<table>
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<th><strong>Title</strong></th>
<th>Relation of heredity and physical disease to insanity: a study based on the certified cases of mental disease admitted to James Murray's Royal Asylum, Perth, for a period of ten years, 1887-96</th>
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<tr>
<td><strong>Author</strong></td>
<td>Campbell, Alexander Keith</td>
</tr>
<tr>
<td><strong>Qualification</strong></td>
<td>MD</td>
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<tr>
<td><strong>Year</strong></td>
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[http://libraryblogs.is.ed.ac.uk/phddigitisation](http://libraryblogs.is.ed.ac.uk/phddigitisation)
A Study based on the Certified Cases of Mental Disease admitted to James Murray's Royal Asylum, Perth, for a period of 10 Years - 1887-1896.

Note: In the statistical tables all re-admissions have been excluded, so that each case represents a separate individual.
Part 1.

A. The Relation of the Laws of Heredity to Insanity.

1. The present state of knowledge in regard to the Laws of Heredity.

There is no more interesting department in the systematic study of mental disease than a consideration of the influence which Hereditary Predisposition has in the causation of Lunacy. That it is a factor of importance has long been accepted as true on the basis of experience, but it is only in comparatively recent times that the laws which underlie the common saying "It runs in the family" or the ominous remembrance "his father was insane" - have been worked out. And the reason for this lies in the fact that of late years the methods of Psychologists have changed very greatly. As long as the old introspective processes were the only by which thinkers could estimate the modes of thought, and the great war of materialism versus transcendentalism occupied entirely the minds of thinkers, little progress could be made. The route to the knowledge desired was a wrong one. The theories were beautiful, but there was no practical result of it all. As Dr. Buckle says in an Address on the "Evolution of Mind in Man" [B.M.A. Meeting, September 1897]: "We might as well study the human body alone without reference to that of any other creature and in that way attempt to decipher its gen-
eral development and meaning as an attempt to comprehend a single human mind without including in our examination not only other human minds in all stages of evolution but equally all other minds to which our own is related—that is, all minds other than human belonging to our kinsfolk, the animals. It was, however, at last realized that it is not necessary to establish the first causes of things, nor for the finite mind of man to grasp the absolute in order to comprehend some of the laws which govern the highest of all human functions, that of mind; and further it is not even necessary to know exactly all the processes of thought in order to formulate laws which will explain many of the aberrations from the normal in these processes.

The Brain is not the Mind, it is true; nor will any number of nerve elements produce thought without the stimulus of that other “something”. On the other hand thought cannot be produced apart from these physical elements — without the working of the organic Brain. And therefore it is now a recognized truth, as yet unproved and apparently correct, that to every psychological state there is a corresponding physiological state. And this necessitates a basis giving rise to this state — a physical organization underlying it. In default of absolute knowledge from which logical deductions could be drawn, modern processes of experiment were applied to Psychology. And the fruitfulness of the enquiry on these lines was soon evident in the results obtained. Considering the backward state of the Pathology of Insanity the enquiry into
the Etiology of the subject was all the more closely pursued in order that new light might be shed on the disease and its causes, and that a scientific basis might be determined on which to found the principles of treatment. The result is that now the action of Heredity as a factor in the causation of mental disease is more clearly proved to be subject to definite laws than perhaps in any other human ailment.

The methods of working have been different. Galton has adopted the purely statistical reasoning that given a sufficient number of facts bearing on the same subject certain similarities and differences may be recognized, which are so constant in their occurrence and which vary so little, as to be necessarily due to some underlying law which governs the whole. Histo points out that laws formulated in this way are merely empirical and cannot be esteemed as scientifically proved. The ideal method is the one where facts are collected, laws formulated, and these, tested by carefully planned experiments, are found to meet all the exigencies of experience.

Greisinger says that all enquiries into this subject must begin ab ovo. In the present study it is not intended to review all the observations and experiments of Lamarck, Darwin, Spencer and Weismann. It will be sufficient to collect as completely as possible the laws which have been formulated and which are accepted today as true, together with those which are yet are provisional and require further confirmation. Further this is specially a study of Insanity and therefore the laws and facts bearing on Heredity will be
considered chiefly with reference to Mental Disease.

Man is a collection of attributes which combine to form his personality. Some of these are of long standing and some of more recent acquisition. Those which are older are also more organically fixed, and more unvarying in their occurrence. The same generalization holds good for lower animals as well and Heredity is that biological law by which all things endowed with life tend to repeat themselves in their descendants. And as it is with mankind in general so is it with races and families, each transmits the broad characteristics from generation to generation—the oldest attributes which mark them off from other divisions of the race. The Jews are good examples of this. Breeding among themselves the nation's characteristics have become very firmly fixed and rarely fail to be represented in succeeding generations.

In the evolution of man the brain and its functions are comparatively speaking of recent development. Not only so, but the various faculties of mind which are represented physically in the brain have also been developed in series; and it is recognized that the longer a race has been possessed of a given faculty the more firmly is that faculty fixed in the possession of it. The more recently it is acquired, the more easily is it lost; the more uncertain is the
law of Heredity transmission in its action with regard to it.
The Basis Law then is the Hereditary; transmission of qualities and attributes and these necessitate a physical basis underlying them. It must be remembered however that in applying this to insanity and the manifestations of Mind generally we are applying it to a series of functions and attributes which are more recent in their evolution than are the attributes of physical configuration, colour etc., and that therefore the basis law may be less constant in its action with regard to them — the number of exceptions to it may be greater.

It is also established that characters and attributes which are rapidly developed are less stable than those of older birth and more especially of slower growth. Their transmission according to the law of Heredity is not so certain. They may be passed over while the older and more fixed are repeated. And as a result we have anomalies which could not be explained otherwise than by a recognition of this fact. Especially in white races the evolution of Mind has been very rapid and the process is probably not yet complete. This law while dealing with the race in general has to recognize the individual also as the medium through which those characters are transmitted; and in order that the action of the law in general may be properly understood it must be referred to the particular. Here we must begin from the impregnation of the ovum.

The ovum may be said to represent matter with some evolutoinal force as evidenced by its partial development before impregnation. The sperm may be said to represent
mainly force with a little matter. In it, chiefly, is found the energy required to produce the multiform development of the original cell. The ovum represents the characters of the female; the sperm those of the male. Each is a miniature - a potential male or female having in possession all the faculties, attributes and characters of the parent organism from which it was elaborated and part of which it is.

