

*Recent Contributions to the Pathology of Nervous Diseases.**

WHEN we reflect that the sciences of astronomy, physics, and chemistry have only recently got rid of the metaphysical spirit, we cannot wonder much that physiology is not yet entirely emancipated from the pernicious thralldom. It was plainly impossible that physiology should be cultivated in the spirit of the positive method of investigation while the sciences upon the advance of which its advance is dependent were not sciences at all, but clouds of idle and shifting fancies. But there has been another and weighty reason why the science dealing with the structure and functions of the organism has remained so long in a metaphysical bondage: because psychology, the last stronghold and the forlorn hope of the metaphysical method, is an important branch of it. Metaphysicians have for at least two thousand years been supremely self-satisfied to evolve, from the unfathomable depths of the inner consciousness, ingenious mazes of vague and ill-defined words which they have dignified with the name of mental philosophy; and the consequence has been that the physiologist, when he came in the course of his inquiries to the brain, contented himself with the anatomical description of it, and never dreamed of studying its functions as the mental organ. By a prescriptive right, sanctioned by the authority of generations, mind belonged to the metaphysician; and it naturally seemed sacrilegious to venture a scientific step in such holy ground. Not only so, but the mischievous influence of the metaphysical spirit spread beyond the department of psychology, and infected more or less strongly all physiological inquiries. However, this state of things could not last in face of the active progress of positive science; the organs and functions of the body became objects of positive investigation, and even the brain no longer escaped scientific study. So it has come to pass that the germs of a mental science having a physiological basis have appeared, and now threaten to disturb the ancient ascendancy of metaphysical mental philosophy. The present position of matters is this: there are two systems of philosophy dealing with the same subject, but not having the slightest connection one with the other, and cultivated according to different methods by different men—metaphysical mental philosophy and positive mental science. A man might be deeply learned in all the wisdom of the former, and yet entirely ignorant of the very meaning of the simplest facts of the latter. It is hardly worth while considering seriously at

* 'Observations on the Pathology of Diseases of the Nervous System,' by Samuel Wilks, M.D.; 'Guy's Hospital Reports,' 1866.

the present day which of these rival systems is likely to prevail over the other; one of them is the latest issue of the advance of positive science, has its foundations deep rooted in the relations of natural laws, and exhibits a promising growth; while the other has moved in an everlasting circle, has no better foundations than the clouds and conceits of men's thoughts, and exhibits symptoms of active decay. Now and then it is skilfully galvanized into a spasmodic semblance of life, but each artificially excited convulsion is plainly the forerunner of an increase of the inevitable paralysis. Much remains to be done, however, before we can claim acceptance for a positive mental science. Not only is our knowledge of the structure and functions of the brain very defective, but there is nothing like exact information to be had regarding its pathology. It has been the fashion to give the name of some disease to a group of symptoms, without attempting to connect these with particular diseased states of the nervous centres. The pathology of all the diseases of the nervous system is, it must be confessed, in a most unsatisfactory condition.

What then, briefly summed up, have been the errors of times past, and what are the hopes of time to come? The errors of the past have been these: first, that metaphysicians have usurped the whole domain of mental phenomena, and have reared therein an unreal system of philosophy such as they reared in every other department of nature until they were forcibly driven out of it; secondly, that the physiologists, imposed upon by the pretensions of the metaphysicians and weighed down by the metaphysical conception of mind, have not dared to apply to mental function and to the brain as its organ the positive method of investigation which they applied with success to other organs and their functions; and, thirdly, that pathologists, influenced by the superstitious feeling of mind as an incomprehensible mystery as well as by the vast difficulties in the way of the study of the pathology of nerve element, have made little or no use of the great quantity of instructive material lying ready to their hands. What are the hopes of the future? They are these: first, that metaphysics, having played out its part, is now passing quickly off the stage; secondly, that an inductive psychology, founded on the faithful observation of nervous and mental phenomena, is coming on the stage; thirdly, that physiologists and physicists are now earnestly devoting themselves to a close study of the different parts of the nervous system with their different functions, and to the investigation even of the intimate conditions of activity of nerve element; and, lastly, that pathologists are likewise zealously engaged in tracing the connection between particular diseases and morbid states of the nerve centres, and in researches into the nature of the morbid changes. Thus the labours of psycho-

logists, physiologists, and pathologists are converging to a focus, and bid fair to meet ere long in a fruitful harmony of action.

