CLINICAL LECTURE

ON

A CASE OF HEMIPLEGIA.

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LECTURE I.—(Concluded.)

Limbs.—The arm was not absolutely paralysed; it was much weakened. As most frequently happens, it suffered far more than the leg. That limb which has the more voluntary or more special uses, suffers the more. Whilst the patient was lying in bed, there was seemingly no loss of power in his leg; but, when we got him up to walk, we found that the leg was decidedly weakened, although he could walk without help. We ascertained two things, each equally important: first, that the leg was weakened; and second, that it was only slightly weakened. You are not warranted in saying that a patient's leg is not somewhat paralysed in a case of cerebral disease, unless you can get him up to walk and see that he walks well, however fully he may seem to move it in bed. Unless you bear this in mind, you will misinterpret your cases when you have obtained necropsies. You will infer, for instance, that a lesion found in the corpus striatum had caused paralysis of the upper, not of the lower, limb. This would be a most unfortunate mistake; it would encourage the popular notion that there are abruptly demarcated localisations of movements of the limbs—one centre for the arm, and another for the leg. The method of representation only approaches this. There are parts where movements of the arm and leg have respectively the leading representation. It is very rare indeed to find considerable palsy of the arm without some paralysis of the leg; not very rare to find that the leg has recovered whilst the arm remains paralysed. For not only does the stress of the palsy fall on the more voluntary limb, but that limb remains paralysed longer. This illustrates a rule, that the more automatic parts recover first. But, even when the patient is up and about, it is, I believe, very common for mistakes to be made as to the condition of the leg, or rather as to its condition relative to that of the arm. Let me give you an illustration. A hemiplegic patient, who had been in the hospital, and who came to show himself in the out-patient room, said that he had recovered much power over his leg, but not over his arm. The facts were exactly the opposite—viz., that he had regained scarcely any power over the leg; for, when I examined him, he could not move a toe, nor could he bend the knee, except to the most trivial extent. He had lost, or nearly lost, movements of separate parts of the leg. On the other hand, his arm had regained a good deal of power. He could move the arm a good deal, but he could not use it. He could scarcely move the leg—its separate parts—but could use it as a whole for walking long distances. The leg, when stiff, serves as a sort of crutch; it can be swung forwards, although its separate movements are almost extinct. But the delicately moving arm would be useless in this condition, and practically useless if the patient had much power over many of the coarse or very general movements of the limb, such as extension, flexion, etc. This case was not, as the one which is the text of this lecture was, according to rule: the leg suffered more than the arm, although, as I say, it seemed to suffer less. But there is in these exceptional cases some kind of order. When the more automatic limb (the leg) suffers more than the more voluntary limb (the arm), the rule is, that the more automatic part of the arm—its upper part—suffers more than the hand. To this rule there are numerous exceptions.

We could not determine defect of sensation in our patient. There was certainly no considerable defect of it.

Now let us see what we have got in this first degree of the common form of hemiplegia. There is paresis of the right side of the face, of the right side of the tongue (this we will infer), of the right arm and leg. This form of paralysis points to disease of the highest parts of the motor tract, and, considering that the arm suffered much more than the leg, and that speech was lost, to disease of the corpus striatum. I do not, of course, say to disease limited to that centre. And again I remind you that it points to nothing more than position of lesion. Hemiplegia is only a localising symptom; it does not point to the pathological process. The destruction of the corpus striatum causing such hemiplegia may be by clot, by softening, or there may be exhaustion of the nerve fibres and cells of the organ from a strong epileptic discharge (epileptic hemiplegia, see page 69). In the last case, the

disease you* might discover at the necropsy would not be in the corpus striatum, nor in the motor tract; it would be in the convolutions. But then the disease you discover in such cases is not the direct cause either of the convulsion or of the hemiplegia. In fact, the disease in the convolutions, so far as it destroys, causes no symptoms. The direct cause of the convulsion is a discharge of highly unstable grey matter—grey matter about the disease you discover. The paralysis is, I believe, a result of exhaustion of the corpus striatum, through which organ the strong discharge has passed during the severe convulsion. So, according to this speculation, epileptic hemiplegia is really a "corpus striatum" hemiplegia. It is evident, anyhow, that the disease in the convulsion is not the cause—the direct cause, that is—of the hemiplegia, because the patient is only paralysed, and that temporarily, after a discharge—after a convulsion. The disease you discover exists in intervals when there is no paralysis at all.