The ideal application of the law of Direct Heredity would be that the product of the two should be the exact mean of the characters of each, but it is an ideal which may be said to be never realized. For there are other laws or circumstances perhaps not so definite as the Basis Law which often modify it so far as to make it almost of no account. Some of these are inherent in the germs themselves and some are external and due to co-extistent conditions. Perhaps the most important of the internal circumstances which modify the basis law is the possession by one or other of the original germ elements of the quality of prepotency. The variations produced by this quality are often towards the morbid. In the representatives of the progenitors there may be qualities like and unlike. The like will tend to be accentuated. The unlike will be antagonistic and the struggle for preponderance in the offspring will depend on which quality possesses the greater prepotency. How prepotency comes to be produced is not clear but the longer it exists the stronger it grows and many deviations from that exact mean which represents the ideal outcome of the basis law must be due to it. The next
modifying factor tends almost entirely to produce morbid variations. It is the necessity for a certain suitability between the two original elements at the time of impregnation. Otherwise, though the progenitors and their germs be vigorous, the resultant offspring may not be. There must be a certain kinship. But again this may be too close or not sufficiently close. The amount of difference between the germ plasms also is in direct relation to the amount of impetus which is given towards development and this again to the amount of instability. This is best seen in crossbreeds who 1. Grow more rapidly and are fully developed sooner 2. Grow to a larger size 3. Attain a higher stage of development.

The results of this requirement must of themselves give rise to many morbid variations - evident either in the early life of the offspring or somewhat later when instability becomes manifest. And as the brain as the organic representative of mental function is a comparatively recent acquisition and not so subject to the rules which govern the transmission of form, etc., and which help to retain the normal in the offspring, the action of this last factor will naturally be the more inclined to produce abnormalities of the mental attributes.

We must look indeed to the individual for the continuance of the characters of the race, but at the same time he also represents the race combining in himself the attributes of a long line of ancestors whose evolutionary struggles through the ages have resulted in the production of himself. The germs which go to the production of a new individual represent
the progenitor, but also through that progenitor, more remote ancestors with all their characteristics. They may not all be apparent. They never are. But they are there and though latent in this generation some of them, aided by circumstances, may acquire sufficient prepotency to render them patent in the next. On this proposition which must be accepted in the light of experience rests the whole question of Reversional Heredity to which many of the seeming exceptions to the basis law may be traced. And closely connected with it is the much vexed question of the transmission of acquired characteristics.

It is impossible here to do more than touch on the opposing views of Darwin and Weismann. It is not necessary for the Medico-Psychologist to read Mr. Spencer's "Rejoinder" to come to the conclusion that the _Psychologis_ Theory is a much more useful one from a working point of view. Experience seems to justify it as a provisional law though the terms in which it is stated are purely theoretical and may not be correct. As a matter of fact it has been modified by Cope and lately by Stearns who have shown that it is not necessary to work on the gemmule hypothesis - that the nervous influence of brain on ovary and vice versa are sufficient without it. At any rate it does not take as its foundation hypotheses which cannot be accepted, as Weismann does in regard to the influence of somatic on germinal cells. But the great advantage of it to the Psychologist is that it explains the hereditary transmission of acquired characteristics. Darwin himself shows how the transmission of psychic attributes - mental habits comes about.
When they appear, in view of the relation of psychical to physiological phenomena we must admit some effective organic modification, that is modified nerve elements. These are represented in the germ plasm by their representative gemmules, or according to the more recent phraseology by the change in the germ plasm due to the nervous influence on it. The transmission of such acquired attributes may take place.

The tendency towards their further propagation may be diminished, or stopped, or increased, according to circumstances. For they are of very recent acquirement and therefore by no means fixed; hence they only slightly come under the basis law. We do not count on their being transmitted; but they may be, and the older they grow in the race the more certainly they will be. This of course applies to insanity as a morbid manifestation of mind. The Sub-Law of Reversional Heredity is really a corollary to the Basis Law. The variations it produces are not real variations. They only show how far reaching the greater law is. In considering such a truth as Hereditary Transmission we must always take the individual as part of the aggregate — as representing the stock from which he comes. As Galton says [Natural Inheritance] "We appear to be severally built up out of a host of minute particles of whose nature we know nothing, any one of which may be derived from any one progenitor, but which are usually transmitted in aggregates, considerable groups being derived from the same progenitor. It would seem that while the embryo is developing itself the particles more or less qualified for each new part,
work, as it were, in competition to obtain it. This sub-law explains how a man may transmit characters, morbid it may be, which he does not himself possess apparently, but which he does potentially since they are characters of the stock to which he belongs. By it we see how a woman can transmit characters of her male progenitors to her sons. In her they are latent. In her sons they reproduce again the characters of his direct maternal ancestors.

The Sub-law of Collateral Heredity is in reality, but an extension of the law of atavism. A man may resemble his uncles physically or mentally because both have the common characteristics of the stock. The quality of prepotency has allowed these characteristics to be transmitted from still older ancestors through the uncles to the individual.

The Sub-Law of Influence is as yet hardly formulated. It probably does exist and produces exceptions to the basis law but it cannot be held to be established as the preceding are. According to it external circumstances also play a part in the production of variation and now the result is always retrogressive. A child born during the temporary illness of a parent, but especially of the father, may be feeble or unstable and liable to disease physical and mental. Fruitful coitus during intoxication, even though father and mother be normally healthy is notoriously productive of children below par. But the principles on which this law of influence is founded have not yet been worked out fully.

To sum up - [il] There is a Basis Law of Direct Hereditary
Transmission which is universal and by which family and organically fixed attributes are handed down but which is more unfailing in its action on faculties and attributes which are old than those which are of comparatively recent production — e.g. mental faculties.

[2] This may be modified by —

1. The sub-law of prepotency
2. The provisional sub-law of mutual suitbility of the germ plasms.
3. The provisional sub-law of influence.

[3] This may apparently be modified by the sub-laws of

It is now necessary so as to estimate the full extent of the influence of these laws in the production of mental disease to examine shortly the collected statistics bearing on the transmission of mental faculties and habits, normal and morbid, and to note the correspondence and inter-relations from the point of view of Heredity.

