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HEREDITY AND NEUROSIS.

*(Being the Presidential Address to the Neurological Society
for 1897.)*

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GENTLEMEN, by your request I find myself in the most honourable position of President of the Neurological Society, and I feel in accepting this post and before entering upon my first duty, which is the giving of the Address, that I must refer to the death of Dr. Hack Tuke, which has thus placed me as the representative of the Psychiatric Branch of this Society. Dr. Hack Tuke was one of the best examples of the transmission of mental and moral characteristics from father to son. Coming of an earnest methodical family he developed, notwithstanding bad health, a power of work which was astonishing to all his friends. A seeker after truth, and a careful recorder of all he saw, he is hardly to be replaced in our branch of medicine, where the material so far exceeds the means for observing and arranging it. He has left us and I will do my best to fill his place, though I fear his mantle has not fallen on me.

The Address of last year was so masterly a demonstration of the work done by its author in the definite lines of anatomical research, that I feel my task in handling the

indefinite and little known must make my address a poor contrast to his, but my life's work has been with those expressions of nerve power which, though disordered, may yet be made as instructive to the medical observer as are the decay and denudations of rocks to the geologist. I cannot hope to bring before you any brilliant generalisations or any new discovery. The brain anatomist and physiologist are employed in examining the basis of mental factors, and therefore we alienists must be content to wait for their work before we can hope to do more than collect, arrange and speculate.

After much consideration, I thought that my special experience might best be utilised by comparing the relationships of the neuroses, and by tracing, as far as I am able, the lineal descent of these disorders of mental function: hence "Heredity and Neurosis" is the subject I have chosen.

The subject is an old one, but with each step in advance in science old subjects are found to have new aspects. Things have as many characteristics as the observer has points of observation; there is no finality, there is no definite or ultimate knowledge. With the development of the Darwinian idea and with the full recognition of the force of evolution, immense strides have been made in all branches of human knowledge, but the goal is not yet reached. More recently Weismann has called special attention to the problems of heredity, and still later Romanes and Archibald Reid, besides innumerable foreign authors, have taken up the subject. The present time is one rather for collecting and weighing evidence than for forming a final judgment, therefore I find myself in a natural but unsatisfactory state of doubt, and I can only give my experience and my opinions, which must after all be only provisional.

Before proceeding further I will lay down briefly my belief in the part played by heredity in the development of normal and abnormal man.

We take it for granted that evolution has taken place, and we believe that it is still in progress, and that the chief factors in evolution are selection or survival and heredity. Survival of the fittest, though in the past so important a

factor, is of little value in the present phase of human development, and whether there has been marked continuous development and advance in man is still a moot point. It is quite certain that advance in the higher animals must be very slow. We watch for the appearance on the earth of new species of animals and we watch in vain, and specific continuity and invariability are arguments against any visible evolution going on at present. In human intellect we have no real evidence of advance in quantity for many ages. From the lowest savage to the highest civilised being, doubtless, there is a great advance, but even here the increase in bulk of brain is not what some might expect it to be. Men advance and are advancing, not in the mass, but in the adaptability of their nervous systems. It is the surrounding conditions which are growing, and the work of the nervous system is to adapt itself to these rapidly changing conditions. The theory at present popular is that of Weismann, which theory is, that there is a continuity, an immortality of germ plasm, and that the only real changes are in the somatic case or surroundings of this substance, or depend directly on this.

The germ plasm is looked upon as quite different and more elemental than the germ cell, it is as it were the nucleus around which the soma grows. That, just as the nucleus takes unto itself matter and forms a germ cell, so the germ plasm as a whole takes to itself a body which is specifically suited to the surrounding of the future animal. The germ plasm is constant in each species and thus it forms the fixed point about which all variations occur and it is in that we must seek for any changes if there is a transmission of acquired qualities. Weismann is supported in his contention that the germ plasm is continuous and unaltered by the fact of specific fixity; that the characteristics of the animal, *i.e.*, the specific ones, do not alter whatever may be the external or internal variations in conditions; varieties may arise depending on these changing surroundings and pass away, but the species is constant. This is apparently true as far as limited periods are concerned, but unless we believe in the individual creation of species we

must accept the evolution of fresh species through a slow accumulation of changes which have been transmitted.

