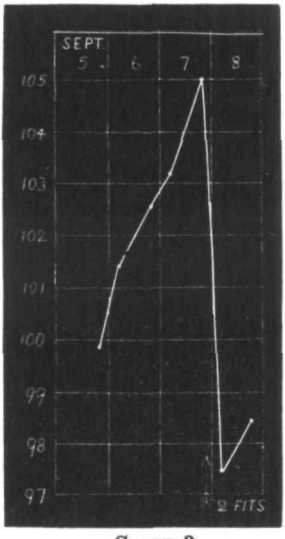

CHART 3.

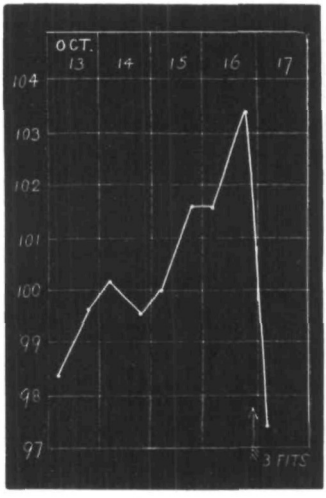

CHART 4.

On the evening of Sept. 5th her temperature was 99·8, and she was complaining a good deal of headache. During the 6th her

temperature rose from 101·4 to 102·6, and her headache increased. By the evening of the 7th, the thermometer indicated 105, shortly after which time she had two fits. The next morning her temperature was 97·4, and she was semi-conscious. She had recovered about noon. (Chart 3.)

On the morning of October 13th, the temperature was normal. Later in the day it had risen to 99·6. It continued to rise irregularly during the 14th, 15th, and 16th, until in the evening of the last day it had attained 103·4. At 10 P.M. a convulsive fit came on, which was followed at midnight by two others. The temperature had fallen the next morning to 97·4. (Chart 4.)

On the morning of Dec. 15th her temperature was 98·4. From this time it rose irregularly, with increasing headache, until 5.30 P.M. on the 17th, when it had reached 101·4. At 7 P.M. the patient became unconscious, with noisy and laboured breathing. About 7·10 she was attacked with convulsions, first on the left, then on the right side. There were also twitchings of the mouth. The attack lasted 15 minutes. At 7.35 she had another convulsive fit of 15 minutes' duration; and at 8.3 another which lasted off and on for 35 minutes. During the last fit the convulsions were very violent and she bit her tongue. At 9.30 that night she was still unconscious, but her temperature had fallen to 97·4. At midnight it was 97. On the morning of the 18th her temperature had risen again to 101·2, and at noon she had a fourth fit, lasting 25 minutes, and attended with strong convulsions. At 4 P.M. her temperature was 99; at 8 P.M., 98·2. She had recovered completely but felt tired and sore, at 2 A.M. on the 19th. (Chart 5.)

On the evening of Sept. 29th her temperature was 99·8. On the evening of the 30th it had reached 101·4. The next morning, it had fallen a little. But it rose rapidly afterwards, and in the evening reached 104·4. About this time she became unconscious with rapid noisy breathing (60 in the minute); and in about 20 minutes convulsions ensued. These were clonic, and affected both sides, but mainly the left. Two other similar convulsive fits followed at short intervals. There were occasional twitchings of the right side of the face in the intervals between the fits, and after the last. The tendon-reflexes were exaggerated, and cloni could be readily obtained in both legs at these times, and also in the intervals between successive spasms. Her breathing also was very quiet and scarcely perceptible; her pulse 70. Shortly after the cessation of convulsions she became restless, and began to cry out. The temperature was normal early on the morning of Oct. 2nd; but the patient had not recovered her consciousness until late in

the evening of that day. She passed water unconsciously in this group of fits, as she had done occasionally in former attacks. (Chart 6.)

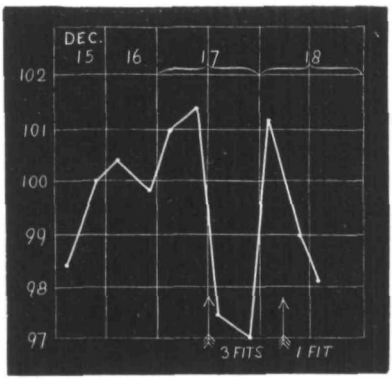

CHART 5.

