The Morisonian Lectures on Insanity, for 1873. By the late David Skae, M.D., F.R.C.S.E., Physician Superintendent of the Royal Edinburgh Asylum, &c., &c. Edited by T. S. Clouston, M.D., F.R.S.E.

(Continued from Vol. xx., *p.* 18.*)*

LECTURE VI.*

Anæmic Insanity.—This is the variety of insanity produced by exhausting discharges, loss of blood, or starvation, and takes its name from the condition of anæmia that precedes and accompanies it. Dr. Aitkin says that "any acute disease which occurs in an anæmic individual assumes a peculiar character." Now this is precisely what occurs when such an individual becomes insane. There are two very distinct kinds of anæmic insanity, which may be called the chronic and the acute. The chronic results from anæmia produced gradually by exhausting discharges or such slow processes. Its symptoms are precisely those that Dr. Skae described as occurring in the insanity of lactation without the sexual characteristics of the latter, so that I need not occupy your time in describing them. The most important characteristics are the premonitory giddiness, flashes of light, singing in the ears, headache. The acute variety follows great and sudden losses of blood or starvation. It is most typically seen in the latter condition. At first there is a state of mental prostration, with pale and cadaverous countenance, wild and glistening eyes, severe pain in the epigastrium, and an intense thirst; then the mind becomes quite imbecile, so that the patient will make no effort for his own benefit, and after this a state of maniacal delirium, with hallucinations of the senses, comes on. The patient sees ravishingly cool and limpid streams and green fields, which if he is at sea he will at once jump overboard to reach, he tries to sing, and converses with imaginary friends. This is soon succeeded by coma or convulsions and death. But if food is given before this, the patient often remains for a long time delirious or imbecile in mind, cannot get rid of his hallucinations, and cannot exert his mind in any way.

* To prevent mistakes it may be mentioned that this lecture was written entirely by Dr. Clouston.—T. S. C.

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General Paralysis.—This disease is not only a variety of insanity, but a true pathological disease of the nervous system, as distinct from all other varieties of insanity and all other nervous diseases as smallpox is from scarlatina, or consumption is from rheumatism. When the great French physicians, Calmeil, Delaye, Bayle, and Esquirol, in the beginning of the century, first seized on a particular group of mental symptoms, associated them together, found they had a regular sequence and history, that they were connected with certain obvious departures from the normal state of the brain and its membranes, and when they gave their generalization a name and called it "General Paralysis of the Insane," they sounded the death-knell of all the metaphysical and spiritual theories of insanity. And it is well that it should have had for a basis such an unassailable medical deduction. It did not cover much of the unoccupied ground of nervous pathology, it did not directly throw very much new light on any other disease of the brain, and above all it had nothing to do with any premature theory of nerve function or nerve disease; yet its importance to the study of insanity was incalculable. I believe that the further and fuller study of general paralysis will do more for the elucidation of many of the unsolved problems as to the connection of mind with brain, nay, as to the connection of motion, sensation, and animal heat with brain, than that of any other disease. Did we know everything about general paralysis and epilepsy, we should find the path of research into most other diseases of the nervous system comparatively easy. They would be the key to all the rest. As we shall see, there is no group of nerve-cells in the body that is not affected in general paralysis, and almost no nerve function left intact. The existence of this disease is certainly by far the best justification for such a system of classifying mental diseases as that of Dr. Skae, which aims at distinguishing from each other the true *diseases* affecting the cerebral convolutions, and not merely ticketing groups of similar symptoms with a name. It is quite certain that under the term insanity there are included many pathological species of brain disease, just as distinct as general paralysis, which we shall ultimately be able to segregate and distinguish. Dr. Skae did not pretend that his varieties were, with one or two exceptions, of this class, but he went a step in this direction, and helped to move the coach out of the rut of mere symptomatology.

I have no need to vindicate the existence of general para-

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lysis as a separate disease in any respect. I have scarcely any need to describe its symptoms in detail, so well known are they to the profession at large now. I shall rather endeavour to look at its symptoms in groups as they result from different parts of the nervous centres being affected by the pathological process in different degrees of intensity. As is well known, the disease presents great variety in its symptoms, both in different cases and in its course in the same individual. We have maniacal, melancholic, and demented general paralytics. We have some patients with the disease whose legs are chiefly paralysed; others whose arms are so; and others who have partial hemiplegia. And the more we analyse the functions of the nervous system, and the great divisions of the mind, the more do we see that these are affected more or less strongly in physiological or psychological groups.

