TWO LECTURES ON SCLEROSIS OF THE SPINAL CORD.

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LECTURE II.—THE CAUSES OF TABES SPINALIS.

(Concluded from page 988.)

4. Another objection which is frequently made to the syphilitic theory of tabes is, that we do not find any special symptoms in syphilitic tabes which would distinguish it at a glance from ordinary tabes. I have just mentioned that it was this circumstance which deterred Duchenne from pronouncing himself more strongly for the syphilitic origin of the disease. If we consider, however, that the description of the symptoms of tabes is in general taken from cases of syphilitic tabes, we can no longer be surprised at that circumstance. Moreover, it is obvious that such an objection, if allowed, must also apply to other forms of tertiary disease, more especially to that which is apt to occur in the brain, and which is by general consent taken to be syphilitic. An attack of hemiplegia from disease of the cerebral blood-vessels may have, and often has, exactly the same symptoms as one arising from embolism or cerebral hemorrhage, where there is not an atom of syphilis in the case. Some of the visceral complaints induced by syphilis do not produce symptoms which are very different from those owing to idiopathic disease of the same viscera. The symptoms of tabes should be looked upon as the response of the posterior columns of the spinal cord to certain injurious influences; and this view explains why all symptoms which occur in non-syphilitic tabes may occur in the specific form of the disease, and *vice versa*. The only difference we find in the syphilitic form is, that there are not unfrequently other symptoms of venereal affection not referable to the cord.

5. This leads us to speak of another objection which has been urged to the theory which we are now considering—viz., that in tabes we do not meet with any other of the well known symptoms of syphilis. To this I would reply that, if such symptoms be properly looked for, they are frequently discovered; they were very striking in some of the cases which I have just related, and to which I could add many others. Indeed, it is not at all uncommon to find primary or secondary cicatrices in the skin, loss of substance in the uvula, sarcocele, exostoses, and other notorious symptoms of syphilis, in such patients; while evidence of brain-syphilis, more particularly of the congestive form of it, is likewise frequent. At the same time, no doubt cases occur where such symptoms are absent, more especially in the skin and mucous membranes; but at this we cannot be surprised, if we consider that tabes is in general a tertiary manifestation of the syphilitic distemper. Similarly, we find that, in specific brain-disease, hemiplegia, with late rigidity of the paralysed muscles, may be the only symptom; while the clinical history of the case shows quite plainly that the nature of the affection is syphilitic.

A very marked case of this sort, which occurred some time ago in my practice, is described in the *Transactions* of the Clinical Society of London for 1882. General paralysis of the insane frequently ends the career of the tabid as well as some syphilitic patients.

6. A final objection which is frequently made to the syphilitic theory of tabes is, that the malady is not cured by specific treatment. A cure, however, of any affection which has already destroyed highly specialised structures is impossible under any circumstances. It is quite true that syphilitic patients daily recover their health under specific treatment; yet no amount of mercury and iodide of potassium will restore a large hole that has been made in the palate, or the peculiar structure of a testicle which has undergone the process of sarcocele. Now, it is well known that, even in the beginning, tabes is not a functional, but a structural disease; and, in general, all we can expect, therefore, is to arrest the further progress of the complaint, and to cure or improve those symptoms which do not depend upon absolute destruction of nervous matter. Specific treatment is mostly useless when the second stage of locomotor ataxy has been well established; and likewise for the amblyopia and amaurosis of the first stage. The more highly specialised the structures affected, the less likely is treatment to act beneficially; and this is no doubt the reason why optic atrophy constitutes such a hopeless subject for therapeutics.

Syphilitic brain-disease is equally rebellious to specific treatment, when it has once proceeded to destruction of specialised structures.

No amount of iodide of potassium will ever cure softening of the motor zone of the brain, from thrombosis of the middle cerebral artery; yet the clearest possible connection may exist between the primary venereal disease and the subsequent affection of the cerebral blood-vessels.

Most cases of tabes which come under our care in practice have already lasted a number of years before they are recognised. Only too frequently lightning-pains are put down to rheumatism or gout, and palsies of ocular muscles to exposure to wind. Yet many years ago, Ricord said that the paralysis of an ocular muscle was the signature of syphilis on the eye of a patient! Fortunately we have now in the abolition of the knee-jerk a diagnostic test of the utmost value for the recognition of the earliest beginnings of tabes, and one which will no doubt lead, in course of time, to an immense improvement in the therapeutics of this disease.

While, therefore, confirmed cases of syphilitic tabes, where the disease has to a great extent run its course, cannot be cured by specific treatment, the latter is very useful as long as the irritant morbid process is still actively going on in the spinal cord. The newer a symptom, the more likely it is to yield to mercury or iodide of potassium; yet even old symptoms, if occurring in less highly specialised structures, are often greatly benefited. This is more particularly the case with the lightning-pains, which may yield to the hydrargyric perchloride after having resisted subcutaneous injections of morphia. The further progress of the disease may also be often arrested; and patients, who were fast going down hill, often regain at least some degree of health and comfort by a specific treatment. A patient whose case has just been referred to recovered completely. Rumpf, of Bonn, has cured a man who was in the second stage of tabes by mercurial treatment, continued for eight months consecutively. Hammond reports a similar case. Palsies of ocular muscles are now often in the very beginning treated energetically on a specific plan, with the result that the patients not only recover from such palsies, but never develop other symptoms which may have been on the point of breaking out. Even Leyden, who utterly scouts the idea of any connection between tabes and syphilis, is compelled to acknowledge that, after all, iodide of potassium is the best medicine for this disease!