The examples cited may be divided into three groups —

A. Where striking but not abnormal mental faculties are shown to be transmitted — Ribot has collected cases which prove the hereditary nature of Memory (Porson, Seneca etc); of Imagination in Poets, Painters, and especially in Musicians (Each family); of will and Administrative Power (Pitts, Caesars etc.). Galton (English Judges) illustrates the transmission of intellectual faculties in families by examples from the English Bench.
In the next class examples of the transmission of exceptional faculties which, however, do as a rule tend to the morbid are given. This group lies midway between A and C and in it the action of heredity is mainly shown in the sphere of the senses and moral nature. It is easy to establish from Asylum and Criminal Records that there is a great tendency for the transmission in families of any instability of the moral nature. No doubt the circumstances of upbringing help to fix these morbid characteristics early in the family with the result that it is more common than otherwise to have a tendency to crime and theft transmitted from father to son. And if there is evidence of alcoholic or sexual excesses in the parents how often is it found also in the children? The instances are not limited to individuals for the action of the law is seen in the decline and fall of nations. The history of the later years of the Roman Empire [Gibbon: Ireland - "Blot upon the Brain"] gives the most striking example of this, but the decline of other Dynasties also exemplifies it.

C. The third class provides statistics of heredity in mental disease itself. Esquirol found about 50% of his cases due to hereditary transmission. At the Salpêtrière out of 220 cases 88 were hereditary; as were 75 out of 152 women under his own care. In 1861 from a Report of the French Government out of 1000 admissions of both sexes 264 males and 266 females had inherited the predisposition. There is no doubt therefore that heredity is a factor in the causation of mental disease. The question is to what extent. Moreau's estimation of nine
tenths is probably excessive. Maudsley comes nearer it when he states it at over a fourth and under a half. Probably most physicians would put it down as about a third; this of course referring to the cases where there was insanity in the family history. But the mind is not a single entity and it is not insanity which is transmitted but a mental instability which is liable to give rise to insanity. Mind is a collection of faculties and attributes which are co-operative but distinct and therefore to estimate the whole notion of heredity we must take into account more than the mere cases of insane heredity. No one can examine the family histories of the insane without arriving at the conclusion that there are many morbid symptoms not necessarily "insane" which are allied because of a common basis which they possess. Apart from the occurrence of mental symptoms pure and simple we are bound to attach importance to the frequent occurrence of such symptoms as stammering, epilepsy, chorea, hysteria, and dipsomania in the family histories of the insane. All these are founded on and due to a basis condition of nervous instability. Lombroso in another direction has shown that the same relations exist between normal and morbid phenomena. By a vast number of examples he traces a close connection between the lunatic with his wonderful if disordered imagination, the mafftoids, literary, artistic, and religious, who have still enough judgment and will power to keep them out of the lunatic class, and the man of extraordinary mental powers who is sane. His analysis of the sane man of genius in his varying moods is striking
showing as it does his days of depression and of exultation, the alternations, - the epileptoid character of his work: above all the instability of the man's nervous organization. It is this instability which is transmitted and the metamorphoses from generation to generation are merely different results of it due to subordinate conditions. When considered in this light the percentage value of heredity as a cause of mental disease becomes much higher.

It is doubtful, however, if even now the whole power of heredity has been estimated. Its laws, as has been seen, operate not for the individual so much as for the stock generally, and in considering their action the broader a view of the matter that is taken the better. The relationship and transformations of various forms of mental and nervous disorder have been noticed. Is it not possible that in the future a still broader view of the relationships of disease, physical and mental, may be taken? and that diseases at present apparently unconnected may show relations undreamt of? There is at any rate one common basis for all disease. It is a variation towards the morbid - a tendency to degeneration.

Although the laws governing the transmission of physical disease are not fully established there can be no doubt that they exist. Cancer in many cases runs in families and must be taken to indicate a tendency to degeneration in the stock. That phthisis is hereditary no one doubts - the records of any consumption hospital prove this abundantly - and a thoroughly phthisical stock is a thoroughly degenerate one. The heredity
of rheumatism and gout is in many cases a family tradition and both are indications of a morbid element in the family. By taking a wider view we forget the individual disease in the broader classification, that it is a form of degeneration, and therefore probably allied to other diseases by links which we do not understand but which may yet be found and may explain many relationships at present obscure. That there is a connection between the physical condition phthisis and a defined class of mental symptoms is evident. It is possible even now to trace the metamorphoses [so-called] of epilepsy, eccentricity, and insanity and to show that there is a causal relation between the most marked form of physical degeneration [phthisis] and mental disease [see part 2]. General Paralysis is an example of how physical and mental degeneration may run side by side as a single pathological entity.

May it not be possible yet to translate all disease in terms of a tendency to degeneration the results of which vary according to conditions inherent in the stock and subject also to external conditions which influence it? It may be that only then the whole influence of heredity will be realized.

In the Tables which follow all the family diseases are given and the percentage calculated [1] For Insane Heredity [alone] [2] For Heredity which includes conditions known to have a predisposing influence [3] For conditions which show a degenerate tendency in the family but which have not yet been recognized as bearing a causal relation to Insanity.

[... The possible relationship of phthisis and General Paralysis will be afterwards noted]
In an ideal inquiry into heredity - 1. The family history should be as comprehensive as possible embracing three generations with collaterals [see Galton's scheme].

2. The instances of direct and crossed heredity should be noted as also instances of atavism and collateral heredity.

3. The enquiry should include any sign of degeneracy in the ancestors or in the brothers and sisters of the patient.

4. The transformations of neuroses and psychoses in successive generations should be noted.

5. Where heredity alone is the cause it should be noted not only at what age the ancestor became insane but also the character of his insanity, for correspondences of this kind especially in suicide and melancholia are well known.

6. If the stock is thoroughly degenerate it should be remembered that as the morbid tendency gets more fixed it appears earlier till imbecility and idiocy are reached.

7. Although the conditions which govern the suitability of sperm and ovum, - the limits of far or near kinship which cannot be passed - are not definite; it is even now possible to explain some apparently causeless cases of idiocy, imbecility, adolescent insanity or premature senile dementia by an enquiry into circumstances such as consanguinity etc., which are liable at times to produce offspring of feeble organization or which may be counted on to break down at an earlier or later period in their life history.

8. The condition of health of both parents at the time of conception should be known as any enfeeblement, even transient, may have disastrous effects on the nervous organization of the child. Only after this should other circumstances be considered.
as causing or helping to cause a case of insanity.