If evolution is true there must have been a gradual change in the parts which slowly aggregate to form the new species, and we have to admit that these changes, whether the result of one form of selection or another, have been sufficiently established to be passed on from parent to child. These characteristics seem to be definitely represented in some way in the reproductive elements. We no longer expect to see the oak tree in miniature in the acorn, nor the chick in the egg, we only look for a power in the seed which will enable it to grow like its parents in harmony with its surroundings. I do not intend here to consider the various theories which have been started to explain the method by which each part of an organism is reproduced in the ovum, for none of these theories are fully accepted, and none will be considered in the practical part of this paper. We accept as facts that the specific characteristics of beings are transmitted directly with a certain power of slight variation, and that the functional correlates of the transmitted organs also reappear in succeeding generations.

No one disputes that there is a direct transmission of the simpler organs of the simplest animals, nor is there any doubt about the transmission of the simpler functions such as the reflexes, and there also seems little doubt that there is a direct transmission of the parts concerned in the instincts, whether these instincts are congenitally active or only develop later with the enlarging of the surroundings. There is, therefore, little difficulty in comprehending how still more complex organic relations may be passed on, but when the connection between the organ and its function is less clear and definite, it is only natural that the mode of transmission should be more difficult to follow. It is now more fully recognised that there is no such thing as the inheritance of a fully developed function of the higher kind; the tissues and the organs reappear in succeeding generations, and from them the function may be evoked. The faculty of speech may be inherited, but the special language comes from the surrounding. Aptitude with the hands is passed on,

but the special form which the aptitude may take depends on the education. A predisposition is a transmitted, not a developed quality. It is noteworthy that among the functions which are transmitted in association with certain organs there may be temporary delay in their exhibition, and there may be a potential function in reserve which may be kept in abeyance for long periods, and yet may appear when the suitable stimulus is given. This will be seen later to have an important bearing upon certain nervous disorders, which appear only at certain stages of life, when in fact certain conditions act as the stimuli. For instance, the duckling may, in the absence of water, walk and fly and not swim, yet when the stimulus of water is present the highly evolved function of swimming is performed with exactitude and endurance.

I shall throughout take it for granted that there is no such thing as the inheritance of a function, but only the inheritance of the capacity or predisposition to react in certain definite ways under certain definite stimuli. The definite organ responds to definite stimuli, and the changed surroundings do not alter the specific character of the being.

When considering the neuroses it will be seen that the surrounding does cause their FORM to vary. This only means that in the neuroses the differences are usually not specific; they must be considered only as varieties, not species.

There is admitted to be a capacity for passing from parent to offspring special ability to react to certain stimuli, but the question which is being most debated at present is, whether it is possible to transmit directly anything which has been acquired by the individual during his lifetime. The general answer to this question is in the negative, but I think this reply has been given too definitely. For although there is no doubt that the great majority of mutilations are not inherited, yet it does not follow, because most of these coarse material effects are not passed on, that some other acquisitions or defects of a different nature may not be so transmitted.

I have already said if there is no power to vary, and no

power to transmit the power to vary, there can be no progress, no fresh definite varieties and certainly no new species. In most living things there is a recognised power to vary, though not in the mass itself yet in its relations. There is a tendency at first, connected with the survival of the fittest to vary more and more in harmony with the changing surrounding. The power to vary and the power to transmit the power to vary, is all that is required, and I think whatever may have been one's earlier ideas, one must now accept the theory that with the higher developing surroundings it is absolutely necessary for the good of the individual that a more rapid power of reacting to the varying surroundings must be transmitted. This is the point where the inheritance of neurosis comes in. If it is accepted that with developing complexity of life there is necessarily developing complexity of relations, with a corresponding tendency to go wrong, and if there is a transmission of capacity for proper self-adjustment, so may there equally be the opposite.

Having considered the bearings of heredity, I wish to define the use I make of the terms "neurotic" and "neurosis." With development, the relationships between the *self* and the *non-self* become more and more complicated, and the means of communication between the two have to be more delicate, and more unstable. The movements of a gale of wind are easily noted by a wind gauge but to mark the movements of waves of light you need an extremely delicate mechanism. The finest human adjustments can only be made by extremely mobile tissues. These delicately mobile tissues are chemically and mechanically unstable, and are sometimes too delicate for their work. Disorder may depend, not on the fineness of the organ, but rather on the force of the excitant, and it will be at once recognised that in studying nervous disorder these two conditions have to be both well weighed.

