

EVOLUTION of the INSANE DIATHESIS

and its RELATIONS to MENTAL and OTHER DISEASE.
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The present paper is an attempt to show the existence of a special insane diathesis or neuropathic constitution as a variation of the human being, and its relation to the causation and production of insanity.

The necessity of this is impressed on any one who has to work among the insane by the anomalies met with in all directions, the want of definite causes of insanity in many cases even where a neurotic or other abnormal family type is taken into account, the unsatisfactory results of investigations into insane hereditary predisposition when taken alone, and the common occurrence of the insane types and of degeneracy in all its forms.

As a beginning it is necessary to study the subject of variation^① shortly and to consider a few of the chief points affecting it. The definition of a variety may be taken as the divergence from a standard mean: this may be in any direction from the mean and therefore may be for good or evil.

Though a standard mean is referred to it is granted that no two living things are exactly alike; there is an inherent tendency to vary excited by the

surroundings &c. on which its life depends and by changes to which they must adapt themselves or die and as every living thing transmits its qualities and therefore its varieties to its offspring the result is that the more useful the variation the better the product.

Variation thus gives rise to new species as a result of the struggle for existence; this is constantly going on and if an individual vary in a way advantageous to itself it will have a better chance of surviving and is thus naturally selected and will tend to propagate the improved form by inheritance; also when an organism begins to vary it goes on doing so for many generations.

This effect may be produced by the action of the conditions of life either directly on the organism or its parts, or indirectly on the reproductive system - which is so very sensitive to slight changes - and the result on the offspring is either definite, when all are more or less modified, or indefinite, when there are many small differences; this latter is much the more frequent, the effects are indefinite and act on each individual in an indefinite way as a chill &c. acts in various ways on different persons according to their constitution. This again may lead

to the production of monstrosities, i.e., a very marked variety, well shown in the "sporting plants" of horticulturists.

Among these developmental species there is often noticed a correlation of parts and even of constitutional peculiarities, e.g., the fact of certain plants being injurious only to animals of a certain colour. These correlational variations are varieties in one part or system causing variations on other parts or systems and this will be referred to afterwards.

The inheritance of every character is the rule and often the same peculiarity tends to appear at the same period of life in the offspring; but we have seen that many slight differences may appear in the offspring of the same parent - individual differences -, and are often inherited and thus natural selection can act.

The characters due to inheritance are called genetic characters and those acquired are specific; these last are highly variable and should any part be injurious it will be modified or the individual will tend to die. Natural selection therefore does not act as a cause but only directs the change; it cannot bring about any variation in organisms but

does preserve variations beneficial to the being under the existing conditions of life; it acts by adaptation to circumstance only.

It is found that wide varying, much diffused and common species vary most and the struggle for existence is most severe between the same species of a genus.

On the other hand apart from variation tending to improvement one finds persistence of a type and also reversion to a simpler and less developed type; examples of the former are seen in the unaltered conditions of some of the simpler forms of life when the persistence is due to the simplicity of structure of the organism, as the higher the organism ~~the~~ more complex it is and so the more liable to be adversely affected.

If, then, the surrounding conditions remain constant, in the case of living beings forming a species, the species may remain constant, but if the conditions change the species ~~must~~ change and adapt itself to them and so advance, or recession ending in extinction results.

The effect of sexual selection as a cause of variation must also be noted and the results of breeding are important.

Intercrossing has been found to eliminate varieties and gives vigour and fertility to the offspring while close ~~inter~~-breeding has the opposite effect and tends to diminish the vigour and fertility of the race.

To repeat - there is a continual struggle for existence going on resulting in the survival of the fittest and resulting in variations tending to improvement on the one hand and to reversion and degeneration on the other; competition ceases only at the extreme confines of life and any variation in the least degree injurious tends to perish; natural selection tends to make perfect, results in multiplication, variation, and survival of the strongest and death of the weakest.

How then do these forces affect the human race? Since development of new powers and faculties must coincide with change in the form of individual species, varieties are met with showing all stages of this result; and retrograde development or degeneration also leaves its mark on the race.

The highly civilised nations such as the British, Americans, Germans, &c., are the results of a severe struggle for existence between similar species, also the result of altering conditions and

adaptation to them, the beneficial effect of intercrossing leading to increased fertility and vigour &c.. This is shown in the general higher development of the nations and their individuals, in their fertility and increase of numbers, and in the special higher development of a highly complex organ, the brain, with its corresponding greater variability.