The time during which the syphilitic germs breed in the system before they can produce tabes varies in different individuals. The most frequent period of its outbreak is between six and ten years after the primary infection. In exceptional cases it is much earlier, and I have now a patient under my care in the hospital, in whom it appeared a twelvemonth after a chancre.

In April 1883, Dr. Shepard, of the Euston Road, asked me to see an artist, aged 40, single, who had contracted syphilis from a model eight years ago. Twelve months afterwards, undoubted symptoms of tabes appeared, as the patient found great difficulty in standing and walking, and showed the characteristic gait of ataxy. He likewise suffered from attacks of lightning-pains, which were, however, not of a severe character, and appeared at long intervals. He was treated by iodide of potassium, which did no good at all; after that, he was subjected to inunction with mercurial ointment, and given blue pill, which did good for a time, but then seemed to lose its effect, as the disease gradually gained upon him. When I saw him, he was just able to walk a few steps on level ground with the aid of two sticks; he showed the classical gait of ataxy, and had lost his patellar reflexes. He could hardly stand with his feet wide apart and his eyes open, and would have gone down at once if the feet had been approached to one another and the eyes closed. Yet he had no difficulty in crossing one leg over another, and showed considerable muscular force in resisting attempted flexion of the knees. The brain and cranial nerves were healthy. He suffered from obstinate constipation, and the sexual power was completely lost. There was some numbness in the soles of the feet, but in all other parts of the body sensibility was perfectly normal. As neither his eyes nor his hands suffered in any way, he was able to paint almost as well as before the beginning of his illness, the only thing which he could not do being to take a perspective of his pictures by walking backwards from his easel.

Another case, in which the symptoms of tabes appeared early after syphilis, was that of a merchant whom Mr. Bader sent to me in February 1880. This patient was thirty-four years old, married, with three children, and had syphilis and gonorrhoea ten years ago. Twelve months afterwards, lightning-pains had appeared, which affected more or less all parts of the body. Eighteen months before I saw him, his sight began to fail; he had Argyll-Robertson's symptom and amblyopia from atrophy of the optic nerve. The patellar reflex was absent. The legs felt as if they did not belong to him. The sexual power was diminished; yet his wife was in the family-way, and he had had connection a fortnight ago.

On the other hand, the patient may remain for many years in apparently good health after he has contracted syphilis; so that the appearance of the first symptoms of *tabes* is believed to be unconnected with the specific taint, and put down to other causes.

Such was the case of a gentleman aged 41, single, whom I saw, at the request of Mr. Bader, in August 1883. He had masturbated heavily at school, and contracted syphilis ten years ago. The symptoms of this illness were slight and of short duration; and the patient had been in thoroughly good health until about three years ago, when his sight commenced to become dim. This was at first believed to be a local affection, and treated as such until Mr. Bader suspected it to be a part and parcel of a general disease. I found, on examination, loss of knee-jerk, Romberg's symptom, constipation, difficulty of micturition, and a history of lightning-pains, rendering the diagnosis of *tabes* certain.

In the following case, the interval between the occurrence of the primary sore and the appearance of the first symptoms of *tabes* was seventeen years.

In May 1883, I was consulted by an army surgeon, aged 42, married, with three children, who had had syphilis badly twenty years ago, but had been apparently quite well afterwards. Three years ago, lightning-pains appeared in the legs, arms, and head; and soon afterwards considerable difficulty and awkwardness in walking was experienced. At present, he can walk for about fifteen minutes at a time, after which he is thoroughly done up. There is numbness in the legs, and in the sphere of both ulnar nerves. Romberg's symptom is well marked. "Belt-sensation" is troublesome; and the knee-jerk is absent in both legs, which are much emaciated. The patient has considerable difficulty with his bowels, but none with his bladder. The sexual power is diminished, yet there are not unfrequently nocturnal emissions of semen.

The length of time which intervenes between the outbreak of the two diseases does not speak against their standing in the relation of cause and effect. In other diseases, many years are known to elapse before a cause produces an effect. Sir Benjamin Brodie met with an accident while riding on horseback in 1834, dislocating his right shoulder; and he eventually died of cancer, which had become developed in the same joint, in September 1862, which gives an interval of twenty-eight years between the injury and the consecutive disease. It would not be difficult to multiply such examples. Moreover, no one thinks of denying that manifestly syphilitic symptoms may and do occur in the bones, testicles, and even in the skin, as long as twenty or thirty years after the primary affection.