The contributions, by Dr. Wilks, to the pathology of nervous diseases in the last volume of the *Guy's Hospital Reports* are an important effort to place the classification of them on a scientific basis. They cannot fail, therefore, to be of great use indirectly to psychological and physiological progress, as well as directly to increase our pathological knowledge and to render it more available by a better method of classification. We propose, then, on the present occasion to give an abstract of the results of Dr. Wilks's studies of nervous diseases, interposing such commentaries as may suggest themselves.

Disease of the central ganglia; hemiplegia.—An alteration in structure leading to a loss of function of the corpus striatum and thalamus opticus—whether the alteration be due to softening, effusion of blood, or embolism of the middle cerebral artery—produces a hemiplegia of the opposite side of the body, but no disturbance of the intellectual faculties. Although the term hemiplegia denotes that one half the body is paralysed, it is not really so; the trunk is unaffected, owing to the centres of the pneumogastric and other respiratory nerves being in the medulla, and escaping injury. In like manner the mind remains unaffected, because the nerve centres of intelligence, consciousness and will—the cerebral hemispheres—are not implicated in the mischief. An interesting question here presents itself: can the will act directly upon the uninjured nerve centres of the non-paralysed parts, or can it act on them only indirectly through the large ganglia? In other words, is there a direct communication between the uninjured centres that lie below the damaged ganglia and the supreme hemispherical centres or not? Anatomists teach that there is such a direct communication by which an immediate influence may be exerted; but clinical observation has not yet given decisive information on the point. Dr. Wilks concludes, that if the will continues to influence the movements of the chest in a hemiplegic person (of which he cannot speak with certainty), “either there must be some connection between the seat of volitional power and the centres of the chest nerves, independent of the large ganglia, or else the regulating centres must be so associated that a stimulus to one side can affect both.”

The loss of speech which so often accompanies right hemiplegia is not easily explained. Dr. Wilks, however, thinks there is much truth in the ingenious theory propounded by Dr. Moxon: that it arises from the two halves of the body being unequally educated, or rather from one half being specially educated, as is notably the case in writing and in many movements of the limbs. When a person has hemiplegia of the right side he cannot write, the guiding power

which appears to exist only in the left corpus striatum being abolished by the disease. Were it possible to put the right corpus striatum in the place of the left, would he then be able to write? Probably not; and why? Because the right corpus striatum has not been educated for that purpose. In like manner it is supposed that one half the brain is specially educated for speech, which will accordingly be abolished by a certain amount of disease on the left side. To us this hypothesis, ingenious as it is, appears to be without real foundation; and if we were to make any comparison of the action of the two halves of the brain, it would rather be with the action of the two eyes. A person may see with the one eye, or with the other eye, or, as he usually does, with both eyes; and so we believe that a person may think with one half of his brain, or with the other half, or with both halves, and that speech, in its mental aspect as the expression of ideation, is coextensive with thought, and by no means confined to either side of the brain. Besides, if the hypothesis be true, what becomes of the statement systematically made, and not contradicted, that one hemisphere of the brain may be entirely destroyed without injury to the intellectual life; the only noticeable consequence being a greater irritability and an earlier exhaustion from exercise in some cases. Lastly, how is the hypothesis to be reconciled with the undoubted existence of loss of speech in some cases of left hemiplegia? Was the patient *right-speeched*, not otherwise than as a person is sometimes left-handed? Other objections might be made, some of which will be found in Dr. Alexander Robertson's thoughtful paper on "The Pathology of Aphasia" in the last number of this Journal; but the fundamental one is the absence of any real analogy between loss of the motor power of writing and loss of speech as a mental faculty. Dr. Robertson thinks it "inconsistent with the general plan of nature that a part should have been created simply to remain in an undeveloped condition," as Dr. Moxon's hypothesis assumes certain parts of the right side of the brain have been. We should not attach much importance to this argument, not being wise enough to know what is the general plan of nature, nor acute enough to see that it is inconsistent with nature's plan to do many things without any useful purpose. In fact, those who think of the mammary gland and the nipple in the male animal, or of the abortive brain of the congenital idiot, or of a hundred other such instances of nature's useless fertility, may be disposed to sympathise with Geoffrey St. Hilaire, when he says—"I cannot make of nature an intelligent being who does nothing in vain; who acts by the shortest mode; who does all for the best." Nature, struggling as man does through failures to success, makes many bumbles, some of which men mend by means of art; but as man is a part of nature, it is after all

