THE LUMLEIAN LECTURES ON THE DIAGNOSIS, PROGNOSIS AND PROPHYLAXIS OF INSANITY.

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LECTURE II.—THE PROGNOSIS OF INSANITY.

MR. PRESIDENT AND GENTLEMEN,—I said at my last lecture that in many cases of insanity the diagnosis is doubtful and hazardous. When we proceed to consider the prognosis we find that our difficulties are not diminished, but, if anything, are increased. For the purposes of diagnosis we have to examine the state of mind of the individual at the time we see him; but to form a prognosis we have to look into the future, and to say what will happen to a patient under all circumstances—circumstances over which we may have no control, and treatment, or want of treatment with which we have nothing to do. The physician called to a case of ordinary illness receives a coherent and true account of the symptoms past and present from the sick man and his friends or nurse. He is generally enabled by what he hears and sees to form an accurate diagnosis of the malady, and his knowledge and experience enable him to give a confident prognosis of the result, knowing well that all will be done for the sufferer that can be done, that his directions will be strictly adhered to, and that the patient himself will second his efforts and try to get well. Contrast this with a case of insanity. The patient is excited and exalted. He denies that there is anything the matter with him, scoffs at physicians and at the notion that he requires one, says he was never better in his life, and will have none of medical treatment unless it is compulsory. Or he is not exalted but depressed: then he thinks that a physician can do him no good, that he is very wicked—too wicked to live—that his immortal soul is for ever lost, and if anyone is to do him good it is the parson and not the medical man. Another is suspicious, and thinks there is a conspiracy to poison or ruin him. He is very shy of a strange medical man, or of his own, if he includes him in the plot, and completely refuses to follow his advice. The information we receive from friends is untrustworthy; they minimise the symptoms and their duration. If we tell them that a patient is insane, and that to effect a cure restraint or an asylum is necessary, they vow they will not hear of such a thing. Our prognosis in certain cases will not be doubtful, but this is because we shall notice the symptoms of general paralysis, or the duration of the disease for two, three, or four years will lead us to the conclusion that the time for recovery is past.

If we examine the insane at the different periods of life, we find that the disorder is rare in those below the age of puberty. Occasionally we meet with a case, sometimes transient and commencing in the night, sometimes melancholic; the child avoids the society of brothers and sisters, mopes in the dark and is disinclined to eat. In my experience these children recover in a large proportion. More break down at the age of puberty, and inasmuch as this is a period of profound physiological change, of development of the procreative system and of the brain centres and mind, we should expect that insanity would be frequent. It is not so, however, not nearly so frequent as at the next epoch, though more so than during the years preceding puberty. In the Commissioners' report for 1894 we read that during the five years 1888 to 1892 inclusive the yearly average of patients admitted under the age of 15 was 323. Those between the ages of 15 and 19 averaged 835, while those between 20 and 24 were 1,520. These latter are the adolescents, suffering from what has been termed the insanity of adolescence, and the prognosis in this and the insanity of puberty is equally favourable, at any rate in the females; its character is almost always mania with excitement, exaltation, hilarious and noisy chattering, and restless movement. Dr. Bevan Lewis says that "of all the types of insanity that occurring at the

puerperal period is one of the most recoverable, yet the recovery rate is nearly as high for the insanity incidental to adolescence." And he gives the recovery rate in puerperal cases at 80 per cent., while that of adolescent females is 73.3 per cent.; but he says "it is far otherwise with the same affection amongst men; in them, where depression is often largely present, the prognosis is far less favourable, and a wide margin must be allowed for partial recoveries, chronic incurables, and fatal cases." And he gives the recovery rate of adolescent males as 58.4 per cent. My own experience agrees with this. I have found a much larger proportion of young men remaining as a chronic residuum in asylums than of young women, and the majority of the former were patients whose insanity was melancholia, and not the noisy mania which is the characteristic form amongst the young.