It has been said that if the surrounding conditions remain constant the species remains constant and persistence of type may occur: applying this to the human race it is noticed that in China the type has advanced to a certain extent and then stagnated - there has been a persistence of the same type for a long period - and this probably is also the condition of some of the black races. Lethargy often precedes the downfall of a nation and results in retrogression and degeneration; this is shown in such types as the Bushmen, Fuegians, Australians, &c., who are all more or less degenerate species: they have suffered probably originally from lack of competition, have afterwards given away before stronger tribes and been forced to live under adverse conditions, inbreeding has had its effect, there has been a failure to adapt themselves to circumstances

and retrogression has resulted.

The lowest of these types are little better than the higher animals and their brain development is little better, their mental moral and social characteristics are of a similar low grade.

Their vital forces show little power of resistance or adaptability when brought into contact with the altered conditions of civilisation as met with in the higher races and they rapidly fall victims. Degeneration manifests itself also in a feeble power of resistance to such diseases as tubercle, syphilis, &c. and to such poisons as alcohol, &c., and the process of extinction is rapid. This affinity to disease and alcoholism, &c. may be explained by the law of correlational variations; it is mentioned above that a correlation between parts and constitutional peculiarities may occur during the development of a species and, if this is applied to degeneration, there is not only a poorly developed brain and body but a predisposition to be affected injuriously by the above mention agents.

Development, stagnation and degeneration apply also not only to the human race as a whole but to all the different sections and subdivisions of it: that is to say there is development and degeneration going on in all nations separately and this determines

their place among the peoples of the world; conditions of life are always changing and this affects the different classes of people and the individuals themselves.

As we have seen the individuals differ from each other in many ways but they can be roughly grouped according to the condition of development they have reached, according to their temperament and also according to their diathesis.

These two latter terms are somewhat old-fashioned and unfashionable at present but the divisions hold good and are useful: to define them, a temperament is any marked type of mental constitution or development which seems due to inherited characteristic and a diathesis^③ is "such an innate hereditary constitution of the body that in the course of these vital actions there will arise at various periods of life under various circumstances, local or general diseases having a common resemblance either as to etiology symptomatology or pathological anatomy. This may be shown in (a) disorder of a general process, e.g. disorder of nutrition as in the strumous diathesis or (b) disease of special tissue, e.g. the nervous. There are four distinct types of temperament usually

recognised, the sanguine, the lymphatic, the bilious and the nervous, and mixed forms occur, and the characters of each shortly are as follows:-
The sanguine temperament is impulsive, cheerful, excitable, emotional and active; the bilious temperament is serious, jealous, revengeful, cool and persistent; the lymphatic temperament is the opposite of the sanguine and is slow, heavy, careful, persistent; and the nervous is animated, impulsive, very excitable, irritable, sensitive and imaginative.

The diatheses are (1) the arthritic, predisposing to gout and gouty affections, (2) the vascular-arthritic, predisposing to disease of the heart and vessels and often of fibrous tissues, (3) the rheumatic, (4) the strumous and lymphatic, predisposing to imperfect nutrition and to tuberculosis and (5) the nervous. These may be modified by age, sex, food, climate, &c., or may occur in combination.

The old theory also adds a cachexia as the resulting condition of body when a diathesis develops into a disease.

Now the diatheses can only be regarded as degenerate variations of the species or varieties showing regression; they imply a hereditary predisposition to disease and the transmission of

this simply means the modification of the vital functions so as to make them morbid.

The varieties resulting would be well marked if it were not for the fact that a feebler resistance is made to disease in the more marked types and extinction follows.

The individuals with a marked diathesis are handicapped in their struggle for existence in the same manner as the members of the low type of savage and the result tends to be the same.

So far the conditions dealt with have referred largely to the body but if the mind be now considered it is found that the same laws apply to it; it is found in all degrees of evolution and development corresponding largely to the state of development of the brain. The brain in the lower races of humanity differs little from that of the higher apes and is greatly inferior to that of the higher races, and in the same way there is a corresponding gradation from the mind of the savage, who has little intellectual power, is very often unable to express his ideas satisfactorily in language and whose moral character is most elementary - up through various degrees of civilisation to that of the most advanced nations.

Deterioration and reversion are shown in those races where there are signs of the ancestral species being of a higher type and civilisation with its arts has been lost.

The general type of mind varies in the different races and a national type is evolved depending here again on inheritance and the action of the conditions of life and among the individuals of each race various types are recognisable as in the different temperaments.

