

LECTURE II.

GENTLEMEN: In my last lecture I gave a general survey of the physiology of our mental functions, showing how indissolubly they are bound up with the bodily functions, and how barren must of necessity be a study of mind apart from body. I pointed out that the higher mental operations were functions of the supreme nerve-centres; but that, though of a higher and more complex nature than the functions of the lower nerve-centres, they obeyed the same physiological laws of evolution, and could be best approached through a knowledge of them. I now propose to show that the phenomena of the derangement of mind bear out fully this view of its nature; that we have not to deal with disease of a metaphysical entity, which the method of inductive inquiry cannot reach, nor the resources of the medical art touch, but with disease of the nervous system, disclosing itself by physical and mental symptoms. I say advisedly physical and mental, because in most, if not all, cases of insanity, at one period or other of their course, there are, in addition to the prominent mental features, symptoms of disordered nutrition and secretion, of disordered sensibility, or of disordered motility. Neither in health nor in disease is the mind imprisoned in one corner of the body; and, when a person is lunatic, he is, as Dr. Bucknill has remarked, lunatic to his fingers' ends.

Mental disorders are neither more nor less than nervous diseases in which mental symptoms predominate, and their entire separation from other nervous diseases has been a sad hin-

derance to progress. When a blow on the head has paralyzed sensibility and movement, in consequence of the disease in the brain which it has initiated, the patient is sent to the hospital; but when a blow on the head has caused mental derangement, in consequence of the disease of brain which it has initiated, the patient is sent to an asylum. In like manner, one man who has unluckily swallowed the eggs of a *tænia*, and has got a *cysticercus* in the brain, may go to the hospital; another who has been similarly unlucky goes to an asylum. Syphilitic disease of the brain or its arteries lands one person in an asylum with mental symptoms predominant, another in a hospital with sensory and motor disorder predominant. The same cause produces different symptoms, according to the part of the brain which it particularly affects. No doubt it is right that mental derangements should have, as they often require, the special appliances of an asylum, but it is certainly not right that the separation which is necessary for treatment should reach to their pathology and to the method of its study. So long as this is the case, we shall labor in vain to get exact scientific ideas concerning their causation, their pathology, and their treatment.

Clearing, then, the question as completely as possible from the haze which metaphysics has cast around it, let us ask—How comes idiocy, or insanity? What is the scientific meaning of them? We may take it to be beyond question that they are not accidents; that they come to pass, as every other event in Nature does, by natural law. They are mysterious visitations only because we understand not the laws of their production, appear casualties only because we are ignorant of their causality. When a blow on the head or an inflammation of the membranes of the brain has produced derangement of mind, we need not look farther for a cause: the actual harm done to structure is sufficient to account for disorder of function in the best-constituted and best-developed brain. But it is only in a small proportion of cases of insanity that we can discover such a direct physical occasion of disease.

In a great many cases—in more than half, certainly, and perhaps in five out of six—there is something in the nervous organization of the person, some native peculiarity, which, however we name it, predisposes him to an outbreak of insanity. When two persons undergo a similar moral shock, or a similar prolonged anxiety, and one of them goes mad in consequence, while the other goes to sleep and goes to work and recovers his equanimity, it is plain that all the coöperating conditions have not been the same, that the entire cause has been different. What, then, has been the difference? In the former case there has been present a most important element, which was happily wanting in the latter—there has been a certain hereditary neurosis, an unknown and variable quantity in the equation.

Perhaps of all the erroneous notions concerning mind which metaphysics has engendered or abetted, there is none more false than that which tacitly assumes or explicitly declares that men are born with equal original mental capacity, opportunities and education determining the differences of subsequent development. The opinion is as cruel as it is false. What man can by taking thought add one cubit either to his mental or to his bodily stature? Multitudes of human beings come into the world weighted with a destiny against which they have neither the will nor the power to contend; they are the step-children of Nature, and groan under the worst of all tyrannies—the tyranny of a bad organization. Men differ, indeed, in the fundamental characters of their minds, as they do in the features of their countenances, or in the habits of their bodies; and between those who are born with the potentiality of a full and complete mental development, under favorable circumstances, and those who are born with an innate incapacity of mental development, under any circumstances, there exists every gradation. What teaching could ever raise the congenital idiot to the common level of human intelligence? What teaching could ever keep the inspired mind of the man of genius at that level?

The congenital idiot is deprived of his human birthright; for he is born with such a defect of brain that he cannot display any, or can only display very feeble and imperfect mental functions. From no fault of his own is he thus afflicted, seeing that he must be held innocent of all offence but the offence of his share of original sin; but it is nowise so clear that it is not from some fault of his parents. It is all too true that, in many cases, there has observably been a neglect or disregard of the laws which govern the progress of human development through the ages. Idiocy is, indeed, a manufactured article; and, although we are not always able to tell how it is manufactured, still its important causes are known and are within control. Many cases are distinctly traceable to parental intemperance and excess. Out of 300 idiots in Massachusetts, Dr. Howe found as many as 145 to be the offspring of intemperate parents; and there are numerous scattered observations which prove that chronic alcoholism in the parent may directly occasion idiocy in the child. I think, too, that there is no reasonable question of the ill effects of marriages of consanguinity: that their tendency is to produce degeneracy of the race, and idiocy as the extremest form of such degeneracy. I do not say that *all* the children of such marriages may not sometimes be healthy, and *some* of them quite healthy at other times; but the general and ultimate result of breeding in and in is to produce barrenness and sterility, children of a low degree of viability and of imperfect mental and physical development, deaf-mutism, and actual imbecility or idiocy. Again, insanity in the parent may issue in idiocy in the offspring, which is, so to speak, the natural term of mental degeneracy when it goes on unchecked through generations. It may be affirmed with no little confidence that, if the experiment of intermarrying insane persons for two or three generations were tried, the result would be sterile idiocy and extinction of the family. Certain unfavorable conditions of life tend unquestionably to produce degeneracy of the individual; the morbid predispo-

sition so generated is then transmitted to the next generation, and, if the unfavorable conditions continue, is aggravated in it; and thus is formed a morbid variety of the human kind, which is incapable of being a link in the line of progress of humanity. Nature puts it under the ban of sterility, and thus prevents the permanent degradation of the race. Morel has traced through four generations the family history of a youth who was admitted into the asylum at Rouen in a state of stupidity and semi-idiocy; the summary of which may fitly illustrate the natural course of degeneracy when it goes on through generations.