The nervous systems which are too delicate for their surroundings, and which, as a consequence, tend to be constantly upset in various ways, are called "neurotic," and the instability itself is "neurosis." It will thus be seen that

I do not mean by the term neurosis a definite disease, only a more or less definite tendency, and in my opinion it is this tendency which may be transmitted.

The connection between the so-called "insanities" and the neuroses must be studied in detail. In many cases the same nervous weakness leads to insanity on the one hand, or neurosis on the other, the result varying with the surrounding conditions of the individual and the exciting causes of the disease. Nervous diseases are not properly studied by dividing them too definitely into classes or groups; Nature is not rigid and definite in the making of living things. I trust the experimenters in psychology will be able to give us useful knowledge in reference to the "reaction times" and acuity of sense perception in the neurotic, for though there seems little ground, according to them, for believing in *types* or temperaments, yet I am inclined to think that in some neurotics, at least, there will be found some common physical sensory disorder or defect.

The neurotic individual is the natural outcome of highly specialised modes of living, and we shall find among the unstable two distinct groups—those who react very rapidly and delicately to their surroundings, and are looked upon as geniuses; and others who are unstable without being brilliant, that is, who react destructively.

The next statement I would make is that the neuroses are allied, and that this is so, will be seen in the fact that similar persons, under similar conditions, break down in different ways, *i.e.*, exhibit the different forms of neurosis; also that the same person, from similar causes, at different times, may exhibit the various forms of neurosis; and I hope to show that there is a hereditary relationship, so that in the transmission of neurosis variation in form often occurs. Much still remains to be done in tracing the causes of difference between the neuroses, and there is a like difficulty in explaining the physical origin of the nervous instability. This latter may chiefly depend on increase of bodily refinement due to habits of life, climate, and food, or it may arise from delicacy or weakness due to exhaustion or degeneracy in the parents. One is in the habit of talking of the chain

of neuroses; the simile is wanting in complete exactness, for though there are many links of this chain they are hardly to be considered as forming any connected whole. The links are of different sizes and shapes, and, though forged out of the same metal, they greatly differ. The linking is best seen by noting what may be the possible development of the neurotic type in one family. In such there may be deficient *power* or mass of brain, associated with idiocy; there may be a tendency to unequal one-sided mental development, which may be associated with precocity on one side and moral defect and criminality on the other. There may be defects of *control*, leading on the one hand to convulsions, and on the other to chorea, or to impulsive acts; there may be tendency to irregular discharge of nerve force, this leading to epilepsy, insanity of critical periods of life, and to recurrent forms of insanity. There may also be morbid forms of mental association and morbid sensory states which lead to organised systems of delusions. Besides all these, which may be seen in the same family and which may represent one another in the same person at different times, there are many other forms of nervous disorder which I shall consider in detail as I proceed. Among these other conditions we shall have to note the bodily diseases which often have a nervous aspect, or which may replace nervous diseases—such are asthma, gout, megrim, and diabetes.

Seeing, then, the varieties of nervous disorder which may be represented in a neurotic family, the study of the starting point of neurosis is all-important in the present relationship. This nervous instability, I have no doubt, depends in the majority of cases upon some bodily defect or weakness in the parent. My belief is that in these cases there is a peculiarity existing in the parent which leads to the instability in the offspring—the tendency to decay in the parent showing itself in weakness in the child. The germ plasm may be continuous, but it must vary directly in some ways with the health of the body. The germ plasm of the young animal must be taken to have more initial vigour than that of the decaying one, and the physical state resulting from bodily illness must affect the whole body. There is no possibility of one organ saying to another, “I have no need of thee.”

I have seen many examples of the children of old age being neurotic, whereas previous ones were healthy; and also I have been able to trace a connection between the children begotten soon after a serious illness and those begotten before it. I have clear evidence of the instability of some children born after the parent has had an attack of insanity, the children born before the attack having been stable enough.