It would seem that the prognosis is unfavourable where the insanity does not present the characteristics which should belong to the time of life. The young, when melancholic, do not recover rapidly, while of acute mania at the climacteric the prognosis is bad. There is one form, however, which occurs in the young which is one of apparent depression. This has been called "acute dementia," or "acute primary dementia," or "stupor with dementia," and has been confounded with the stupor of melancholia, *melancholia cum stupore*. It is not the same; it occurs in the young, its onset is rapid, the reduction is great. We never find so rapid a reduction in melancholia. The patient appears to be in a state of fatuous imbecility—lost, dribbling and dirty, grinning idiotically, or sunk in vacuous stupor. Yet the history may enable us to give a favourable prognosis. If we find that this all came on rapidly after some shock or fright, and we can ascertain beyond a doubt that it is not secondary dementia following an attack of acute insanity, and is not a state into which the patient has gradually drifted, we may pronounce hopefully in spite of the unfavourable symptoms.

Passing from the insanity of the young, the adolescents below the age of 25, I may consider that of the women mostly young who show symptoms of mental disorder during pregnancy, after childbirth or during lactation. The first, the insanity of pregnancy, is rare, and but few patients are admitted into asylums. In my own experience the cases have not been severe, and, so far as I know, all have recovered. In mild cases the prognosis is good, but of those which are severe enough to require asylum treatment the outlook is not so favourable, and almost all are desperately suicidal.

The insanity which, albeit acute, is the most curable of all is the puerperal, which in the majority of cases assumes the form of mania, rising from quiet and simple mania to the most acute delirium. The first thing to be noticed is loss of sleep, a matter often overlooked by the nurse, who may even disturb the patient to feed the child, or in other ways, neglecting to inform the medical attendant of the fact that sleep is defective. Then excitement commences, sleep is more and more absent, and in a few days the sufferer is in a state of acute or subacute mania. The first question will be where is such a patient to be treated. Our prognosis will be favourable if she can have proper treatment applied in a suitable place, skilled attendants, and all that is necessary for her welfare. Failing this, removal to an asylum will be necessary, and should be carried out without delay. If the woman is young, is not broken in health, and has not had many previous attacks, the prognosis is very good. Dr. Bevan Lewis gives the ratio of recoveries at 80 per cent., and Dr. Clouston as 75 per cent., a ratio higher than we find in any other form of insanity. And the ratio of deaths given by these two gentlemen agrees as closely as that of the recoveries, that of Dr. Bevan Lewis being 8.5 per cent., while Dr. Clouston's is 8.3 per cent. The reason for this high rate of recovery is not hard to find. Such cases are all of them acute, generally commencing in the first fortnight after delivery. The patients are under medical observation; if they are mild cases they are treated promptly at home, if too severe for home treatment they are at once removed to an asylum, where they recover rapidly and surely. They do not drift on for weeks or months without any treatment, as so many maniacal and melancholic patients do. These are Dr. Bevan Lewis's words: "The incalculable advantage of early treatment is very obvious in the recovery list, since of four-

and twenty who were placed in the asylum within one week of the onset of the insanity, thirteen recovered within three months, and the remaining eleven left recovered within five months, and this despite the fact that several had inherited strong neurotic tendencies." He also tells us that those who remained as chronic insane or died were either late admissions or women over 30 years of age. That which is called the insanity of lactation may arise from the exhaustion of over-suckling, from defective uterine involution, or reflex irritation. The prognosis is favourable. The recovery rate in Dr. Clouston's cases was higher than that of the puerperal. It is more commonly seen among the lower than the higher classes, and my experience of it is very small.

The period of adult life, that from 25 to 45 years, presents the largest number of insane patients of all kinds. In the Commissioners' last report the average number of admissions of persons between these ages was 7,310 out of a total of all ages of 16,045. A large number will be cases of mania; the majority, also, of the general paralytics will be included, and there will be a proportion of melancholics. Under the term "mania" are comprised all the various states of exaltation, which range from a slight reduction of control to one of delusion or hallucination, and thence to the extreme of maniacal delirium. There is no absolute line of demarcation between these stages, yet acute delirious mania differs widely from acute mania with delusions. In the former the first question is, Will the patient live out the storm, or die? and our prognosis must be directed to this. If death does not occur in the acute stage, mental recovery usually takes place, unless there have been frequent attacks previously. Women withstand the fury of the delirium and want of sleep better than men, but both sexes survive in a large proportion in the early attacks if only they are properly placed for suitable treatment. Our prognosis will be largely influenced by this. A patient kept at home in perpetual restraint, strapped down to the bed to prevent his jumping through the window, will probably die of exhaustion. Proper apartments are necessary, safe rooms where a patient can be without restraint, skilled attendants to administer abundant food, and adequate medical treatment. The temperature is important. In many very delirious cases, with never-ceasing muscular movement and violence, the temperature rises but a little above the normal. A high temperature is unfavourable, and so is a very rapid pulse. If in the intervals of quiet the pulse falls to a frequency not much above the normal, it is a good sign. The tongue, through great excitement, may keep moist and clean. If it is coated with a thick sticky coat of dead epithelium, and this proceeds from yellow to brown, and brown to black, and the lips and teeth are covered with sordes, the prognosis is, I need not say, very bad.