First generation: Immorality, depravity, alcoholic excess and moral degradation, in the great-grandfather, who was killed in a tavern-brawl.

Second generation: Hereditary drunkenness, maniacal attacks, ending in general paralysis, in the grandfather.

Third generation: Sobriety, but hypochondriacal tendencies, delusions of persecutions, and homicidal tendencies in the father.

Fourth generation: Defective intelligence. First attack of mania at sixteen; stupidity, and transition to complete idiocy. Furthermore, probable extinction of the family; for the generative functions were as little developed as those of a child of twelve years of age. He had two sisters who were both defective physically and morally, and were classed as imbeciles. To complete the proof of heredity in this case, Morel adds that the mother had a child while the father was confined in the asylum, and that this adulterous child showed no signs of degeneracy.

When epilepsy in young children leads to idiocy, as it often does, we must generally look for the deep root of the mischief in the family neurosis.

No one can well dispute that, in the case of such an extreme morbid variety as a congenital idiot is, we have to do with a defective nervous organization. We are still, however, without more than a very few exact descriptions

of the brains of idiots. Mr. Marshall has recently examined and described the brains of two idiots of European descent. He found the convolutions to be fewer in number, individually less complex, broader and smoother, than in the apes: "In this respect," he says, "the idiots' brains are even more simple than that of the gibbon, and approach that of the baboon." The condition was the result neither of atrophy nor of mere arrest of growth, but consisted essentially in an imperfect evolution of the cerebral hemispheres or their parts, dependent on an arrest of development. The proportion of the weight of brain to that of body was extraordinarily diminished. We learn, then, that when man is born with a brain no higher—indeed, lower—than that of an ape, he may have the convolutions fewer in number, and individually less complex, than they are in the brain of a chimpanzee and an orang; the human brain may revert to, or fall below, that type of development from which, if the theory of Darwin be true, it has gradually ascended by evolution through the ages.

With the defect of organ there is a corresponding defect of function. But there is sometimes more than a simple defect. A curious and interesting fact, which has by no means yet received the consideration which it deserves, is that, with the appearance of this animal type of brain in idiocy, there do sometimes appear or reappear remarkable animal traits and instincts. There is a class of idiots which may justly be designated *theroid*, so like brutes are the members of it. The old stories of so-called wild men, such as Peter the wild boy, and the young savage of Aveyron, who ran wild in the woods and lived on acorns and whatever else they could pick up there, were certainly exaggerated at the time. These degraded beings were evidently idiots, who exhibited a somewhat striking aptitude and capacity for a wild animal life. Dr. Carpenter, however, quotes the case of an idiot girl, who was seduced by some miscreant, and who, when she was delivered, gnawed through the umbilical

cord as some of the lower animals do. And Dr. Crichton Brown, of the West Riding Asylum, records a somewhat similar case in a young woman, not an idiot naturally, but who had gone completely demented after insanity. She had been in the habit of escaping from home, and of living in solitude in the woods, feeding upon wild fruits or what she could occasionally beg at a cottage, and sleeping in the brush-wood. She had frequently lived in this manner for a fortnight at a time. During one of these absences she was delivered of twins; she had sought out a sheltered hollow, and there, reverting to a primitive instinct, gnawed through the umbilical cord. The twins were alive when found two days after birth, but the mother was in a very exhausted state, having had no food or covering since her delivery. "We have at Salpêtrière," says Esquirol, "an imbecile woman, who used to earn a few sous by doing rough household work. It has happened on several occasions that as soon as she got her sous she took them to a laborer, and gave herself up to his brutality; but when she was pregnant she went no more to him."

In the conformation and habits of other idiots the most careless observer could not help seeing the ape. A striking instance of this kind is described by Dr. Mitchell, Deputy Commissioner in Lunacy for Scotland. "I have never," he says, "seen a better illustration of the ape-faced idiot than in this case. It is not, however, the face alone that is ape-like. He grins, chatters, and screams like a monkey, never attempting a sound in any way resembling a word. He puts himself in the most ape-like attitude in his hunts after lice, and often brings his mouth to help his hands. He grasps what he brings to his mouth with an apish hold. His thumbs are but additional fingers. He has a leaping walk. He has heavy eyebrows, and short hair on his cheek or face. He is muscular, active, and not dwarfish. He sits on the floor in ape fashion, with his genitals always exposed. He has filthy habits of all kinds. He may be called an idiot of the lowest

order; yet there is a mischievous brute-like intelligence in his eye. His head is not very small, its greatest circumference being twenty inches and a half, but in shape it strongly exhibits the ape-form of abnormality."

Pinel has recorded the case of an idiot who was something like a sheep, both in respect of her tastes, her mode of life, and the form of her head. She had an aversion to meat, and ate fruit and vegetables greedily, and drank nothing but water. Her demonstrations of sensibility, joy, or trouble, were confined to the repetition of the ill-articulated words, *bé, ma, bah*. She alternately bent and raised her head, and rubbed herself against the belly of the girl who attended her. If she wanted to resist or express her discontent, she tried to butt with the crown of her head; she was very passionate. Her back, her loins, and shoulders, were covered with flexible and blackish hairs one or two inches long. She never could be made to sit on a chair or bench, even when at meals; as soon as she was placed in a sitting posture, she glided on the floor. She slept on the floor in the posture of animals.