Some of those observers who are fond of attempting to reconcile contradictory opinions, have started the idea that syphilis acts indirectly in producing *tabes*, and is what is called a predisposing cause. It is said to lower the system, to deprive it of its power of resistance, and in this way to act like other debilitating influences, such as masturbation, sexual and other excesses, etc. This view, however, is hardly supported by what we see in practice. In many cases, indeed, so far from being debilitated by the germs which are breeding in them, the patients appear to be quite well and strong at the time of the outbreak of *tabes*, and this more especially where the primary and secondary symptoms have been slight.

A merchant, aged 61, married, and father of six children, consulted me in February 1881. He had had syphilis twenty years ago, and his eldest child had been syphilitic. For many years past, he had been perfectly well; but in March 1880, he suddenly saw everything double. He consulted the late Mr. Critchett, under whose care the affection disappeared within a month. He had a second attack of the same thing in January 1881, and was again subjected to treatment, but this time without any benefit. I examined him carefully for symptoms of *tabes* and syphilis, and could discover nothing wrong except complete loss of the knee-jerk in both sides and paralysis of the rectus externus muscle. His general health was excellent; yet there could be no doubt that he was in the first stage of *tabes*.

It is a curious circumstance, and one that is of some moment in the question with which we are now occupied, that both *tabes* and syphilis are much more frequent in males than in females. Fournier finds that, amongst syphilitic patients, there is one woman to nine men; while the proportion in *tabes* is about one woman to ten men. Where *tabes* occurs in women, it is generally in the lower orders of prostitutes, or in poor women who have to work hard in damp shops. Erb has seen thirteen tabid women, of whom four had apparently not had any syphilis. Three others denied having had it; but the first of these latter had had three miscarriages, had suffered from violent headaches, and four of her children had died young. The second of the three had had two miscarriages, and showed cicatrices resulting from extensive ulcerations of the skin. The husband of the third person was

notoriously syphilitic. Four others had certainly had syphilis; in another this was highly probable; one more had had a chancre. This is rather a heavy indictment, and more particularly so when we remember how difficult it sometimes is to discover syphilis in a woman, and how easy, on the other hand, to overlook it.

While, therefore, an overwhelming amount of evidence speaks for a causal relation between syphilis and *tabes*, we must acknowledge, on the other hand, that cases are occasionally met with in practice where *tabes* and syphilis occur together, and where, under the influence of specific treatment, the syphilitic symptoms on the skin and the mucous membranes are improved or cured, while the symptoms of *tabes* become worse. These may afterwards improve under the influence of electricity and nitrate of silver. Such cases are certainly startling; at the same time they only prove what is already known—viz., that in general an antisyphilitic treatment has only little influence on *tabes* when this has become firmly established, that is, after the second or ataxic stage has been fairly reached.

In many cases, no other cause but syphilis can be found for the evolution of *tabes*; while in others, a variety of injurious influences appear to act together with the syphilitic dyscrasia in leading to the outbreak of the complaint. The principal one of these latter is unquestionably the influence of cold. Most observers are agreed on this point, and only Fournier appears to attach little importance to it. The influence of cold in the syphilitic appears occasionally to act as the exciting cause, while in the non-syphilitic it is often mentioned as the only cause which can be assigned.

In May 1874, I was consulted by a patient, aged 59, married, who had for a good many years been in business in Canada as a provision-curer. He had there to pass constantly from one extreme of temperature to another, as he had first to go into ice-houses and afterwards into the sun, when the thermometer in the shade was at 90°. He had, however, also had syphilis and gonorrhoea eighteen years ago, and had a stricture of the urethra, which gave him a great deal of trouble. Three or four years ago, he suddenly lost his speech, and became paralysed on the right side. He was unconscious for a fortnight, and then recovered. When I saw him, he had the true gait of ataxy, difficulty in standing, numbness up to the wrist, complete loss of sexual power, but not of desire, and constipation of the bowels. He could generally pass his urine in a small stream, but had occasionally attacks of retention, when the catheter had to be introduced. The symptoms of *tabes* had become developed within the last three years, and were by the patient and his friends attributed to the chills he was in the habit of receiving by going into ice-houses. Yet we cannot ignore that he had had syphilis, and the fact of his having had temporary aphasia and hemiplegia, in addition to his other troubles, speaks strongly for the specific character of all his nerve-symptoms.

Another case, in which the influence of cold appeared to act as the exciting cause of *tabes* in a syphilitic subject, was that of a merchant, aged 30, single, who consulted me in January 1873. He had led a very wild life, and had syphilis badly four years ago. He consulted, amongst others, Dr. Lewin of Berlin, and was treated by him with subcutaneous injections of perchloride of mercury for a month; after which all symptoms of syphilis left him. He spent the autumn of 1870 at Brighton, and was advised to take sea-baths very late in the season. After this, he first began to feel shooting-pains in the lower extremities, more particularly the right leg; and had difficulty in walking, with sluggishness of the bladder and constipation of the bowels. Romberg's symptom was present. He remained for some time under my care, and I had the opportunity of satisfying myself that the syphilitic taint was by no means eradicated from his system, as he would occasionally, for weeks together, have specific eruptions on different parts of the body, such as ulceration of the tongue and of the penis.