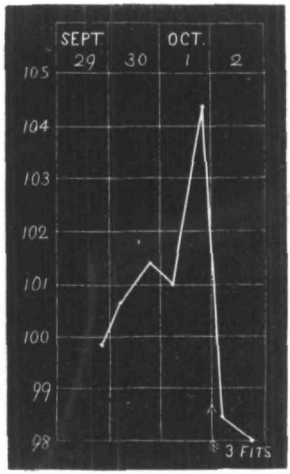

CHART 6.

The last quotation I shall make in respect to fits is from the notes taken on July 16th, and I quote these mainly because a fairly careful record of temperature was made during her epileptic state.

"Temperature has risen continuously for past five days, reaching the maximum (102·6) at 4 P.M. yesterday afternoon (Jan. 15th). A fit came on at 4.20, whilst the patient was apparently asleep. For fifteen minutes she was convulsed, throwing her legs, arms, and head about; and at the end of this period the temperature was 99·6 (fall of 3 degrees).

"For the next fifteen minutes she was perfectly quiet; breathing hardly perceptible.

"During the succeeding twenty-five minutes she lay, sometimes convulsed, sometimes trembling, with twitching of mouth, and moaning. Resp. 30, Temp. 100·2.

"She was then quiet for fifteen minutes, the temperature falling to 99·8.

"At 5.45 the respirations became quicker, and a second fit came on, commencing as before with convulsions, and passing into quiescence with occasional trembling, and twitching of mouth. Temp. 99·4.

"At 6.15 she became rather restless, and took to pulling her hair.

Temp. 98·4. She then slept for nearly two hours; during which time the temperature fell to 98." (Chart 7.)

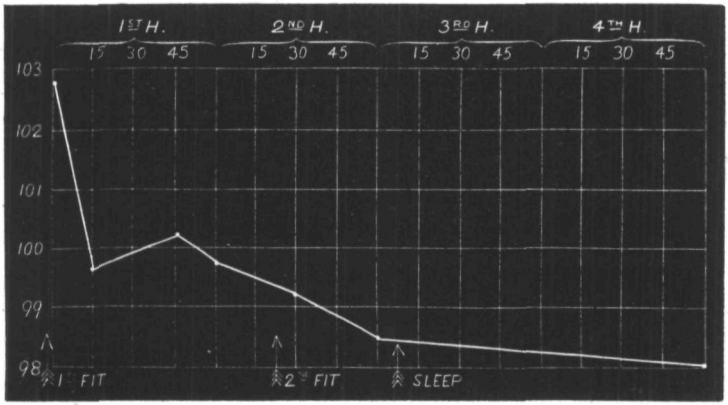

CHART 7.

(2.) For some time after the patient's admission into the hospital, her temperature (save for a rise due to an attack of tonsillitis) continued normal: and, as I have already stated, her fits during the first two months of their occurrence were not attended with any rise or change of temperature. But from this time, when the onset of fits became invariably preceded by rising body-heat, there were occasional rises of temperature, lasting even for a few days, to which fits did not succeed. The most remarkable of these began

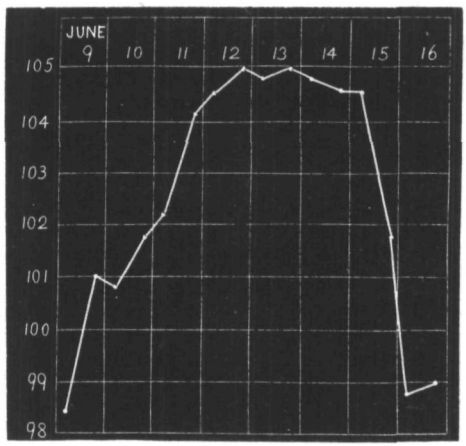

CHART 8.

on June 9th, and continued for a week. During the greater part of the time she seemed fairly well. On the night of the 12th, her headache was intense, but it was much less severe the next day. (Chart 8.)

(3.) It will be recollected that it has been stated once or twice in the foregoing notes, that, although the eyes were immovable by voluntary effort, they were occasionally seen to execute considerable lateral movements, which appeared to be involuntary. That the double inward and downward squint was not due to voluntary effort was proved by its persistence without change for many months, not only when she was awake, but when she was asleep, and by her mode of reading, which never altered. At the same time there can be no doubt of the occasional involuntary movements which, though not frequent, were witnessed on different occasions by many persons. The ptosis was never extreme, and seemed to improve of late. Mr. Nettleship, indeed, doubted whether it was true ptosis, and thought that the semi-closure of the lids might be adequately explained by the position which the eyes had assumed. The right arm and leg, after they had become paralysed, remained so. But the rigidity which was associated with the paralysis varied somewhat, and as a general rule the leg was more rigid than the arm.