nature which "makes that mean" and therefore in the end mends herself.* Only we should take care in our reflections to allow long enough time for this improvement and development: without question nature's skill is greater now than it was five thousand years ago—her lands everywhere decorated with a more beautiful art, and covered with more various and more fruitful crops, and her children stronger, better and wiser; and she is still only in her early youth. What are a few thousand years in the history of a development where centuries are but seconds? We must beware then of limiting nature's doings by our ideas of what her plans are, or of attributing a perfection as end to what may be only means in a developmental progress. In her failures and blunders there is the earnest of a new success; in her successes, the presage of new failures on a higher platform of development; the rudimentary organ of one animal is the prophecy of the higher animal in which it shall arrive at its full development; the fully developed organ of the lower type marks a grade of development again to be witnessed in the degenerate organ of the higher type. Not to ramble further in this digression, however, let us return to the other arguments which Dr. Robertson uses against Dr. Moxon's theory. "Besides, as his theory is based on the greater attention to the movements of the right hand than the left—arguing from that fact a probably greater attention to the right side of the tongue than the left (memory accumulating on the left side of the brain, where he thinks attention is fixed)—it follows that left-handed people ought, when aphasic, to have their hemiplegia on the left side, which *possibly* is the case. Again, how does it happen that even after nineteen years, as in one of my cases, during which, according to the theory, attention ought to have been transferred to the left extremities, memory has not gradually grown up in the right hemisphere?"

When brought face to face with a person suffering from loss of speech, the first question plainly is to determine what is the loss. Is it a loss of the power of giving articulate utterance to the ideas, of making the vocal signs of them; or is it a loss of speech on its mental side—in other words, of ideational function? It is quite possible for a person to lose the power of expressing himself by

- * "*Perdita*. For I have heard it said,
There is an art which, in their piedness, shares
With great creating nature.
- "*Polixenes*. Say there be;
Yet nature is made better by no mean,
But nature makes that mean: so, over that art,
Which, you say, adds to nature, is an art
That nature makes.
- This is an art
Which does mend nature,—change it rather; but
The art itself is nature."—*Winter's Tale*.

speech without the intelligence being at all affected, the ability to express himself by writing remaining: he loses the mechanical power of registering his thoughts in a certain way by reason of damage to some part of the instrument which he has to use. Either the communication between the ideational centres and the motor centres of speech is interrupted; or the mechanism of the motor centres in which reside the motor intuitions of speech is damaged and their functions suspended; or the communication between the motor centres and the muscular apparatus is cut off. In all these cases the lesion is a motor one, and the question a question of paralysis, just as it is when power of writing is lost in consequence of right hemiplegia. And as in some cases of hemiplegia a strong emotion may suffice to move a paralysed limb when no effort of the will can move it, so here a strong emotion may sometimes enforce its expression in speech when volition cannot.

Now, before saying anything of loss of speech in its intellectual aspect, let us ask what are the probable motor centres of speech—what are the motor nuclei in which are stored up the residua of all the previous motor acts of speech? * Some seem inclined to believe that the corpora striata contain the motor nuclei of speech, and that therefore it is that loss of speech so often accompanies hemiplegia depending on injury to the corpus striatum. Dr. Jackson, whose labours in the study of the different forms of paralysis are so well known, would probably suppose that disease of the left corpus striatum producing right hemiplegia must cause a loss of the power of articulation; and with this view Dr. Wilks apparently coincides. But there are no arguments, so far as appear, affording support to the opinion that the motor centres of speech are situated in either corpus striatum, while there are reasons for believing that they are not so placed. Disease of the corpus striatum and hemiplegia occur without any loss of speech; and loss of speech occurs without disease of the corpus striatum and hemiplegia. Where then are these centres situated? In reading Dr. Wilks' remarks, it has been a surprise to find no reference to the views of Schroeder van der Kolk on this subject. Arguing from the facts—(1) that the two corpora olivaria are reciprocally united by a considerable number of fibres, arising from their ganglionic cells and perforating the raphe; and (2) that the corpus olivare of each side is closely connected with the nucleus from which the hypoglossal nerve of the same side originates, that eminent anatomist concluded that the corpora olivaria presided over the movements of the tongue in articulation. This view is confirmed in some measure by comparative anatomy;