A singular case in point is that of a Russian officer, who acquired a chancre while serving with the army in the Caucasus, and treated the sore with the application of what he called "snow-poultices!" Soon afterwards, he felt a shooting pain in the groin, scrotum, sacrum, and left leg, which induced him to apply to a surgeon. He now underwent treatment by inunction, which appeared to be successful for the time. Three years afterwards, however, he was obliged to stand in the water for a couple of hours, and then felt almost at once the same pain in the left leg and other parts which he had had on applying the snow. Shortly after this exposure had taken place, double vision, constriction of the chest, and other symptoms of *tabes* supervened.

The influence of exposure to cold is, no doubt, to a great extent, instrumental in causing the numerous cases of *tabes* which occur after campaigns. When the Austrians had lost the battle of Sadowa, they had, in their precipitate retreat, to cross the river Elbe; and it is re-

lated that, amongst those who had to flee for their lives, and were thoroughly wetted on that occasion, an unusual number of cases of this malady occurred. Romberg mentions that the disease was rife during the great French wars in the commencement of this century. A large number of cases appears also to have occurred in the celebrated free corps commanded by Major von Lützow in the German war of liberation in 1813, when that troop of irregular horse underwent the most extraordinary fatigues in constantly harassing the outposts of the French armies. After the war in Hungary in 1849, and the French campaign in Mexico, similar results were observed. In campaigns, however, the influence of cold is only one of the factors; syphilis, overexertion by forced marches, and excesses of various kinds, play, probably, quite as important a part in the production of the disease as cold.

In ordinary every-day life, the influence of cold in producing tabes is observed chiefly in persons who sleep in newly built houses, or out of doors, or in damp bedrooms; who work in cold draughty workshops or offices, or as agricultural labourers in the fields. Tabes seems occasionally to spring from frost-bite. Exposure to cold also has a most prejudicial influence after the disease has become developed. It often gives a fresh impetus to the morbid process, and renders the patients more useless and helpless than they were before.

This circumstance was well shown in the case of a merchant, aged 40, a widower, who consulted me in October 1873. He had had gonorrhœa many times, and syphilis twenty years ago. He had infected his wife and only child. About twelve months ago, he had a sudden attack of double vision, and began to suffer from spermatorrhœa and from lightning-pains through the legs. He consulted a quack, who told him that "his blood was too hot," and advised him to walk with his naked feet on the bare floor for half an hour every evening. After the patient had done this a few times, he rapidly lost the use of his legs, and was now totally unable to walk or to stand, but managed, with crutches, to walk a maximum of three hundred yards. He still could, when sitting on a chair, cross one leg over the other, and move the legs in bed quite easily in all directions. The bladder was extremely sluggish, the bowels confined, and the soles of the feet completely benumbed.

The next cause which is of influence, as exciting the development of tabes, is *overexertion*. Experimental overstimulation of the muscles in animals, by long continued faradisation, has led to paralysis of their limbs, as seen by Vulpian, Brown-Séquard, and others; and it is easy to understand how overexertion, either in walking or other ways, should exhaust the vital power of the spinal cord. This is more particularly the case with the syphilitic, while in otherwise healthy persons it is more rare; yet it was the only cause which could be discovered in the following case.

A merchant, aged 50, consulted me in November 1871. He had for a number of years been engaged in mining operations in South America, which entailed a great deal of going down on ladders and crawling on niches in rocks, at a depth of upwards of a thousand feet. He first felt weakness in the legs seventeen years ago, after he had done "an unusually hard job" of this kind. He went on with his work, however, but gradually became worse, and, about four years ago, was recommended to take hot mineral baths in South America, after which the disease appeared to make more rapid progress. When I saw him, symptoms of tabes were marked in both upper and lower extremities, and there was also a considerable amount of wasting in the muscles of the hands. He had never had syphilis.

The following is another case in point.

In June 1874, I was consulted by a young gentleman, aged 20, who was then reading for the bar, and was chicken-breasted and hunch-backed, but had been pretty well until the summer of 1873, when he went to the Vienna Exhibition, where he was walking and standing about all day long. After some time spent in this manner, he began to feel great numbness in the feet and legs, which gradually spread upwards to the waist. He was also very much troubled with a feeling of tightness round the chest. Symptoms of catarrh of the bladder, with great irritability of the viscous, then appeared, and the patient gradually got so weak on his legs, that he had to give up walking altogether. At present he was totally unable to walk without assistance, yet had not the least difficulty in moving his legs in bed, and showed considerable muscular force in resisting attempted flexion of the knees. He had completely lost the power over the bladder, and was obliged to introduce the catheter sometimes every hour, more especially in the night, when he could never sleep properly on account of constant calls to pass his urine. The urine was ammoniacal, and contained a large quantity of muco-pus. There were no symptoms of tabes above the waist. The patient denied having ever suffered from gonorrhœa or syphilis, or been much exposed to cold, and at-

tributed his malady entirely to the over-exertion which has been mentioned.