(4.) The position of the pain in the head varied; at first it was mainly on the right side; subsequently it was referred usually to the occipital region; but latterly was most intense about the junction of the sagittal with the coronal suture, or over the frontal bone. The sickness was wholly unconnected with food.

(5.) The treatment adopted varied at different times. On several occasions iodide of potassium was continued for some time. Once she was treated with liquor arsenicalis. Again, bromide of potassium in large doses was had recourse to. The pain in the head was often relieved by the application of blisters, and of a few leeches. But the subcutaneous injection of the strong solution of acetate of morphia, in from four- to seven-minim doses, was on the whole most efficacious and most largely employed. The long warning given by rising temperature of the advent of fits led us on several occasions to endeavour to ward the fits off. Blisters and leeches, and the bromides of potassium and ammonium, were employed on several occasions with this object, but fruitlessly. On two occasions large doses of quinine were given and repeated, but without any apparent benefit; and on two occasions also, salicylate of soda, in twenty-grain doses every two hours, was administered as soon as there was a warning of fits, and was continued until the fit came on. On each occasion the temperature rose in spite of the remedy,

and the fits occurred as usual. Whether or not the circumstance was accidental merely, I cannot say; but it was noted that the fits following the use of the salicylates were specially severe.

CASE III.—*Ophthalmoplegia externa and interna; partial anæsthesia of head and neck and chest; epileptic fits; gastric crises; and attacks of intense dyspnœa dependent on paralysis of the abductors of the vocal cords.*

ROBERT R., a labourer, 46 years old, was admitted on June 13, 1884, into St. Thomas's, from the hospital at Moorfields, where he had been under treatment for about two months. The following notes, taken at Moorfields, were given me by Mr. Lawford.

"He had had no illness for many years, and no fits. He had had venereal disease several times; the last time being two years ago, when he had 'two sores.' No evidence of constitutional syphilis.

"His present illness began three months before admission, with drooping of the left upper eyelid. This, he says, improved somewhat. Then the right lid began to droop, and gradually the ptosis became complete on that side. About a month later occipital headache and giddiness came on, with frequent vomiting. Soon after this he was in the Gravesend Infirmary for four weeks for 'inflammation of the stomach.' During this time he had severe pains in the belly, and vomiting. Never had incontinence of evacuations.

"On admission. *Right eye.*—Complete paralysis of levator palpebræ. No inward movement of globe. Slight outward movement. Slight downward movement with rotation, as if from superior oblique. Fair upward movement. Eye diverges.

"*Left eye.*—Partial ptosis; about two-thirds of cornea shown—no power of raising lid above its normal position. No outward or upward movement of globe. Very slight outward movement. Slight downward movement effected by superior oblique. Eye diverges.

Pupils dilated, without action to light. No power of accommodation. Right optic disc normal; left streaky, and sheaths of arteries and veins very visible. Media clear. No colour-blindness.

"There is double partial paralysis of fifth nerve. Motor branches apparently affected; most on right side. Masseters weak. Partial right facial palsy; cannot whistle. Tongue protruded in middle line.

"The patient has constant, though not severe, occipital head-

ache. No vomiting now. Some complaint of giddiness. Is this from the condition of his ocular muscles? No ataxy. Patellar reflexes good.

"The patient was treated with mercury. Salivation was produced, and kept up, till May 24th. Iodide of potassium was also given. But no appreciable change was observed in any of his symptoms."

On admission into St. Thomas's he was a fairly nourished, and fairly healthy-looking man, complaining of occipital headache and giddiness. The condition of his eyes was exactly that described by Mr. Lawford. He could not whistle or puff out his cheeks, and his aspect was expressionless; but he could show his gums fairly well, and he laughed symmetrically. I could not satisfy myself that there was any clear paralysis of the facial nerves. When he opened his mouth widely the chin was slightly thrown over towards the left side. This was the only phenomenon which suggested any implication of the motor branches of the fifth. Tongue protruded straight. There was marked impairment of sensation all over face and front of neck; also over front of the chest and abdomen to within an inch or two of the umbilicus. There was no weakness or defect of sensation in the arms or legs, and the tendon and superficial reflexes were natural. No impairment of hearing, smell or taste was detected. His voice and articulation were perfect. His mental condition was unaffected. The abdominal and thoracic viscera appeared to be healthy. He slept well. His tongue was coated, his appetite fair. Bowels regular, urine normal.

