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CLINICAL LECTURE

ON A

CASE OF LOCOMOTOR ATAXY TREATED BY NERVE-STRETCHING.

Delivered in University College Hospital on May 13th, 1881.

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Epileptic and Paralysed.

THE case to which I propose to call your attention to-day, gentlemen, is one of considerable interest. You know that Locomotor Ataxy, dependent as it is upon a sclerosis of the posterior columns of the spinal cord, is a very intractable disease, and that, of late, new attempts have been made to modify its course by a procedure which would not, at first sight, seem likely to commend itself much to pathologists. I certainly had no bias in favour of the process of "nerve-stretching" as a remedial measure for such a disease. Still, results had been reported in Germany, and more recently in France, of so far favourable a nature, as to make it highly desirable that the method should have a wider trial. The patient whose case we shall consider to-day had been previously under my care in this hospital. He had been rapidly becoming worse, and there was reason to believe that the process of sclerosis had been extending (on the left side more especially) so as to implicate the anterior grey matter in the lumbar region. I thought it would be well, in an advanced and apparently hopeless case of this kind, to see whether the course of the disease could be arrested by the new procedure, especially as the patient was himself most anxious (after the nature of the operation had been explained to him) that the trial should be made.

To judge of the effects of this method of treatment in the present case, it was needful to have pretty full details as to the condition of the patient before and for some time after the operation; hence the clinical record must be much more detailed than would otherwise have been necessary. An abstract of the previous notes has been made by my able assistant, Mr. Henry Maudsley, who has also been very zealous in carrying out and recording numerous comparative observations as to the patient's condition subsequent to the two operations which he has undergone.

Charles D., aged 39, was admitted into Ward 7 on March 22nd, 1880, and discharged on June 16th, 1880.

Previous History.—He had been a warehouse porter for the last ten years; was formerly a machine-printer. He was a soldier from 1854 to 1856, but was never abroad. He had lived in London thirty-one years, and had had family troubles which caused him much anxiety (wife intemperate). There was no neurotic history. He had rheumatic fever seventeen or eighteen years ago. There was no history of syphilis; he had gonorrhœa at twenty; no history of previous sexual excesses.

Mode of Onset of Disease.—About three years and a half since (autumn of 1876), he began to lose strength in his legs, could not run so well as formerly, and began to have difficulty in getting up and down stairs; also in walking in the dark, unless touching a wall. These symptoms gradually increased, and within six months he experienced difficulty in voiding his urine, which gradually became worse; so that in eight or nine months he was unable to micturate, except during defæcation. During this time, he was admitted into the Middlesex Hospital, and remained there four months, and it was whilst in the hospital that he lost the power of voiding his urine, and was obliged to pass a catheter three times a day. This he had continued to do ever since. He had also slight dimness of sight. Loss of sexual desire and power came on suddenly, soon after he was unable to void his urine (about two years ago). He had had no emissions since, but occasional erections. There

was no history of lightning nor of other paroxysmal pains. There was a history of attacks of diarrhœa and of sickness at distant intervals ever since he began to be ill. He had suffered from a burning pain in the hypogastrium occasionally ever since 1876.

Condition in March 1880.—Cranial Nerves.—There was slight dimness of vision; but, except the second, none of the cranial nerves were affected. The pupils were insensitive, and slightly contracted; the movements of the eyeballs perfect in all directions. *Motor Apparatus.*—The muscles of the upper extremities were firm and well developed. The grasp of the right hand was 71 lbs.; of the left, 64 lbs. *Gait.*—When the patient was supported by a stick, he could walk; but he threw his legs outwards at each step, raised the toes somewhat off the ground, and brought the heel down suddenly. He could not walk without a stick, but this seemed more, due to general weakness of limbs than to loss of co-ordinating power. He stood, with slight support, steadily when the eyes were open; but, when they were closed, he began to sway about, and would have fallen, if not supported. The knowledge of the position of the legs and of their passive movements was unaffected. There was slight loss of natural power in bending the right knee and right ankle against pressure, though this was more marked on the left side. All the muscles of the lower extremities reacted normally to the faradic and galvanic currents. Tactile sensibility was unimpaired; there was no analgesia anywhere; hot and cold bodies also were at once and correctly discriminated. *Reflexes.*—The plantar reflex was diminished, especially on the left side. The knee-reflex was absent on both sides. There was no ankle-clonus. He had retention of urine, so as to require the use of the catheter. The control of the sphincter ani was usually perfect, but was diminished if there were any diarrhœa. There was loss of sexual desire and power; he had occasional erections at night; no emissions.