Accidents appear occasionally to lead to tabes, without any syphilitic infection or any other cause having previously occurred. This question has recently been studied by Petit, who has collected forty-seven cases, and concludes that injury to the spine, whether direct or indirect, by falls on the back, the seat, or the feet, may cause a concussion of the cord, and subsequently lesions, which may become the starting point of a chronic myelitis, showing the symptoms of tabes. He thinks that—more especially in persons predisposed to sclerosis in general, such as the gouty, the syphilitic, and the alcoholised—injuries at a distance from the spine may over-excite the cord, and lead to the development of tabes; that they may aggravate the existing disease, or cause a relapse where it has been cured. I am inclined to agree with Petit's views, from having had several cases under my care in which a severe accident was the only cause which could be ascertained.

In June 1882, I had a patient, aged 50, under my care at the hospital, who had been a digger in Australia, and had on one occasion been buried in a mine for several hours. This occurred three years ago. A few days after this accident, the first shocks of lightning-pains appeared in the right leg; and, twelve months before coming under my care, ataxy of gait, with other characteristic symptoms, began to be perceptible. The patient denied any syphilitic infection.

In the following case there was a history of syphilis, excesses in smoking, drinking, and sexual indulgence, two several accidents, and habitual exposure to cold.

A chemist's assistant, aged 36, single, consulted me in November 1881. He had for years led a very wild life, and exceeded greatly in drinking, smoking, and sexual intercourse. Ten years ago he had a sore, which was presently followed by a bubo and roseola, but no other symptoms of infection. Four or five years ago he had, on two several occasions, fallen from his horse. He had also been very much exposed to cold in a shop, where no fire was kept in winter, and draughts were incessant. Three years ago, when at a cricket-match, he felt that he could not run well, and suddenly staggered and fell down. Ever since that time he had had great difficulty in walking. Two years ago he had double vision, but only for a short time. Shooting pains in the legs then came on, which were, however, not severe, and when I saw him he complained more of pain in the left shoulder, which was apt to come and go quite suddenly. Going downstairs was most awkward, while he managed to go upstairs tolerably well. Romberg's, Westphal's, and Argyll-Robertson's symptoms were marked. He suffered from constipation of the bowels and incontinence of urine, and the sexual power was gone. There was considerable diminution of sensibility in the sphere of the right ulnar nerve, but none in the left. The muscles of the balls of both thumbs were greatly wasted, and the patient had, on this account, great difficulty in writing. The interossei were also somewhat wasted. The electric reactions of the wasted muscles were, however, normal. The grasp of the dynamometer was only 60° with the left, and 80° with the right hand.

I saw this patient again in June 1883, when there were, in addition, symptoms of optic atrophy in the right eye. The difficulty of vision had only become perceptible about a fortnight ago, when "a dark cloud seemed to become settled at the top of the field of vision, and he was unable to distinguish with that eye anything above the eyebrow." There was achromatopsia on the right, but not on the left eye. The right eye showed the peculiar white condition of the nerve, but the left appeared normal by ophthalmoscopic investigation, and also had the proper acuity of vision.

Veneral excesses have already been mentioned in several of the cases which I have just shortly related. Duchenne has seen a case in which "frantic masturbation" appeared to be the cause. Sexual excesses generally coincide with excesses in drinking, smoking, and the acquisition of syphilis; and it is therefore difficult to apportion the exact degree of influence which the former agent may possess. I have not seen a single case in which venereal excesses alone could be looked upon as the cause. In the female sex, tabes is chiefly found in prostitutes; and in them the three agents of syphilis, excesses, and drink, probably rank in importance, in the order in which they have just been stated, in the production of the malady. Exposure to cold may, in some instances, be added to it. Lancereaux has noticed that tabes occurs amongst girls in Paris who work the sewing-machine with the foot. These women are extremely hard worked, as many of them have to continue at their work from 6 A.M. until midnight. The constant movement of the foot appears to excite the sexual organs, which become so hot and congested that the women are obliged to wash the parts frequently with cold water. It is assumed that the excessive functional excitement starting in the sexual organs provokes, through the centripetal nerves, irritative reaction in the parts whose function it

is to receive those impressions, and that it is more the prolonged and injurious action of a more or less abnormal sexual excitement on the spinal cord than syphilis which produces tabes. I am unable to agree with this opinion. I have seen in hospital-practice cases of tabes in London working-women, who had to use the sewing-machine which is worked with the foot, and have inquired amongst them whether this has the effect on the sexual organs mentioned by Lancereaux. They did not seem to understand the bearing of my inquiry, although they happened to be very intelligent persons, but attributed their illness to having worked in damp workshops and amongst generally unhealthy surroundings. None of them had apparently had syphilis. The French working-girls are probably sexually more excitable than the English, a similar difference being seen in the development and aspects of hysteria in the two countries.