Little or no change took place in the nervous symptoms above described during his stay in the hospital. But he presented from time to time several additional interesting phenomena, which I will describe. They were, a sense of weight at the epigastrium, which was sometimes so intense as to make him roll about in bed and cry out; epileptic convulsions; and attacks of intense dyspnœa, in which at times he seemed in immediate danger of death.

(1.) He complained pretty constantly of pain across the loins, and occasionally of pain along the spine. But often, and at irregular intervals, he suffered also from a sense of weight or oppression or constriction in the epigastrium (for the most part associated with the dorsal pain), which was often so severe as to make him groan and cry out in agony, but which he did not describe as being actual pain. This sensation was generally aggravated by breathing deeply, speaking, moving, or taking food; and consequently when at his worst he would lie in bed,

groaning, speechless, and refusing all nourishment. He felt during the attacks as if he should be suffocated, and also as if he should be relieved by vomiting. Retching and vomiting indeed were not uncommon. But relief never ensued therefrom. During the attack his breathing was for the most part slow and shallow and quiet, but not infrequently a deep inspiration occurred, which was always noisy. The pulse was quick and weak, and the temperature normal. It did not appear to me that he had true dyspeptic symptoms, or that there was any actual loss of appetite or disgust for food. The attacks here described, sometimes slight, sometimes severe, and lasting for a few hours, or for a day or two at a time, were common. But he had one or two severe attacks of a week or two's duration each, in which his sufferings were constant and most severe, in which he practically refused all food, and in the course of which he became so weak and ill, that it was feared he would sink. At these times he found considerable relief from morphia injections. Ice to the epigastrium comforted him on one or two occasions.

(2.) It was during a prolonged bout of epigastric discomfort and vomiting, that on August 11th and 12th he had four fits. These were of sudden occurrence, of short duration, and attended with absolute insensibility and slight convulsive movements of his hands. With the latter exception he lay as if he were dead. In the intervals he vomited, his respirations were 40, laboured and snoring, and his pulse about 130. Another fit occurred on the 9th of October. But there was no further recurrence.

(3.) He was liable throughout his stay in the hospital to sudden attacks of extreme dyspnœa, which lasted from a second or two to 5 or 10 minutes at a time. The first of these was observed one day while he was at lunch. He suddenly became livid in the face, struggled violently for breath, and made loud snoring inspirations. The dyspnœa subsided after a few minutes. All his other attacks were the same in quality; but often, and more especially during the latter period of his stay in the hospital, they were of littel more than momentary duration. They came on quite irregularly, sometimes in the day, sometimes at night, and while he was asleep; and were often very alarming. On the 2nd of December, Dr. Semon examined his throat with the laryngoscope, and reported that there was complete paralysis of the left abductor, and incomplete paralysis of the right. "The left vocal cord (the inner border of which is slightly excavated) stands perfectly immovable in the middle line; the right one (which appears similarly excavated) is, on attempt at deep inspiration, hardly drawn outwards to the cadaveric position, so that the chink of the glottis is always

very narrow. On attempted phonation, both cords meet completely; the right one and the right arytenoid cartilage being promptly drawn to the middle line."

(4.) During his stay in the hospital he had a few accidental complications. Shortly after admission he had some conjunctival inflammation which lasted for a few days. A month or two later his temperature rose for several days, and on one of them he coughed up about an ounce of blood, the exact source of which was not ascertained. And at the beginning of March 1885 he had a sharp and severe attack of erysipelas, commencing from the right eyelid. Excepting at these times, his temperature was always about normal.

His treatment consisted mainly in the continuance of the iodide of potassium and mercury. For his headache and other pains, cannabis indica and morphia (by subcutaneous injection) were occasionally administered; for the attack of dyspnœa, nitrite of amyl and nitro-glycerine; and as local applications to his epigastrium, ice and counter-irritants.

When he left the hospital on the 31st of March, he was still complaining of occasional catches in his breath, especially in the morning, and of some oppression at the chest; and all his paralytic phenomena remained as they have been described. But in his general health he felt better than he had done for a long time.

Case IV.—*Ophthalmoplegia externa. Wasting Palsy.*

John M., a sauce-maker, aged 53, consulted me on two or three occasions in the summer of 1884. With the exception that he had had syphilis, he had enjoyed good health up to twelve years ago. At that time he first complained of double vision. Five years later his eyelids began to droop. About four years ago, weakness and wasting of the muscles of the left shoulder and upper arm came on. Subsequently the right arm and the thighs became similarly affected. He states that there has been some variation in the condition of his eyes; and that there have been times when he has been able to raise his lids fairly well. Latterly he has suffered from gout.