* *The residua of the motor acts of speech*:—These are the foundations of what may be called the *motor intuitions* of speech—what have been designated by the Germans *Bewegungsanschauungen*. For a fuller account of this department of the mental functions than would be proper here, I may refer to the chapter on "Actuation" in my work on the *Physiology and Pathology of the Mind*.

for the corpus olivare exists only in a small number of animals—only in mammalia, and is most developed in man, the apes coming next in order. The facial nerve has connection with it through a group of ganglionic cells or *auxiliary* ganglia on a level with the nerve and closely connected with its nucleus—a circumstance which may afford some reason to suppose that the loss of speech and the facial paralysis accompanying hemiplegia are concomitant effects of a common cause, whether this be the direct encroachment of disease or some secondary consequence of it. If the hypothesis of Schroeder van der Kolk be true, a question will arise, whether the will can act directly upon the corpus olivare, or whether it can act only through the corpora striata. It is indeed a part of the larger question whether all the fibres of the sensori-motor tract end in the thalami optici and corpora striata, new ones starting thence to go to the hemispherical cells, or whether some pass directly onwards to the surface of the brain. It may well be that all the nerve fibres from the limbs end in the thalami optici and corpora striata, and yet that there is direct communication between the grey surface of the hemispheres and the special nuclei, motor and sensory, that lie in the cerebro-spinal tract below these ganglia.

Coming next to the consideration of speech in its mental aspect, is it really a matter for serious discussion whether the faculty of it is placed in a particular part of a particular convolution on one side of the brain? If it be so placed, then it is an unavoidable psychological corollary that thought is located there also—a *reductio ad absurdum* which might well stagger the hottest theorist. When the mental faculty of speech is affected, the defect is not a motor one, nor is the question one of paralysis (although it is possible there may be paralysis of speech also), but the defect is mental, and the question is one of ideational disturbance or deficiency; the loss or disorder of speech being an index marking the degree and kind of the mental failing. For a man to exhibit intelligent utterance under such circumstances would be very much as if the notes of a piano were to go on vibrating in the harmony of a tune after the player had ceased playing, or when his fingers were striking discords. In how many cases of hemiplegia without loss of speech does the mind escape entirely? Is it not the usual fact that, though consciousness remains, the memory, the emotions and the mental power, are more or less affected in hemiplegia? Superadd loss of speech to the mental failing, or suppose a greater degree of secondary disturbance produced in the supreme centres of intelligence by the primary mischief in the corpus striatum, and we may conceive the conditions of any sort of imbecility of thought, memory, and expression.

But, it may naturally be said, the foregoing observations can have weight only on the supposition that the observations and inferences

made respecting loss of speech and disease of the left corpus striatum, or of the left frontal convolution, or of both, have no weight. True: the frequent association of right hemiplegia and loss of speech counts for nothing as an argument in favour of the conclusions which have been based upon it, so long as cases are met with, as they certainly are, in which there is left hemiplegia with loss of speech. A generalisation is unsound which is met by a positively contradictory instance, when that instance cannot be explained by any variation of circumstances intervening to disturb the operation of the general law, and thus, by accounting for the exception, confirming the law. The true problem is to find out how it is that loss of speech more often accompanies right than left hemiplegia, not to set up the hypothetical cause of a necessary coexistence, and thereupon to invent other hypotheses in order to account for the actual variations. There would certainly appear to be conceivable other anatomical reasons for the frequent coexistence of loss of speech and right hemiplegia more likely than the localisation of speech in one part of one side of the brain. It is hardly necessary then to add that the observations of disease of the posterior part of the third left frontal convolution, which have been reported with a remarkable family likeness ever since M. Broca promulgated his singular theory, inspire no confidence whatever. It requires a person to have studied the morbid anatomy of the brain nearly all his life in order for him to be trustworthy as a guide to what is a morbid condition of it. And the way in which many of these cases have been related, when they are critically looked into, can scarcely fail to excite doubt and suspicion, not of the sincerity of the reporters, but of their scientific competence and of their freedom from unconscious bias. How frequently, in fact, do we find in such cases an elaborate account of the symptoms during life, and, when we come to the description of the morbid appearances, little more than that "there was softening of the posterior part of the third left frontal convolution"—little more than the exact repetition of Broca's theory in Broca's words. A great difficulty in observation notoriously is, not to see what is specially looked for, but to avoid seeing it. Apart, however, from all question of the reliability of pathological observations, and apart from all psychological considerations, the fact that loss of speech has occurred without any affection of the left frontal convolution, the not less decisive fact that the left frontal convolution has been destroyed by disease without any loss of speech, and the further fact that loss of speech does occur when the disease is on the right side of the brain, render it unnecessary to discuss Broca's theory on the basis which some have hastily claimed for it.