The statement I made as to the parts paralysed in hemiplegia gives them in geographical order. We say the patient has lost power in the face, tongue, arm, and leg. Another and more useful, although unfamiliar, way of putting it, is to say that the hemiplegic patient has lost a quantity of movements, and that these are the most voluntary movements of the body—of one side of the body, that is. He preserves the more automatic movements—those of the trunk, etc. We saw, too, that our patient had lost the most voluntary movement of his tongue, retaining the automatic. We may make this very general remark that, from destroying lesions of the cerebral nervous centres, parts suffer the more as they are voluntary or special, and the less as they are automatic or general. Recovery follows the reverse order: the more automatic parts recover first. We shall have further illustrations of this principle as we go on. We shall see, I think, that we have in it a clue to the explanation of the whole of the condition of the aphasic patient, and to a knowledge of the nature of the duality of the brain and mind. The aphasic patient, like the hemiplegic patient, and, we may add, like the insane patient, is reduced to a more automatic condition.†

Second Degree of Hemiplegia.

We now pass to that hemiplegia of greater range, which I shall call the second degree of hemiplegia, or, as I sometimes say, complete hemiplegia. Our patient's hemiplegia was as complete in range as we usually see hemiplegia. His face, tongue, arm, and leg, were paralysed on one side. But, from a graver lesion than that our patient had, there is a compound effect; there is not only (1) increase in the paralysis of the face, arm, and leg, but also (2) spreading of palsy to more automatic parts. Thus the shoulder and trunk muscles of the right side are involved. There are also certain other prominent and very interesting symptoms which show extension of paralysis to movements of more automatic parts.‡ These are (a) deviation of the two eyes, and (b) of the head—in both cases, from the side of the body paralysed. The following is a list of the chief symptoms in complete hemiplegia (those additional to symptoms in the first degree of hemiplegia being in italics).

1. *The head turns to the left.*
2. *Both eyes turn to the left.*
3. *The muscles of the chest and belly are weakened on the right.*
4. *The muscles passing from the trunk to the right limbs are paralysed.*
5. The face is paralysed on the right side.
6. The tongue, on protrusion, turns to the right.
7. The right leg is paralysed.
8. The right arm is paralysed.

The turning of the eyes and of the head is from the side paralysed, as is that of the face. One or both of these symptoms may be present when the lesion is a very grave one. With regard to one of these deviations, it is very plain that we have not to speak of paralysis of ocular muscles, but of loss of special movements of the eyeballs. The lateral deviation of the eyes, for example, is not due to disease of any of the

* It is implied in the text that we do not always discover local disease of the brain, post mortem, in cases of convulsions, in which the paroxysms began locally and were followed by temporary hemiplegia. I have seen two cases in which there was no local disease, but generally wasting of both sides of the brain.

† See "On Voluntary and Automatic Movements" in the JOURNAL, Dec. 2, 1871, p. 641.

‡ For verbal convenience, we continue to suppose the right to be the side of the body affected.

§ Lateral deviation of the eyes in cases of hemiplegia was first described by Vulpian. Prévost has written a most valuable monograph on the subject (*De la Déviation conjuguée des Yeux et de la Rotation de la Tête dans certains cas d'hémiplegie*). In this country, cases have been reported by Humphry of Cambridge, Lockhart Clarke, Hutchinson, Broadbent, Russell Reynolds, and myself (*London Hospital Reports*, vol. iv, 1868). I am surprised that Vulpian and Prévost's researches on ocular deviations have received so little attention in England. Ocular deviation is a most important symptom both clinically and physiologically.

¶ The word *grave*, as previously remarked (p. 70), includes two factors—size of lesion (quantity of nerve-tissue destroyed) and suddenness of lesion (rapidity of destruction). The element of suddenness is a very important one. As Prévost remarks, the deviations mentioned in the text usually accompany "brusque" lesions.

ocular nerve-trunks nor of their branches, nor even of their "deep" origins in the pons Varolii or crus cerebri. The lesion is far higher: in the case supposed, it is in the brain. There is loss of that *movement* which turns the two eyes to one side. Speaking metaphorically, there is loss of a chord, not loss of a few notes.