To put my experience briefly: neurosis or unstable nervous disposition depends in many cases on disease, or causes of bodily weakness in the parent. It is noteworthy that the conditions of nervous weakness leading to transmission of neurosis do not always exist in the insane themselves, but that an insane parent may beget or bear a normal child. The old notion that all insanity was likely to be passed on is not correct. There are very well-marked examples in which insane mothers have had several normal children, though they were insane during the whole pregnancy and after these children were born.

My belief is that physical, rather than nervous instability, is transmitted; this does not, however, cover the whole field, for in certain families, for generation after generation, the nervous balance alone seems to be very unstable, the members of these families having plenty of vitality.

The physical tendency to neurosis is easily transmitted, and in some cases a direct constitutional tendency to break down under special stresses is transmitted. Neurosis is not, as a rule, started by consanguinity alone, but if there is a tendency to nervous weakness, this is increased greatly by intermarriage.

Though an insane parent may have a normal child, there is no doubt that the offspring of the insane show their weakness in various ways, and it is here that we see so well marked the transmission of the tendency, as contrasted with the transmission of the disease.

As a rule, the children of the insane and of certain classes of neurotics resemble one another. These children may have no deficiency of brain mass, and no evidence of initial lack of any faculty, but they are *restless*; they seem to react

unduly to all external and internal stimuli, so that there is no surplus of nervous power, no storage; memory is defective or absent, and there is no power to advance from experience. These children vary greatly in the degree of their restlessness, and also as to the time when it becomes manifest; the earlier this restlessness is marked the greater the risk of mental defect in the child.

The same defect of power of control of nervous force is seen in the various kinds of impulsive acts of these neurotic children. In some, "*rages*," or nocturnal terrors, represent undue reaction to outside stimuli. The stimuli, in some cases, are started from without the body, but in others from within, there being subjective sensory impressions or visceral impressions which, neglected by the normal child, may in the neurotic start various exaggerated reflexes. Interestingly related to these children are those who have an extreme dread of heights. Many persons, otherwise normal, have giddiness or dread on looking down great heights, but in my experience the offspring of the neurotic suffer much from this dread. Uncontrolled or exaggerated motor reflexes are seen in these children, also mimicry of a monkey-like type, and it is among such that we meet with the musical mimic, the weak-minded child with a phenomenal memory, and the calculating idiots. Such children not only react abnormally to outward stimuli, but convulsions are easily caused in them.

A skin eruption, a dental trouble, or gastro-intestinal irritation may set up fits. The occurrence of infantile convulsions does not mark every child as neurotic, but it is a very important element in the diagnoses. These convulsions occurring in neurotics may readily lead to a *habit* which becomes epilepsy, each recurring convulsion making the next more easily produced. Neurotic children exhibit various interesting disorders of expression, some of which need further study. Facial twitches are common, proceeding in some cases from mimicry, but in others from ill direction of nervous energy. Certain forms of stammering, too, are common in neurotics. Before leaving these cases, I should like to mention certain other defects of expression

(or peculiarities, I might say). In some there is a missing link between one of the sensory centres and the highest centres : thus, some cannot learn by sight, and others cannot learn by hearing, the former defect being the more common. I have seen half a dozen young patients who could not be taught to spell ; they saw no relationship between alphabetical signs and sounds. Again, in studying mirror writing, I have met with idiots who did it at once when set to copy with their left hands, and I would go one step further and say that the neurotic learn to do this much more quickly than the normal ; in this case, rapid power of adapting to changing conditions may mark a connection between the genius and the fool.

Defect of control seen in the neurotic may extend beyond the senses and the muscles, &c. In children belonging to nervous stock, the temperature, which is generally variable in childhood, is more erratic, the slightest bodily disorder being followed by rapid and sudden rise in temperature, which falls equally quickly. Allied to the instability of temperature in the neurotic is the facility with which delirium is started. The offspring of neurotic parents show their physical and mental instability in no way better than the ease with which they pass into delirious states. A very slight illness will be associated with nocturnal delirium, and with the simpler fevers of childhood, such as measles and the like, delirium will be present. I think this is of double interest in comparison with the easy production of convulsions under similar conditions, and the tendency in these patients later on, say at adolescence, to develop grave *delirium* or delirious mania, just as epilepsy may be the result of the convulsions.