But the mind is most intimately associated with the body, they cannot be considered apart; though the brain is recognised as the organ of the mind all the other systems and organs affect and are affected by the mind and as the bodily conditions are affected and vary so do the mental.

"We cannot truly understand mind functions without embracing in an inquiry all the bodily functions and, I might perhaps say, without exaggeration, all the bodily features."^⑤

The mind normally develops with the body, it undergoes changes in all its parts at puberty and adolescence and at the climacteric corresponding to those of the body and it fails as the body fails in old age.

This close relationship is further demonstrated

by the effects of injury and disease; injury to the reproductive organs before puberty results in injury to the mind - Eunuchs are said to be morally most depraved and deficient in real social feeling; conversely the body can be altered by the mind as in the results of severe mental shock, in the alteration of secretions of glands by mental disturbance and in the phenomena of "faith healing". This proves that the internal organs are plainly "not the agents of their special functions only but by reason of the intimate consent or sympathy of function they are essential constituents of our mental life."

Again in degenerates the same feature is noticed - with a degenerate body there is usually a degenerate mind, all parts being affected, and in cases where the change in the mind is the more marked alterations are found in parts of the body the so-called stigmata of degeneration, to describe which is needless. In the degenerate there is often a reversion of habits as well as of body as in "monkey tricks" and animal habits &c. and if the photographs of the inmates of an Asylum be compared with those of some of the lower races it is surprising how many will be found to resemble each

other. Variations towards improvement and degeneration are therefore found in all divisions and classes of the human race, independent of the state of evolution of that section itself, are developed by means of the inheritance of genetic characteristics and the acquisition of specific characteristics, and result in the higher development of the human being on the one hand and the production of bodily and mental degeneration on the other.

Now insanity occurs in all the peoples of the earth and apparently always has done so: the examples in ancient history are familiar; it has been noticed⁽⁴⁾ in all parts of the world, for example in Africa - Egypt, Soudan, Central Africa, Uganda, &c., in Asia - India, Java, China, &c., amongst the Aboriginal inhabitants of America, the Pacific Islands, &c.. The type varies according to the climate, race, &c., and the general state of evolution of the race, but statistics referring to this and to the numbers &c. are unobtainable.

At first sight a large proportion of insane would be looked for amongst the lower races owing to a greater production of degenerate forms and the want of recognition and detention of such cases, but this is probably counter-balanced by other

circumstances; for example badly developed and malformed beings would have a much less chance of surviving - if they were not actually destroyed as sometimes occurs - while adult lunatics also have a poor chance as in cases of "running amok" &c.. Again among the highly civilised races a high rate of insanity might be expected from the increased pressure of the conditions of life, the more highly developed condition of the brain, and the protection and care of the insane: but here again though the pressure is greater the race generally adapts itself better to the surrounding conditions of life, the circumstances taken all over are better and the insane are isolated and detained under proper supervision to a large extent.

The general conclusion may be observed - taking a broad view of the subject and excepting small and isolated groups and sections - that the proportion of insane or mentally unsound is more or less a fixed one, in this country at least.

This has been fully gone into by Macpherson.^⑤

So far it has been demonstrated that variation tending to improvement and degeneration is constantly going on, that the improved variation survives and that the degenerate type tends - failing improvement - to perish, that degeneration

manifests itself in the human body as various diatheses or a lessened tendency to resist disease or other adverse condition, that there is often an affinity or correlation between these varieties, and that particularly with bodily degeneration there is degeneration of mind as well.

This degeneration of mind manifests itself by abnormal mental phenomena and this is included in the study of insanity. The classification and divisions of mental disease are very different and have varied and altered to a large extent recently: the following classification has been drawn up by the Author considering the subject from the point of view mainly of deficiency of development and durability of the nervous system, and is made up from a series of cases admitted into an English County Asylum during the last 50 years.

The same subject is being worked out by Dr. J. S. Bolton⁶ from a pathological and clinical point of view and the results can be compared.

1. The first group of course consists of those obviously congenitally defective and includes in ascending progression Idiots, Imbeciles, weak minded, morally defective and criminal cases. These show bodily malformations and stigmata of

degeneration and usually the latter are most marked in the lower types of mental deficiency. It is unnecessary to describe examples of the above and the criminal is now universally accepted as a degenerate. But it is easily recognised that Imbeciles of all grades frequently have passing attacks of acute mental disorder often coexisting with the periodical crisis of life such as puberty, adolescence, the climacteric and the onset of senility.

They may be suitable cases for home life until with these periods come the acute attacks necessitating their removal to Asylums. This points to the derivation of the next group.