The influence of *drink* alone does not seem to be great. A French army-surgeon, who consulted me in December 1882, for a very painful form of tabes, with severe laryngeal crises, mentioned in his history masturbation early in life; syphilis, sexual excesses, and abstinence-drinking later on. The influence of drink in the parent was the only cause which I could discover in the case of a Swedish gentleman, who was sent to me by Dr. Allan, of Hyde Park Terrace, in January last. He had led an exemplary life, had never had anything to do with women, not met with accidents, nor been subject to exposure or unfavourable influences of any kind. His father, however, had been an inveterate drunkard, and had died in a fit of drunkenness at 39 years of age. It is therefore not at all improbable that this patient may have been conceived while his father was in a state of intoxication—a circumstance which is known to give rise to epilepsy, paralysis, idiocy, and insanity in the offspring, and is probably instrumental in inducing the form of tabes which is known as Friedreich's disease.

The influence of *tobacco-smoking* is probably not great; excessive smoking, however, was mentioned to me as the cause of his illness by a merchant, aged 31, married, and father of three children, who consulted me in March 1874. He said that he had for years smoked all day long without interruption, and habitually consumed as much as two ounces of birdseye in a day. He had never had syphilis, nor been subject to any other unfavourable influence. His present illness dated from three years ago, when his legs became very weak and numb. He now felt "as if he had no legs, but only two sticks." He had the characteristic difficulty in standing, the ataxic gait, loss of sexual power, and of control over the bladder and bowels.

The *acute infectious diseases* appear to have but little influence in producing tabes. I have never seen a case occurring subsequently to typhoid fever, small-pox, crsipelas, measles, etc., and only one after jungle-fever.

This was the case of an officer, aged 35, single, who was sent to me by Dr. Henry Savage, in May 1865; he had been fourteen years in India, and enjoyed good health until about twelve months ago, when he was seized by jungle-fever, which proved most intractable; and he never recovered his health thoroughly afterwards. He suffered much from indigestion and nervousness, but more particularly from difficulty in walking. I found the gait typically ataxic. He was apt to lose his balance, and had frequently fallen down lately; he felt quite helpless in the dark, was very nervous on going downstairs, and had a peculiar feeling in walking, as if the ground rose with him, and he were walking on elastic springs. The right pupil was larger than the left, but there were no ophthalmoscopic signs of optic atrophy. He had had no syphilis, and his illness could only be attributed to the effects of the fever. There was a slight but perceptible swelling of the spleen.

In a few patients, finally, we do not find any other cause except the *neurotic constitution*, as inherited from parents who have been subject to epilepsy, paralysis, insanity, hysteria, chorea, megrim, malformation of the skull, or simply to excessive excitability of the nervous system, as shown by habitually violent manners, outbursts of passion, an odd or eccentric behaviour, etc.

The influence of the neurotic constitution, however, is more particularly seen in that peculiar form of tabes which is known as Friedreich's disease, or hereditary ataxy. In by far the largest majority of cases of ordinary tabes, however, the fault lies more with the individual patient than with the stock from which he came. Hysteria in the mother I have found in several cases, while of other forms of nervous disease in parents I have seen singularly little. Vulpian states that a special predisposition must necessarily exist for the development of tabes, even where there has been syphilis; for why, he asks, should tabes be so rare when syphilis is so frequent? To this question I may answer, first, that tabes is much more frequent than is generally believed; and, secondly, that many persons who have acquired syphilis are subjected to a long course of specific treatment, and therefore escape the tertiary

affections which might otherwise have been in store for them. On the whole, therefore, there is only a slight influence of heredity in tabes; on the other hand, the mode of life adopted by the individual plays, no doubt, a considerable part in the production of the disease. Persons who have had syphilis will be more likely to acquire tabes if they commit afterwards excesses in sexual indulgence, the pleasures of the table, drinking and smoking, and lead an irregular and exciting kind of life altogether.

Fournier finds most victims of tabes amongst the votaries of pleasure in large cities. Yet syphilis, drink, and venereal excesses are quite as much at work in small country towns as in Paris and London; and I doubt whether tabes is really more frequent in the "great centres of civilisation." I have seen a considerable number of men who had emptied to the last drops the cup of what is called "pleasure," and who, having by a lucky chance steered clear of syphilis, had not acquired tabes. Excesses without syphilis appear to lead, in general, more to cerebral than to spinal disease.

Whether any particular profession is more exposed to tabes than another is difficult to ascertain. In hospital-practice, my patients have been firemen, boatmen, cabmen, coachmen, policemen, engine-drivers, workers in drainage, railway-guards, and navvies; and, amongst women, those who had to work hard and long in damp places, more especially upholstresses, waistcoat-makers, laundresses, etc. On the whole, however, tabes appears to be more frequent in the higher than in the lower strata of society; and this is possibly due to the greater mental efforts required of the former, combined with anxiety and depressing emotions of various kinds which affect the rich more than the poor, and which tend to lower the power of resistance of the nervous centres to injurious influences.