During his stay in hospital, he much improved in his gait; so that he could walk downstairs after a time, merely with aid of a stick. There were no attacks of stabbing pains in the limbs whilst in the hospital; but the severe hypogastric pain was almost constantly present, and sometimes prevented his sleeping. He had several attacks of diarrhœa, and was sick at times. The temperature in the axilla varied between 98.2° and 99.4°. During his stay, he took *mistura quinæ* or *mistura quinæ cum ferro*; and, for a time, a bromide and chloral draught every night.

The patient continued to improve after leaving the hospital until September. His gait was much better, and he was free from pain.

In September, his gait became worse; he fell at times, and became obliged to use two sticks instead of one. The pains in the hypogastrium and also his appetite became worse; his sleep was much disturbed.

The patient was readmitted on November 4th, 1880. His condition then seems to have been about the same as in March, except that he walked with much more difficulty, and only with aid of support on each side. The left pupil was larger than the right. He remained in the hospital until December 1st, suffering much from dull burning pain in the hypogastrium. He left the hospital this time in about the same condition as when he was admitted, and was sent to Eastbourne, where he began to suffer again from "startings" of the legs. His ability to stand or walk seemed diminished, so that he moved about habitually in a wheel-chair whilst at Eastbourne. His hypogastric pains also remained as bad as ever. During his stay there, he had several attacks of diarrhœa; and on one occasion his temperature rose to 103°, and he shivered, and suffered much for some hours with pains in the abdomen. The day after this attack he seemed to be in his usual condition again.

His condition when admitted on February 2nd, 1881, was as follows.

Cranial Nerves.—The pupils were unequal: the left was about normal size; the right rather smaller; both reacted to light (though sluggishly) and in accommodation. Vision was fairly good. There was nothing abnormal about other cranial nerves. *Sensory Apparatus.*—The upper limbs were normal. In the lower limbs, there was impairment, not loss, of tactile sensibility around both knee-joints and the inner side of the thighs as high as the middle; no delay, and correct localisation. Tactile and painful sensations, also those of temperature, were elsewhere normally appreciated. He had occasional

"starting feelings", not painful, from the buttock to the heel, causing the legs to kick out. There was constant dull aching pain in the hypogastrium. *Motor Apparatus: Upper Limbs.*—There was slight wasting and flabbiness of the muscles of the left arm and forearm. The grasp of the right hand was 75 lbs.; of the left, 65 lbs. The muscles of the left arm and forearm reacted less readily to the faradic current than did those of the right, though all the muscles reacted to the weakest current of the Ward battery. *Lower Limbs: Right.*—There was slight wasting of the muscles (anterior and posterior) below the knee. There was weakness of the flexors of the hip-joint, so that the patient could not, when lying in bed, raise his extended leg to more than an angle of forty degrees with the bed, and could only retain it in this position about four or five seconds; the weakness of the muscles of the knee and ankle joints was comparatively slight. *Left.*—There was much more wasting and flabbiness of the muscles of the left than of the right lower extremity—in the leg, and also in the thigh; each of these parts being half an inch less in circumference than its fellow at the same level. He was unable to rise into the sitting posture without using his pulley. He had very little power of flexing the hip-joint, and complete inability to raise the limb from the bed. Weakness of the muscles of the knee-joint was much more marked than on the right side. He had scarcely any power of flexing or extending the ankle-joint. The muscles of the left thigh and leg responded rather less readily to the faradic current than those of the right. Occasional involuntary painless "jerkings" of the lower limbs were complained of. *Gait.*—He could not stand without the support of two persons, his legs falling under him; but, with his heels apart, and his toes turned outwards, he could stand with two persons holding him up. When he attempted to walk, thus supported, he took short steps; the left foot often getting in the way of the right; his legs were thrown about helplessly. He was unable to clear the ground with his left toes, and occasionally also with his right. The movements of the legs were slow and jerky. After walking thus for five or six yards, he became exhausted and his legs doubled up under him. When his eyes were closed, he trembled, and showed a tendency to fall. *Reflexes.*—The plantar reflex was normal; the cremasteric, absent; the abdominal, absent; the epigastric, absent. The knee-reflex was absent; there was no ankle-clonus. The patient had retention of urine; he used the catheter himself night and morning. He had usually complete control over the sphincter ani, but he could not retain a very relaxed stool nor an enema. There was loss of sexual desire and power. He had still occasional erections at night, but no desire and no emissions.