There is an acute mania where there is no delirium. Acute delirious mania runs a rapid course of a few weeks, terminating in death or—in the majority of cases—in recovery; while the noisy, garrulous, exalted state of acute mania may last for six months, a year, or even longer, and then pass away and sanity return. The prognosis points to a different issue. It is not a question of life or death; we are not anxious about the lives of these patients. The important point is, Will they recover their reason or not? Sometimes we see noisy mania, varying from silly and frivolous hilarity to anger and abuse, yet without delusion; an absolute want of self-control constituting that moral insanity I have already spoken of. We inquire the duration of the attack, the history of previous attacks (if any), the condition of the patient during the interval between the attacks, the health and bodily strength, the probable cause, and the family history. The more recent the attack and the more rapid the onset, the better the prognosis. If it is one of a long series of attacks, and has lasted for months, we may have doubts, though sometimes patients have such attacks recurring at intervals through a long life.

The cases of simple mania or simple melancholia without delusions are not nearly so frequent as those in which we find delusions or hallucinations, or both. How is our prognosis affected by them? They are evidence, no doubt, of a somewhat advanced insanity and a considerable reduction of the brain centres, but the prognosis is not rendered unfavourable by these alone. The more acute the symptoms the less are the delusions likely to remain permanent after the acute

stage has passed. It is a good sign if delusions change frequently. To-day the patient imagines one thing, to-morrow another. They do not become fixed and organised. But when all the acute symptoms have passed, when the patient recovers his sleep, and is able to employ and occupy himself, if one or two delusions remain persistently and cannot be dispersed, the prognosis is bad. The nature of chronic delusions varies considerably. Some have a fixed idea of persecution and of being tormented by certain people, others have hypochondriacal fancies, often very difficult to eradicate. And in every asylum we see patients with ideas of grandeur, who think themselves kings or queens, dukes or duchesses, and who dress themselves or sign their names in accordance with their delusions. The same remarks may be applied to hallucinations. Those which arise in an acute stage need not make us give an unfavourable prognosis any more than the snakes and rats of the patient in delirium tremens, but the chronic "voices" of a person who is in all other respects restored to mental health are of ill omen. If they vanish for a time they return again on any failure of health, and may render the man who hears them one of the most dangerous of patients.

We come now to another of the epochs of life, that known as the climacteric, an epoch of transformation, when various important functions with their corresponding nerve organisations come to an end. It is not surprising that we find it to be a period of nerve instability, when the various chances or accidents of life bring about an overthrow of the mental balance. The climacteric being a time of instability, causes, moral or physical, which would have been resisted at another age, produce insanity, or in persons prone by inheritance the change of life itself may suffice. What is the prognosis? The form incidental to this epoch is melancholia more or less acute; and a large number of the sufferers recover, probably 50 per cent. In forming our prognosis we take into consideration the duration of the malady, the question of early treatment, the number of previous attacks, the health of the patient, and such causes as alcoholic indulgence. There is a popular notion that the climacteric change of life will bring relief or even cure to those who are already disordered in mind or have suffered from periodical attacks. Such hopes are doomed to disappointment. In my experience all such patients are worse rather than better at the time of the cessation of menstruation.

Can climacteric insanity be said to exist in men? There is no such functional change in them, but they exhibit the same symptoms of mental disorder at a somewhat later age—namely, 65—which corresponds to the woman's change at 50; and this brings me to the prognosis of melancholia in its various aspects. The "simple" melancholia without delusion passes away often without treatment, and leaves the patient sane and sound. Some have such attacks periodically and get rid of them without our aid, and no medical treatment that I know will cut them short. The disorder runs a certain course, and disappears to return again at a future time. There is some risk of suicide, but as regards recovery the prognosis is decidedly favourable.