To prevent a possible misconception in regard to the foregoing cursory criticism, it may be well, before passing from the subject, to add one reflection more. It is this: that a limited disease of the

brain, such as abscess or softening, confined to the medullary part, or situated elsewhere, may affect the intelligence in one case and not in another, or at one time in one person and not at another; the effect being due probably to that obscure action which we provisionally designate reflex or sympathetic action. I have seen a patient, whose death proved him to have limited abscess of the brain, devoid of all intelligence and utterly unable to express himself in any way at one time, and at another time suddenly to recover his intelligence and to speak quite sensibly, although the restoration was only temporary. The example might serve to prove, were proof on such point necessary, how completely in some cases limited mischief may affect the whole mind; it may also enable us to conceive how it is that disease of one of the corpora striata does sometimes disturb seriously the intelligence.

Disease of the pons varolii.—Disease on one side produces hemiplegia with or without some other local paralysis; a disease in the middle of the pons may involve both sensory and motor tracts, and cause a complete loss of power of the whole body. Though a sudden effusion of blood usually produces profound coma with contraction of the pupils, there is not necessarily any loss of consciousness. The implication of one or other of the numerous nerves arising from this part will afford evidence as to the part of the sensori-motor tract affected: the facial, the fifth or the sixth nerve may be paralysed, and the fibres of the lingual and glosso-pharyngeal are involved when the disease is low down towards the medulla. Dr. Wilks relates three cases of disease of the pons, in all of which there was loss of speech, and other cases to show how closely the symptoms of apoplexy of the pons sometimes resemble those of opium poisoning.

Paralysis in connection with disease of the surface.—If a patient is quite unconscious, his limbs will fall helpless when they are raised; but is there a real paralysis in every such case, or is the result due to loss of volition? In fact, is disease of the surface of the brain sufficient to produce a real paralysis, or is an extension of disease to the motor centres necessary to bring about such effect? Dr. Wilks relates one remarkable case in which there was retention of consciousness with left hemiplegia, and in which after death the whole cineritious substance of the right hemisphere was soft and disintegrated, the disintegration reaching the medullary matter, but not penetrating deeper. The left hemisphere was quite healthy. The example, if, as Dr. Wilks observes, the report can be relied upon, might certainly seem to prove that disease of the surface of the hemisphere may produce hemiplegia. The patient, a woman, was quite unaware that she had lost power over her left side. But was the existence of a real paralysis satisfactorily established in the

case? Or is it possible that the helplessness of the left limb was after all due to the loss of volition and consciousness in the right hemisphere? It is clear that the left hemisphere was cut off both from knowledge of, and power of acting upon, the limbs of the opposite side; for although it was in full function, the patient was unaware of her hemiplegia—the left hemisphere being so disintegrated as to be unconscious of it. And the example would seem to show that one hemisphere can only act volitionally on the limbs of the same side; because though the left hemiplegia, granting it real, would account for the inability of the right hemisphere to act upon the left side, it would not account for the entire unconsciousness of the hemiplegia. And of course if the hemiplegia was not real, there was no reason why the right hemisphere should not have been able to act upon the limbs, except that it was cut off from communication. It is certainly an interesting question as to the extent of power of one hemisphere over the limbs of the same side—whether it has any direct consciousness and control of them, or only an indirect power through its sympathy with the other hemisphere. But it still remains unsettled whether there was actual paralysis or not in Dr. Wilks' case. If there was, what becomes of the assertion that one hemisphere of the brain may carry on the intellectual and bodily functions, without any apparent defect? On the other hand, what difficulty is there in supposing that disease of the surface only may produce paralysis, when we remember that disease or laceration of the surface of the brain very frequently produces convulsions? The subject is evidently still wrapped in obscurity, and demands patient clinical and pathological study.