February 5th. This afternoon, while the patient was under the influence of ether, Mr. Marshall cut down upon the great sciatic nerve in the middle third of the right thigh, and stretched it with his finger. With the nerve between his thumb and forefinger, he pulled it upwards from below twice, and afterwards from above downwards twice, making the nerve stand out like a tense thick cord in the buttock. The nerve was raised between one and two inches from the level of the skin, and four or five from its bed. The wound was dressed antiseptically. There was scarcely any shock during the operation, the pulse remaining of good quality, and about 100 per minute. The patient was put to bed; and, when he recovered from the ether, he could move his right ankle and toes, there being no motor paralysis of that leg, and no anaesthesia. About two hours after the operation, he complained of being chilly. The temperature was 98.4°; pulse 102, very small and compressible. Hot bottles were applied to his feet, which were very cold, but not one more than the other; and two drachms of brandy ordered every two hours. The patient had one dose; and at 8 P.M., five hours after the operation, was very comfortable, complaining of no pain anywhere in the leg or back.

February 6th. He was restless last night, and slept badly. There was no pain in the leg or thigh, but the constant aching pain in the hypogastrium still continued. There was no paralysis of the muscles supplied by the great sciatic nerve, the power of bending the ankle-joint and toes being the same as before the operation. That he might not disturb the wound in the thigh, he did not attempt to flex the knee. There was no anaesthesia anywhere; the tactile sensibility about the knee being, if anything, slightly improved. Appreciation of painful impressions seemed to be the same as before the operation.

February 7th. He slept badly, but did not complain of pain in the leg. During the early morning, there were involuntary flexions of the hip and knee joints three times. These movements were slower, more extensive, and more painless than the previous "jerkings". The slightest touch of the finger about the right knee was appreciated much better than before the operation. Painful impressions were perceived as before. There was no motor paralysis. He was in good spirits, and said he felt better than before the operation.

February 9th. He had slept well during the last two nights. He

considered himself better than before the operation; as the leg felt warmer and more comfortable, and he could more readily appreciate a light touch on it.

February 10th. The tactile sensibility of the right leg was perfect. The right leg was warmer to the touch than the left. Temperature in the right popliteal space 97.8°, in the left 97°, in the morning; in the evening, 98.2° and 97.2° respectively.*

February 12th. *The constant aching pain in the hypogastrium disappeared about this time.* He slept well, was in good spirits, and took his food well.

February 18th. Tactile sensibility about the right knee seemed not quite so good to-day. Temperature was still higher in the right than in the left popliteal space—97.8° and 96.2° respectively. The right limb felt warmer and more comfortable; the left just the same as before the operation.

February 21st. He made his first attempt at walking to-day. When supported by two persons, he walked nearly across the ward and back, and in a better manner than before the operation. He moved his right leg more regularly, and seemed to have more power in controlling it. He dragged the toes of the left foot along the ground in attempting to move it forwards, as before. He complained occasionally of the right leg jerking, causing slight pain, which appeared to travel from the buttock to the ankle. The right limb was still warmer than the left—98° and 97.2° respectively.

February 25th. Tactile sensibility of the right leg was now about the same as before the operation, though the right leg continued warmer to the touch than the left, being still 0.8° higher. An attempt at walking to-day was not more successful than it had been before the operation. The wound had been healing very slowly, the track of the drainage-tube being still open.

March 5th. Tactile sensibility about the right knee and thigh seemed to vary from day to day, though it was still generally better than over the corresponding parts of the left knee and thigh. The temperature of the right continued from 0.7° to 0.9° higher than that of the left leg.

March 12th. An aching pain in the lower part of the chest on both sides came on three days ago, and still continued. No signs of pleurisy were found. The patient got up and tried to walk again. His gait was markedly improved; he did not require so much support. He bent his knees and raised the toes from the ground, never dragging them. The movements of the legs were much less jerky and sudden, though he brought his heels rather abruptly to the ground. Tactile sensibility was better over the right than the left knee. The right leg for the last two days had not been so warm as the left, and the temperature was now 0.2° lower on the right than on the left side.