There is now under care, in the West Riding Asylum, a deformed idiot girl who, in general appearance and habits, has, according to Dr. Brown, striking features of resemblance to a goose; so much so, that the nurses who received her described her as just like "a plucked goose." Her father died in the asylum, and her mother's sister was also a patient in it at one time. She is four feet two inches in height, has a small head, and thin and scanty hair, so that the crown of the head is partially bald. The eyes are large, round, prominent, and restless, and are frequently covered by the eyelids, as if by a slow, forcible effort at winking. The lower jaw is large, projecting more than one inch beyond the contracted upper jaw, and possesses an extraordinary range of antero-posterior, as well as lateral, movement; the whole configuration of the lower part of the face having a somewhat bill-like appearance. The neck is unusually long and flexible, and is

capable of being bent backward so as actually to touch the back between the scapulæ. The cutis anserina is general over the body, but is most marked on the back and dorsal aspects of the limbs, where it looks exactly as if it had been just deprived of feathers. The inferior angles of the scapulæ stand prominently out, and moving freely with the movements of the arms have precisely the appearance of rudimentary wings. The girl utters no articulate sounds, but expresses pleasure by cackling like a goose, and displeasure by hissing or screeching like a goose, or perhaps like a macaw. When angry, she flaps her arms against her sides and beats her feet upon the floor. She knows her own name, and understands one or two short sentences, such as "Come here" and "Put out your hand." She recognizes the persons who attend upon her, and feed her, and is much agitated if touched by a stranger. She cannot feed herself, but swallows voraciously all that is put into her mouth, showing no preference for one article of diet over another. She is dirty in her habits, and no amount of attention has improved her in this respect. She is very fond of her bath, cackling when she is put into it, and screeching when she is taken out of it.*

It is a natural question, Whence come these animal traits

* The following account of an idiot in the Western Counties Idiot Asylum has been communicated to me by Mr. Kenton, surgeon to the Asylum: She is between 15 and 16 years old, has a very small head, but is well formed otherwise, and well nourished. She has little or no intellect, not being able to speak, and barely understanding a few signs. By careful treatment she has been taught to feed herself, but there her education has reached its limit. She has been left to herself, and watched with a view to observe her natural habits. When alone in the garden, she chooses a quiet spot among the shrubs, and, sitting down, will bend forward with her small head between her thighs, and occupy herself in picking imaginary insects from the adjacent parts of her body, pretending to pick them and to throw them away. She will then wander about, and finding a suitable bough, will swing by her hands, and then double her legs over the branch and swing with her head downward. She will steal any thing she fancies, and hide it away; will suddenly spring upon any child near and bite and scratch it, and then in a moment look as demure as if she had done nothing. At certain times she will go under the shrubs, scratch a hole with her hands in

and instincts in man? Whence was derived the instinct which taught the idiot woman to gnaw through the umbilical cord? Was it really the reappearance of a primitive instinct of animal nature—a faint echo from a far-distant past, testifying to a kinship which man has almost outgrown, or has grown too proud to acknowledge? No doubt such animal traits are marks of extreme human degeneracy, but it is no explanation to call them so; degenerations come by law, and are as natural as natural law can make them. Instead of passing them by as abnormal, or, worse still, stigmatizing them as unnatural, it behooves us to seek for the scientific interpretation which they must certainly have. When we reflect that every human brain does, in the course of its development, pass through the same stages as the brains of other vertebrate animals, and that its transitional states resemble the permanent forms of their brains; and when we reflect further, that the stages of its development in the womb may be considered the abstract and brief chronicle of a series of developments that have gone on through countless ages in Nature, it does not seem so wonderful, as at the first blush it might do, that it should, when in a condition of arrested development, sometimes display animal instincts. Summing up, as it were, in itself the leading forms of the vertebrate type, there is truly a brute brain within the man's; and when the latter stops short of its characteristic development as *human*—when it remains arrested at or below the level of an orang's brain—it may be presumed that it will manifest its most primitive functions, and no higher functions.

the ground, sit down upon it as a cat does, then turn round and carefully cover the spot by scraping the earth over it with her hands. She tears her clothes up into strips, and hides the pieces. Mr. Kenton mentions another idiot under his care, who puts every thing to his nose before putting it into his mouth. This he does, not hastily, but deliberately, examining each piece of food carefully by his sense of smell. He greatly dislikes butter, and will not eat pie-crust or any cooked food which contains butter, and he detects its presence with certainty by the sense of smell. He will not kiss any one till he has sniffed at the person first.

I am not aware of any other considerations than those just adduced which offer even the glimpse of an explanation of the origin of these animal traits in man. We need not, however, confine our attention to idiots only. Whence come the savage snarl, the destructive disposition, the obscene language, the wild howl, the offensive habits, displayed by some of the insane? Why should a human being deprived of his reason ever become so brutal in character as some do, unless he has the brute nature within him? In most large asylums there is one, or more than one, example of a demented person who truly ruminates: bolting his food rapidly, he retires afterward to a corner, where at his leisure he quietly brings it up again into the mouth and masticates it as the cow does. I should take up a long time if I were to enumerate the various brute-like characteristics that are at times witnessed among the insane; enough to say that some very strong facts and arguments in support of Mr. Darwin's views might be drawn from the field of morbid psychology. We may, without much difficulty, trace savagery in civilization, as we can trace animalism in savagery; and, in the degeneration of insanity, in the *unkinding*, so to say, of the human kind, there are exhibited marks denoting the elementary instincts of its composition.