We see that the order we have mentioned for the involvement of parts (from the voluntary or special to the automatic or general) is respected in the second degree of hemiplegia. The loss of movements of the two eyes and of the head, and the weakness of the side of the chest, show extension of palsy beyond the paralysis of the most voluntary parts (face, arm, and leg) to movements next most voluntary, or, in other words, to movements next least automatic. A lesion of the first degree of gravity produces paralysis of the face, arm, and leg: one of the second degree of gravity has a compound effect; it both leads to more decided paralysis of the parts I have just named, and adds on the additional symptoms (those mentioned in italics in the list). Never forget that the separation into three degrees of gravity is artificial. Thus there may not be deviation of both the eyes and of the head, but of one of these parts of the body only, and significantly it is then of the eyes: the more special of the two movements suffers. If we take the ocular deviation, we see that the physiological order prevails here. It is the most important of the ocular movements which is lost.

As to the palsy of the trunk, we often observe that the two sides of the chest appear to act equally until the patient is told to draw in his breath; then the chest on the paralysed side lags behind, there is less expansion, and the movement seems to begin later. Some years ago, Dr. Broadbent put forward the hypothesis that the bilaterally acting muscles—the thoracic muscles, for example—escape in hemiplegia, because they are doubly represented, these muscles of the two sides of the body being represented in each side of the brain. I adopted this hypothesis, and still think that the principle of it is correct; for, although in some cases of hemiplegia there is, as above remarked of the chest, one-sided weakness of those muscles which must act bilaterally, this weakening is only found soon after the paralyzing lesion, and in cases of grave lesions. Broadbent's hypothesis is, I think, correct, so far as this, that in destroying lesions of the brain, movements of one side suffer the less the more their normal action is with those of the other side of the body. This hypothesis accounts, I think, for the "thick speech" (see p. 71) in bilateral lesions of the higher divisions of the motor tract.

The order of recovery in cases of complete hemiplegia illustrates well the principle, that the more automatic or general parts recover before the more voluntary or special. This is saying, in effect, that the lateral deviations pass off first. These symptoms are, indeed, mostly very transitory; they pass off in a few hours* or days. But since they are usually produced by a grave lesion, they are signs of ill omen; the patient who has had them is not, except in cases of epileptic hemiplegia, likely to get rid of the rest of his paralysis.

We will now recapitulate and add further remarks on the physiological significance and clinical value of these lateral deviations. 1. They are signs of a grave, that is of a large and sudden, lesion. 2. They are usually transitory; they last a few hours only, or a few days. 3. The deviation of the eyes may occur without deviation of the head. 4. When, soon after the seizure, the paralysed arm or leg, or both, become very rigid, the head and eyes may turn with the face to the paralysed side, just as they turn to the side convulsed at a certain stage of convulsion beginning in the face, hand, and foot. 5. They occur with lesions of or on the surface—meningeal hæmorrhage, for instance—as well as with lesions of the corpus striatum or optic thalamus. Observe, also, 6, lateral and other conjugate deviations of the eyes occur, with lesions of other parts of the nervous system, with lesion of the crus cerebelli,† for an example.

Third Degree of Hemiplegia (degree beyond) Hemiplegia.

I shall do little more than mention the symptoms in the third degree. There is no discoverable hemiplegia, so that the term hemiplegia becomes a misnomer. There is universal powerlessness, paralysis of both sides of the body, or, as we may say, there is Complete Hemiplegia *plus* paralysis of the other side of the body. Bearing in mind the principle several times mentioned, we see that the patient is "reduced" to a condition so automatic that the only obvious action, and that imperfect, may be of parts so automatic as those of respiration and circulation.

* I have recorded a case of extensive softening in the region of the middle cerebral artery, in which case the deviation of the two eyes lasted three or four weeks, until death. (*London Hospital Reports*, vol. iv, 1868, p. 355.)

† The symptoms of complete hemiplegia are interesting, as showing that there exists in the cerebrum an anatomical connection betwixt the most special movements of our eyes and the most special tactual movements—viz., those of the hands. My speculation is, that the ocular movements concerned in estimating distance are represented in the cerebellum, along with our locomotor movements.