Whether acute or subacute muscular rheumatism has any influence in the production of tabes, as has been stated, seems very doubtful. Most patients call the lightning-pains rheumatic, and come with an apparent history of rheumatism, which, however, does not bear critical investigation. The same may be said of our old friend, the "suppression of habitual perspiration." This is rather more likely to be owing to, than productive of, the disease. A patient, who was sent to me by Mr. Bickersteth of Liverpool, in June 1882, ascribed the outbreak of the malady to a bad attack of diarrhoea, which he had had while staying at Madeira; it was then that he first noticed unsteadiness in walking, which the medical man there thought to be owing to the relaxing climate. On inquiry, I found that he had had syphilis very badly fifteen years ago. He then suffered from fearful ulcerations of the skin and subjacent tissues, buboes which would not heal, etc., for about fifteen months after the primary sore, and he acknowledged having been insufficiently treated "from want of time!" He had now occasionally crops of copper-coloured spots appearing on his skin; on the whole, however, the "active" manifestations of the disease had ceased for some years past. At present, he showed absence of knee-jerk in both legs; he had difficulty in holding and expelling the urine, looseness of the bowels, diminished sexual desire and power, Romberg's symptom, ataxic gait, and difficulty in going downstairs. In the upper extremities, the muscular force was considerable, as he squeezed the dynamometer to 160°, yet the fingers were numb. He had never suffered from lightning-pains or from constriction round the waist. While, therefore, the disease was no doubt owing to syphilis, yet the attack of diarrhoea may have aggravated the already existing malady.

We are on much firmer ground in discussing the influence of age and sex in the production of tabes.

With regard to the *age* at which the disease is most likely to break out, the statements of several observers are devoid of value, as they have only given the ages at which the patients came under care, and not those at which the first symptoms of the malady appeared.

In fifty-two cases in which I have been able to ascertain as nearly as possible the date of the outbreak of the disease, it occurred—

At 9 years in 1 case.				
Between 20 and 29 years in 9 cases.				
" 30 " 39 "	18	"		
" 40 " 49 "	13	"		
" 50 " 59 "	10	"		

At 60 years in 1 case.

My youngest patient was a girl, aged 9, who was sent to me by Dr. Horace Dobell, in July 1881. She had been staying at the seaside, and been paddling a good deal in the cold water with her naked feet, which was the only cause that could be ascertained. After a time, she experienced lightning-pains in different parts of the body, which were short, sharp, and agonising, and caused her to scream whenever a shock passed through her. When she came to see me, these shocks occurred chiefly in the left knee, where a stabbing pain was felt every

two or three minutes. The knee-jerk was absent in both sides. There were no other symptoms; and she did not appear to have ever been subject to symptoms of inherited syphilis. The pain resisted the use of nitrate of silver, in doses of one-eighth part of a grain, and the application of the constant current; but yielded completely to the use of ergot, in ten-minim doses of the liquid extract, thrice daily. I have not seen the little patient since, and am therefore unable to say whether the patellar reflex has returned.

The next youngest patient with tabes whom I have seen was an omnibus-conductor, aged 22, who came under my care at the hospital in February 1878. He had had small-pox ten years before, and a primary sore when seventeen years of age. He appeared to have had no secondary symptoms, but had an attack of hemiplegia of the left side two and a half years ago, being then in his twentieth year. He recovered from this completely in three weeks. In June 1877, he had an attack of double vision, which was cured at Moorfields. A week before he came to the hospital, he suddenly felt pain at the back of the head and down the neck, and a curious sensation of numbness in his face, which soon afterwards was drawn to the side. When I examined the patient, there were all the symptoms of paralysis of the left portio dura in the first portion of the Fallopiian canal, together with paralysis of the left rectus externus. The knee-jerk was absent in both sides. There could be no doubt that it was a case of commencing tabes; but it was difficult to say when this affection commenced, and whether it was already present when the patient had the stroke of paralysis at nineteen years of age, or whether the attack of double vision at twenty-one was the first symptom of it. An examination of the knee-jerk alone at the earlier period of his illness could have settled this question.

Another case in a very young man was that of a lieutenant in the Indian army, who was sent to me by Mr. Erichsen in April 1872. He was then twenty-three years of age, and had contracted syphilis three years ago. He had had an indurated chancre and bubo, and had subsequently suffered from severe ulceration in the region of the left shoulder, and from iritis. Symptoms of tabes appeared about twelve months ago, that is, at twenty-two years of age, and were more marked in the left than in the right side of the body. He was much troubled with numbness, particularly in the left foot; had difficulty in standing on the left foot, while he could stand tolerably well on the right; staggered when he was requested to close his eyes; and had much difficulty in walking slowly, while he could walk fast better. He then, however, had to manoeuvre considerably, and showed the characteristic gait of ataxy in the most unmistakable manner.

From the table which I have just given, it appears that tabes is most prone to break out between thirty and fifty years of age. The ages of the same patients at the time they came under my care were as follows.

At 9 years in 1 case.	
From 20 to 29 years in 3 cases.	
" 30 " 39 " 12 "	
" 40 " 49 " 21 "	
" 50 " 59 " 11 "	
" 60 " 69 " 3 "	
At 72 years in 1 case.	

Tabes is, therefore, in general a disease of the prime of life.

The oldest patient with unmistakable tabes whom I have seen was a gentleman aged 72, who consulted me in June 1881, and who had had syphilis thirty years ago. The first symptoms of tabes appeared in him three years ago. In the same month, I saw another gentleman, aged 66, a widower, who had had syphilis twenty-six years ago. He had remained well for sixteen years, and it was only then that the first symptoms of tabes presented themselves. At present, he shows all the usual symptoms of the disease confined to the lower dorsal and upper lumbar portion of the cord. Such cases, however, are exceptional.