Before treating the symptoms of the disease in this way, I shall refer to a singularly barren controversy that has been carried on as to the real nature of the disease. The question at issue is this—"Is general paralysis a bodily or a mental disease?" On the one side it is said that it is a bodily disease with mental symptoms generally present; on the other, that ordinary insanity has sometimes those paralytic accompaniments. The strong argument brought forward in favour of the former view is, that all the bodily symptoms of the disease are said to occur without mental aberration. Many German physicians hold this view. The only reason why such a controversy should ever have been started, arises from the medically false theory that insanity is a special and distinct condition that enters into a man and takes entire possession of him when sanity leaves him. The one moment he is sane, responsible, and a living man in the eye of law, the next he is insane, irresponsible, and legally dead. This question of responsibility is of course one that has often to be settled for judicial purposes, but why should it have anything to do with the medical view of the nature of a disease? General paralysis is a disease affecting the whole of the nerve centres, that may show the first signs of its presence in one part or another, in a motor centre, a sensory one, or a mental one, but that will, if time is given it, spread to all the others, interfere with their functions, and ultimately destroy them. It is not doubted by anyone that it destroys the mind function just in the *same way* as it does the bodily one, through a physical change in the nerve cells.

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No one denies that, even in the cases said to be without insanity, the memory becomes weakened, the intellectual power gradually fades away, and all the mental operations get slow and feeble. In some cases no doubt the patient dies of an epileptiform fit, or some other disease after the paralytic symptoms have appeared, and before there was any apparent trace of mental weakness. The disease had begun in the motor centres, and had not reached the mental in such a way as to interfere with their functions much. In such a case it has been asked, should the general paralytic patient be counted as insane? Should he be allowed to make a will, or to commit murder without being hanged for it? My reply is that these are questions that do not affect the position of the disease in a medical nosology, and that we must not break the unity of a true pathological species through any merely accidental or legal definitions that set up insanity as essentially different from other diseases of the nervous system. In many reports of lunatic asylums I find the diseases under which the patients laboured put down as mania, or melancholia, or dementia, with general paralysis. Now this is precisely as if a patient were described as labouring under a pustular eruption with small pox, or as suffering from delirium with typhus fever. It would of course be perfectly legitimate to distinguish between the different states of general paralytics by describing them as labouring under general paralysis with mania or melancholia, &c., just as it would be to say small-pox with pustular eruptions, or typhus with delirium. As a matter of fact no case of general paralysis of long duration has ever been reported by a competent observer, in which all the mental operations were vigorous. I have in my mind at the present moment the case of a man of great mental capacity and vigour of body and mind, who has for some twelve months had the speech and occasionally the walk of general paralysis. Anyone seeing him and speaking with him for a short time would be able to discover no mental defect whatever. He sometimes writes excellent letters, too, going into all sorts of business matters most clearly; and as for delusions, he is as free from anything of the kind as any one of us. Yet are his mental operations not impaired? They are so most evidently, in this way. In the first place, everything like mental effort of any kind whatever, especially anything that requires originating power, such as writing a business letter, is attended with an enormous effort, and is followed by complete exhaustion, so that he can do nothing more that day. At

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certain times, too, he can by no effort of will do anything of the kind; cannot compose a line, or put a pen to paper if he tried as hard as possible. Then his intimate friends see that his memory is really much impaired, though it is only they who would observe this. Instead of being an active man, doing the work of three men both in body and mind, he does and can do no work at all. Instead of leading and guiding other people, and taking the lead among all with whom he comes in contact, he is content to submit himself to another's will. Now this man is clearly not "insane" in any sense of the term, legal or even medical; yet are not his brain cells that minister to his mental operations being interfered with in their action by a disease that is only too sure still further to invade, and at last to abrogate, their functions? Should we be justified by any pathological rule in separating this case in any way from the other cases of the same disease where there are delusions, and who are reckoned insane? Looking at the case from a purely psychical point, is not his mind diseased? If the answer is in the affirmative, then we know, as physicians and pathologists, that this results from a bodily disease of a kind that, in most cases, produces delusions and true insanity, which I should fear would be only too likely to occur yet in this very case. The question therefore is a mistake entirely, whether general paralysis is a paralysis complicated with insanity, or a form of insanity complicated with paralysis. It may be either the one or the other to begin with, but is always both at the end, if the patient lives long enough to run its natural course. In reality it is a pathological disease of the central nervous system, with mental and bodily symptoms. One of the very latest writers on insanity, Dr. Blandford, whose book is generally so reliable and so practical, has a sentence in his chapter on general paralysis in which he professes to sum up our knowledge in regard to its pathology, that is so extraordinary and so unsupported by facts of any kind, symptomalogical or pathological, that one would fain believe it had been inserted by a mistake. It is this—"there is every reason for supposing that the mental and motor disorder depend on pathological states which, though they co-exist, are independent one of the other." Of course they are independent so far as the motor and mental elements of nerve tissue are independent, but that the pathological state of the one is of a different kind from that of the other, as this sentence would seem to imply, we have not the remotest ground for believing, but on the

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contrary, have every possible ground for the opposite belief, that they are identical.