March 15th. The condition of the left leg, on careful examination, was found to be the same as on admission, except that the circumference of the calf seemed to be a quarter of an inch less. The state of the right leg was improved as regarded tactile sensibility and temperature, the latter being now again on the right 97.6°, and on the left 96.8°. *Second Operation.*—The left sciatic nerve was stretched by Mr. Marshall in the same manner as the right had been, under ether, and with antiseptic precautions. There was no shock.

March 16th. He slept badly last night. Between 4 and 5 A.M., there was one involuntary flexion of the hip and knee joints, similar to what had occurred on the right side after the operation. Tactile sensibility about the left knee and leg was markedly improved. The left leg was now warmer to the touch than the right; and the temperature of both was raised, that of the left being 99.6°, and of the right 98°. The power of flexing and extending the ankle-joint was also markedly improved. No attempts were made to move the knee, on account of the operation-wound.

March 21st. Increased power over the ankle continued; also improved sensibility on the left—now equal on the two sides. Temperature—right 98.4°, left 98.8°.

March 28th. He had a slight attack of diarrhoea during the last two days, but was better now. Improved power and tactile sensibility on the left side continued.

April 2nd. He had another attack of diarrhoea yesterday. He had some mental depression, and was rather weak.

April 4th. Though still weak from the effects of the diarrhoea, he attempted to walk to-day for the first time since the second operation. There was extreme weakness of the legs; no ataxic movement. He required much support. There was occasional dragging of the left toes,

* These temperatures were in all cases obtained by placing an ordinary clinical thermometer between the skin of the popliteal space and a pad of cotton-wool, and securing it thus by a few turns of a bandage round the knee. The thermometers were allowed to remain in this manner in contact with the skin for from 60-90 minutes.

but not at all of the right. He had no pains anywhere. His appetite was bad; he slept badly.

April 12th. He made another attempt at walking. His gait was improved again; he was not quite so weak; he did not drag the toes; and there was more control over the movements of the legs. He has had an attack of constant aching pain in both sides of the chest, more or less, for the last three days. There was no pleurisy. Temperature in axilla yesterday at 3 P.M. 101.4°, and at 7 P.M. 103°. An attack of diarrhoea began at 3 A.M. this morning. He had little sleep. The tongue was covered with creamy fur. Pulse 128, small, but regular. The urine was alkaline, and contained a quantity of thick ropy mucus and pus. The urethra was painful and tender, and there was considerable spasm of it on passing the catheter. The catheter was now passed twice a day, and the bladder washed out with a solution of quinine (two grains to the ounce).

April 22nd. Diarrhoea had been present, on and off, since the last note. He had ten stools yesterday; was better this morning, though he was extremely weak. The tongue was coated with thick white fur. Temperature 100.6°; pulse 114; respirations 20. The urine was still alkaline.

April 26th. The patient had been gradually improving. The tongue was clean and moist. Temperature 98.4°. He had no pains in the chest now. The diarrhoea was much less—only two or three loose stools daily. His appetite was improved.

April 30th. He continued to improve. Diarrhoea had ceased. The appetite was better. The urine was now acid, but still contained a quantity of mucus.

May 8th. The patient had been improving gradually since the last note. This morning he tried to walk. He required the support of two people to stand upright. He was exceedingly weak on his legs; but his gait was better than before the operation. He had more control over his legs, and he cleared the ground better with the toes. Tactile sensibility over both lower limbs was perfect; and he could also appreciate the prick of a pin everywhere, and the difference between heat and cold. His power of moving the left ankle was decidedly better than before the operation, and he moved the hip-joint more forcibly. The legs felt much warmer than formerly; and their temperature was generally about 98° to 98.6°, the right being sometimes higher than the left. He still had slight pain in the lower part of his chest; but the old severe pain in the hypogastrium, which disappeared a few days after the first operation, had not been felt since.

As I said in introducing this case to your notice, gentlemen, our patient was advised to submit to the operation of having his right sciatic nerve stretched as a kind of "forlorn hope". Originally, the performance of the operation on the left leg was not contemplated; but, soon after the first operation, the patient himself was so satisfied with the improvement which had been brought about in his condition, that he repeatedly asked for the other leg to be treated in a similar manner. Finally, after prolonged observation of the changes brought about in the right limb by the first operation, I no longer thought that the operation was contraindicated by the condition of the left limb—rather the reverse; and I accordingly asked my colleague Mr. Marshall to be good enough to operate upon the left sciatic nerve as he had done upon the right. His method of pulling the nerve in both directions, and with the fingers rather than with a hard spatula, is worthy of note. It is, of course, most desirable, in such an operation, not to injure the nerve-fibres.