I have met with one family in which one member had convulsions leading to epilepsy ; another member died of delirious mania after measles ; a third developed systematised delusional insanity, the links in the neurotic chain being easily traced to their origin, namely, a neurotic father.

The general idea that *youth* is in favour of the patient is markedly a mistake ; with the neurotic, the younger the patient the greater the danger to the individual, the dangers

being either of permanent loss of power, or of permanent instability.

I hardly know where to place somnambulism in my series of derived neuroses, for, though it differs in origin in different patients, yet there is no doubt it is very common in the children of the insane and the neurotic. In some it is started during the restless state when there is undue reaction to outward stimuli; in others, it is associated with dreams, or with nocturnal hallucinations of a less pronounced type than nocturnal terrors. I have known it arise in restless, irritable children from vesical irritability. In one case which I saw recently, I have no doubt that unrecognised dreams played a chief part; for this girl recollected dreams occasionally, which were always of exactly the same type, so that the fright and reaction certainly depended on dreams in some cases, and, I believe, the similar acts were always, in this case, started by similar mental states. Automatic states will be seen to be linked with convulsive and epileptic conditions. Exaggerated irritability leads to another series of troubles—the constant wetting of the bed, and the development of precocious sexuality; in both instances I have been able to trace reflex acts as starting these morbid habits.

The descendants of neurotic parents exhibit their nervous weakness in instability of various kinds, but they also show very clearly want of power, and as might be expected in the evolution of the civilised states, the finest adjustments will be seen to fail first. In the individual the first sign of weakness as well as the first sign of decay may be a lack of adaptability; senility is often marked by rigidity and want of plasticity, and with those decaying or degenerating through defective heredity the same may be seen. In some cases the neurotic is too unstable to have definite power of adapting himself to his surroundings, and I wish now to consider such who fall under the description of the morally insane.

These classes now under consideration form the connecting links between the criminal and the insane, and a few examples will best convey my meaning. In some there is

either a want of memory or lack of power of comparing past experiences with present stimuli. Moral idiocy, moral imbecility, and moral insanity are all forms, or rather degrees, of the same thing, and it is again worthy of note that just as a previous attack of insanity may produce moral insanity in the individual, so previous insanity in the parent may leave moral insanity in the children. Of the moral defects which occur as symptoms, the most common are lying, theft, cruelty, destructiveness, and increasing precocious or perverted sexuality.

Lying may be an exaggeration of the common childish habit of "make believe." I have met with most astonishing romancers among the children of the neurotic. In these children there seemed no power to separate the imagined from the experienced, and the lying was rather a genius than a fault. On the other hand, the neurotic liar is generally malignant and cunning, and I have known such, who on the spur of the moment could invent the most elaborate lie which was hard to disprove. I daresay lying is not uncommon in its various forms among normal children, but it is necessary to consider it here in relationship to the abnormal. *Stealing* may be associated with lying (it generally is), or it may be met with alone. It again is of two markedly different types. It may be a kind of uncontrolled reflex, the mere taking anything which falls in the way of the child, or may be allied to the collectors' habit; it may be quite simple in the restless child, but may be developed by cunning through injudicious punishment. In some, punishment has no effect either in developing or checking the habit, there being either inability to remember, or what is more likely, to associate the act of stealing with the punishment. In some cases there is what one patient described to me as "lust of possession," there being recurring periods of possessive desire which might be compared to the recurring periods of sexual desire. These cases might be considered as cases of morbid impulse. The cases of destructiveness and cruelty, again, resemble those already considered in being of two classes, in the one the mere reflex desire to act leading to the destruction, the sight of fire