I have occupied so much time in the discussion of this point, because it is one as to which some confusion prevails, and even medical men are led away by the legal aspect of the question and by the artificial distinctions conveyed by the term insanity.

Dr. Skae has drawn a very able and graphic picture of the usual mental symptoms of a typical case of general paralysis.* "*Most frequently* there is, preceding the development of the paralytic symptoms described, or accompanying their development, an attack of a peculiar form of mania so often associated with general paralysis as to have been called *mania paralytica*, and, from its character, *delire ambitieux* by the French writers. This peculiar delirium is very common. The patient fancies that he is possessed of enormous wealth; he is full of projects for the benefit of mankind; he is about to purchase and endow libraries and churches for the public good. He is a prince, ennobled by the Queen, about to marry a Spanish countess; he is possessed of fleets laden with gold and diamonds. The house in which he lives is a palace; all the attendants and females are his lords and ladies; the walls are gilded, the windows are made of diamonds; he himself made the sun which illuminates them; he is a mighty conqueror, and destroyed Sebastopol, captured the Emperor of Russia, but graciously pardoned him; he is God himself, and wields universal and omnipotent power. He can talk any language, he can sing (and he does sing readily, but most discordantly); he can write most beautiful novels and enchanting poetry. He has carriages and horses without number—steamboats waiting to convey him to London to see the Queen—confidential missions from Lord Palmerston—schemes of universal conquest or universal philanthropy.

"In the midst of all this imaginary power and grandeur, he is (and this is a very characteristic feature of general paralysis as compared with other forms of insanity with similar delusions) docile and *facile;* he is diverted from the highest enterprise or the most important duty by the simplest request; he forgets the conquest of Europe, or the immediate commands of Her Majesty, for a walk round the airing-ground with an imbecile companion, to whom he talks condescendingly, promising him a dukedom or a bishopric. Everything about him is good—every one is *so* kind—his food

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is first-rate, he offers a cheque for £75,000 for the purchase of the asylum, and promises to endow it with unbounded munificence, and to convert it into a paradise of brilliancy and bliss.

"Sometimes the first indication of the disease is afforded by some act of foolish extravagance. A person of frugal and prudent habits purchases a number of pictures, some of them little better than sign-boards, which he represents as Raphaels or Titians; he orders whole libraries home, of perhaps six or eight dozen of gold pencil-cases; or he purchases a worn-out hack, and boasts that it can trot to Glasgow and back with a dog-cart and four persons behind it, in an hour. Not unfrequently, while the conversation appears still rational, and any foolish act of extravagance has an ingenious explanation, the person will be found to be accumulating in his pockets or desk bits of glass or trash of various kinds, under the belief that they are precious stones.

"The general paralytic varies in one remarkable and very constant feature from the maniac or monomaniac; he is neither suspicious nor resentful; he dislikes no one, suspects no one, nor would he offer an injury or insult to any one.

"This disease suddenly seizes its victim in the prime and vigour of life, when he has acquired, by unexampled industry, it may be, a high position in the profession which he adorns. Arrested suddenly, in the height of prosperity, he gradually degenerates into a state of hopeless fatuity, and dies when far beyond the reach of friendly consolation. During the progress of his rapid decay, he is insensible to all the ills of life, the grief of friends, the ruin of his hopes, and fame, and family; he staggers about boasting of his wealth and grandeur; and even when hardly able to swallow, powerless to move and on the brink of the grave, he is babbling in a speech, no longer articulate, that he is 'my lord duke,' and that it is 'all right.' It may be consolatory to think that the sufferer is thus unconscious of his condition; but it adds, I think, painfully to the features of the disease, to see so much boasted grandeur and wealth associated with so much physical and mental degradation."

Such is the picture of a typical case which no medical man will have any difficulty in recognising if he comes across it; but, as we shall see, a large number of the cases do not answer to this description at all. It is for the detection of these exceptional cases that we require to understand and take into account the true pathological nature of the disease.

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I shall not detain you with a description of all the well-known motor symptoms of the disease. They vary in intensity from the slight tremble of the upper lip and the shuffle, and thickness in the articulation of a long word with many consonants, which are only detected by the practised observer, but which when once observed mark the presence of the disease with absolute certainty, and doom the patient, to the complete paralysis of all the voluntary muscles found in the last stage of the malady. As I remarked, they may affect the most various sets of muscles in greatest intensity. Some patients can't articulate a single word distinctly, who can walk and run and write quite well, others can't walk a step who have scarcely any defect in articulation. It is an interesting fact that patients labouring under this disease will often articulate the first words of a sentence quite well and then begin to fail, and they will often walk quite well at first, when setting out for a walk, but soon get weak and straddling in the legs. Those facts point to an essential weakness in the nerve power. Coming under the motor abnormalities of the disease, too, are the congestive epileptiform attacks, which vary in intensity from the slightest loss of consciousness, or the twitching of a few muscles, up to continued convulsions lasting for days in succession and killing the patient, and which, in regard to frequency in different cases, may be entirely absent during the course of the disease, or there may be one such attack every week while the patient lives.