The effects observed in our patient as results of the operation have been these. Within one week from the date of the first operation, he lost the continuous dull burning sensation at the hypogastrium, from which he had been scarcely ever free for several months, and from which he had suffered at intervals since the commencement of his disease. He has continued free from this pain up to the present time—that is, for rather more than three months—though of late he has occasionally felt a less continuous pain on each side of the lower part of the thorax. Marked lancinating pains in the limbs seem never to have been present in this patient, though in other cases which have been reported such torturing pains have similarly been either greatly mitigated or caused to disappear by the operation of nerve-stretching.

He has had several attacks of diarrhoea similar to those to which he had been subject before the operation; and one of these attacks was severe, and associated with some cystitis. In other respects, however, the patient's general health has been somewhat improved. He has been taking his food well and sleeping better since the hypogastric pain disappeared. Still it is worthy of note that the operations have done nothing to mitigate the occasional attacks of diarrhoea.

If we turn now to the condition of the limbs, we shall find that similar changes in their condition were observed after each operation,

and that these effects are in part those to which Brown-Séquard has recently called the attention of the profession; viz., an increased temperature and an improved sensibility of the limb.

More marked and slower painless contractions took place from time to time in the limb which had been operated upon, in place of the slight jerking and somewhat painful movements to which it had previously been subject. These were observed in each case on the morning after the operation, and they were subsequently repeated from time to time.

There was no *motor paralysis* in the course of the sciatic nerve, even on the same or on the day following the operation, in either leg. In the case of the right leg, the patient was able to move his foot the next morning (February 6th) as well as before; and afterwards he seemed to gain some amount of strength in this leg, judging from the improved manner in which he walked on February 21st. In the case of the left leg, on the morning after the operation (March 16th), he was even able to move the foot better than he had done before during the previous five weeks; and a slight increase in power over the movements of this limb has continued to the present time (*i.e.*, for a period of eight weeks and a half), though there seems to have been no further or progressive gain in this direction.

The *sensibility* of the limbs was never very much impaired; but in each case, after the operation, the previous slight defect in tactile sensibility disappeared in the corresponding limb. Three weeks after the first operation, the tactile sensibility of the right limb seemed for a time to undergo slight daily variations; but, as the last note on May 8th shows, this variation was only temporary. The sensibility in each limb seems to have been restored by the operation.

The *temperature* of the *left* limb on the morning after the operation (March 16th) was very distinctly warmer than the right, though for almost five weeks previously it had been observed to be persistently lower. In the right popliteal space it was 98°, and in the left 99.6°. Subsequently, the following variations were noted:—March 17th—right 99°, left 98.6°; March 19th—right 98.2°, left 98°; March 21st—right 98.4°, left 98.8°; March 28th—right 97.6°, left 97.8°. Attention was not particularly directed to the temperature of the *right* leg on the days immediately following the operation. At all events, there is no note ill February 9th, when the leg felt warmer, and was described by the patient as feeling much more comfortable than it did before the operation. On the next day, the temperatures in the two popliteal spaces were found to be as follows: morning—right 97.8°, left 97°; evening—right 98.2°, left 97.2°. Other temperatures are recorded thus:—February 14th—right 98.8°, left 97.8°; February 15th—right 97.6°, left 97°; February 18th—right 97.8°, left 96.2°; February 21st—right 98°, left 97.2°; February 25th—right 97.6°, left 96.8°; March 5th—right still higher by 0.7° to 0.9° than left; March 12th—right for last two days 0.2° lower than left leg; but on March 15th (morning of second operation)—right 97.6°, left 96.8°.

In another less advanced case of locomotor ataxy, which has since been treated in the same manner, now in Ward 7, the temperature in the limb operated upon did not rise above that of the other by more than 0.5°, and even this, or a smaller amount of elevation, did not continue for more than two weeks. The improvement in sensibility in this case was also slight and temporary. Here, again, no motor paralysis was produced at first; but there does not seem as yet (five weeks) to be any appreciable improvement in the patient's condition. He walks rather more steadily, but requires a little more support than before the operation. He also complains of a slight fixed pain in the right foot which was not previously felt. It is difficult, of course, to gauge the exact strength of the "pull" to which the sciatic nerve is subjected, but it is thought to have been a little stronger in this case than in the former patient. I mention this because it is probably a matter of considerable importance; it is quite possible that too weak a pull may produce little or no effect; but, on the other hand, too strong a pull may yield either no good results or results which are positively harmful.