Unfortunately in the accompanying analysis it has been found impossible to conduct the enquiry on such wide lines, as the data in the earlier cases have not been sufficient to give accurate results. The main point brought out is the influence of the three classes of hereditary predisposition as given above.

2. In view of what has been said the heredity of particular types of insanity must be considered of small importance. But still it must be admitted that certain classes give a greater proportion of cases due primarily to insane heredity than do others. Circular insanity, e.g., that vicious alternation of morbid brain conditions, shows such a necessary instability of the nervous organization as to warrant expecting heredity to play a very important part in the causation. Melancholia - and along with it may be taken suicide - is found to be transmitted with great regularity. C. louston says that of all conditions that go to produce melancholia "the most important is hereditary predisposition" - in spite of the fact that anything which has a lowering effect on the constitution generally tends to produce depressed brain action. In mania hereditary predisposition does not rank so
High as a cause. Jacobi in an analysis of 220 cases reckons it at about one ninth. In the present analysis it is about one third for both males and females. Dementia according to Clouston is the end of a bad stock and here the value of heredity (pure insane) rises. Its appearance would seem to indicate that the accumulating tendencies to degeneration in the stock had reached a maximum. In the following analysis heredity has been reckoned, owing to insufficient data, without differentiating paternal or maternal influence. Of the four great classes - Mania, Melancholia, Dementia, Delusional Insanity - the percentage value of insane heredity amounts to 42.6 per cent in the males and 47 per cent in the females or just under 43 per cent for both sexes. This accords with Maudsley's estimate of over 33% and under 50%. Martini gives statistics for 25 years among higher class lunatics as about three tenths; for the labouring classes as about one fourth. Esquirol gives one fourth for the poor and three fifths for the rich. Webster [1849] out of 1798 lunatics gives one third [before in females]. In 10 years 1872 - 1887 [British Statistics] out of 176 478 of all classes 19% of the males and 21% of the females or 20.5% all over showed an insane heredity.

In the analysis another percentage has been worked out and in the Tables the dotted line indicates the percentage which gives a family history of insanity or other allied conditions. This class of other causes which predispose to insanity includes -
1. Neuroses and psychoses - eccentricities, stammerings, epilepsies etc.

2. Paralyses and apoplexies

3. Low mental development in the parents

4. The abuse of alcohol or drugs in the parents

5. Phthisis

Probably the most fatal combination in a family history is the association of insanity with Phthisis. All these conditions must be taken as indicating or productive of a degree of nervous instability or tendency to degeneration in the stock. Their inclusion as predisposing causes brings the percentage up to 70.1% in males and 70.2% in females. May not this explain the wide divergence in opinion of different writers on the subject? The percentages for pure insane heredity accord with the usually accepted figures. These latter approach more nearly the high estimation of Moreau - nine tenths - and of Briscoe [J. N. Sc. New Series 143] - 90%.

In accordance with the view that insanity might be expressed like all other diseases in terms of a tendency to degeneration a third class has been entered in the analysis but not in the general schemes. It includes cases where there is a family history of such diseases as Cancer, Gout, Rheumatism and Cardiac Disease. When the relations and metamorphoses of physical and mental disease are better known, even the action and reaction of the nervous system on the other systems and vice versa are more fully understood, it will probably allow
a very much broader view to be taken and will admit of such diseases in a family being considered as indications of a morbid tendency and classed as factors in the production of insanity in succeeding generations. At present however even the most elementary connections are not understood.

There is now left a class of cases where no hereditary predisposition could be found. A special analysis has been constructed showing the causes which have been noted as causing or contributing to cause the mental disease in these cases. As a final result -

Out of 152 males no hereditary predisposition was found in 26 and of these no other cause was assigned in 8.

Out of 152 females no hereditary predisposition was found in 30 and of these no other cause was assigned in 28.

In the general scheme of causation the influence of alcohol and syphilis has also been indicated in percentages.
### INFLUENCE of HEREDITY —

**— Analysis of Statistics —**

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<th>Males</th>
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<tr>
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<tr>
<td>A Family History of Nervous in</td>
<td>8</td>
</tr>
<tr>
<td>A Family History of Low Mental Development</td>
<td>2</td>
</tr>
<tr>
<td>A Family History of Alcohol in</td>
<td>4</td>
</tr>
<tr>
<td>A Family History of Brain Disease in</td>
<td>1</td>
</tr>
<tr>
<td>A Family History of Cancer in</td>
<td>3</td>
</tr>
<tr>
<td>A Family History of Rheumatism + (and. Oes.)</td>
<td>1</td>
</tr>
<tr>
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<th>OTHER ELEMENTS in the Familial</th>
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<tr>
<td>Mental</td>
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</tr>
<tr>
<td>Nervous</td>
<td>2</td>
</tr>
<tr>
<td>Paralytic</td>
<td>3</td>
</tr>
<tr>
<td>Alcohol</td>
<td>1</td>
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| Phthisis        | 4      |
| recessive       | 2      |
| Reumatism       | 1      |

| Neuritis (Gen.) | 1      |
| alcoholic       | 1      |
| epileptic       | 1      |
| Rheumatism      | 1      |
| manic, manic    | 1      |
| 6 alcoholics    | 1      |
| 10 alcoholics   | 1      |

**SUMMARY —**

- 34% A Direct Hereditary (Mania)
- 64% well known Hered. (causes this includes)
- 8% Subsidizing Signs of an unhealthy stock
- 26% not tried

**But other:**

- 10% Chronic Alcoholics
- 4% Fracture of Skull
- 14%

Leaving 12% not traced

4% of whom might be accounted for by other causes —
A family history of Insanity in 2
A family history of Nervousness in 15
A family history of Apoplexy or Grain Brain Disease in 2
A family history of Phthisis in 7
A family history of Alcohol in 1
A family history of Gout in 1
A family history Doubtful in 1
No family history in 13 out

SUMMARY -

- 34.4% Direct Insane Heredity
- 77.6% Well-known Hered. Causes (Including)
  1.0% Subsidiary Signs of Unhealthy Stock
  1.6% Doubtful
- 21.3% No hereditary history
  But 4.9% have a Sufficiently Strong Exciting Cause -
  Learning 14.4% accounted for -
A Family History of Insanity in 21
A Family History of Mania in 6
A Family History of Psychotic Paralysis in 4