When both sides of the body are paralysed from a grave cerebral lesion, it is difficult to demonstrate paralysis anywhere, because stimulation everywhere leads to no reaction. Besides, a very grave lesion produces loss of consciousness. We can well understand that the condition produced by a large clot suddenly effused in the pons Varolii, or in but one side of the brain, is scarcely to be distinguished from opium-poisoning. It is convenient, however, to speak of the results of a very grave lesion in one side of the brain as a third degree of hemiplegia; for the universal powerlessness is, I think, really a degree beyond the second degree of hemiplegia, and depends on lesion of that one side of the brain. It is clear that both sides of the body are represented in each side of the brain; for, after old lesions of one of the corpora striata, wasted fibres are traceable into each side of the cord.* But one side of the body (that on the side of the lesion) is much less represented than the other side, and hence, if the patient, who is universally powerless from a very grave lesion in his left corpus striatum, does not die apoplectic, the limbs on the side of the lesion (the left limbs) recover early, but he remains paralysed of the right side.

These facts, as to representation of the two sides of the body in each side of the brain, are not only very important in leading us to a proper explanation of those convulsions which, beginning *deliberately* on one side, become universal, but as leading on to an explanation of those convulsions which, affecting one side only a little sooner and a little more than the other, are often called general convulsions, or, under certain clinical circumstances, "idiopathic epilepsy". I believe there is also in these last-mentioned cases discharge of some part of but one cerebral hemisphere—of that hemisphere opposite the side of the body to which the epileptic patient's eyes and head turn at the onset of the paroxysm.

"Vital" Symptoms in Hemiplegia.

So far, we have spoken of the gross movements of the body. We have omitted certain very important symptoms. There are other movements than those of the limbs and trunk—other movements than those which are visible. There are movements of the arteries and of the heart. That these movements are represented in the brain, even in the convulsions, I have long held. Indeed, it seems to me that cases of disease, especially cases of *petit mal*, show that the anatomical substrata of consciousness, and these will be of convulsions, sum up, and, as it were, potentially contain all lower processes; they re-represent the whole subject. The anatomical substrata of consciousness are, of course, the highest and most special of all nervous processes. In a case of *petit mal*, in which loss of consciousness is the earliest event, there must be implication of those most special nervous processes. Now, in such cases, there is not loss of consciousness only, but there is great pallor of the face. Otherwise put, discharge of the very highest of all nervous processes produces, not only a most special loss, but also effects referable to parts so automatic as the circulation. Similarly from such destroying lesions as clot, affecting the highest centres (of the corpus striatum and adjoining brain we are supposing in this lecture) there occur "vital" symptoms. There are alterations of circulation, respiration, and temperature. I say "alterations" because, soon after the lesion, there is slow and shallow respiration, the pulse is slow, and temperature is abated; whereas, after some time (it varies greatly), the respiration is quick, pulse swifter and irregular, and the temperature is raised. In accordance with the principles enunciated several times in this lecture, these most automatic processes only suffer in very grave lesions. They are little marked in the first degree, more in the second, and most in the third degree of, or rather degree beyond, hemiplegia. They pass off soon, thus illustrating the principle that the more automatic parts recover first. I cannot do more now than urge you to pay attention to these "vital" symptoms, as well as to the gross symptoms. To consider them here would lead me too far from my special task. What I would strongly urge is, that they should be studied, not only from cases of "destroying lesion", such as cerebral hæmorrhage, but from cases of "discharging lesion". They are of great importance in prognosis.

Loss of Consciousness.—There is one other symptom which often attends hemiplegia—loss of consciousness. I shall speak of it very briefly. The definition I would give of this is that it is loss of use of the highest (most special) of all nervous processes; and, as before mentioned, I hold that these processes are evolved out of, and as it were

* The facts of convulsion from disease of the cerebral hemisphere are quite in accordance. There may, indeed, be taken three arbitrary degrees of convulsion, beginning unilaterally, corresponding to our three arbitrary degrees of hemiplegia. In the third degree, the convulsion, beginning on one side, reaches the other side—it becomes universal. This indirect evidence of the representation of the two sides of the body in each side of the brain is important, because a very large clot in one side of the brain squeezes the other side, and a large clot is the commonest cause of the third degree of hemiplegia.

potentially contain, all lower nervous processes. On this view, you will see that the distinction of cases into epileptic and epileptiform, grounded on the presence or absence of loss or trouble of consciousness, is arbitrary, and without anatomical and physiological warrant. It is, I consider, an error to suppose that the nervous processes underlying consciousness are *sui generis* and abruptly separate from all others.