being quite enough to induce some of these unstable children to throw their most cherished toy into the flames. In other cases there is the exaggerated pleasure of power; this I fear, is not uncommon in the ordinary school boy, and may do little or no harm, or it may occur early in exaggerated degree in the neurotic child. The subject of sexual precocity is probably one of the most difficult to discuss fairly, yet I feel that to do it justice it is one which needs a paper to itself, and for this I am not here prepared, I have no doubt that the children of the neurotic have often very strong sexual passion developed prematurely. It is always hard to gauge the statements of sexual perverts; they are almost always anxious, like their connexions the hysterics, to make a parade of their symptoms, while they apologise for their weakness by lying, or by transferring the blame to others. I have evidence, however, that sexual self-abuse may arise in infants from local irritability—that an adherent prepuce may start a vicious habit, or that worms in the rectum, or some bladder trouble may similarly give rise to a habit which is hard to cure. This may occur in the healthy child, but is rarely so started in such. There is doubtless a very great danger to neurotic children in relation to the sexual functions, and here again we meet with the fact that similar symptoms of defective control over the desires may also occur as the result of previous attacks of insanity or of senile nervous decay. If I had to plead specially for the possibility of the direct transfer of mental symptoms from parent to child, I should certainly select cases which have been under my observation in which immoral parents have had immoral children, but in these cases, as in the alcoholic ones—in which, too, the transference of habits seems to be clear—we have many other factors to consider which show that the heredity is not clearly proved. Sexual precocity is to my mind one of the most common symptoms of neurotic origin; I have not very much experience of sexual inversion, but I believe that in these cases heredity is also supposed to play a very important part.

Already I have spent a very large amount of time on the subject of the forms of the neurosis which are met with in

the offspring of the nervous and insane; not that I expect to be able to point out the absolute physical tendency to transmission, but chiefly with the purpose of showing how a neurotic tendency shows itself in the offspring in various ways—that, in fact, there is only a transfer of a tendency which may develop in different ways according to the surroundings of the individual. Having done this, I shall now pass to other branches of my subject.

To complete the chain, heredity and the neuroses, it is necessary to refer to certain relationships which exist between bodily disease and neuroses. I cannot speak on this subject from any large personal experience, but I am inclined to think that hereditary nervous instability leads to a special predisposition to contract some contagious diseases. Sir W. Jenner pointed out that in some families there is a remarkable susceptibility; he specially referred to our royal family and its proclivity for typhoid fever. I believe that members of highly neurotic families not only take such diseases as scarlet fever, measles, typhoid, &c., readily, but that they are more liable than others to have a second attack of the same fever. If my idea is borne out and found to be true, it is only another example of the transference of a *predisposition* to unstable vitality. Micro-organisms of a dangerous nature are probably very generally present, but fortunately the soil required for their growth is not so common. I believe, however, that the neurotic subjects provide a fertile soil. If this be true of fevers, the same may hold good with phthisis. It is worth noting that this disease is commonly met with in the insane, and I believe it is still admitted that the tendency to develop phthisis is readily transmitted. Nowadays no one looks for the direct inheritance of either consumption or of cancer, but they recognise that certain families seem to be more liable to them than others. My opinion was, until quite recently, that no connection could be traced between cancer and the neuroses, but I feel now that my judgment should be reserved until I have observed further.

Next, as to the transmission of insanity, as such, from parent to child. I must make it clear that in my opinion

there are certain neurotic conditions which are more easily passed on than others. It does not follow that every neurotic must become insane, in fact there are certain forms of neurosis, such as hypochondriasis, which rarely pass beyond the border line of sanity. I think it will be best for me now to consider the part which heredity seems to play in some of the *forms* of mental disorder which are commonly recognised, not as species of disease, but as convenient groupings of symptoms. Much has been written which I have not time to discuss as to the special power of transmission of insanity which belongs to one sex or the other; doubtless the laws underlying the transmission of bodily and mental characteristics have to be studied much longer before any general rules can be formulated.

One-third of the insane are said to have neurotic heredity, but here we at once meet with a difficulty, for this makes all kinds of mental disorder of equal value in transmission. This is not so, and though I cannot pretend to weigh the exact value of each form of mental disorder as to its power of being passed on, I shall give an approximate value to each.

Mania.—In my experience, some forms of maniacal excitement are very likely to occur in the neurotic subjects, but ordinary (emotional) mania is not one of these forms. Hysteria of a grave type (with various forms of hysterical paralysis, refusal of food, malingering and the like), occurs in such persons, yet the development of these symptoms in these patients into organised mania is not common. On the other hand, I believe that neurotic subjects are specially liable to acute delirious mania, from comparatively slight causes; thus just as the neurotic child may readily pass into delirium, the neurotic adult or adolescent will easily pass into the higher grade of the same disease, *i.e.*, delirious mania. In these cases the cause is often some moral shock, some fright or sudden grief, a disappointment or an illness, which last may have started with fever and passed gradually into delirium and to acute delirious mania. It is interesting that this form of mental disorder which, in my opinion, is so frequently met with in highly neurotic families, is

characterised by extreme physical alterations, in fact the tendency is to rapid dissolution, the basis of mind being in a very unstable state.