The *power of walking* in our patient, poor as it is, is certainly better than it was before the first operation (just fourteen weeks ago), though I do not think it can be said that there has been any appreciable gain in this respect since the second operation (just eight and a half weeks ago). Still, when lying in bed, his power of moving the left foot and leg is very slightly increased, in comparison with what it was during the five weeks preceding this operation. The wounds, as might have been expected, have been rather slow to heal in these patients.

In the present condition of our knowledge, I do not think it profitable to attempt anything like a physiological explanation of the mode of action of nerve-stretching. One of the results seems clearly to be the induction of some amount of vaso-motor paralysis in the limb operated upon. The improvement in sensibility may be a result of this

change in the vascularity of the limb, or it may be in a measure independent of it. It is worthy of note in this connection that daily variations seemed to take place (about three weeks after the first operation) in the sensibility of the right leg without any corresponding variations in the temperature of the limb.

Although we cannot explain the exact mode in which nerve-stretching acts, we are not in a much better condition as regards many internal remedies which we know to have an undoubted power in modifying processes of disease. We do not on this account hesitate to use quinine or arsenic in ague, or salicylate of soda in rheumatic fever; nor is there any reason why, if nerve-stretching really seems to do good in this or in other chronic diseases of the spinal cord, we should not have recourse to such a procedure. Much of our therapeutics is still empirical rather than rational. What we have to ascertain, therefore, in the first place, is, whether the operation does or does not seem to do good.

Although it is still very doubtful how long the good effects produced by nerve-stretching in locomotor ataxy may last, it seems to me, judging from the results which have been published by others, as well as from my own experience in regard to this case, that its influence over the disease is so decided as to deserve further careful trial. Looking also to the effects which the operation produces upon the limbs, I am disposed to think that it may also prove of considerable service, in conjunction with electrical treatment, in certain cases of chronic spinal paralysis in children or in adults; and I shall take an early opportunity of giving the method a trial in some suitable cases. The increase in the temperature of the limb operated upon may decidedly help to improve the nutrition of its wasted muscles, and thus perhaps render them more amenable to electrical treatment.

CLINICAL LECTURE

ON

CASES OF SPASMODIC DISORDERS IN THE LOWER LIMBS.

Delivered at St. Mary's Hospital.

By C. HANDFIELD JONES, M.B.CANTAB., F.R.S.,
Physician to the Hospital.

GENTLEMEN,—We have lately had a case in the wards which was of interest to me, and I am sure I may say to you, in several respects. Let us occupy our time to-day in taking a retrospect of the story, and in seeing what instruction we may gain from it.

CASE I.—The patient, F. C., was a young girl aged 13, the daughter of a carpenter, who was disabled from work by an injury to his leg, and of a mother, whom I judged, and I trow not unjustly, to be fond, foolish, and anxious. She was herself a sleek-faced little damsel, who lay in her bed with great propriety, at any rate after the first few days, attired in a rather showy red dressing-gown, of a modern cut (as far as my imperfect erudition on such points enables me to affirm), and in bright yellow worsted slippers, which I learned were her own workmanship. She crocheted or did some such fancy work. Altogether there was a good deal in her "pose" to warrant the suspicion which more than one of you entertained, that her malady was largely compounded of, or based on, hysteria. This notion was materially supported by the circumstance that, about three months and a half previously, she had been in the hospital for six weeks on account of fits, which were stated to have been of very frequent occurrence, sometimes three or four in a day, but which were conspicuous by their absence during the whole or almost the whole of her stay. The first fit occurred on September 2nd, 1879, when she was struck on the left temple, and immediately fell down in a fit. Two days after this, while racing at a school-treat, she had another. Since then, she had been continually having fits, which came on after any excitement, and were usually ushered in by drowsiness; the patient then sat down, and the fit came on, and lasted from half an hour to five hours. After a fit, she generally complained of headache. On October 30th, she had a fit in the morning, which lasted four hours; on her recovery, she had lost the use of her legs, and had not been able to stand since. She came to us on November 9th, 1880. The notes, taken probably the day after, say that her aspect was healthy, that her manner was natural, and that she behaved well and gave no unnecessary trouble. Her legs were very sensitive to touch, though she could scarcely stir them from the bed, and she was quite unable to stand. When the