A more advanced stage of melancholia demands more active treatment—treatment which can hardly be carried out in a patient's own house amidst a number of terrified or sympathising relatives. Almost all such are suicidal; all must be so considered and kept guarded from everything by which they can hurt themselves. Many have to be sent to asylums, some because their means are not equal to the expense of private care, others because they refuse their food and have to be fed by force, or because they are so suicidal that in a private house they are not safe. But if properly cared for, with suitable attendants and adequate medical supervision, either in or out of an asylum, the prognosis is eminently good. The disorder is a tedious one; a slow process of repair has to restore and build up again the waste of nerve force. So slow is this that we do not despair if many months elapse with but little advance; it may even require years. After years of gloom the sufferer returns to the full possession of every faculty, reason, feeling, and memory, for the brain appears to have undergone no organic change.

There is, however, a class of patients in whom the brain disturbance is far more severe, and to it we apply the name of acute delirious melancholia. Instead of the quiet state or

stupor of ordinary melancholia, characterised by passive resistance and inertia, there is panic stricken frenzy and incessant motion. The sufferer paces the room, will not lie in bed, thinks the house is on fire, and that he is going to be burned, poisoned, or tortured. He will take no food or medicine, keep no clothes on, and resists to the uttermost everything that has to be done for him. Of such the prognosis is extremely bad. They are generally debilitated at the onset, and the violence of the disease soon exhausts them.

It sometimes happens that a patient has apparently recovered from an attack of melancholia; he seems quite well, and is about to return to his family and friends; we are told that he has not been so well for years, he is so full of life, energy, and enthusiasm. As time goes on, however, the good spirits become abnormal excitement, and the energy drifts into active mania, and instead of melancholia a maniacal attack supervenes through which the individual has to be led. Conversely, melancholia may follow mania after the same fashion. This alternating insanity may go on for years, one form succeeding the other with the utmost regularity. The prognosis is most unfavourable. Do what we will in the way of change, treatment, or removal of every supposed cause, the malady returns with fatal regularity. All periodicity in insanity is unfavourable. Some have alternate days of depression and excitement, but such patients do not recover. Others have recurring attacks of the same kind, not alternating. Here again the prognosis is bad. They are for the most part victims of hereditary transmission, and such attacks may commence early and be continued through a long life.

In forming a prognosis we may derive much help from a knowledge of the cause of the disorder. There may be an assignable reason—a moral cause as it is called—as grief, worry, or overwork; or a physical, as influenza, a blow on the head, or alcohol. In a large number of cases the cause is returned in the statutory statement as “unknown.” Such insanity has been termed “idiopathic,” which, in other words, means hereditary instability, a proneness to rapid reduction of the supreme centres through some cause so slight that it escapes notices, and would produce no result on a healthy brain. How is the prognosis affected by our knowledge that the disorder is hereditary? The popular idea is that such insanity is very incurable, but this is not borne out by experience. A vast number of the cases of insanity occurring in young people are of this kind—cases of the mania of adolescence and puerperal mania. I have said already that a larger number of puerperal cases recover than those from other causes, yet puerperal mania is generally hereditary. Those who are affected by hereditary insanity recover at any rate from the first attack quite as often as others; but they are specially liable to a return of the disorder, their unstable nature being easily upset by a slight cause.

Passing from the hereditary or idiopathic insanity to that which is acquired by the individual himself, we have to consider first the “moral causes,” so called. These are given in the Commissioners’ report as six varieties: 1. Domestic trouble, including loss of relatives and friends. 2. Adverse circumstances, including business anxieties and pecuniary difficulties. 3. Mental anxiety and “worry” (not included under the above), and overwork. 4. Religious excitement. 5. Love affairs, including seduction. 6. Fright and nervous shock. Now these are all called “moral causes,” but some of them deserve the name of physical as much as any. The long-continued strain of the first three which may be comprised in two words, worry or overwork, must produce a physical effect on the brain cells and brain circulation. You will remember the experiments of Dr. Hodge, and his observations on the effect of normal fatigue on the sparrow, the pigeon, the swallow, and the honey bee. He found that the normal fatigue of the day’s exercise caused a marked decrease of the nucleus of the nerve cell and a jagged and irregular, instead of a smooth and rounded outline. This was restored by the night’s rest. In man, excessive stimulation in the shape of overwork or worry causes a want of control of the vasomotor system, hyperæmia, overaction of lower centres owing to obstruction of the higher, deposits of waste, and so on. These are physical effects, though they proceed from