Melancholia.—I find it much more easy, as a rule, to trace a melancholic inheritance in a family than I do to trace any other form of family neurosis, and this is interesting, for it is with melancholia that one is most accustomed to find a co-related disorder of the bodily functions. With mania you may have every bodily function apparently in order, but in melancholia you generally find all the vital processes imperfectly performed. It is, therefore, not very surprising that a bodily tendency which has a mental aspect should often be transmitted. I might go further and say that commonly many bodily ailments tend to be represented by morbid self-consciousness of a depressed or melancholic type. Visceral action when unconsciously performed is healthy action; unhealthily performed it tends to cause gloom. There is, therefore, a natural relationship between the transmission of certain unhealthy bodily conditions, and a melancholic interpretation of the morbid feelings.

I have already pointed out that in the passing on of instinct it is common to see a potentiality transmitted which may never be called into action by the surroundings; and so it is in certain families. Melancholia occurs in the members of these families when they attain advanced age, or when they are by disease brought to a premature old age. I have known such families in which, generation after generation, the members pass into melancholia, though the lives of the individuals in many instances have varied widely; some being active, some passive, some having borne the burden and heat of the day, while others rested in the shade of easy and happy circumstances, yet one and all have broken down similarly in old age. In some of the families where there has been conspicuous ability in managing affairs and in the steady pursuit of literary distinction, the end has been, in one generation after another, a melancholic shadowing of the great mental powers. I think it right also to point out here that in some of these families the characteristic instability of the neurotic is well marked.

The brilliant ones have even during their times of work periodically to pass into the *wilderness* like the prophet of old. There are periods of deep depression alternating with periods of restless energy, and in many cases these persons end in chronic mental depression; such persons often transmit similar tendencies to recurring times of brightness and despair.

Dementia.—I need say little on this subject, but I must briefly refer to it. The natural tendency of all mental disorders is supposed to be dementia. To accept this as true one has to modify the term dementia, or use the expression "forms of mental weakness," which includes not only defect of faculties but defect of mental stability weak-mindedness and chronic and recurrent insanities being placed together. The tendency of insanities, then, is to dementia, but this is more evident in some instances than in others. The neurotic individual, though liable to insanity, is more likely to recover once or more often. Instability means tendency to go wrong, but power to be set right. The neurotic, by inheritance, then, tends to recurrent insanities with a greater chance of some recoveries, and to ultimate weak-mindedness or permanent instability. I have seen a fair number of cases in which the family tendency was always to fail first in their highest mental abilities and then slowly to pass into permanent and general dementia. Here the bodily health is often maintained to a great age, and we have the difficult task of explaining the relationship between the transmission of a healthy body with a mind tending to decay or to disorder. All I can say is that such cases are not infrequent. In dementia the lines of degeneration may follow those of development, and in generation after generation similar lines of decay may be followed. It is noteworthy that in such families one meets with tendency to apoplexy, senile epilepsy, &c., or to some visceral degeneration such as Bright's disease; one member of the family dying of one and another of some other of the diseases named.

The next subject I wish to refer to is systematised Delusional insanity, Monomania, &c. These groups are to

my mind the most interesting of all classes of insanity, and need much careful study and some generalisation to place the chaotic mass of observed facts in some sort of order. I would say the chief characteristics of the disorder are the frequency of a history of insanity in the progenitors of the sufferers, and the constancy with which most of the mental functions, apart from the delusion which dominates the mental life, remain unimpaired. It is well to recognise that in some cases of delusional insanity there is no history of insanity in the parents, but there is history or previous mental illness in the patient himself, thus once more showing the import of insanity in the individual, and its relationship to hereditarily derived neurosis.