2. The recurrent cases. This group includes types of recurrent mania, recurrent melancholia and mixed cases (alternating insanity).

These cases start^⑦ as a rule about the period of adolescence and the maniacal type is the commoner of the two. The attacks occur at varying periods and are usually of the same type and are easily recovered from but the patient seems unable to keep well for long when away from the restraining influence of asylum life. Between the attacks the patients are excitable, flighty and

easily upset and never do much good in the positions they occupy when out of the Asylum though they cannot be classed as insane. They show congenital deficiency appreciably, in their weak mindedness, childishness, lack of self control and general instability of mind.

Though these are commonly met with starting during adolescence a number are found coming on in later life and frequently about the climacteric and in these cases also the attacks often are perfectly recovered from and the patient may die practically sane.^⑥

These then suggest a congenital weakness or tendency to the onset of recurrent insanity and as such differ from attacks of simple mania and melancholia which do not recur and which are met with at all periods of life and commonly at the critical periods but which are not looked upon as being identical with the recurrent cases by the Author. These cases are embraced by the manic-depressive insanity of Kraepelin but this term will not be used in the present classification. Compare now the conclusions of Dr. Clouston on this form of insanity:^⑦ "It is more marked where they are very heritary than in any other disease; it is more

common in youth, puberty and adolescence than at other periods; possibly it is one of the modes by which nature brings that kind of stock that has become degenerate by over brain cultivation for many generations to an end." "It is a distinct disease - a few relapses in mania or melancholia do not constitute this disease."

There are, however, as was pointed out by the Author in the paper dealing with adolescent insanity, a certain number of these cases of recurrent insanity which show a progressive mental deterioration and which connect the recurrent cases with those of the next group which includes the cases of dementia. The above groups of cases may be included together as being due to deficiency of development and with these should also be included the various types of delusional insanity, embracing another class of cases ~~are~~ the so called borderland cases well described by Dr. Savage and by him divided into such groups as the Sexually deranged, Social misfits, Self mutilators, Hypochondriacs, Youthful failures and the Inebriates. The relation between these and Delusional Insanity is often marked.⁽¹⁰⁾

3. Delusional Insanity is met with at all ages, in the adolescent, adult and in old age, and

separate varieties have been described according to the age at onset &c., for example the Paranoid varieties of Dementia Praecox, and the Presenile delusional cases &c..

It is a disease of long duration and in pure cases there is frequently little mental enfeeblement or dementia. Though hereditary predisposition is said to be less important in the production of this disease by some authors, that it is a developmental disease is proved by the following facts: it is more prevalent in persons of a retiring modest or sensitive disposition: ① among the origins given by Clouston ② are out of temperament and disposition: the dominant traits of personality are first exaggerated: ③ " it develops on a defective constitutional basis either congenital or acquired, defective heredity existing in a very large percentage of cases, some have been abnormally bright other always flighty &c.. ④ "

The degenerative types speak for themselves and also the presenile delusional cases. From the above one may conclude that there is an inherent tendency to mental disorder in all these cases due to a deficiency in development, the different varieties being affected by the bodily condition at the period

of onset.

Deficient development of the mental system may then be taken as occurring in the above mentioned groups of mental disorder and in a parallel series might be arranged 4. those affected with epilepsy and probably with hysteria, for epilepsy is found associated with all states of development of the mind and cannot be put in any definite one of the above groups though the majority of epileptics are certainly weak minded: here there is probably a close relation to the nervous diathesis. But the condition of deficiency of development cannot be altogether divided from the condition of deficient durability of the nervous system and as mentioned above cases are found passing from one to the other particularly among adolescents.

5. The first then of these series exhibiting marked want of staying power is that of premature dementia or dementia praecox. The characters of this disease are well known and need not be gone into minutely, the conclusions drawn from the Author's series however may be mentioned.^⑦

The symptoms may occasionally be traced back to birth, or even before it as in the case of one where the mother give a history of shock during pregnancy,

and if a careful history can be got the affection may be traced through all the stages of development up to the time of adolescence when the more marked symptoms come on. Some of the cases may also show signs of mental weakness - lack of development - as well. They almost all pass rapidly into a condition of more or less well defined dementia due to deficient durability of the mental system all stages being met with.

An important point noticed was the prevalence of tubercle and the very large number which died of tubercular diseases. The frequent history of hereditary insanity or phthisis in the family, the stigmata found, the occurrence of several cases in one family, the gradual onset, the period of onset, the progressive deterioration and the prevalence of tubercle, all point to the degenerative character of the disease.