moral causes.¹ How does all this affect our prognosis? In proportion to the time that the excessive stimulation has lasted, so will our prognosis be unfavourable or the reverse. Long protracted overwork or worry may produce the same injurious effects on the brain cells and centres as a blow or alcohol. Therefore the duration must affect our verdict. Such acquired insanity must be looked upon very unfavourably. Causes such as the sudden loss of a friend, or a fright or shock, are likely to upset an unstable mind, and to produce a rapid reduction of the mental balance, but this will not be spread over a long time and will come nearer to that which we call hereditary insanity, and of this the prognosis is good in a first attack if it occurs in one not broken in health.

Passing to the physical causes given in the Commissioners’ table, we find some which have been already considered: as puberty, pregnancy, parturition, and the change of life; another group is uterine and ovarian disorders. How far do these affect our prognosis? Under the head of uterine disorder we have to consider all the derangements of menstruation which are so commonly met with amongst the insane, and are so often assigned as the cause of the mental disturbance; of these, amenorrhœa is the most common. It may occur in the course of an acute attack, or have been noticed before any mental symptoms. The patient has declined in health and strength, and, as concomitant symptoms, the amenorrhœa and mental disorder have appeared. When by dint of rest, feeding, and sleep the bodily condition is brought again to its normal level, the catamenia reappear, and the patient becomes sane, but not as cause and effect. The amenorrhœa has not caused the insanity, the restoration has not cured it, both having a more remote origin. So, too, menorrhagia may have reduced the strength and insanity has followed. If the menorrhagia is stopped the patient may recover; neither of these conditions need make us give an unfavourable prognosis. That affections of the uterus (such as displacements, prolapse, and the like) may by a reflex irritation upset an unstable brain is evidenced by many recorded cases, and cures have followed when the uterine disorder has been remedied. The prognosis here will depend on the duration of the mental symptoms and the extent to which they have become organised. I have known a patient recover who had a severe prolapsus uteri which could not be dealt with, whilst another did not recover from whom an irritating pessary was removed which was supposed to have given rise to the insanity. Though there may be amenorrhœal and dysmenorrhœal trouble in many cases, I do not think the prognosis depends on this, and examination in the case of young unmarried women is likely to do more harm than good.

There is a variety of insanity which has received the name of traumatic. By this is meant insanity which is the result of an accident, causing a direct blow or injury to the head, or a shock or shake to the body generally without definite harm to the head. In either case we may find insanity rapidly supervening in an acute form as the result of shock, even when the damage done to the head has been slight; and then our prognosis will be favourable if there are no other conditions to prevent recovery. I have known mental symptoms follow falls and blows, and patients recover at all ages. In the young it has taken the form of acute primary dementia, and the issue has been recovery. In elderly persons acute mania or acute melancholia has supervened, and recovery here also has followed. Far other, however, is the prognosis in those cases where the advent of the mental malady is slow and insidious and we find at first a moral insanity, a gradual perversion and alteration of the whole man, the reduction leading to quiet and concealed delusions or to loss of memory and incipient dementia, or to the boastfulness and other symptoms of general paralysis. All these point to a chronic organic change which the brain is undergoing and which we are powerless to arrest. With traumatic insanity is often, but erroneously, coupled that which is said to proceed from “sunstroke.” Sunstroke, in the strict sense of the word, rarely, in my experience, produces insanity, but heat, the continued heat of the tropics, especially in unhealthy places, produces a considerable amount. I have seen many from India, Burmah, the Straits Settlements and

¹ Cf. Dr. Batty Tuke, Morisonian Lecture, *Edin. Med. Journ.*, March, 1894.

such climates, both men and women. I have found such patients, when removed to a cold climate, recover in the large majority of cases; therefore the prognosis is good. But I have come to the conclusion that those who have once broken down and become insane in the tropics ought not to be allowed to return to those climates. If they do they undergo a great risk, even under the favourable conditions of hill stations in the hot weather and such-like precautions. It is not the hot days but the hot nights that try the nervous system and cause sleep to be broken and unrefreshing.