It behooves us, as scientific inquirers, to realize distinctly the physical meaning of the progress of human intelligence from generation to generation. What structural differences in the brain are implied by it? That an increasing purpose runs through the ages and that "the thoughts of men are widened with the process of the suns," no one will call in question; and that this progress has been accompanied by a progressive development of the cerebral hemispheres, the convolutions of which have increased in size, number, and complexity, will hardly now be disputed. Whether the fragments of ancient human crania which have been discovered in Europe do or do not testify to the existence of a barbarous race that disappeared before historical time, they certainly

mark a race not higher than the lowest surviving human variety. Dr. Pritchard's comparison of the skulls of the same nation at different periods of its history led him to the conclusion that the present inhabitants of Britain, "either as the result of many ages of great intellectual cultivation or from some other cause, have much more capacious brain-cases than their forefathers." Yet stronger evidence of a growth of brain with the growth of intelligence is furnished by an examination of the brains of existing savages. Gratiolet has figured and described the brain of the Hottentot Venus, who was nowise an idiot. He found a striking simplicity and a regular arrangement of the convolution of the frontal lobes, which presented an almost perfect symmetry in the two hemispheres, involuntarily recalling the regularity and symmetry of the cerebral convolutions in the lower animals. The brain was palpably inferior to that of a normally-developed white woman, and could only be compared with the brain of a white idiotic from arrest of cerebral development. Mr. Marshall has also recently examined the brain of a Bush-woman, and has discovered like evidence of structural inferiority: the primary convolutions, although all present, were smaller and much less complicated than in the European; the external connecting convolutions were still more remarkably defective; the secondary sulci and convolutions were everywhere decidedly less developed; there was a deficiency of transverse commissural fibres; and in size, and every one of the signs of comparative inferiority, "it leaned, as it were, to the higher quadrumanous forms." The developmental differences between this brain and the brain of a European were in fact of the same kind as, though less in degree than, those between the brain of an ape and that of a man. Among Europeans the average weight of the brain is greater in educated than in uneducated persons; its size—other circumstances being equal—bearing a general relation to the mental power of the individual. Dr. Thurnam concludes, from a series of carefully-compiled tables, that while

the average weight of the brain in ordinary Europeans is 49 oz., it was 54.7 oz. in ten distinguished men; and Prof. Wagner found a remarkably complex arrangement of the convolutions in the brains of five very eminent men which he examined.* Thus, then, while we take it to be well established that the convolutions of the human brain have undergone a considerable development through the ages, we may no less justly conclude that its larger, more numerous, and complex convolutions reproduce the higher and more varied mental activity to the progressive evolution of which their progressive increase has answered—that they manifest the kind of function which has determined the structure. The vesicular neurine has increased in quantity and in quality, and the function of the increased and more highly-endowed structure is to display that intelligence which it un-

* The following table is compiled from Dr. Thurnam's paper "On the Weight of the Human Brain" (*Journal of Mental Science*, April, 1866):

BRAIN-WEIGHTS OF DISTINGUISHED MEN.

	Ages.	Oz.
1. Cuvier, <i>Naturalist</i>	63	64.5
2. Abercrombie, <i>Physician</i>	64	63
3. Spurzheim, <i>Physician</i>	56	55.06
4. Dirichlet, <i>Mathematician</i>	54	55.6
5. De Morny, <i>Statesman and Courtier</i>	50	53.6
6. Daniel Webster, <i>Statesman</i>	70	53.5
7. Campbell, <i>Lord-Chancellor</i>	80	53.5
8. Chalmers, <i>celebrated Preacher</i>	67	53
9. Fuchs, <i>Pathologist</i>	52	52.9
10. Gauss, <i>Mathematician</i>	78	52.6
Average of ten distinguished men	50-70	54.7
Brain-weights of average European men	{ 20-60 50-70	49 47.1
Average brain-weight of male negroes		44.3
" " 14 congenital idiots (males)		42
" " 8 " (females)		41.2
Estimated brain-weight of Microcephalic idiocy (males)		37.5
" " " (females)		32.5

It may be proper to add that the average weight of the adult male brain is 10 per cent. greater than that of the female—100:90. The brains of the Hotentot, Bushman, and Australian are, so far as observation goes, of less weight than those of negroes.

consciously embodies. The native Australian, who is one of the lowest existing savages, has no words in his language to express such exalted ideas as justice, love, virtue, mercy; he has no such ideas in his mind, and cannot comprehend them. The vesicular neurine which should embody them in its constitution and manifest them in its function has not been developed in his convolutions; he is as incapable therefore of the higher mental displays of abstract reasoning and moral feeling as an idiot is, and for a like reason. Indeed, were we to imagine a person born in this country, at this time, with a brain of no higher development than the brain of an Australian savage or a Bushman, it is perfectly certain that he would be more or less of an imbecile. And the only way, I suppose, in which beings of so low an order of development could be raised to a civilized level of feeling and thought would be by cultivation continued through several generations; they would have to undergo a gradual process of humanization before they could attain to the capacity of civilization.