But cases in which rapid and marked dementia is the prominent symptom are met with, though less frequently, during mature life and more frequently at the climacteric and with the onset of senility.[®] These point to the same lack of durability and here again all stages of dementia are met with, the senile cases particularly often showing only a slight

increase from the normal senile condition.

These then are the varieties of mental disease which show most markedly the effect of degeneration acting either by want of development or by want of durability and there remains 6. a group of cases in which there is no marked symptom of lack of development or durability of the system involved but in which there appears to be only a tendency to attacks of mental disorder. Some of these have been referred to in dealing with the recurrent cases but a large number depend for a cause especially on the effect of toxins or mechanical injury and they will be grouped as Confusional Insanity.

This large group includes the various mental disorders due to the action of poisons embracing (a) those taken voluntarily, e.g., alcohol, morphine &c., (b) those due to microbic toxins, e.g., influenza, typhoid, puerperal, (c) the result of auto-intoxication. Allied to these there is the insanity occurring as the result of mechanical injury, shock, apoplexy, &c., and the symptoms shown here resemble the toxic insanities in showing confusion or partial (recoverable) dementia.

The symptoms of this group need not be described fully - they include maniacal and

melancholic and delusional types but the most marked condition is the state of confusion: in a series of post influenzal cases⁽⁴⁾ the melancholic type was found by the Author to be the more common and a tendency to suicide was frequent. The action of the causes however in these confusional insanities is most commonly mixed thus in alcoholism there is probably autointoxication as well as direct poisoning, in puerperal cases there is probably autointoxication as well as direct microbic poisoning and in General Paralysis of the Insane there is a much more complex effect, syphilis, secondary toxines and autointoxication and, according to Ford Robertson, a special organism all interesting.

But it is found by all observers - and in the above mentioned post influenzal cases - that there is nearly always some predisposing cause such as hereditary tendency to insanity, alcoholism, or the neuroses, besides the exciting cause and to this attention must now be directed.

To recapitulate briefly mental degeneration shows itself in various ways (1) by faulty development leading to (a) Imbecility and all grades of weak mindedness (b) recurrent insanity, (c) the borderland cases and delusional insanity,

(d) Epileptic and hysterical insanity. (2) By deficient durability ending in the various dementias. (3) By a tendency to attacks of simple mania, melancholia, confusional insanity, &c..

It has been shown that types are found connecting the various groups and how complex some are, General Paralysis could be taken as an example which might include deficient development, deficient durability, direct poisoning, autointoxication and the secondary action of microbes, while some cases of Dementia Praecox show many symptoms strongly suggesting a toxic action.

There is therefore a degenerate type of variation which shows itself in the above ways either as a direct developmental defect or a tendency to mental disease and this is more than a mere hereditary predisposition to insanity for undoubtedly in all families there is a history of insanity at one time or another; it is also more than a matter of the nervous diathesis, for though insanity is frequently met with in families of this type it is also found associated with all the other diatheses; it is, from a gardener's point of view, a "sporting" variety which, if carefully cultivated from selected individuals - which happens by

accident or possibly by affinity, or by the addition of conditions favouring its development, will lead to an exaggeration of the type and, in the case being considered, final extinction. It is the greatest of the degenerative variations or diatheses.

A survey of the causes of Insanity usually noted will show that Hereditary Predisposition to insanity is given as an important cause and this it undoubtedly is though its importance is often exaggerated, the hereditary insanity being simply a production of the insane diathesis. In morbid heredity the defect may be transformed and show itself in different forms in different generations such as nervous disease, insanity, alcoholism, &c., and these are often given as causes while they are in reality part of the result of degeneration.

If this tendency to morbid variation of the body or mind (or both which is usual) be now accepted it is necessary to turn to the determining causes of the acute attack, and probably one of the most important, if not the most important, is the state of development and growth of the individual. The effect of bodily condition on the mind, and the reverse, has been referred to: of these the changes due to the development of the reproductive system

at puberty and adolescence and its involution and decay at the climacteric are the most important, for after the instinct of preservation of life in the individual the most important is that of reproduction or preservation of the species.

It can be clearly seen what an effect on the whole body and mind the development of this power of reproduction and of its various organs has on the normally constituted individual; it causes changes and alterations in all the systems and parts of the body, and beyond this surely nothing further is wanted as an exciting cause of insanity in those who are of a psychopathic constitution.