With regard to sex, all observers are agreed that the male is much more liable to tabes than the female. I have never seen this disease in a lady, but a good many cases of it amongst the out-patients of the hospital. These were chiefly women who had to work in damp unwholesome shops, and some of them had had syphilis.

In conclusion, let me for one instant draw your attention to the practical deductions which appear to follow irresistibly from the facts I have brought before you. I hope I may have succeeded in showing that, in the vast majority of cases of locomotor ataxy, syphilis is the cause of the complaint—syphilis which has not been sufficiently treated in the beginning, and which might never have led to such results if it had been more energetically and perseveringly combated at the time of its first appearance. Allow me, therefore, most earnestly to entreat you to take syphilis well in hand at the earliest

stage of its appearance, when it is much more under our control than at a later period of its existence; and do not rest in your endeavours until you have good reason to believe that every germ and vestige of that horrible poison has been thoroughly uprooted and destroyed. Examine such of your patients as have had secondary symptoms, from time to time, for the knee-jerk, loss of which I believe to be the first symptom of tabes; and, should you fail to elicit it, take it as a warning that locomotor ataxy has pushed forward its outposts, and is on the point of invading the system. Do, then, your best to obstruct its further progress by every means in your power; and let us thus, by suppressing that terrible and painful malady, tabes, add one more triumph to the victories of preventive medicine.

THE FAMILY-HISTORY OF CANCER-PATIENTS.

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THE following remarks are based on the record of 132 cases of cancer under treatment at the Middlesex Hospital during the year 1882.

With regard to the occurrence of cancer, it was found that, in 34 cases of uterine cancer, there was a history of previous malignant disease in eight families, or in 23.7 per cent.; in 41 cases of breast-cancer, in ten families, or in 24.3 per cent.; in 28 cases of cancer of the tongue, mouth, and lip, in one family, or in 3.5 per cent.; whilst in 18 miscellaneous cancers, including 10 of the rectum, no history of any previous malignant disease could be obtained. Thus, of the whole 121 cases, there was a history of previous malignant disease in nineteen families, or in 15.7 per cent. Of former estimates, Mr. Sibley's was 8.7 per cent., and Mr. Baker's 24.2.

The hereditariness of cancer has been disputed by Mr. Harrison Cripps (*St. Bartholomew's Hospital Reports*, vol. xiv, p. 287, *et seq.*); on the strength of a calculation which, as he says, proves that cancer in the parent in no way increases the liability of the offspring to suffer from the same disease. This conclusion appears to me to be based on fallacious reasoning, and consequently to be erroneous. According to Mr. Cripps, the question is, does the proportion of cancerous parents of the cancerous exceed that of the non-cancerous? It seems to me a more correct statement of the question would be, Does the proportion of cancerous relatives of the cancerous, to those of the non-cancerous, exceed the proportion of the cancerous to the non-cancerous in the whole community?

The final step of the argument, based on these incomplete premisses, exhibits this imperfection—that the conclusion is arrived at by substituting for the latter part of the initial proposition, namely, for the proportion of cancerous relatives belonging to the non-cancerous, the death-rate from cancer among the whole adult population; but these two are not identical, and consequently they are not mutually interchangeable. I have failed to find the data requisite for the solution of this question in Mr. Cripps's paper. Sir James Paget's analysis of the family history of 147 cases of innocent tumours (*Medical Times and Gazette*, August 22nd, 1857) tells against Mr. Cripps's conclusion; for only 6.8 per cent. of them were aware of having had any cancerous relative, whilst 22.4 per cent. of the cancerous had one or more relatives affected with the same disease.

With regard to the occurrence of phthisis, it was found that in 34 cases of uterine cancer there was a history of phthisis in nineteen families, or in nearly 56 per cent.; in 40 cases of breast-cancer, in twenty-four families, or in 60 per cent.; in 27 cases of cancer of the tongue, mouth, and lip, in twelve families, or in 44.4 per cent.; in 10 cases of cancer of the rectum, in four families, or in 40 per cent.; and in 8 cases of miscellaneous cancer, in one family. Thus of the whole 119 cases there was a family history of phthisis in 60, or in about 50 per cent. Mr. Sibley found it in 48 out of 130 cases, or in nearly 37 per cent. In 15 of the above cases there was a history of both phthisis and cancer in the same family.

The relatives thus affected may be classified in this way: On the father's side, phthisis in 10 cases; cancer and phthisis in 2 cases. On the mother's side, cancer in 10 cases; cancer and phthisis in 1 case. In the patient's brothers and sisters, phthisis in 2 cases; cancer in two cases.

In 32 *post mortem* examinations, the lungs were found healthy in 3 only. The following lesions, not due to cancer, were revealed: old general pleuritic adhesions over both lungs in 9 cases; localised old adhesions, chiefly over both upper lobes, in 10 cases; old tubercular disease, chiefly of both upper lobes, in six cases. These facts, together with those of the family history, show plainly how thoroughly