I have used the general expression loss of use, because the nervous processes underlying consciousness may be put out of use by very different pathological processes. Here, particularly, I would urge you to keep the physiological condition separate from the pathological process. Just as hemiplegia may be caused by anything which puts the corpus striatum *hors de combat* (clot, softening, tumour, strong epileptic discharge); so loss of consciousness may be caused by anything which puts the highest nervous processes *hors de combat* (clot, softening, severe squeezing by tumour, and epileptic discharge). Whether, in a case of cerebral hæmorrhage, the loss of consciousness is due to shock, to squeezing, or to arterial anæmia, is a question in pathology; the physiology of loss of consciousness is clear. Of course, I do not locate consciousness so geographically as I try to do the representation of the limbs and face. Consciousness will be lost in any "grave" lesion of the brain on either side. For, since the processes underlying consciousness are the highest of all, and are evolved out of and re-represent all lower processes, the loss, especially the sudden loss, of any important, although subordinate, part of the brain would entail loss of consciousness. I do not wish to consider this subject further at present.

ON HABITUAL DRUNKENNESS:

Being the President's Address, delivered at the Annual Meeting of the Birmingham and Midland Counties Branch.

By WILLIAM C. GARMAN, Esq., Wednesbury.

GENTLEMEN,—One of the objects of our annual inaugural address is to mark a fresh starting point in what we hope and expect will be a fresh career of usefulness; not necessarily entailing the promulgation of anything absolutely new, or advancing opinions on which we are not for the most part in accord, for it is almost inevitable that on an occasion of this kind, that ground must be traversed which others have gone over before.

The British Medical Association is now the only recognised representative organisation of our profession, and any influence that is brought to bear on the powers that be for the public weal must almost of necessity come from this source. Hence, it has its grave responsibilities as well as its privileges and honours. Feeling that, at the present political juncture, there arises an opportunity for directing attention to much that remains to be done in matters, connected with which the State and our profession hold important relations, must be my apology for selecting Public Medicine as part of the subject matter of my remarks; not that its want of importance requires any apology, only that so much has been said of late on some departments of this subject that it savours of being somewhat overdone, when only a moderate amount of good has really been achieved.

I first propose to speak to you on a subject which, perhaps, more than any other, places members of our profession in the most difficult and painful position; of a class of cases which, perhaps, more than any other, gives us the most trouble and anxiety, and in the present state of legislation finds us almost powerless for good. I refer to the habitual drunkard or dipsomaniac. When I remind you that it has been ascertained, on pretty accurate data, that in England and Scotland there are 600,000 of these cases; that there are, moreover, 60,000 lunatics, and that 60,000 lives are lost annually in England, caused by accidents or disease the result of drinking, I feel sure I can urge the vast importance of the subject if any excuse were necessary for bringing it under your notice.

The recognition of the drinking habit as a disease, the proper care and treatment of the dipsomaniac, and the alleviation of his condition has been left as a legacy by the lamented Donald Dalrymple (whose efforts on this behalf were most untiring and praiseworthy), to be dealt with by his professional brethren. From an extensive observation of the "confirmed habitual drunkard", I have become convinced that it is neither more nor less than a psychological condition to be described by no other word than mania. And I suppose that such is the opinion of the majority of gentlemen whom I am now addressing; and yet it strikes me as singular that, although this opinion is held by the greater number of our body, so little has been said or written on this subject. The recognition of the drinking habit as a disease, was brought prominently