Some, who one moment own freely the broad truth that all mental manifestations take place through the brain, go on, nevertheless, to straightway deny that the conscience or moral sensibility can be a function of organization. But, if all mental operations are not in this world equally functions of organization, I know not what warrant we have for declaring any to be so. The solution of the much-vexed question concerning the origin of the moral sense seems to lie in the considerations just adduced. Are not, indeed, our moral intuitions results of the operation of the fundamental law of nervous organization by which that which is consciously acquired becomes an unconscious endowment, and is then transmitted as more or less of an instinct to the next generation? They are examples of knowledge which has been hardly gained through the suffering and experience of the race, being now inherited as a natural or instinctive sensibility of the well-constituted brain of the individual. In the

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How can this
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matter of our moral feelings we are most truly the heirs of the ages. Take the moral sense, and examine the actions which it sanctions and those which it forbids, and thus analyze, or, as it were, decompose, its nature, and it will be found that the actions which it sanctions are those which may be proved by sober reason to be conducive to the well-being and the progress of the race, and that its prohibitions fall upon the actions which, if freely indulged in, would lead to the degeneration, if not extinction, of mankind.* And if we could imagine the human race to live back again to its earliest infancy—to go backward through all the scenes and experiences through which it has gone forward to its present height—and to give back from its mind and character at each time and circumstance, as it passed it, exactly that which it gained when it was there before—should we not find the fragments and exuviae of the moral sense lying here and there along the retrograde path, and a condition at the beginning which, whether simian or human, was bare of all true moral feeling?*

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their origin?*

We are daily witnesses of, and our daily actions testify to, the operation of that plastic law of nervous organization by which separate and successive acquisitions are combined and so intimately blended as to constitute apparently a single and undecomposable faculty: we observe it in the formation of our volitions; and we observe it, in a more simple and less disputable form, in the way in which combinations of movements that have been slowly formed by practice are executed finally as easily as if they were a single and simple movement. If the moral sense—which is derived, then, inasmuch as it has been acquired in the process of human development through the ages—were not more or less innate in the well-born individual of this age, if he were obliged to go, as the generations of his forefathers have gone, through

* Foster, in his "Essay on Decision of Character," makes this conception of the individual character, almost in the words used; but the application of it to the race, and the conclusion drawn, are of course not his.

the elementary process of acquiring it, he would be very much in the position of a person who, on each occasion of writing his name, had to go through the elementary steps of learning to do so. The progressive evolution of the human brain is a proof that we do inherit as a natural endowment the labored acquisitions of our ancestors; the added structure represents, as it were, the embodied experience and memories of the race; and there is no greater difficulty in believing that the moral sense may have been so formed, than in believing, what has long been known and is admitted on all hands, that the young fox or young dog inherits as an instinct the special cunning which the foxes and the dogs that have gone before it have had to win by hard experience.

These remarks are not an unnecessary digression. Nor will they have been made in vain if they serve to fix in our minds the conviction that the law of progressive evolution and specialization of nerve-centres, which may be traced generally from the first appearance of nerve-tissue in the lowest animals to the complex structure of the nervous system of man, and specially from the rudimentary appearance of cerebral convolutions in the lower vertebrata to the numerous and complex convolutions of the human brain, does not abruptly cease its action at the vesicular neurine of the hemispheres, but continues in force within the intimate recesses of the mental organization. Moreover, they are specially to the purpose, seeing that they enable us to understand in some sort how it is that a perversion or destruction of the moral sense is often one of the earliest symptoms of mental derangement: as the latest and most exquisite product of mental organization, the highest bloom of culture, it is the first to testify to disorder of the mind-centres. Not that we can detect any structural change in such case; it is far too delicate for that. The wonder would, indeed, be if we could discover such more than microscopical changes with the instruments of research which we yet possess. We might almost as well look to discover the anatomy of a gnat with a telescope.

I purposely selected for consideration the defective brain of the idiot, because it exhibits an undeniable fault of structure, which is often plainly traceable to evil ancestral influences. When we duly consider this, and reflect that we might, if we chose, arrange a series of human brains which should present a regular gradation from the brain of an ape to that of a well-developed European, are we not fully justified in supposing that like unfavorable ancestral influences may occasion defects in the constitution or composition of the mind-centres which we are yet quite unable to detect? We know nothing of the occult molecular movements which are the physical conditions of our mental operations; we know little or nothing of the chemical changes which accompany them—cannot, in fact, detect the difference between the nerve-element of a brain exhausted by exercise and incapable of further function, and that of a brain reinvigorated by sleep and ready for a day of energetic function; and we know nothing of the intricate connection of nerve-cells in the hemispheres. It is plain, then, that there may be, unknown to us save as guessed from their effects, the most important modifications in the molecular activities of nerve-element, changes in its chemical composition, and actual defects in the physical constitution of the nerve-centres. Wherefore, when no appreciable defect is found in the brain of one who has had a strong predisposition to insanity, and has ultimately died insane, it behooves us to forbear a hasty conclusion that it is a perfectly well-constituted brain. Close to us, yet inaccessible to our senses, there lies a domain of Nature—that of the infinitely little—the operations in which are as much beyond our present ken as are those that take place in the remotest regions of space, to which the eye, with all its aids, cannot yet reach, and of which the mind cannot conceive.

It certainly cannot be disputed that, when nothing abnormal whatever may be discoverable in the brains of persons who have a strong hereditary tendency to insanity, they often exhibit characteristic peculiarities in their manner of

thought, feeling, and conduct, carrying in their physiognomy, bodily habit, and mental disposition, the sure marks of their evil heritage. These marks are, I believe, the outward and visible signs of an inward and invisible peculiarity of cerebral organization. Here, indeed, we broach a most important inquiry, which has only lately attracted attention—the inquiry, namely, into the physical and mental signs of the degeneracy of the human kind. I do not mean to assert that all persons whose parents or blood relatives have suffered from nervous or mental disease exhibit mental and bodily peculiarities; some may be well formed bodily and of superior natural intelligence, the hereditary disposition in them not having assumed the character of deterioration of race; but it admits of no dispute that there is what may be called an *insane temperament* or *neurosis*, and that it is marked by peculiarities of mental and bodily conformation. Morel, who was the first to indicate, and has done much to prosecute, this line of inquiry, looks upon an individual so constituted as containing in himself the germs of a morbid variety: summing up the pathological elements which have been manifested by his ancestors, he represents the first term of a series which, if nothing happen to check the transmission of degenerate elements from generation to generation, ends in the extreme degeneracy of idiocy, and in extinction of the family.