Whatever may be the truth with regard to the sufficiency of disease of the brain to produce paralysis, there can be no doubt that such disease produces mental disorder. When it is acute, we have delirium ending in coma; when chronic, we witness a gradual failure of intellectual power. The ultimate effect of a chronic change is, in many instances, an atrophy: the brain becomes smaller; the sulci between the convolutions are filled with water, and the arachnoid over them is thickened and opaque. The shrinking is partly compensated by effusion into the ventricles, and the choroid plexus contains cysts and earthy matter. This state of things is met with in the atrophy of old age, of dementia, of alcoholismus, and of lead poisoning; the decay of mental and physical power corresponding in the main with the wasting of the brain.

After pointing out that the result of the retrograde changes which occur in general paralysis is a destruction of the tissues and a corresponding loss of function, Dr. Wilks puts the following questions to alienists:—"Do they rely on the symptoms which accompany the disease as characteristic of it? or do they, on the contrary, consider that the only cases which deserve the name of general paralysis are

those in which they believe that there is an affection of the cineritious substance, such as I have spoken of above? Would such a condition, in the absence of any of the usual symptoms, be sufficient to constitute the disease? Are a certain number of the symptoms sufficient to mark it, even though one or two of those usually regarded as most characteristic should be absent?" He desires this information, believing that much error ensues by reason of medical men paying more attention to the study of one class of diseases than to that of others; and he gives the following happy illustration of the truth of his remarks:—

I lately took the trouble to test the powers of diagnosis possessed by different physicians who pursued each his own speciality. A gentleman came to me, as a patient, whom I recognised to be suffering from general paralysis. He tottered or straddled into my study; he spoke thickly, like a man intoxicated; he had lost all intellectual expression; he had tremor of the tongue, and his pupils were unequal. He said he was very well, and appeared cheerful. His reason for coming to see me was the fact that he had had two or three bilious attacks. His wife, however, said that for many months he had been forgetful and strange in his manner, so that he was quite incapacitated for business. I afterwards met a medical practitioner who had known him for years, and who was content to style the case one of softening of the brain. It so happened that chance brought to my house two gentlemen, one of whom had been making a study of Duchenne's paralysis, the *ataxie locomotrice* (as it is called), while the other had been connected with a lunatic asylum. The one, seeing my patient walk with a tottering gait and with his eyes constantly directed towards his legs, was at once impressed with his own idea of the case, and this notion was strengthened when I showed him the inequality of the pupils, which, he said, is one of the symptoms of Duchenne's disease. Some amount of reasoning on my part was necessary to convince this gentleman that these characters are not peculiar to his favorite malady. My other friend instantly recognised the case as one of general paralysis, and expressed the opinion that the profession generally are very imperfectly acquainted with this disease.

This instance is, I think, sufficient to show that the true characters of the different forms of chronic brain disease are not yet so accurately defined that every one can at once distinguish between them. Many of the symptoms at present described as peculiar to some are, in reality, common to many of these affections, and are due to a general rather than to a special derangement. It is said, for example, that general paralysis is characterised by quivering lips and by hesitation in speech, followed by want of power in the limbs; that it often terminates in epilepsy, and that its mental symptoms consist in a loss of control, in the existence of delusions, and, ultimately, in a state of dementia. The ideas are generally of an exalted or ambitious kind, but authorities state that the intellectual phenomena vary, and that, whilst some patients are demented, others are maniacal. It is clear that many of these symptoms belong simply to an atrophy of the brain, being present even when this arises from alcoholism; hence, we must ask whether the peculiar form of delusion, which is certainly one of the most striking features in these cases, is sufficient to characterise the complaint, and whether its absence is enough to negative the diagnosis of general paralysis. Further, we must inquire whether a meningo-cerebritis, or some other definite pathological change, is found after death in every case of this disease. If a negative answer is given to the last question, then my friend

who called a case of general paralysis by the name of softening of the brain, by which he meant a general decay of the brain, was not far wrong. I have already said that if, in a case of alcoholism, we abstract the symptoms of abdominal visceral disease, the nervous symptoms remaining correspond closely with those of general paralysis. I have also alluded to the so-called "ataxie locomotrice," which is said to be a disease with characteristic symptoms; but the condition of the pupils, and the presence of paralytic symptoms affecting some of the cerebral nerves, show that the seat of this malady lies within the cranium, and not merely in the spinal cord. Hence, my colleague, Dr. Gull, many years ago, alluded to such cases in his 'Gulstonian Lectures' under the name of *cerebral paralysis*, and said that they were brought about, not by any actual softening process in the spinal cord, but by more general causes, such as sexual excesses.