The effects of its development are noted in all grades of imbeciles and those mentally deficient as causing outbursts of acute mental disorders; it may start the initial attack in the recurrent cases, the age at the onset depending not on the actual number of years but on the state of development of the individual and this varies greatly: the same may be remarked in epileptics and in hysterical cases.

Should degeneration show itself by deficient durability of the nervous system the result of the adolescent development is the onset of dementia praecox; the character of simple attacks of insanity

is also affected by adolescence. At the period of involution exactly the same may be observed, the age here again varying greatly in different individuals: here again are found the same phenomena among imbeciles and epileptics, the same occurrence of recurrent insanity which often starts at this period, the onset of marked dementia, and the modification of the character of the attacks of simple insanity which has led to the term melancholia being referred only to depressed attacks at this period.

The onset of Senility also has its effect but this is less important as the climacteric cases pass into the senile cases and it is difficult to distinguish them: cases of marked senile dementia are found about the climacteric age, as mentioned above, but the main effect is the alteration of the character of the symptoms corresponding to the normal change in old age. In this way the various Insanities due to degeneration can be accounted for, the period of onset depending on the degree of deficient development or deficient durability of the system involved: examples of this varying degree of deficiency are seen in imbeciles who may not be admitted into asylums till well on in life, recurrent cases which may start at adolescence

or not till about the climacteric and cases of rapid dementia which may occur during adolescence, maturity, the climacteric or old age. As has been seen inherited peculiarities tend to appear in the offspring at the same period of life and this is noticed in dealing with mental disorders.

But this effect of degeneration is merely a morbid variation tending to disease of the mental system and is therefore a diathesis - the Insane diathesis or Psychopathic constitution - and this term must be used in its widest sense. It is as stated above the greatest of the degenerate variations. It is found combined or associated with the other diatheses and as mentioned before particularly with the tubercular diathesis with which there is evidently an affinity. There is also a close relation with the nervous diathesis as in cases of epilepsy but the latter is probably a type by itself.

There are probably definite lines of variation included in this diathesis such as the cases due to deficient development and durability, epileptic and hysterical cases, the so called borderland cases (including the alcoholic) and the cases of delusional insanity, and a tendency to simple and recoverable

attacks of insanity; of these the first is the most marked. While the different varieties of insanity can be produced in this way, the type of character as to exaltation and depression &c., probably depends largely on the temperament, the general emotional state at the time, and the exciting cause. The temperaments have already been described and it is easy to suggest the type of insanity which would be developed in each; in mild cases it would practically be an exaggeration of the normal state.

An exciting cause as mentioned above is usually unnecessary in the cases where the insane diathesis is marked but where it is not so and there is only a tendency to the simpler forms of insanity, the determining cause can be found in stress of any kind, bodily or mental shock, the various toxins, &c., and these may affect the character of the attack.

As regards the cause of the diathesis itself it has been argued that it is a morbid variation depending originally on a lack of adaptation to circumstance and as such will be hereditary in all its forms; that is to say the tendency to degeneration will be continued until the surrounding conditions alter. But of course, like other varieties it can be largely eliminated in time by

crossing with healthy stock though individuals may be found continuing the type: conversely it will be accentuated by the union of individuals with morbid heredity and this frequently takes place as asylum records testify and gives rise to the idea of a mutual affinity between such persons.⁽²⁾ On the other hand the insane diathesis can be acquired congenitally. Conditions may so act on an individual that the descendants may show symptoms of mental degeneration; take for example acquired disease in the parent affecting the child, where the toxine affects the parent primarily and the child secondarily and so may start the diathesis.

It is also possible to conceive that a healthy individual may be so adversely affected by unfavourable conditions that the insane diathesis may be developed and so acquired directly. Insanity is therefore a form of degeneration or morbid variation and as such tends to perish and there is no want of examples of this as in the sterility of imbeciles, the production of imbeciles by the insane and by alcoholics, the tendency to suicide which is often heritary, and the tendency to death in epileptics, &c.: and here again can be included the associations of the other diatheses and the

prevalence of tubercle as a tendency to extinction.

But it is equally obvious that in a large proportion the defect is improved and even eliminated, for if all the individuals with a trace of degeneracy in their stock were to perish the entire race would soon be extinct; as the proportion of insane has been stated to be practically stationary there is in all probability a balance between improvement and regression.

How far this balance can be turned in favour of improvement remains to be seen, also the means to bring this about, if possible; the most rational means that suggest themselves are the improvement of the conditions of life and the selection of the stock and these must be taken in their broadest sense.