More like traumatic insanity is that to which we give the name of alcoholic. Very various are the symptoms and phases of this, and the prognosis will vary equally. This is an acquired insanity the direct result of alcoholic poisoning, but those who have an hereditary predisposition more readily fall victims, and it is not infrequently hereditary, the same propensity showing itself in successive generations. All the varieties of insanity may be produced by alcohol. We see acute delirium and acute mania exemplified by the symptoms we call delirium tremens. Less acute than this is the insanity with delusions either maniacal or melancholic, which is due to long-continued drinking. Now, with regard to the acute symptoms you are all familiar with them, and will agree with me that patients as a rule recover, at any rate, from the first attack. Many recover again and again, and have such illnesses periodically for many years. From the less acute insanity the majority recover at first if no unfavourable conditions arise. The stoppage of the drinking allows the poison to be eliminated, and the mind is restored. If the drinking is more protracted we may find evidence of organic brain change. Paralytic symptoms will be noticed, and signs of approaching dementia, as loss of memory and childish conversation. This is frequently the way in which the drinking of women terminates. In them delirium tremens rarely occurs, and after years of alcoholization paralytic symptoms are often the first to be noticed. Here the prognosis is very unfavourable, yet I have known them recover in a most unexpected manner, after being admitted in a helpless condition, with complete loss of power in the lower extremities. But recovery of all such means a return to their evil habits, and from a second attack they are not likely to emerge.

Insanity from other poisons, such as opium, chloral, or bhang, are rarely met with here. Here and there we find mental symptoms, chiefly depression, coming on in persons who are addicted to opium eating, or that which is now the prevalent fashion, hypodermic injection. The prognosis is not favourable. The patient improves when the morphine is withheld or lessened, for it is not always possible to stop it altogether, but I know no habit so difficult to break through, and though many times interrupted the victim goes back to his syringe unless he is in actual confinement. Of insanity from chloral I have had little experience. If it is stopped I should expect recovery, as the habit is not likely to have continued a long time. Insanity from bhang is common enough in the East, but here we do not see it. The patients recover at any rate in the earlier attacks.

There is an insanity which occurs in epileptic patients which is of a very serious nature, and is by no means uncommon. Epilepsy means a discharge of unstable grey matter which causes mental symptoms ranging from a loss of consciousness of a very brief duration to most acute mania, or, if of long duration and much severity, to complete dementia. There are many epileptics who have fits not very numerous or frequent which do not produce insanity, though a certain cloud may remain for a time after an attack; but if the fits are frequent, or occur a number at a time, they may be followed by very acute symptoms; these may pass away and the patient recover, yet the prognosis is unfavourable. Epilepsy in the adult is a very grave disease, of which cures are the exception rather than the rule, and the recurrence of the disease, and the resulting insanity, tends to that state of hopeless dementia which characterises the chronic epileptics of our asylums.

If the prognosis of insanity following epilepsy is unfavourable the outlook of that which follows apoplexy is still more gloomy. After an apoplectic seizure well-marked symptoms of insanity, mania, or melancholia may appear either at once or after an interval. They may pass away or alternate,

mania and melancholia succeeding one another. But if the more prominent features disappear there will be a weakness of mind and memory tending to the dementia so constantly found. As in all cases of organic mischief in the brain or its vessels the prognosis is unfavourable, especially in the cases of hæmorrhage where consciousness is more interrupted than where the damage is due to thrombosis. There are many important questions, such as the degree of mind, the capacity and responsibility of the aphasic, but I am not concerned with such at present.

More favourable is the prognosis in that insanity which has been termed post-febrile, and arises in the course or towards the decline of acute disorders, such as the eruptive fevers, pneumonia, or typhoid. This is not to be confounded with the ordinary delirium so often seen, and seen when the temperature is at its highest. The insanity I am speaking of has been well described by Dr. Hermann Weber.² It does not come on at the height of the fever, but during its decline when the temperature has fallen, and he says that the commencement in almost every case occurred immediately after waking from sleep. No doubt the brain in these cases becomes deprived of blood to a considerable extent, and on waking delirium takes place in a patient whose centres are unstable. Of this sudden insanity the prognosis is good, and the attack is usually transitory. Where insanity follows a long-continued illness, whether fever or any other exhausting malady such as influenza, the prognosis is decidedly unfavourable, and will depend on the general health and recuperative power of the individual. I have seen several patients who had had influenza, and who never recovered.