A Family History of Alcohol in 3
A Family History of Phthisis in 1
A Family History of Rheumatism and Dis. in 3
A Family History not Known (poor) in 1
No Family History in 3

SUMMARY:

50% Direct Insane Heredity
83.3% Wellknown Hered. (Cause Including)
7.1% Signs of Degeneration in Stock
7.1% No Hered. Existing —
4.1% 7% was Sufficient Existing Cause
2.4% Inadequate for
and 2.3% History unknown —
A Family History of Insanity in 26
A Family History of Neurosis in 6
A Family History of Paralysis in 2
A Family History of Phthisis in 2
A Family History of Alcohol in 1
A Family History of Rheumat. & Adv. Dis. in 6
A Family History of Cancer in 1
A Family History not Known or Doubtful in 3
No Family History in 11

SUMMARY
43.3% Direct Insane Heredity
61.6% Wellknown Street. Causes Exclus. (r)
11.6% Subsidiary Signs of Unhealthy Stock
5% Not Known or Doubtful
18.3% No Fam. History
Ordinary 3.3% - By their lives show degenerate tendency
6.6% - Suspected Existing Cause
Learning
9% unaccounted for
A family history of insanity in 10

A family history of neurosis in 3

A family history of paralysis in 2

A family history of alcohol in 1

A family history of cancer in 1

A family history doubtful in 2

No family history in 4

SUMMARY -

43.4% - Quick Insane Heredity

69.5% - Well known illnesses (cases included)

43.6% - Subsidiary signs of unhealthy stock

8.6% - Doubtful

17.3% - No family history

Of whom all may be accounted for but 1

Learning 4.3% unaccounted for

GENDER -

MALE - 1

A family history of neurosis in 1

(See convictions)

NOTE: Mother up young woman during gestation
Dementia Females
Total - 12

A Family History of Insanity in 7
A Family History of Nervous in 2

A Family History of Cancer in 1
No Family History in 2

COMBINATIONS OF OTHER ELEMENTS 1 in 3.4
- Nervous - 1
- Phthisis - 1
- Rheumatism - 1 (Ephthamia)
- Neurasthenia - 1 (Calciothlics)

- (Paeplonic Phthisis)
- (Paeplonic Phthisis)
- (Neurotic Type)
- (Protected Accidation)

SUMMARY -
58.3% Direct Insane Heredity
75% Weak-Known Hered. (Joint Including)
8.3% Subsidiary Signs of unhealthy Stock
10.6% No Family History

Out of these 1 born out of protracted lactation
- 1 a Low or generic Type

Leaving 0.0% unaccounted for -
A Family History of Insanity in 11
A Family History of Nervous in 3
A Family History of Alcohol in 3
A Family History Doubtful in 1
No Family History in 4

SUMMARY -
50% A Sweet Family History of Insanity
77.2% Well-known Primary (nss. Including)
4.5% A Doubtful Family History
18.1% No Family History - see above

SUMMARY -
57.1% Direct Insane Heredity
71.3% Well known Hered. Causes (including)
14.2% Doubtful
14.2% No Family History
<table>
<thead>
<tr>
<th>FAMILY HISTORY OF INSANITY IN 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>SUMMARY</td>
</tr>
<tr>
<td>100% Direct Insane Heredity</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FAMILY HISTORY OF INSANITY IN 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>SUMMARY</td>
</tr>
<tr>
<td>100% Direct Insane Heredity</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>STUPOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>FEMALES</td>
</tr>
</tbody>
</table>

A. Anergic — Out of 1 female —
No Family History in 1

B. Melancholic — Out of 2 females —
A Family History of Insanity in 2

SUMMARY —
66.6% Direct Insane Heredity
33.3% No Family History
### A Family History of Insanity
- 3

### A Family History of Nervos
- 1

### A Family History of Paralysis
- 2

### A Family History of Phthisis
- 2

### A Family History of Alcohol
- 1

### A Family History of Deformity
- 1

### A Family History of Gout
- 1

### No Family History
- 1

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>25%</td>
<td>Direct Insane Heredity</td>
</tr>
<tr>
<td>75%</td>
<td>Well-known Hered. Cases (Excl. 1)</td>
</tr>
<tr>
<td>16.6%</td>
<td>Suspected Signs of Unhealthy Stock</td>
</tr>
<tr>
<td>8.3%</td>
<td>No Family History</td>
</tr>
</tbody>
</table>

In addition to
WHERE NO HEREDITARY PREDISPOSITION

out of 50 Maniacal Males -
No Hered. Predisposition in 13 of whom
[6 were habitual drinkers
2 had practiced suicide
1 was over worked
1 had long suffered from Insomnia
with Nasal Disease
4 had NO SPECIAL CAUSE -

out of 42 Melancholic Males -
No Hered. Predisposition in 3
[18 alcoholic
2 NO SPECIAL CAUSE

out of 23 Demented Males -
No Hered. Predisposition in 4
[1 showed signs of Congenital Medullary
vertebral fracture; infantile paralysis
1 had had Meningo-Meningitis
1 had fallen on his head and got
a brain injury
1 had long suffered from Bronchitis
Exophthalmos, Bathrobe Disease
Of which another

Hereditarily doubtfull in 2 Demented Males -

out of 26 Delusional Males -
No Hered. Predisposition in 4
[1 had malaria.
1 had been in an army hospital
1 had been in an army hospital
1 NO SPECIAL CAUSE

out of 12 General Paralytic Males -
No Hered. Predisposition to Maniacal; in 1
1 NO SPECIAL CAUSE -

out of 153 Males - No Hered. Predisposition
in 25 -
Out of these 25 Males - NO SPECIAL CAUSE
in 8 -
WHERE NO HEREDITARY PREDISPOSITION

Out of 61 Mammalian Females
No Hired: Predisposition in 13 of whom
1 Pre-existing Condition
12 No Special Cause

Out of 60 Melancholic Females
No Hired: Predisposition in 12 of whom
1 Brain death from injury
1 After Severe Infection
1 Death from Malignant
Encephalopathy
3 Suicide
8 No Special Cause
(1 Pre-existing)

Famine: Not known in 2 Mammalian Females

Out of 12 Demented Females
No Hired: Predisposition in 2

Out of 14 Obscure Females
No Hired: Predisposition in 2
2 No Special Cause

Out of 3 Stuporose Females
No Hired: Predisposition in 1
Low Maturing Brain
September