That the function of common sensation is affected in the disease is abundantly shown by the entire absence of pain on injury that exists in some of the patients, and there is another symptom very commonly present at the commencement of the disease that is not sufficiently dwelt on by writers on the subject. This is the flying pains or the fixed "neuralgic" pains that the general paralytic often suffers much from. I have seen some patients with the most severe headaches before the characteristic symptoms of the disease appeared, and others who had them during the whole of the attack in all its stages, others who suffered from tic and neuralgic toothache; others from a pain in the region of the heart; others from gastralgia; others from a sense of choking and difficulty of breathing. In fact these disorders of sensibility are as numerous as the nerve centres that regulate them. All those pains are of central origin. I now look on the occurrence of such pains before an attack of insanity as a

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very bad sign, and they often strengthen my diagnosis of general paralysis in my own mind.

A good deal has been written as to whether the reflex function is interfered with or not. A very obvious distinction has, it appears to me, been lost sight of by many of those who have treated this part of the subject, by not remembering the nerves that arise in the brain and those that rise in the cord. The reflex action in the muscles, supplied by the cerebral nerves, is interfered with from an early period of the disease, as is seen by the impaired deglutition, the length of time a patient will sometimes take to shut his eye when an object is brought near it, and the insensibility to tickling about the face. This is what we might expect from the brain being the organ chiefly affected in the disease. The reflex function of the cord is not ordinarily much interfered with till the very end of the disease. In the beginning of it the patients are unusually sensitive to tickling the soles of their feet. This is also what one might expect from the symptoms of the disease. The cord is not ordinarily the first part affected, and as usually happens when the brain power is lessened, and there is less voluntary control exercised over the cord, its automatic functions have more play.

The special senses are often affected towards the end of the disease. Dr. Skae says—"The senses become blunted and impaired." "In several cases I have seen amaurosis associated with general paralysis." I have had a case who had entirely lost the hearing in one ear, and I have had patients who could not distinguish between milk and a solution of quinine.

Lastly, the nutritive system is markedly interfered with. At the beginning of the disease a loss in weight, a thin, pinched appearance of the features, and at a certain stage in some cases a well-marked marasmus and emaciation is often met with. Then in the second stage there is the well-known tendency to the formation of a flabby fatness. The pulse and heart's action are strongly influenced by the disease. Whenever there is the least tendency to brain excitement the pulse has a peculiar fullness and hardness. The pulse of a general paralytic in this stage I look on as one characteristic of the disease. At this stage in the disease (the second) sores and wounds heal with extraordinary quickness, the latter often by the first intention; at a later stage there is the most extraordinary tendency to form bed-sores. After death,

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too, all the soft tissues are generally found soft and flabby; decay takes place in the body very quickly, and, as I first pointed out three years ago, the bones are softened and their structure altered. This has been proved abundantly since then by chemical analysis, and the test of the amount of weight a rib will bear when taken out after death. Lastly, the temperature in general paralytics is increased, and especially the normal relation of the morning and evening temperature is reversed. Dr. Saunders, of the Devon Asylum, was the first to show that after the epileptiform attacks the temperature in general paralytics rose very much, and in 1868 I made a great number of observations in regard to the temperature of the body in the insane,* the result of my observations being that while in all forms of insanity there is a tendency to the rising of the temperature, and especially of the evening temperature, in general paralysis this tendency found its acme. I found that in every case of this disease if the observations were repeated sufficiently often, the average evening temperature was higher than the morning temperature, that it varied more in the different stages of this disease than in those of any other form of insanity, being high in the first and third periods, and low—considerably lower than the standard of health—in the second or quiet and fattening period of the disease.

Looking at all these symptoms can we pick out the essential conditions of the disease—mental and bodily—as distinguished from the accidental and transitory? First, in regard to the mental symptoms. I do not think the delusions of grandeur, the *Delire ambitieux*, can be regarded as such. They are most striking certainly, and by far the most effective in painting a picture of the malady. But they only occurred in about half of Dr. Skae's 108 cases, and I have gone over the cases of 85 patients, from a more country district than Edinburgh, that I have had under my care during the last ten years, and find that of the 68 men only 30 had such exaggerated notions, and of 17 women only two had anything of the kind. I look on the peculiar character of the mania—where there is mania—as being much more really symptomatic. It partakes of the character of *weakness of mind and facility* from the beginning. I look on the delusions of grandeur and wealth and the acquisitive propensities as being the former day dreams and tendencies

* "Jo. Men. Sci.," vol. xiv., p. 34.