I have said enough to show that, in studying the chronic affections of the brain, we should endeavour to discover which symptoms are universal, and which are proper to particular forms of disease. These complaints, as a rule, can be distinguished by the circumstances attendant upon them; it is not difficult to determine whether the failure of bodily and mental power arises from poisoning by lead, mercury, or alcohol, from old age, or from chronic inflammation.

The post-mortem appearances found in general paralysis are so far peculiar that in this disease the brain is not always obviously wasted, although the normal tissue is really destroyed to the same extent as in atrophy. Moreover, as this morbid change progresses slowly through the brain, and does not affect it all at once, the symptoms of it may vary. Since it begins in the cineritious surface, the mental powers often fail whilst much bodily power remains. Thus, every lunatic asylum contains many patients suffering from this disorder who can walk well, and who enter into the games of the institution, or are engaged in labour. That the guiding will may be almost absent, although the motive powers connected with the central ganglia are perfect, is sometimes remarkably shown by cases of patients who have considerable difficulty in starting, but who, when once the machinery is set a going, will continue to walk until exhausted, having scarcely any power to stop. Such a case is the very opposite of one in which, from disease of the centres or spine, all power is lost, though the mind and will are intact.

In the general paralysis of the insane, then, we find a chronic change in the brain, and especially in the grey substance immediately beneath the membranes. The inevitable result of such an affection is the gradual decay of all bodily and mental power. By removing this morbid condition from the category of special disorders we are not taking from its peculiarities, but adding to its interest; for if a spontaneous change of the kind mentioned is productive of certain well-marked results, it is a point of great pathological and physiological importance to observe that like functions, induced by causes of various kinds, give rise to very similar symptoms. This we see, for instance, after injuries of the head and effusions of blood; and, under these circumstances, the post-mortem appearances also resemble what is seen in the idiopathic form of disease; indeed, it sometimes happens that the lesions last named are the immediate exciting causes of a disease which is said to be simply mental. Thus, I believe I am correct in asserting that, according to the reports of asylums, evidence of hereditary influence fails in this disease more often than in any other class of affections seen in these institutions. This is in favour of the view that general paralysis may affect a previously good brain. If my memory serves me right, a history of hereditary predisposition is wanting in a quarter of all cases of insanity.

We should question the correctness of the statement that the evidence of hereditary influence fails in general paralysis more often than in other mental diseases; indeed, we hold it more correct to say that in a case of general paralysis, where there are no excesses assignable as causes, there is almost sure to be some history of hereditary taint. Dr. Wilks "regrets to find that in the reports which are abundantly heaped upon us from lunatic asylums the work of the mere secretary or superintendent so much overshadows that of the physician, and that the scientific value of these pamphlets is altogether sacrificed to their business character." He fails to find in the reports in his possession any well-recorded cases with details of post-mortem appearances, and he is fain therefore to adduce examples from Calmeil. But there is an excuse for the scientific baldness of those reports which Dr. Wilks has not thought of: they are addressed to the Committee of Magistrates, and not to medical men; and they are intended as reports upon the condition of the asylums during the year, not as scientific reports. While we bring forward, however, this sufficient apology for the character of our asylum reports, we are sorry not to have a word of apology to make for the absence of scientific results commensurate with the importance of the vast quantity of material collected in our numerous asylums, and with the attainments of those who superintend them. In this regard Dr. Wilks' complaint is only too well founded; and so far as it points to the isolation of the asylum physician from the scientific spirit of his profession, by his absorption in economical affairs, it undoubtedly points to a real evil, and one which, unless remedied, must inevitably, sooner or later, lead to many mischievous consequences.