Out of 152 Females - No Hereditary
Predisposition in 38
Of these 30 - No Special Cause in 23
Part II

The Inter-Relationship of Certain Physical and Mental Diseases

1. Relationship of Phthisis to Insanity -

It is now generally acknowledged that there probably exists a causal relationship between physical and mental disease. A patient, especially with a family history of insanity and suffering from a chronic physical disorder - e.g. phthisis or cardiac disease becomes insane; is it not possible that the concurrent and pre-existing physical symptoms may tend to produce certain groups of mental symptoms - or, in other words, may influence the course of the mental disease? It would seem that this is possible to some extent. The extent to which this relationship operates has not been worked out in regard to all physical disorders, but in the case of some of the more frequent it has. Considering how rife phthisis pulmonalis was formerly in asylums and how common cardiac complaints are in the insane it is not to be wondered at that the relation of these to the production of morbid mental symptoms has been to some extent determined. But other less frequent forms of physical disorder e.g. Diabetes, Bright's Disease etc., seem to be able to give a special character to intercurrent mental symptoms.

The relationship of Phthisis to Insanity may be stated under several heads -
It is without doubt an important element in the family histories of insane persons. It is closely associated often with a family history of neurosis or of insanity, and when this occurs the outlook for the offspring is of the gloomiest as they are predisposed by the laws of heredity to degeneration, physical as well as mental. The exact influence of phthisis as a factor in heredity as shown by the cases under consideration is given in the accompanying tables. In the present cases the age of phthisis in the families of the general paralytics under examination is high. In one the mother died of phthisis; a brother died of phthisis and patient [a brother] was a general paralytic. In another the father and a sister died of phthisis and patient [a brother] was a general paralytic. The number of cases at present collected is too small to admit of a generalization, but the fact that the families which produced twelve general paralytics also produced six cases of fatal phthisis and one death from hydrocephalus seem to show some common ground between the two. That common ground appears to be that they are perhaps the two most powerful degenerative processes known. But neither is inherited as such—in fact general paralytics do not often breed general paralytics. It is the morbid tendency which is transmitted, and this may be stated in general terms as a tendency to degeneration. Looking at the matter in this light it does not seem difficult to conceive how syphilis, alcohol, sexual excesses or external conditions acting on such a stock may convert the potential tendency
into the actual reality - this latter varying according to the exciting cause.

II. In the individual there are three points of relationship between Insanity and Phthisis.

A. There is the phthisical patient who is not insane. These have long been noticed to exhibit a peculiar alteration in mental habit. The most striking feature of it is perhaps their blind hopefulness which declines to see the gradual decline of strength and even at the worst looks for nothing but ultimate recovery. The Spes Phthisica is classical in its antiquity. It is different from the mental state in the latter days of General Paralysis. In the Paralytic the state is much more of a happy fatuousness. He lacks the feverish energy - the irritability of the Phthisical patient who is "nervous and excitable irritable and exacting keen eager and sanguine". (Maudsley Path. of Mind). This condition is no doubt to some extent due to the increased temperature - the increased circulation in a weakened and wasting brain. Latterly toxic effects may have a share also in its production. But the condition is unique as a mental accompaniment of fever. It is true it is a protracted fever, is not a case of a strong brain being suddenly over-balanced by a high temperature - but there is more than this. There is a mental degeneration as well as a physical - slighter it may be and slower - but concurrent and always present - and the altered circulatory conditions acting on such a brain give rise to loss of the higher powers of
mind which subserve the will and enable the patient to form a sound judgment.

B. The alternation of mental and physical symptoms is also an occurrence well known in asylum practice. It is not so often seen now – thanks to modern asylum management but even yet it is no uncommon thing to find when Phthisis is lighted up – it may be abrupt – in an insane patient that the mental symptoms abate, and that they become again evident if the physical condition remits. In Phthisis there is usually fever and the effect of the feverish state on insanity is now generally recognized by the introduction as therapeutic agents of animal extracts which artificially produce a temperature reaction and often effect good results on the mental condition. This is giving the relationship its slightest value. It may be more important and at any rate it is interesting when one comes to consider the other relations which Phthisis and Insanity have to each other.

C. But the most interesting class of cases is that which has been studied by Greisinger and specially by Clouston where certain mental symptoms taken together may be said to indicate a latent predisposition to Phthisis on the part of the patient to be the result of the ordinary causes of insanity acting on a patient who has also a phthisical tendency. Such Heredity is the most fatal. As yet in the patient there may be no Phthisis obvious. As a matter of fact at first the mental symptoms are not associated with developed Phthisis but only with a marked tendency to the disease as evidenced by
thoracic configuration and appearance. After the Phthisis does develop - if it does - the character of the symptoms may be masked. If no Phthisis appears, the case is even then usually incurable. Such a case usually occurs in highly decadent stock - where the tendency is towards extinction. From the cases under consideration eleven cases of this Etiological Class have been collected and a table showing the details is appended. Of these, three are not pure as they also give a personal history of alcohol - and in one the symptoms of Phthisical insanity supervened after a maniacal attack had subsided. The others are typical. Of the nine last, six are Melancholics; two, cases of Delusional Insanity; one, [noted above not quite pure] a Recurrent Mania. (See Phthisis.)

In these, the Page of Insanity and Neurosis in the F.H. is excessive - there being only one case which does not give a heredity either insane, neurotic or phthisical.

The Mental symptoms are very distinct as a class. There are practically always delusions of a melancholic character, usually of suspicion, frequently of self depreciation, sometimes hypochondriacal. But the commonest is suspicion of poisoning. Hallucinations are not unfrequent and are usually auditory. In a typical case the patient is silent, brooding, morose, sometimes dull and apathetic, sometimes restless and impulsively violent. Usually he is taciturn, sullen, and resistive. He does not speak much and if he does it is in general merely to mutter his dissatisfaction. As a rule he is obstinately abstinent. This refusal of food is not the
capriciousness of a sane patient with marked phthisis. It is not a flighty objection but a sullen dogged resistance founded no doubt on his delusions of suspicion - his fear of poisoning.

Out of the eight quite typical cases tabulated below six refused food with resistance. What is the appearance of these patients? Can they be distinguished by any head mark? Of the two types - the fair the dark - the latter are much more frequently found among those suffering from phthisical insanity. "Dark, thin, sullen, gaunt" is the most usual description of such a case - "Stooping, with a flat narrow chest". This is often all. At the most we need not expect more than flattened apices - impaired expansion - perhaps the slightest suspicion of a change in the note. No absolute dulness is necessary; certainly no cavity formation; for this, implying as it does Bepsis, Fever, absorption may graft a new set of symptoms on those of the type sketched which will mask them beyond recognition.