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of the individual which he was sane, uncontrolled and uncorrected by judgment and reason, just as an imbecile can be made to believe such things if he is told them. I have found that it was the vain, boastful, ambitious men before, who were the kings and millionare general paralytics. An excited general paralytic in an asylum ward never knows which patient he can annoy with impunity, and which he cannot. He is always doing, or trying to do, utterly absurd and obviously impossible or irrationally dangerous things. He will try to break open doors, to make a bolt away from an attendant whom he might know can catch him at once. By this very unthinking boldness of his strategy he often succeeds in his object, but having done so can make no use of his advantage. If he escapes from the asylum he asks his way from the first policeman, telling him where he has come from; if he steals another patient's pipe he goes to the nearest fire to light it. His delusions of the most outrageous absurdity are paraded before imbeciles whom any other class of patient would know could not appreciate them, and he is utterly insensitive to any ridicule of them. No other class of patients ever make themselves so supremely and childishly ridiculous as general paralytics, but they will even believe in the insane pretensions of their fellow patients.

The depression of the disease, when it is present, has a want of fixity and tenacity, a point that also indicates an essential weakness of the mental fibre. They do not express an active misery, but there is a cloudiness and haziness about their melancholic thoughts. I have only known two general paralytics require forcible feeding. The very dementia of general paralysis is all its own. It more nearly approaches extinguishment of all the mental faculties than any other dementia. The emotional and moral faculties in general paralysis always indicate the extremest weakness. They are excessively emotional in a silly, childish way, laughing and crying at trifles; changing from laughing to crying, from passion to smiles, like the sunshine and showers of an April day. You can play on them as on an instrument, bringing out joy or grief, anger or love just as you please. There is no sense of right and wrong left from the beginning in most cases. The religious, moral man takes to bad courses; the truthful man ceases to distinguish between truth and falsehood.

Then, turning to the motor symptoms, we see that they in reality proceed from feebleness of the central nerve batteries. The most delicate nerve co-ordinations that have been the

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last and most difficult ones to acquire, are the first to be lost. The power of articulation of long and difficult words and sequences of words, the flexibility of voice that has charmed its listeners, the delicacy of action of the vocal cords in the opera singer on which all Europe has hung enchanted, are lost long before the coarser muscular combinations are in any way affected, or the actual muscular force that can be exerted is even touched. Comparing these effects with what we know of the functions of the brain, do they not show simple feebleness of action in the highest regulating centres?

Taking the motor and mental first symptoms of the disease together they can be imitated in some people more closely by the drinking of a certain amount of alcohol, than in any other way. I have seen a man in whom the whole sequence of symptoms of general paralysis could be artificially produced by his drinking one glass of whisky after another, from the initiatory slight thickness of speech through the ambitious delusions and boastfulness to the final dementia.

Then, as we shall see, the effect of certain cerebral tumours is to produce motor symptoms almost identical with this disease, causing also the epileptiform attacks, and mental symptoms which in many respects bear a resemblance especially to this kind of imbecility.

Do the common and well-known causes of the disease tend to throw any light on its real nature? There can be no doubt, from the recorded statistics, that there are two causes that above all others, taken singly, and still more when they are both combined, produce the disease. Two-thirds of all my cases were from those causes. Those are intemperance and sexual excesses. Now the one causes brain irritation, and the other brain exhaustion, two effects that are almost synonymous in regard to their final effects on the nervous system. The disease prevails to by far the greatest extent, however, among a class who add to those two things, great muscular exertion, viz., the coal and iron workers. The disease is more than thrice as common in Durham and Glamorgan as in the rest of England. In such a class, therefore, three of the very strongest causes of brain exhaustion and irritation are applied at once. The candle is burned at both ends and in the middle.

I think I am right in stating that the course of the disease and its prevalent symptoms and direction are very much

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influenced by the cause. In the cases where drinking has been the cause there is usually much more acute and delirious excitement, a higher temperature, and a slower course. Dr. Blandford thinks that there is a longer duration of the disease among the higher classes and that this is owing to the better nursing they get. I doubt the fact, but it may be that in the miner his brain having been irritated and poisoned for years by impure liquors a more acute form of the disease is set up.

But the light to be thrown on the nature of the disease by an examination of its causes is not complete without looking at the less frequent causes, as well as those I have mentioned. I find that 32 of Dr. Skae's 108 cases were caused by mental causes, such as brain work, over-anxiety, over-excitement, grief, disappointments, shocks. This is a large proportion, and you will observe that the effect of all of them is to produce severe brain irritation and exhaustion. Even the causes of the disease, that only occur very rarely, such as blows to the head, which were assigned in seven of Dr. Skae's 108 cases, and in three of my 85, have the same character in common with the other causes, viz., brain irritation.