There is much difference of opinion as to the relations of syphilis and insanity. Can we speak of a syphilitic insanity? I do not myself think that insanity in the ordinary sense of the word is due to syphilis except when the latter acts as a moral cause. Syphilophobia is not uncommon. Patients who have or have had specific disease become melancholic and are possessed by the one idea that they shall die of it in its most loathsome form. Even those who have never had it may conceive a delusion that they have it, and point to every little spot and pimple in proof thereof. Syphilis does produce mental defects, but it does so, as Dr. Hughlings Jackson has shown, "by attacking the neuroglia, the fibrous tissue, blood vessels, lymphatics, membranes or bony coverings, involving the nerve tissue and its functions secondarily by pressure, so causing irritation, inflammation, and *ramollissement*, or by starvation from deficient blood supply, causing degeneration and atrophy."³ The prognosis is most unfavourable in all cases where the brain is so damaged by syphilis, and I have rarely found that antisyphilitic treatment, which nowadays is so largely used, has produced any beneficial result.

There is a form of insanity which has received the name of the insanity of masturbation, on which a word or two may be said. Masturbation is very common amongst the insane, common amongst the males and also among the females, though perhaps in a less degree. Amongst the latter it is constantly found in an acute attack of mania, but it disappears when the acute symptoms are over. It is not to be supposed, however, that this evil habit is the cause of the insanity in every case where it exists. In many, I may say the majority, it is a symptom. In some neurotic persons with an inherited unstable organisation it may be a cause. Loss of control allows the habit to be indulged in to excess, and the irritation and exhaustion of this perpetual indulgence upset the weak brain and produce the mental phenomena which have been described as characteristic of this variety. These are morbid and exaggerated ideas of self, sometimes self-importance and conceit, sometimes hypochondriacal fancies about health or delusions that the patient is not sufficiently valued by his relations and friends. At some time or other there will be an acute or subacute attack of mania or melancholia, and when this passes away there may be a period of remission and an apparent recovery, but the patient soon drifts into hopeless dementia. The prognosis in all such cases is extremely unfavourable.

As I began with the insanity of puberty and adolescence, so will I end with that of old age; and by this I do not mean

¹ *Medico-Chirurgical Transactions* vol. xlviii.

² Dr. Clouston, *Clinical Lectures*, p. 420.

the dementia which is the last scene in the history of many a once great mind. There may be difficulty in determining the extent of this at the commencement; questions of diagnosis and of mental responsibility may arise, but of the prognosis there can be no doubt. But one meets with a certain number of cases of mania, and more frequently of melancholia, in old people, many of whom recover in a surprising way.

The year before last I was asked to see an old lady of 75 years, whose mental and bodily strength had been failing, as her medical man had told me, for six months. She did not know where she was, though she was in her own house, where she had lived for many years, and she had all kinds of delusions. Being unmanageable there, she was removed to an asylum, and everyone supposed it to be the beginning of the end. She was in a somewhat acute state for some weeks, had hallucinations of sight and many delusions, and then gradually improved, became perfectly clear in her mind and memory, and went home to the old house in less than three months recovered.

Dr. Clouston gives the particulars of 203 cases of senile insanity, excluding 101 others which were cases of epilepsy, mania or dementia of long standing, or climacteric insanity. He says that heredity as a cause was uncommon. The age was from 60 to 90 years, and of these 203 persons, 72 were discharged "recovered"—that is, in all of them their worst mental symptoms disappeared, they passing into normal senility. In many cases they became quite well in an absolute sense." This is in the proportion of 30 per cent.—a large number when the time of life is considered. So that our prognosis is not utterly without hope, though it may be doubtful or even unfavourable. It is to be remembered that all Dr. Clouston's patients and my own which I have mentioned recovered in asylums. I do not think the same results would be attained by any home treatment.

SOME RESEARCHES INTO THE CHEMISTRY OF TYPHOID FEVER.¹

BY

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IN a paper which we read at the Annual Meeting of the Association in 1893 we gave an account of some researches which we had carried out respecting the pathological effects of certain chemical substances extracted from the spleen after death from scarlatina. An opportunity having lately arisen of obtaining the spleens from five cases which had succumbed during the third week of enteric fever, it occurred to us that perhaps the same method of investigation might in this case also yield interesting results. In the following paper many of the minuter details of the work have been purposely omitted, since the method adopted was identical with that advocated by Sidney Martin in his various valuable papers on animal toxins, and followed by us in our former work.