What are the bodily and mental marks of the insane temperament? That there are such is most certain; for although the varieties of this temperament cannot yet be described with any precision, no one who accustoms himself to observe closely will fail to be able to say positively, in many instances, whether an insane person, and even a sane person in some instances, comes of an insane family or not. An irregular and unsymmetrical conformation of the head, a want of regularity and harmony of the features, and, as Morel holds, malformations of the external ear, are sometimes observed. Convulsions are apt to occur in early life, and there are tics, grimaces, or other spasmodic movements of muscles

of face, eyelids, or lips, afterward. Stammering and defects of pronunciation are also sometimes signs of the neurosis. In other cases there are peculiarities of the eyes, which, though they may be full and prominent, have a vacillating movement, and a vacantly-abstracted, or half-fearful, half-suspicious, and distrustful look. There may, indeed, be something in the eye wonderfully suggestive of the look of an animal. The walk and manner are uncertain, and, though not easily described in words, may be distinctly peculiar. With these bodily traits are associated peculiarities of thought, feeling, and conduct. Without being insane, a person who has the insane neurosis strongly marked is thought to be strange, queer, and not like other persons. He is apt to see things under novel aspects, or to think about them under novel relations, which would not have occurred to an ordinary mortal. Punning on words is, I am inclined to think, sometimes an indication of the temperament, and so also that higher kind of wit which startles us with the use of an idea in a double sense; of both which aptitudes no better example can be given than that of Charles Lamb. His case, too, may show that the insane temperament is compatible with, and indeed it not seldom coexists with, considerable genius. Even those who have it in a more marked form often exhibit remarkable special talents and aptitudes, such as an extraordinary talent for music, or for calculation, or a prodigious memory for details, when they may be little better than imbecile in other things. There is, indeed, a marked instinctive character in all they think and do; they seem not to need or to be able to reflect upon their own mental states. At one time unduly elated, at another time depressed without apparent cause, they are prone to do things differently from the rest of the world; and now and then they do whimsical and seemingly quite purposeless acts, especially under conditions of excitement, when the impulses springing out of the unconscious morbid nature surprise and overpower them. Indeed, the mental balance may be easily upset altogether by

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any great moral shock, or by the strain of continued anxiety. A great physical change in the system, too, such as is caused by the development of puberty, by the puerperal state, and the climacteric change, is not without danger to their mental stability. The effects of alcohol on such persons are in some respects special: it does not make them so much drunk as mad for the time being; and I think it will be found in most, if not all, cases of insanity caused by alcohol that there has been a predisposition to it.

I have sketched generally the features of the insane temperament, but there are really several varieties of it which need to be observed and described. In practice we meet with individuals representing every gradation from the mildest form of the insane temperament down to actual idiocy. These cases ought to be arranged in groups according to their affinities, for until this be done we shall not make much real progress toward exact scientific notions respecting the causation and pathology of insanity. One group might consist of those egotistic beings, having the insane neurosis, who manifest a peculiar morbid suspicion of every thing and everybody; they detect an interested or malicious motive in the most innocent actions of others, always looking out for an evil interpretation; and even events they regard as in a sort of conspiracy against them. Incapable of altruistic reflection and true sympathies, they live a life of solitude and self-brooding, entrenched within their morbid self-feeling, until the discord between them and the world is so great that there is nothing for it but to count them mad. Another group might be made of those persons of unsound mental temperament who are born with an entire absence of the moral sense, destitute of the possibility even of moral feeling; they are as truly insensible to the moral relations of life, as deficient in this regard, as a person color-blind is to certain colors, or as one who is without ear for music is to the finest harmonies of sound. Although there is usually conjoined with this absence of moral sensibility more or less weakness

of mind, it does happen in some instances that there is a remarkably acute intellect of the cunning type.

The observations of intelligent prison-surgeons are tending more and more to prove that a considerable proportion of criminals are weak-minded or epileptic, or come of families in which insanity, epilepsy, or some other neurosis, exists. Mr. Thompson, surgeon to the General Prison of Scotland, has gone so far recently as to express his conviction that the principal business of prison-surgeons must always be with mental defects or disease; that the diseases and causes of death among prisoners are chiefly of the nervous system; and, in fine, that the treatment of crime is a branch of psychology. He holds that there is among criminals a distinct and incurable *criminal class*, marked by peculiar low physical and mental characteristics; that crime is hereditary in the families of criminals belonging to this class; and that this hereditary crime is a disorder of mind, having close relations of nature and descent to epilepsy, dipsomania, insanity, and other forms of degeneracy. Such criminals are really *morbid varieties*, and often exhibit marks of physical degeneration—spinal deformities, stammering, imperfect organs of speech, club-foot, cleft-palate, hare-lip, deafness, paralysis, epilepsy, and scrofula. Moreau relates a striking case, which is of interest as indicating the alliance between morbid or degenerate varieties, and which I may quote here.

Mrs. D—, aged thirty-two. Her grandfather kept an inn at the time of the great French Revolution, and during the Reign of Terror he had profited by the critical situation in which many nobles of the department found themselves to get them secretly into his house, where he was believed to have robbed and murdered them. His daughter, who was in his secrets, having quarrelled with him, denounced him to the authorities, but he escaped conviction from want of proofs. She subsequently committed suicide. One of her brothers had nearly murdered her with a knife on one occasion, and another brother hanged himself. Her sister was epileptic,

imbecile, and paroxysmally violent. Her daughter, the patient, after swimming in the head, noises in the ears, flashes before the eyes, became deranged, fancying that people were plotting against her, purchasing arms and barricading herself in her room, and was finally put in an asylum. Thus there were, in different members of this family, crime, melancholia, epilepsy, suicide, and mania. Need we wonder at it? The moral element is an essential part of a complete and sound character; he who is destitute of it, being unquestionably to that extent a defective being, is therefore on the road to, or marks, race degeneracy; and it is not a matter of much wonder that his children should, when better influences do not intervene to check the morbid tendency, exhibit a further degree of degeneracy, and be actual morbid varieties. I think that no one who has studied closely the causation of insanity will question this mode of production.