It is well known that a hereditary predisposition to insanity, or even to diseases of the nervous system, is seldom present in cases of general paralysis, and no previous weakness of the nervous system in any way has usually shown itself. In fact the disease usually occurs, as Dr. Blandford says, "In men who are not only in their greatest vigour, but often fine, handsome, powerful men—men who have enjoyed life, and lived hard." "The paralytic patient has rarely had to seek aid from doctors." It "crushes the strongest in his full prime, terminating both reason and life."

On the other hand it does not, I think, begin at once as many writers on the subject would have us believe. Such has not been my experience in most of the cases where I have been able to make careful and full inquiry into the habits and life and feelings of the patients for two or three years before the outbreak of the disease. I am sure its premonitory symptoms, which are really a part of the disease, often begin long before the actual visible paralysis. The man has not been able to do his work; he has not had the full enjoyment of life that marks perfect health; he has had neuralgic pains, or he has been in a low way for a time.

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All those first symptoms really show a weakening of the power of the nervous system, and of that part of it that ministers to the mental operations, presides over all the others and makes the man. In some of my cases I formed the opinion that the seeds of the disease were sown many years before its actual development, and that the man in his prime suffered for the sins of his youth.

The pathological changes that are found in the central parts of the nervous system after death, while they account in most cases for the later symptoms, do not tell us the true nature of the disease, and where it arises. They are all referable to mere degeneration. The cells of the brain are found fatty or shrivelled; the connecting tissues increased and more fibrous. The membranes are, in almost all cases, thickened, and their fibrous elements increased. Westphal has shown that the same changes are found in the spinal cord. Drs. Princaré and Bonnet have demonstrated that the nerve cells in the sympathetic ganglia are fatty or full of pigment or shrivelled. Dr. Clifford Allbutt has demonstrated that during life the retina is found diseased. In fact nearly every important aggregation of grey nerve substance has one after the other been shown to be diseased or abnormal when examined microscopically, just as every function of the nervous system we have seen to be weakened and interfered with. The complete appropriateness of a name was never before so well justified as that of "*general paralysis*" which Calmeil gave it long before those universal pathological changes were demonstrated.

The most interesting field of pathological inquiry in this disease is the tracing a definite connection between the symptoms present during life and the amount of disease present in the different parts of the central nervous system. Considering how the symptoms, motor and mental, are often so limited and special, we have here a wonderful field of physiological as well as pathological observation. No experiments in injuring or faradising limited portions of the brain could be more perfect than what occurs in this disease. The chief difficulty is that so few patients comparatively die in the early stages of the disease, when the symptoms are local and more limited to groups of muscles or groups of mental faculties, and in the end the disease has spread to all the nervous system. In the cases where the mental symptoms have been most severe, I have found that the anterior and upper convolutions of the brain are most

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affected. I have also observed that the cases which have been very subject to epileptiform attacks had more disease at the base and in the 4th ventricle. Westphal has described cases where there was paraplegia for years before obvious mental symptoms appeared, and where the spinal cord was found completely tabic. I think I have noticed that where the speech has been specially affected there was obvious disease in the region of Broca's convolution. Certainly I have noticed that it is usually the cases that have the speech least affected that live the longest, while those who have most epileptiform attacks die soonest, the disease in the latter being more in the region of the centres of organic life. But this whole field has not been fully worked out as to details.

You are probably aware that the first theory as to the real nature of this disease was Bayle's, viz., that it was a chronic meningitis; and the latest is that of Poincaré and Bonnet, supported by Westphal, and evidently favoured by Dr. Blandford, that it originates in the vaso-motor ganglia, and "that the alterations of the encephalon are the mere consequences of the disorders which this sclerosis, by a paralytic action of the cervical ganglia, produces in the cerebral circulation." This latter theory is, so far as I am aware, only supported by four facts, in addition to the state of the cells of the sympathetic ganglia (a condition, by the way, which my own observations would show to be very little marked indeed as compared with the condition of the cortical substance of the brain):—1. The analogy of the well-known effect of alcohol in first partially paralysing those vaso-motor centres, and when pushed a little further, affecting the co-ordination of the muscular centres of motion. 2. The effect of tumours inside the brain, which, by retarding the out-flow of blood from the venous tissues inside the skull and so increasing the blood pressure from the arteries, is known to cause progressive disease of certain parts of the nerve substance and optic neuritis. 3. The thickened state of the capillaries and small arteries after death in general paralysis. 4. The common occurrence of small extravasations of blood in the brain after death.

Certainly, these facts show that the blood-vessels and circulation of the brain are affected in this disease, but are they not much more rationally explained by supposing that the paralysis of the vaso-motor nerves and ganglia, which causes those changes in the arteries, is just one part of the universal paralysis that characterises this disease? What reason have

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we for supposing that it is the *fons et origo mali?* Neither the causes of the disease, its first symptoms, or its most marked characteristics, point to this the most obscure of all the divisions of the nervous system. Perhaps the present obscurity of their functions is the real reason why disease of the vaso-motor nerves and ganglia have been selected as the hypothetical cause of general paralysis.