For Details See Table - Phthisis

And lastly taking Phthisis in its relationship to Tuberculosis generally it may not be out of place here to consider the present day state of Phthisis in asylums with what used to be. It was formerly notorious that a very large number of the insane succumbed to Pulmonary Phthisis. This was partly due to the fact that they were aggregated together in institutions and also the hygienic arrangements of
these institutions were by no means the best. The crowded ill-ventilated wards of the older asylums, the facilities for the spread of infection, the fact that Phthisis was not recognized as infectious had no doubt much to do with this. It was no wonder that the melancholies and dementes of low resistive powers subjected to these conditions gave a high death rate attributed to Phthisis and Tuberculosis.

Esquirol estimated that more than 1/3 of his Melancholies were Phthisical.

In Vienna out of 602 autopsies from 1853 - 1855 a third were Phthisical cases.

In Bethlem from 1842 - 1846 1/5 patients were Phthisical.

In Hamwell over four years - among female patients not quite 1/5.

Over a large range of asylums 1/4 of the deaths were due to Phthisis.

In the records of deaths over the ten years now under consideration there have been five cases entered to the Pathological Register as being due to tubercular lung changes - of these three were women and in all three the tubercles were quiescent [in one the nodules were calcareous]. In both men there was cavity formation - but one was a General Paralytic far advanced in the third stage - The difference between the old and the new is marked and the quiescent tubercles show that given favourable hygienic conditions - even in the insane the ravishes of pulmonary phthisis may be stayed.
Apart from phthisis as seen post mortem, Respiratory Diseases * generally among which for convenience phthisis has been classed, hold, in the cases studied, a comparatively low place among the common ailments of the insane. Even in the Melancholics it does not rise to 10% while in the Demented cases it falls almost to Zero. [see tables Part 111]

Phthisis in asylums may therefore be now considered of much less account than it was. Modern hygienic improvements, the recognition of its infectious character, and proper isolation with the use of antiseptics, have done much to diminish it. And as in asylums so, though to a much less extent, among the outside public. It is an important advance in more ways than one. For apart from its mortality altogether, it is certainly of great pathogenetic value owing to the various relations it bears to insanity.

* [Excluding slight catarrhs which are often not noted].
The Heredity of Phthisis - and its influence as a CAUSE -

**MANIA**

<table>
<thead>
<tr>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>61</td>
</tr>
<tr>
<td>A. Insanity + Phthisis</td>
<td>4</td>
</tr>
<tr>
<td>B. Nervous + Phthisis</td>
<td>2</td>
</tr>
<tr>
<td>D. Phthisis (alone)</td>
<td>0</td>
</tr>
</tbody>
</table>

60 or 12% 15 or 24.5%

**MELOCHOLIA**

<table>
<thead>
<tr>
<th>Male</th>
<th>Female</th>
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</thead>
<tbody>
<tr>
<td>42</td>
<td>60</td>
</tr>
<tr>
<td>A. Insanity + Phthisis</td>
<td>3</td>
</tr>
<tr>
<td>B. Nervous + Phthisis</td>
<td>0</td>
</tr>
<tr>
<td>C. Paraplegia + Phthisis</td>
<td>1</td>
</tr>
<tr>
<td>D. Phthisis</td>
<td>1</td>
</tr>
</tbody>
</table>

60 or 11.9% 5 or 8.3%

**DEMENTIA**

<table>
<thead>
<tr>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>23</td>
<td>12</td>
</tr>
<tr>
<td>B.C.D.</td>
<td>B.C.D.</td>
</tr>
</tbody>
</table>

20 or 89% 1 or 8.3%.

**DELUSIONAL INSANITY**

<table>
<thead>
<tr>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>22</td>
<td>14</td>
</tr>
<tr>
<td>B.C.D.</td>
<td>B.C.D.</td>
</tr>
</tbody>
</table>

3 or 15.6% 20 or 14.2%

**STUPOR**

<table>
<thead>
<tr>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>1</td>
</tr>
</tbody>
</table>

**GENERAL PARALYSIS**

<table>
<thead>
<tr>
<th>Male</th>
<th>(Gen. d. Phthisis)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1 (Gen. d. Hydrops)</td>
</tr>
<tr>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>1 (Gen. d. Phthisis)</td>
</tr>
<tr>
<td>2</td>
<td>2 (Prt. d. Phthisis)</td>
</tr>
</tbody>
</table>

1 or 8.3% 4 or 32.3%
CIRCULAR INSANITY

— NO PHTHISIS —

Total Influence —

Males —
Out of 153 - Fam. Hist. of Phthisis 13% in 20

Females —
Out of 152 Females 13% in 24 or 15.7%

Note — In 1 Male where No Fam. Hist.

8 Phthisis and Tuberculosis
Insanity according to PhthisisSyke

In 1 Female where No Fam. Hist.

8 Phthisis - Insanity acc. to Phthisis Syke.
## The Insanity & Phthisis

### Table of Symptoms

<table>
<thead>
<tr>
<th>NAME</th>
<th>MENTAL DISEASE</th>
<th>PATHOLOGICAL APPEARANCES</th>
<th>HEREDITARY HISTORY</th>
<th>DELUSIONS</th>
<th>HALLUCINATIONS</th>
<th>INSANE ACTIONS</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>J.M.</td>
<td>Recurrent Mania</td>
<td>Shot nervous - pale - stocky - fat narrow chest</td>
<td>Epilepsy, epilepsy</td>
<td>Suspicion of being taken ill</td>
<td>Hearing</td>
<td>Solitary quest</td>
<td>No refusal of food</td>
</tr>
<tr>
<td>J.B.</td>
<td>Manic</td>
<td>Joint; passive</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Difficulty of eating</td>
</tr>
<tr>
<td>H.B.</td>
<td>Manic</td>
<td>Joint; passive</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Difficulty of eating</td>
</tr>
<tr>
<td>T.B.</td>
<td>Manic</td>
<td>Joint; passive</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Difficulty of eating</td>
</tr>
<tr>
<td>J.G.</td>
<td>Manic</td>
<td>Joint; passive</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Difficulty of eating</td>
</tr>
<tr>
<td>P.C.</td>
<td>Manic</td>
<td>Joint; passive</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Difficulty of eating</td>
</tr>
<tr>
<td>S.A.</td>
<td>Manic</td>
<td>Joint; passive</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Difficulty of eating</td>
</tr>
<tr>
<td>M.B.</td>
<td>Manic</td>
<td>Joint; passive</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Difficulty of eating</td>
</tr>
<tr>
<td>H.B.</td>
<td>Manic</td>
<td>Joint; passive</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Difficulty of eating</td>
</tr>
</tbody>
</table>