Among the chief characteristics of the neurotic are instability or susceptibility to the influence of surroundings and the facility of forming habits, and in delusional insanity it is these characteristics which are most marked. I have met with much difficulty in explaining the apparently direct transmission in some of these cases of imperative ideas.

From the time of Darwin it has been noticed that trivial acts performed by a parent may apparently, without education, re-appear in the child—that in fact a bodily something may be transmitted which has a special mode of expression which will be transferred. The trifling, and one might say useless, variations which may occur in one generation after another may be seen in the extra digit and certain types of nose or mouth peculiar to some families. I have seen several patients whose history I have been able to examine carefully, in whom mental tricks have been transmitted from one generation to another. In one case a daughter was brought to me with the *folie de doute* and the *folie de toucher*, and I heard her father had been subject to both these peculiarities for many years. In one such case I was told the parent and child had been separated from the earliest years.

The power of transmission of muscular tricks and other peculiarities is, I think, beyond dispute. Though it is very difficult to exclude all risk of imitation, as for example, with

the history of the transmission of special musical ability, I have met with "musical prodigies," the children of musical parents, but have never been able to decide how much was direct inheritance and how much the result of imitation; but allowing that much was due to the latter, yet there seemed to be a transmission of a greatly increased aptitude or tendency which is all one is contending for. Among the inherited tricks I should place imperative ideas which may follow neurotic heredity or neurotic illness. I have not any statistical evidence as to the inheritance of the special senses; we all recognise that deafness or shortness of sight may occur in parents and children. I am also inclined to think that I have evidence of transmission of unusual acuity of the sensory perceptions, and it is possible that with special nervous constitutions and special sensory acuity there may readily occur systematised delusional insanity. I have described elsewhere certain forms of this disorder which depend on deafness, and, therefore, I am prepared to meet with similar forms of organised delusion depending on other congenital or acquired sensory defects. Cases of delusional insanity are chiefly characterised by suspicion, doubt, ideas of plots, persecutions and the like, and there are frequently hallucinations of the senses. The memory and other faculties may be quite normal; there is little, or perhaps one should say, only a slight tendency to dementia, though there is great tendency to chronicity. I believe few of the sufferers from these organised forms of mental disorder have been free from strongly neurotic heredity, that they have been the children of old or degenerate parents, or have themselves had other attacks of acute insanity. The time at my disposal will only allow me to make this bald statement, of fact and not to enter into any more interesting points in relation to the direct or indirect transmission of sensory mental traits.

Certain other hereditary relationships deserve notice, but I fear I can only mention them in rapidly passing to my conclusion. We recognise the transmission of a tendency to develop gout, and we recognise that the disease produced by the individual himself differs little from that which may have been inherited. We recognise that

such a disease as gout may re-appear in the next generation in another form, and what is more, it may assume a neurotic character, gout replacing insanity, or insanity gout. This is not only true of gout, but of many other bodily diseases.

There is, then, a solidarity in the human body with its functions, which makes it almost a fault to speak of neurosis as a thing apart from bodily states and conditions.

I have endeavoured to trace the links existing between the bodily states and the mental expressions, and so I must leave the subject by summing up shortly as to my belief in the force of heredity and the influence of the developing surroundings in the production of nervous instability.

I have pointed out the links in the neurotic chain as seen in the offspring of the insane and of the highly neurotic.

I have shown how similar mental states may result from neurosis in a parent or from neurosis in the individual.

I have pointed out my experience as to the relative danger of transmission of the various forms of insanity; and now, gentlemen, I have completed my task, I leave it with regret, knowing how imperfectly I have performed it. Yet I leave it with the hope that, at least, I have shown you that I do not look upon heredity as a tyrant which, with inflexible power, drives the offspring to destruction. I do not think because the fathers have eaten sour grapes that all the children should have their teeth set on edge. I have striven to show that, though there is, in my opinion, power to transmit acquired peculiarities, yet the tendency is to transmit a predisposition which may be modified by surroundings.

That, in fact, it is not with the Fates we have to struggle, but with flexible powers, this justifies our treatment and encourages us to hope that we are doing our service to mankind with a prospect of doing good; hopefully we may proceed in the quest of truth, not trusting to attaining perfect truth, but having the pleasure of the quest which, like the search for the Grail, will hallow our work and consecrate our lives.