The patient presents almost complete ophthalmoplegia externa. He has very slight power over his upper eyelids, which cover half the corneæ and pupils. His eyeballs are prominent, and can only be moved very slightly (in an arc of about one-sixth inch), inwards and outwards; not at all in any other direction. There is no internal paralysis of the eyes, no impairment of sight, and no

affection of either fundus. The right masseter is somewhat wasted, and the lower jaw is thrown over to that side when he opens his mouth widely. There is marked weakness and wasting of both shoulders and upper arms, and slight wasting of the forearms. The thighs are small; but, excepting for gout in his feet, he seems to walk fairly well.

Patellar tendon-reflexes normal; no numbness of feet or hands; no lightning pains, or indeed any symptoms of locomotor ataxy.

CASE V.—*Ophthalmoplegia externa and interna. Locomotor Ataxy, attended with gastric and rectal distress, and a peculiar cough.*

A musician, between 30 and 40 years of age, was admitted under my care in 1880. At that time he was suffering from obscure symptoms, the meaning of which I failed to interpret. He was exceedingly nervous and irritable, and gave me the impression that he was hysterical. Whether I did not trouble myself to investigate his case thoroughly, or whether I did investigate and could discover nothing to explain his symptoms, I cannot recollect. The case, however, made little impression on me, and I should have forgotten all about it, but for its subsequent history. He called upon me at my own house, a little later in the year, complaining of "tightness in his leg;" but he walked without difficulty and well; and I still failed to discover what was the matter with him.

The next time I saw him was in April 1883. On this occasion he had a marked ataxic gait, and complained of numbness in his feet, and occasional slight lightning pains in his legs. His eyes also had become affected There was partial ptosis on the left side. The pupils were dilated, and acted neither to light nor to accommodation, and he had lost the power of adjusting his sight to near objects. But in other respects his sight was good. He could move his eyes readily in any direction, and there was no affection of the fundus of either of them. He complained also of frequent pain between the shoulders, and sickness, and of almost constant severe pain in the lower part of the back. He was still nervous and hysterical in manner. His appetite was good.

I saw him again in June 1884. He had then become much worse. The movements of his legs were strongly ataxic, and he could not walk or stand without assistance. The tendon-reflexes were abolished. He had no lightning pains, but he complained of occasional pains in the ankles, as if they were being scratched. The pupils were dilated, but unequal, and acted neither to light nor to

accommodation. He said he could not focus his eyes. The mobility of the eyeballs was now much impaired; he could not move either to left beyond middle line. Movements to right imperfect. Elevation of both equal, but slight. In trying to look down, the right moved less than the left. No colour-blindness. He had a fair appetite, but ate little, for fear of aggravating the pain in his chest, which was always present, more or less. He complained mainly, however, of pain in the rectum and lower part of the back, which was constant, but liable to exacerbations, and the source of intense misery to him. Bowels confined. He had suffered for some time from a cough (of which I witnessed several attacks), consisting of a series of ineffectual expiratory shocks, followed by a noisy, somewhat crowing inspiration. Voice natural; no dyspnœa; no dysphagia. It is not improbable that the peculiar cough may have been connected with some paralytic affection of the vocal cords, but unfortunately I did not investigate this point.

ADDENDUM TO ACCOUNT OF AUTOPSY OF MARION H.—There are pale yellow patches, not differing in consistence from the surrounding brain-substance, scattered here and there in both grey and white matter. They appear to be local areas of anæmia, occasionally seen in otherwise normal brains.

The patches are most evident, (1) in the cortex of the third left transverse frontal convolution; (2) in the outer part of the anterior extremity of the left lenticular nucleus; (3) in the internal capsule and adjoining part of the lenticular nucleus posteriorly. The right anterior crural and median nerves healthy, Cervical sympathetic also healthy.

Microscopical Examination.—Fifty sections from various parts were examined. The cortex and underlying white matter of the left third frontal convolution were healthy, as were also the motor and sensory portions of the internal capsule on the same side, the lenticular nucleus, the claustrum and the island of Reil.

Nothing abnormal was detected in the corpora quadrigemina. Owing to an error, the condition of the nuclei of the third nerves was not made out.

The fibres of the sixth nerves and their nuclei were perfectly healthy. The nuclei of the facial nerves, the spinal accessory, the glosso-pharyngeal, the vagus and the hypoglossal were also normal.

There was no sclerosis in the pyramidal tract, pons, or medulla oblongata.

The right median nerve and the superior cervical ganglia of the sympathetic were normal.