MODE OF EXTRACTION, ETC.

The spleens were removed from the body as soon after death as possible, and, having been freely incised, were placed in bottles containing strong spirit. On their receipt at the laboratories the organs were thoroughly minced and the pulp mixed with an excess of absolute alcohol and put aside for some weeks, in order to ensure the coagulation of all the albuminous matter which might be present.

The next procedure was to separate the precipitate by filtration through linen, and, after washing the precipitate with absolute alcohol, to add the resultant fluids to the original spirituous solution. This mixture contained (a) any

albumoses or peptones which were present in the spleen, (b) alkaloids, (c) extractive matters and fat, (d) salts.

The solid residue was next extracted with distilled water, the process being aided by the employment of an automatic shaker. After a second filtration, which was generally a matter of some difficulty, a clear yellowish fluid was obtained, which contained nearly all the proteid material which had not been rendered insoluble by the action of alcohol. This watery extract was then added to the spirituous solution just mentioned, and the mixture concentrated *in vacuo* at a temperature not exceeding 40° C. By means of an apparatus devised by one of us, and now in frequent use at the laboratories, we were enabled to evaporate as many as six flasks at a time, the distillates being collected and preserved in separate vessels. The great saving of time secured in this way was an important point, since, owing to the low temperature at which the process of concentration had to be carried on, the operation was necessarily very tedious.

As soon as the contents of the flasks had attained a syrupy consistence, they were poured into a bottle containing a large quantity of absolute alcohol, the result of which was to produce a copious precipitate consisting of those proteid substances which had been dissolved in the water or weak spirit. As soon as the precipitate had settled, the supernatant fluid was poured off, evaporated as before, and the residue again treated with absolute alcohol, the manoeuvre being repeated until further precipitation failed to occur. The various precipitates were then collected, thoroughly washed with fresh alcohol, dried *in vacuo* over sulphuric acid, and preserved in a dry and well-stoppered bottle.

The alcoholic filtrate was next evaporated several times to dryness, the residue being extracted on each occasion with absolute alcohol, and then finally collected and preserved. Both these extracts were found to contain a certain quantity of fatty material, which imparted an acid reaction to their solutions. To eliminate this recourse was had to extraction with anhydrous ether and chloroform, after the plan devised by Sidney Martin. By these various processes we were enabled to obtain amongst others, the following chemical substances:

1. A material which was insoluble in absolute alcohol but freely soluble in water, and which afforded all the chemical reactions of an albumose. The maximum quantity of this substance, or more probably mixture of albumoses, which was extracted from a spleen, was 3.93 g., and the minimum 2.1 g.

2. A substance which was extremely soluble both in water and in absolute alcohol, and possessed most of the characteristic features of an alkaloid. The maximum amount obtained from any case was 0.8 g.

3. A dark-coloured, semi-solid material consisting of a mixture of fat and fatty acids (1.2 to 0.9 g.).

MODE OF ADMINISTRATION.

The animals which we employed in order to determine the pathological effects of the various chemical substances consisted of rabbits, guinea-pigs, and rats. In each instance the animal had remained for some time under observation prior to the commencement of the experiment, and a daily record was kept of its temperature and body weight. Each dose of the albuminous or alkaloidal substance was dissolved in 3 c.cm. of distilled water when required for use, but the fatty extract was reduced to a fluid state by the action of heat. In the case of the guinea-pigs and rats the injections were invariably made beneath the skin of the abdomen, but the rabbits were also submitted to the intravenous method of inoculation. The strictest antiseptic precautions were observed, and in no instance did we notice any signs of inflammation at the site of puncture. After an injection the animal was placed in a separate cage and its temperature recorded on a chart every hour or two. The condition of the appetite, the body weight, and the character of the dejecta were also noted day by day.

The animals were killed at intervals of time varying from a few hours to three weeks after the injection, and the principal organs of the body put aside for microscopical examination. The tissues were embedded in paraffin, cut with a rocking microtome, and the sections stained with hæmatoxylin and eosin.

¹ Report to the Scientific Grants Committee of the British Medical Association. This research was carried out in the laboratories of the Conjoint Board of the Royal Colleges of Physicians (London) and Surgeons (England), and we owe our best thanks to the Council of that body for the liberal accommodation provided, and to the Director, Dr. G. Sims Woodhead, for much valuable interest and criticism during the progress of our work.