Epilepsy; disease of the surface of the brain.—Dr. Wilks holds the opinion that the morbid conditions of the brain which give rise to epileptiform convulsions are remarkably uniform, and that they all point to the presence of local irritation of the surface. He has no hesitation in saying that for one case of disease in the pons varolii with epilepsy, fifty cases may be found in which the morbid changes occupy the surface; and he cannot see any grounds for a theory which supposes the seat of epilepsy to be in the pons or in the central ganglia. "Disease of those parts would produce paralysis; but in order to produce increased movements, they must be healthy and susceptible of irritation. In the case of feigned epilepsy we should say that the will, which is intimately associated with the cineritious structure, acts on the central ganglia beneath, and excites them to the production of violent movements in the limbs, exactly as in the real disease. Thus, we can believe that in true epilepsy there arises in the superficial parts of the brain an influence which is independent of the will, and, in fact, takes away

the consciousness by operating through the cineritious substance, and which also irritates the ganglia below, and sets up the paroxysm. At the same time we may allow that the pons varolii and medulla oblongata are also excited, and we may thus explain the affection of the respiratory nerves and of the spinal accessory, which causes the distortion of the head." In confirmation of these considerations he points out that not only does irritation of the surface of the brain usually produce convulsions, but that the most definite affection discovered in cases in which the symptoms have been undistinguishable from epilepsy is an old adhesion of the membranes to one spot on the surface of the brain. Furthermore, consciousness is abolished during the epileptic fit, while the ultimate effect of the disease, when it is long continued, is to produce imbecility. "It appears to me that, from clinical and post-mortem observations, as well as from all analogy, we cannot but conclude that the *fons et origo mali* is in the cineritious substance of the brain. . . . So far as I know, Dr. Todd has been the only author who insisted on the fact that the seat of epilepsy is in the cerebral lobes; but, if I remember rightly, this view was not generally adopted at the time of its propagation on account of objections based upon physiological grounds; nevertheless, it appears to me that everything points to the correctness of this opinion. I am myself so convinced of it as to feel sure that the improved method of examination used by Mr. Lockhart Clarke will show a well-marked change in the cineritious substance of the brain in cases of long-standing epilepsy." Dr. Wilks gives the outlines of a few cases which support these views. And we might call to mind, as an additional argument in their favour, those instances of periodical maniacal excitement which really represent a vicarious epilepsy—the cases in which mental convulsions take the place of the usual bodily convulsions.

Tumours productive of mania.—In the few recorded cases of tumour giving rise to mania, Dr. Wilks finds that the tumour has always been of the cholesteatomous kind; and he believes that this affords ground for thinking that the disease may have been merely coincident with some other undiscovered change more immediately connected with the altered mental state of the patient. We feel loth, however, to admit this conjecture on the basis alleged for it; for, in the first place, there are cases on record in which the tumour producing mental derangement has been cancerous or fibrous, or tubercular, or syphilitic, or a cysticercus; and, in the second place, it is easily conceivable that in the case in which a tumour does cause mental disorder, it may do so by a reflex or sympathetic action like that by which an abscess of the brain may disturb, or abolish for a time, the patient's intellectual functions, though at another time not affecting them observably.

Disease of the cerebellum.—The theory that the function of the cerebellum is to harmonise and co-ordinate the various movements, is not supported by a single clinical fact, so far as Dr. Wilks is aware. We rejoice to have so authoritative a statement, for we have always been of opinion that it never was supported by a single physiological fact, or by a single well-considered reflection. How it has been possible for writers to go on assigning such a function to the cerebellum at one part of their books, and at another part to describe the independent function of the spinal cord as ministering to automatic acts, primary and secondary, is not easy to explain. In none of the cases of disease of the cerebellum which have come under Dr. Wilks' care, has there been observed anything more than a desire to lie quiet in bed, and an anxiety to be let alone—symptoms which are common in other cerebral diseases.

But enough has been said to indicate the character and the importance of Dr. Wilks's contributions to the pathology of nervous diseases: they must be studied by all who desire to learn what is known of this obscure subject, and what are the most promising lines of further investigation. If we were disposed to venture any criticism of them here, it would merely take the expression of a regret that Dr. Wilks has not considered it within the scope of his paper to give an exposition and criticism of the views of other observers, English and foreign, but has contented himself with the modest enunciation of the results of his own observations and reflections. In the confusion of dubious observations, uncertain inferences, and contradictory theories with which the pathology of nervous diseases is beset, the ripe criticism of so competent an authority, eliminating what was worthless, and co-ordinating the real work done, would have been a welcome and invaluable guide to those who, each moving in a different way, are all now in wandering mazes lost. We would fain have added—

Henceforth thou art the genius of the shore,
In thy large recompense, and shalt be good
To all that wander in that perilous flood.

H. M.