I could not, if I would, in the present state of knowledge, describe accurately all the characteristics of the insane neurosis, and group according to their affinities the cases testifying to its influence. The chief concern now with its morbid peculiarities is to point out, first, that they mark some inherited fault of brain-organization; and, secondly, that the cause of such fault is not insanity alone in the parent, but may be other nervous disease, such as hysteria, epilepsy, alcoholism, paralysis, and neuralgia of all kinds. Except in the case of suicidal insanity, it is not usual for the parent to transmit to the child the particular form of mental derangement from which he has suffered: insanity in the parent may be epilepsy in the child, and epilepsy in the parent insanity in the child; and, in families where a strong tendency to insanity exists, one member may be insane, another epileptic, a third may suffer from severe neuralgia, and a fourth may commit suicide. The morbid conditions which affect the motor nerve-centres in one generation seem to concentrate themselves sometimes upon the sensory or the ideational centres in another. In truth, nervous disease is a veritable Proteus, dis-

appearing in one form to reappear in another, and, it may be, capriciously skipping one generation to fasten upon the next.

The different forms of insanity that occur in young children—as all forms of it except general paralysis may do—are almost always traceable to nervous disease in the preceding generation, a neuropathic condition being really the essential element in their causation. The cases of acute mania in children of a few weeks or a few years old, which have been described, might more properly be classed as examples of idiocy with excitement. There can be no true mania until there is some mind. But we do meet sometimes in older children with a genuine acute mania, occurring usually in connection with chorea or epilepsy, and presenting the symptoms, if I may so express it, of a mental chorea or an epilepsy of the mind, but without the spasmodic and convulsive movements of these diseases. More or less dulness of intelligence and apathy of movement, giving the seeming of a degree of imbecility, is common enough in chorea, and in some cases there is violent delirium; but, besides these cases, there are others in which, without choreic disorder of movements, there is a choreic mania: it is an active delirium of ideas which is the counterpart of the usual delirium of movements, and its automatic character and its marked incoherence are striking enough to an ordinary observer. Hallucinations of the special senses, and loss or perversion of general sensibility, usually accompany the delirium, the disorder affecting the centres of special and general sensation, as well as the mind-centres.

Between this choreic mania and epileptic mania there are intermediate conditions partaking more or less of the character of one or the other—hybrid forms of a cataleptic nature. The child will lie for hours or days in a seeming ecstasy or trance, with its limbs rigid or fixed in a strange posture. There may be apparent insensibility to impressions, while at other times vague answers are given, or there is a sudden bursting out into wild shrieks or incoherent raving. If this

be of a religious kind, the child is apt to be thought by ignorant persons to be inspired. The attacks are of variable duration, and are repeated at varying intervals. On the one hand, they pass into attacks of chorea; and, on the other hand, into true epileptic seizures, or alternate with them.

In children, as in adults, a brief attack of violent mania, a genuine *mania transitoria*, may precede, or follow, or take the place of an epileptic fit; in the latter case being a masked epilepsy. Children of three or four years of age are sometimes seized with attacks of violent shrieking, desperate stubbornness, or furious rage, when they bite, tear, kick, and do all the destruction they can; these seizures, which are a sort of vicarious epilepsy, come on periodically, and may either pass in the course of a few months into regular epilepsy, or may alternate with it. Older children have perpetrated crimes of a savage and determined nature—incendiarism and even murder—under the influence of similar attacks of transitory fury, followed or not by epileptic convulsions. It is of the utmost importance to realize the deep effect which the epileptic neurosis may have on the moral character, and to keep in mind the possibility of its existence when a savage, apparently motiveless, and unaccountable crime has been committed. A single epileptic seizure has been known to change entirely the moral character, rendering a child rude, vicious, and perverse, who was hitherto gentle, amiable, and tractable. No one who has seen it can fail to have been struck with the great and abrupt change in moral character which takes place in the asylum epileptic immediately before the recurrence of his fits; in the intervals between them he is often an amiable, obliging, and industrious being, but when they impend he becomes sullen, morose, and most dangerous to meddle with. Not an attendant but can then foretell that he is going to have his fits, as confidently almost as he can foretell that the sun will rise next day. Morel has made the interesting observation, which is certainly well founded, that the epileptic neurosis may exist for a considerable period in

an undeveloped or masked form, showing itself, not by convulsions, but by periodic attacks of mania, or by manifestations of extreme moral perversion, which are apt to be thought wilful viciousness. But they are not: no moral influence will touch them; they depend upon a morbid physical condition, which can only have a physical cure; and they get their explanation, and indeed justification, afterward, when actual epilepsy occurs.

The epileptic neurosis is certainly most closely allied to the insane neurosis; and when it exists in its masked form, affecting the mind for some time before convulsions occur, it is hardly possible to distinguish it from one form of the insane neurosis. The difficulty of doing so is made greater, inasmuch as epilepsy in the parent may engender the insane neurosis in the child, and insanity in the parent the epileptic neurosis in the child. A character which the insane neurosis has in common with the epileptic neurosis is, that it is apt to burst out in a convulsive explosion of violence; that when it develops into actual insanity it displays itself in deeds rather than in words—in an insanity of action rather than of thought. It is truly a *neurosis spasmodica*. Take, for example, a case which is one of a class, that of the late Alton murderer, who, taking a walk one fine afternoon, met some little girls at play, enticed one of them into a neighboring hop-garden, there murdered her and cut her body into fragments, which he scattered about, returned quietly home, openly washing his hands in the river on the way, made an entry in his diary, "Killed a little girl; it was fine and hot;" and, when forthwith taken into custody, confessed what he had done, and could give no reason for doing it. At the trial it was proved that his father had had an attack of acute mania, and that another near relative was in confinement, suffering from homicidal mania. He himself had been noted as peculiar; he had been subject to fits of depression, been prone to weep without apparent reason, and had exhibited singular caprices of conduct; and it had once been necessary

to watch him from fear that he might commit suicide. He was not insane in the legal or the ordinary sense of the term, but he certainly had the insane neurosis, and it may be presumed confidently that he would, had he lived, have become insane.