faradic current was applied, there was no response for about twenty seconds, and then the muscles acted powerfully, and severe pain was felt. On tickling the soles, reflex contractions sometimes occurred, and sometimes did not; one foot was affected at times more than the other. The feet were at times pointed, and extension of them was painful, and strongly resisted by the calf-muscles. This, however, was not quite constant; to-day the right foot could be brought into its natural position. The patellar tendon-reflex was well marked. She complained of pain in the left back and on the left side of the abdomen. On the 12th, when taken out of bed and held up, she could not move her legs at all, or make any attempt to support herself; the feet were turned inwards, the soles raised, the legs in a state of rigid spasm. I could not flex them with any ordinary effort, and any great force applied to them caused much pain. When lying in bed, the rigidity at times seemed to be less, but at others was complete. The remedies indicated were evidently such as might reasonably be expected to calm an excited state of nerve and muscle. To produce relaxation, I might have employed belladonna, chloral, bromides, physostigma, and others; but I selected two, one of which was an old well-approved means, and the other a modern, of which I had lately been making trial in the analogous state of asthma with advantage. I ordered a warm bath to be given every night, and two minims of a one per cent. solution of nitro-glycerine three times daily, with a teaspoonful of cod-liver oil twice daily. On the 15th, she could draw up her right limb fully, and allowed me to move it quite easily; it was in its natural state; the left was just as before, quite rigid in extension, and could not be flexed. I increased the dose of nitro-glycerine to three minims. On the 16th, the pulse was 90, soft. There was no giddiness nor flushing of the face. The right foot was drawn up when the sole was tickled; the left did not move; but she was conscious when the sole or the leg was touched. She was quite unable to stir the left leg voluntarily. There was no blueness or coldness of the left foot; it felt to the hand as warm as the right. On the 18th, a subcutaneous injection of one-sixtieth of a grain of atropine was directed to be made daily, and the other remedies continued. On the 20th, she had regained the use of both legs, could walk the whole length of Victoria Ward (thirty yards), and could just stand on either leg. Reflex action now occurred on tickling the sole of the left foot, or perhaps voluntary; the foot was drawn up, and the leg bent at the knee. She was first able to bend the knee in the warm bath on the night of the 18th. The sequela of the fit, the spasm, having thus yielded, the next indication appeared to be to prevent the recurrence of the primary disorder, for which, of course, bromide suggested itself. I ordered her bromide of ammonium gr. viij; tincture of cinchona ʒss; compound spirit of ammonia ℥v; decoction of cinchona ʒss—three times daily; and to continue her oil. On the 22nd, she was walking about well, and could walk a good way along a single plank of the floor. On the 26th, she complained of a pain in her great toe, and looked, I thought, pale; I therefore ordered ten grains of saccharated carbonate of iron to be taken twice daily; and, on December 2nd, I sent her out. She came to hospital on the 6th to show herself, looking very well; and, at my request, stepped up on an ordinary chair and jumped down again to the floor. I dismissed her apparently quite well, but shall not feel surprised if she returns, sooner or later, with some other neurosis, or a recurrence of the same. June 18th, 1881. This expectation has up to this time not been realised.

Before offering any comments on this case, I will relate some others which appear to be of the same kind.

CASE II.—E. B., aged 23, single, was admitted on April 27th, 1878. Her eyes were grey, and her hair rather light. She had been ailing a month, attending as out-patient three weeks. She was taken worse on the 27th; she had a fit, in which she lost consciousness, but did not bite her tongue; her hands were contracted, and her feet, and her body all drawn up. She never had a fit before; she had globus hystericus at the time. There had been no mental worry. The catamenia were regular, too copious the last time. She slept well. Her appetite was not good.—April 30th. The left hand was now all right, but the right hand was somewhat swollen, and was pained by movement at the wrist; the pain extended up to the shoulder. To-day the fingers were extended, but yesterday they were flexed partially, and were more or less rigid. The feet appeared normal, but movement at the ankle-joints caused pain, and was strongly resisted by the muscles; the pain extended up to the calves of the legs. She was ordered bromide of potassium, 10 grains; iodide of potassium, 3 grains; compound spirit of ammonia, 10 minims; water an ounce—three times a day. Diet simple—milk, beef-tea.—May 2nd. She was in much the same state, taking, since the 29th ult., mistura sodæ salicylatis four times daily. She had at first a dose every hour for four doses.—May 6th. Both hands were quite free, but the ankles were not; she