before the profession sixteen years ago by Sir R. Christison, in an admirable address delivered before the Royal College of Surgeons of Edinburgh, although attention appears (according to that gentleman) to have been first directed to it as long since as 1817 by Salvatori, a physician of Moscow, in a treatise read before the Physico-Medical Society of that city, entitled "De ebriositate continuâ, remittente et intermittente", in which he speaks of the singular malady arising from excessive drinking, which he calls "furor bibendi", and gives the following graphic description of the symptoms of an approaching attack of periodic ebriosity. First, in the morning, while the stomach is empty, there are sickness, belching, salivation, trembling of the extremities, giddiness, languor, and general discomfort. By and bye, the appetite fails; sleep is short and disturbed; an indefinable misery arises, rendering life itself a burthen. At this stage, the habitual intoxicating cup thrusts itself perpetually on the thoughts, gradually so occupying them as to exclude all other ideas, and now the resistance and prayers of the patient's friends are of no avail. He declares he is driven by irresistible necessity to strong drink, and will go mad without it; he drinks, and at once rushes into intoxication. Forthwith vanish all his precursory miseries. His low spirits disappear; nausea ceases; if he never sleeps, it is without fatigue; if he is always on foot, his nerves are strong for the toil and feel it not. The first two or three days are days of joy. But soon he begins to storm and rage if drink be not continually at hand. The eyes are staring, and the eyelids never closed; he often sees double, and distant objects dimly; he stammers in his speech; the mind wanders; gloom again possesses him; and he bewails his unhappy lot. The stage of drinking being at last at an end, he vomits an acid acrid mucus; detests strong drink, recovers soundness of mind, and condemns remorsefully his own weakness. Languor follows great prostration; heavy sleep, profuse sweating, often spirituous in odour, acrid diarrhoea, and tenesmus, with a feeble pulse, intense headache, and thirst, and tremor of the hands, especially after drinking cold water. The paroxysm is now over.

Salvatori goes on to say that the mind, though generally impaired in those afflicted with ebriosity, is not so perverted that it should rush of itself to destruction. On the contrary, men of great intelligence, guided in all other things by the dictates of wisdom and prudence, are seen to succumb to this calamity. It can scarcely be doubted, therefore, that some fundamental infirmity lurks not in the mind but in the body, affecting the mind secondarily and inducing a true insanity. With regard to the seat and nature of this bodily infirmity, he confesses that it is somewhat hypothetical; but he considers that the symptoms of the disease and their course point to an affection of the nervous system, in all probability to "a disordered state of the ganglionic system of nerves, such as is witnessed in some cases of parasitic affections". With regard to remedies, he speaks of having used wild thyme.

Here, then, we have the symptoms, progress, pathology, and treatment of one form of this malady brought before the profession by a foreigner nearly sixty years ago. And, despite the interest of the subject, whether taken from a scientific, moral, or political point of view, it is only by fits and starts, as it were, that we hear anything of the question. If our leading psychologists are right—and our profession, as a body, for the most part admit this fact—the necessary sequence is that gross injustice is being done to thousands of our fellow men and women. The victim of this disease, being as powerless of himself to help himself as any patient that ever entered a lunatic asylum, should, in my opinion, be dealt with and provided for as carefully and efficiently.

Drunkenness, as a vice or vicious habit, is principally confined to the accidental inebriates—those who become drunkards of their own will, those whose brutal instincts, governed by uncontrolled passions, override their intellectual faculties. These have been quaintly described as sporadic or accidental drunkards, whose vice arises from a want of education and bad company, and is not the result of hereditary taint or diseased mental organisation. I would draw a wide distinction between the drunkard who is such in accordance with his own volition, and the inebriation of disease, which has its cause, symptoms, diagnosis, and treatment as clearly marked as a case of pneumonia.

Dr. Christison's definition of a dipsomaniac is the best I know. He says: "He is not merely the ordinary or habitual drunkard, but the drunkard whose avidity for strong liquors has reached such a height as—1. To cease to be controllable by every plain, powerful, moral, and religious consideration; 2. To overwhelm the mind in frequent or continuous intoxication; and 3. To occasion danger to his affairs, or family, or both—it then should be considered as a disease, and treated as an insanity."

The drinking habit or alcoholic diathesis is confined to no one class of society. I have seen it in the professional man, the educated man, down to the working labourer who toils for his daily bread. It has come under my observation in ladies of culture and refinement. I have