Certain deductions can be made with great certainty in regard to general paralysis, from the facts relating to its causes, symptoms, and pathology which I have indicated.

1. That it is a disease of the grey or cellular parts of the nervous system.

2. That it illustrates better than any other disease with which we are acquainted the tendency to that progressive degeneration which specially characterises the diseases of the nervous system; for it not only goes on steadily from bad to worse, but advances into ganglia, such as the retina and sympathetic, that have no continuity with the brain except by white fibres.

3. The disease is in all its symptoms—mental, motor, sensory, and vaso-motor—chiefly characterised by symptoms of weakness of power and want of co-ordination—is in fact, essentially a dementia and a paralysis from the very first.

4. The stage of maniacal excitement of the disease is accompanied by such increase of temperature and symptoms of congestion of the brain as strongly to point to its being the result of a process, either inflammatory or closely allied to it, not affecting the meninges only, but more especially the cortical substance.

5. That the excitement and the congestive attacks are accompanied by stasis of the blood in the capillaries of the pia mater, as shown by the tendency to apoplexy and false membranes. Those false membranes seem to hold an intermediate position between the products of ædema and inflammation.

6. That the origin of the disease is usually in exhaustion or irritation of the brain-cells that regulate and control the co-ordinating centres of mental function and motion—in other words, that element of the nervous centres that has the very highest and most important functions of all—that this irritation or exhaustion sets up a diseased degenerative process in them, which slowly but certainly spreads to every group of cells in the nervous system with which those higher centres have direct relation.

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7. That so far as our present pathological facts go we have more reason to suppose that the disease begins in the outer layer of the cortical substance of the brain than in any other part, but that it may first affect different convolutions in different cases.

Insanity from Brain Disease.—By using the term insanity from brain disease Dr. Skae, of course, did not imply that any form of insanity can result from anything but brain disease. He meant by "brain disease" here what is usually called organic disease of the brain. I shall merely refer to two kinds of this disease—softenings and tumours—each of which, when they produce mental disturbance at all, undoubtedly cause a very distinct type of insanity.

The insanity of softening of the brain is familiar to us all, in a mild form, in the childishness and forgetfulness and irritability of the man who has had an attack of apoplexy with partial hemiplegia. When it assumes the form of more developed mental aberration, it simply consists of more or less excitement, suspicion, or depression engrafted on this childishness, and coming on in spurts. I have known such patients, when melancholic, to be extremely suicidal.

The insanity that results from tumours of the brain is of a somewhat different type. It is characterised at first by irritability, loss of self-control, and a change of disposition, sometimes by depression, especially if the tumour is situated near the pons varolii. As the tumour grows, a blunting of the whole mental faculties takes place that gradually passes into coma. An extreme irritability beyond the control of the patient is the chief characteristic while there is any consciousness left. The chief bodily symptoms that accompany these—and they always do so—are intense headaches to begin with, usually felt at the back of the head; then a loss of power in the extremities, then a want of co-ordination of the muscles, and a speech very closely simulating that of general paralysis; occasional congestive or epileptiform attacks precisely similar to those of that disease; at some stage of the disease loss of sight from optic neuritis; and, lastly, complete paralysis and coma.

In a paper on the subject of "Tumours, in their Relation to the Mental Functions of the Brain," published last year,* I came to the conclusion they have distinct effects on the brain substance. 1. They create an irritation tending to ramollissement in the nerve substances with which they are in contact,

* Jo. Ment. Sci., vol. xviii, p. 153.

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after they have existed for a time and as they grow. 2. They cause pressure on distant parts, which, in its turn, causes an alteration of structure and nutrition. 3. They set up *progressive* disease and degeneration of certain parts of the nerve structure, such as optic neuritis, the true nature of which is not yet very well known; but it seems to be in some way directly connected with the essential constitution and nature of all sorts of nerve substance, whether cells or fibres. And lastly, that all cases of insanity from organic brain disease seem to hold an intermediate place, so far as mental symptoms are concerned, between acute inflammation of the cortical substance and blood poisonings on the one hand, and ordinary typical insanity on the other, the mental characteristics of the three being represented by delirium, irritability, and delusion respectively.