Those who have practical experience of insanity know well that there is a most distressing form of the disease; in which a desperate impulse to commit suicide or homicide overpowers and takes prisoner the reason. The terrible impulse is deplored sometimes by him who suffers from it as deeply as by any one who witnesses it; it causes him unspeakable distress; he is fully conscious of its nature, and struggles in vain against it; his reason is no further affected than in having lost power to control, or having become the slave of, the morbid and convulsive impulse. It may be that this form of derangement does sometimes occur where there is no hereditary predisposition to insanity, but there can be no doubt that in the great majority of cases of the kind there is such a neuropathic state. The impulse is truly a convulsive idea, springing from a morbid condition of nerve-element, and it is strictly comparable with an epileptic convulsion. How grossly unjust, then, the judicial criterion of responsibility which dooms an insane person of this class to death if he knew what he was doing when he committed a murder! It were as reasonable to hang a man for not stopping by an act of will a convulsion of which he was conscious. An interesting circumstance in connection with this morbid impulse is that its convulsive activity is sometimes preceded by a feeling very like the *aura epileptica*—a strange morbid sensation, beginning in some part of the body, and rising gradually to the brain. The patient may accordingly give warning of the impending attack in some instances, and in one case was calmed by having his thumbs loosely tied together with a ribbon when the forewarning occurred. Dr. Skae records an instructive example in one of his annual reports. The feeling began at the toes, rose gradually to the chest, producing a

sense of faintness and constriction, and then to the head, producing a momentary loss of consciousness. This aura was accompanied by an involuntary jerking—first of the legs, and then of the arms. It was when these attacks came on that the patient felt impelled to commit some act of violence against others or himself. On one occasion he attempted to commit suicide by throwing himself into the water; more often the impulse was to attack others. He deplored his condition, of which he spoke with great intelligence, giving all the details of his past history and feelings. In other cases a feeling of vertigo, a trembling, and a vague dread of something fearful being about to happen, resembling the vertigo and momentary vague despair of one variety of the epileptic aura, precede the attack. Indeed, whenever a murder has been committed suddenly, without premeditation, without malice, without motive, openly, and in a way quite different from the way in which murders are commonly done, we ought to look carefully for evidence of previous epilepsy, and, should there have been no epileptic fits, for evidence of an *aura epileptica* and other symptoms allied to epilepsy.

It is worth while observing that in other forms of insanity, when we look closely into the symptoms, there are not unfrequently complaints of strange, painful, and distressing sensations in some part of the body, which appear to have a relation to the mental derangement not unlike that which the epileptic aura has to the epileptic fit. Common enough is a distressing sensation about the epigastrium: it is not a definite pain, is not comparable strictly to a burning, or weight, or to any known sensation, but is an indescribable feeling of distress to which the mental troubles are referred. It sometimes rises to a pitch of anguish, when it abolishes the power to think, destroys the feeling of identity, and causes such unspeakable suffering and despair that suicide is attempted or accomplished. In other cases the distressing and indescribable sensation is in the crown of the head or down the spine, and sometimes it arises from the pelvic organs. In

all cases the patients connect their mental trouble with it, regarding it as the cause of the painful confusion of thought, the utter inability of exertion, the distressing ideas, and the paroxysm of despair. Perhaps they exaggerate its importance; but there can be little doubt that writers on mental disorders, too exclusively occupied with the prominent mental features, have not hitherto given sufficient attention to these anomalous sensations. We have been apt to class them as hypochondriacal, and to pass them over as of no special significance; but I cannot help thinking that, properly studied, they may sometimes teach us more of the real nature of the particular form of insanity—of its probable course, termination, and its most suitable treatment—than many much more obtrusive symptoms.

In bringing this lecture to an end, I may fitly point out how entirely thus far the observation of the phenomena of defective and disordered mind proves their essential dependence on defective and disordered brain, and how closely they are related to some other disordered nervous functions. The insane neurosis which the child inherits in consequence of its parent's insanity is as surely a defect of physical nature as is the epileptic neurosis to which it is so closely allied. It is an indisputable though extreme fact that certain human beings are born with such a native deficiency of mind that all the training and education in the world will not raise them to the height of brutes; and I believe it to be not less true that, in consequence of evil ancestral influences, individuals are born with such a flaw or warp of Nature that all the care in the world will not prevent them from being vicious or criminal, or becoming insane. Education, it is true, may do much, and the circumstances of life may do much; but we cannot forget that the foundations on which the acquisitions of education must rest are not acquired, but inherited. No one can escape the tyranny of his organization; no one can elude the destiny that is innate in him, and which unconsciously and irresistibly shapes his ends, even when he be-

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lieves that he is determining them with consummate foresight and skill. A well-grounded and comprehensive theory of mind must recognize and embrace these facts; they meet us every moment of our lives, and cannot be ignored if we are in earnest in our attempts to construct a mental science; and it is because metaphysical mental philosophy has taken no notice whatever of them, because it is bound by the principle of its existence as a philosophy to ignore them, that, notwithstanding the labor bestowed on it, it has borne no fruits—that, as Bacon said of it, “not only what was asserted once is asserted still, but what were questions once are questions still, and, instead of being resolved by discussion, are only fixed and fed.”