The Hereditary Insanity of Adolescence.—This is a long name and a somewhat clumsy one, but I cannot devise a better. In a conversation I had with Dr. Skae before his death, in reference to the influence of hereditary predisposition, he agreed with me that there was a very distinct form of insanity that we often meet with in the members of families strongly tainted with a neurotic inheritance, about the age of 20, or from 18 to 25, just as the patient is coming to maturity. Usually no cause whatever can be assigned for the coming on of the disease. In very many cases the patients have been most promising and healthy up to the time of the attack. In comparison with their brothers and sisters they have frequently been the most steady and studious. In fact, such persons come to maturity sooner than usual, and have been more free from youthful livelinesses, and less drawn to the other sex. They have been men and women almost before their time. The form of insanity that attacks them is always a sharp attack of maniacal excitement, coming on suddenly, and, as I remarked, usually without any sort of real assignable cause. Anxious parents will be sure to devise a cause of some sort. They have been too studious, they have worked too hard, they have not taken amusement or exercise enough, they have had a cold or some trifling ailment. In cases of this sort, almost more than any others, are the bright hopes and fond anticipations of parents blasted and crushed; for the majority of such cases never recover at all, and those who do are very apt to have relapses. After a short attack of excitement the mania passes away, leaving the mental powers dulled and weakened, and after a few

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irregular spurts of excitement or transitory brightenings up, the patient sinks into hopeless dementia, but with excellent bodily health, so that he lives apparently as long as though the brain functions had remained perfect. Such cases form a considerable part of the dements that fill our asylum wards. This variety of insanity is, I think, quite a distinct and well-marked one. It is the purest type of hereditary insanity, and might be well called simply by that name, if that would not be likely to lead to confusion. It seems as though such persons had in the twenty years they have lived exhausted the original power of their brain convolutions. They are examples of like begetting like, for in most cases insanity has occurred in ancestors not far removed. They only inherited brain power enough to carry them up into adolescence, instead of having, like an ordinary human being, enough to last while the rest of the body lasts. It is a sort of premature dotage of the brain between 18 and 25. They have thus died in their youth to all the passions, the cares, and human interests that occupy other men. It is an example of Nature's mode of stopping the reproduction of disease. However hard on the individual, it is certainly good for the race. In fact, I think I have often observed that all the hereditary taint in a family seemed to go to such a case, while all the rest of the members of it remained quite free from neurotic symptoms. I have thought it a good sign for the others, if one of a family was thus affected. He was the scapegoat for the rest.

Idiopathic Insanity.—By this term Dr. Skae meant every case of insanity caused by purely mental or moral causes that did not come under any of his other varieties. He thought that in nearly all cases the exhaustion of brain produced by want of sleep was the immediately exciting cause of the disease. Contrary to the common belief that insanity is *usually* the result of severe disappointments, anxieties, afflictions, and distresses of life, we find, as a matter of fact, that only about one-fourth of all the cases are so caused, and of these about two-thirds can be usually referred to some of Dr. Skae's varieties, leaving about one-tenth or one-twelfth of the total number of the insane that are really idiopathic.

This variety Dr. Skae divided into two kinds: the sthenic and the asthenic, which he thus distinguishes: "*Sthenic*, when combined with distinct symptoms of vascular action—suffused eye, throbbing temples and carotids, hard and full pulse, occurring in persons in robust health, and brought on most

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commonly by causes of a nature calculated to excite the emotions and passions. *Asthenic*, when combined with symptoms of *Anæmia*—emaciation, feeble pulse, cold extremities, and so forth; and brought on by causes conducive to an anæmic condition—exhaustion, and especially want of sleep, however induced, whether by grief, anxiety, over-taxed brain, poverty and starvation.

Such is a very imperfect sketch of the different varieties of insanity which Dr. Skae thought deserved to be reckoned as distinct natural orders.

And now permit me, Mr. President and Gentlemen, to thank you very cordially for the respect you have paid to Dr. Skae's memory, and the honour you have done me by your attendance at this course of lectures.

On Syphilitic Affections of the Nervous System. By J. Hughlings Jackson, M.D., F.R.C.P., Physician to the London Hospital, and to the Hospital for the Epileptic and Paralysed.

I wish here to give as briefly as possible an account of the pathology of the nervous symptoms which result from syphilis. Of necessity there is considerable recapitulation from former papers I have written. For syphilis produces very different affections of the nervous system, and I have therefore had to speak of syphilis when considering Amaurosis, Epileptiform seizures, Hemiplegia, &c. It is, however, justifiable to bring together the conclusions one has arrived at about syphilitic nervous affections from the study of nervous affections in general.

A great deal of work has now been done, both in this country and abroad, on syphilitic diseases of the nervous system, and recently there have appeared the masterly lectures by Broadbent, and the most valuable book by Buzzard on these affections. It is a very difficult task to write on such a subject after these able physicians. I shall, therefore, limit myself. I wish simply to consider syphilitic nervous affections as I have seen them myself; thus my task is considerably narrowed.*

* Of syphilitic disease of the spinal cord, however, I do not wish to say anything, because I have not yet seen a single case as proved post mortem. There are very few cases of this kind with post mortem examinations on record; there ought, therefore, to be more hesitation than there is in ascribing paraplegia to syphilis.

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