### Typical Examples

- 8 Typical Examples
- Where Symptoms appear after Maniacal attack
- Not typical - both complicated by alcohol
- Now more dimunished - asylum no longer required

### Notes

- The table lists various symptoms associated with mental diseases, including delusions, hallucinations, and insane actions.
- Specific details such as hereditary history, pathological appearances, and remarks are also documented.
- The table highlights the complexity and variability of symptoms across different cases.
2. Syphilis in Relation to Insanity and especially General Paralysis.

When one remembers the far reaching effects of Syphilis on the Nervous System and the many nervous lesions that are ascribed to the later action of the virus one would imagine that its influence on the delicate nerve basis of mentalization would be strikingly shown in the numbers of cases of mental disease due to it.

In the following tables however where the personal and family histories have been got as accurately as possible, Syphilis as a cause does not rank so high as we would expect. Among the females it is entirely wanting. In the higher classes this is what one would look for. In the males the total percentage of the disease is only 5.2% and there are only two classes which contribute to this, viz. Delusional Insanity and General Paralysis. In Delusional Insanity the percentage is 47%, small that it may be almost neglected especially as in both cases there was a strong personal and family history of excessive alcoholism. For all practical purposes, in these tables, there is only one form of mental disease where Syphilis must be carefully considered as a factor in the causation and that is General Paralysis. There the percentage given is 41.7.

The exact Etiology of General Paralysis is not yet determined; and especially is the causation value of Syphilis a much debated point. Maudsley will have none of it. Excess
and especially sexual excess is what he considers most important. Syphilitic histories in General Paralytics he treats as accidental; merely proving the sexual excess [Path. of Mind]. Savage says that those concerned in the treatment of Syphilis think that it is not a common cause of General Paralysis, but those concerned in watching the development of General Paralysis think it an important factor. Among private cases at any rate Syphilis seems to be a frequent cause. "70% at least of our private cases give a history of Syphilis" [Savage].

It is not the only cause but it is a very frequent one. It may not be the sole cause but it tends to start the degenerative process.

Others think that some day General Paralysis will be found to be due to an organism [Clouston]; many put great stress on the deteriorating influence of chronic alcoholic excess. Some consider it toxic in origin [Charpentier] and De Holstein [Sem. Med. 8th. May 1897] reports a case where the General Paralytic symptoms seemed to depend on true diabetes from which the patient suffered.

But as yet most observers are of opinion that excess, especially sexual, and syphilis rank highest among the causes.

With regard to syphilis the distinction does not seem to be sufficiently clearly drawn between inherited and acquired syphilis. The difficulty of tracing the inherited taint involving as it does a delicate inquiry into the family and early personal history of the patient has no doubt something
to do with this. A patient seldom overlooks the fact - nor for that matter do his near relatives - that he has acquired Syphilis; - they are more careful to conceal or overlook all traces of the inherited form.

And yet comparing the cerebral lesions produced by Syphilis apart from General Paralysis - we find those due to acquired Syphilis conform much less closely to G.P. lesions than do those produced by Hereditary Syphilis. In the congenital form the cerebral lesion is a sclerosis predominantly and often exclusively cortical; microscopically showing overgrowth of neuroglia and disappearance of cells. Some accompanying alteration in the pia is almost invariable and in not a few cases there is a symphysis between the pia arachnoid and sclerosed cortex (Barlow & Barry D.Ps.Med.)

In the acquired form on the other hand the lesions are commonly central softenings and gummata.

Contrasting then these two distinct classes of pathological brain changes - if Syphilis in certain cases helps to produce the special degeneration of General Paralysis - it would seem that the taint when hereditary would tend in that special direction at least as much if not more than when acquired. And a close enquiry into the early personal history of the patient and of his brothers and sisters as well as into the reproductive history of his mother might in many cases allow of that hereditary taint in the family being very clearly defined.

The statistics of General Paralysis in the young seem to bear this out (Alzheimer, Allg. Z. f. Psychiatr. u. Neurol.)
has collected 34 cases of young people and children who have suffered from General Paralysis. In 28 out of the 34 a history of Hereditary Syphilis was found.

If the whole influence of Syphilis in the cases of General Paralysis is to be estimated we must consider not only the cases where Syphilis has been acquired but more especially those where there is a hereditary taint. In the present cases there are none noted as being due to hereditary disease. But Syphilis after all does not appear to be the only cause; and especially in the acquired form it can hardly be considered as more than the exciting cause. There must exist in the nervous organization of those persons who develop side by side physical and mental symptoms of degeneration - a certain instability - a tendency to degeneration. This tendency may be produced by the hereditary deterioration due to parental Syphilis; but in the case of the acquired form Syphilis can only be considered as the cause in so far as it sets the degenerative change a going.

As regards Mental Heredity about 1/3 of the cases of General Paralysis are said to show a hereditary predisposition to mental disease - This predisposition is higher in women than in men - less in private patients than in paupers. In the present cases the influence of heredity amounts to only 15%. Nor do apoplexies and neuroses bulk largely in the family history as by some they are supposed to do. But one family disease which occurs very strikingly is Phthisis. [See Section on Relation of Phthisis to Insanity]. Phthisis may
be considered the most marked form of physical degeneration which is transmitted in families [see Galton].

General Paralysis may be considered as the most marked form of degeneration - physical and mental. In both there is exemplified the degenerate tendency but the elements which go to make up this tendency may be various - In one case there may be a preponderance of elements tending to nervous and mental forms of degeneration; in another the physical elements of the tendency may be the stronger. Again, external circumstances may so act as to give the degenerate tendency in the family a bias in one direction or in another; or subsequent fresh causes of degeneration grafted as it were on the original tendency may modify it and give it a special direction.

Acquired Syphilis must be considered as a most powerful cause which may act in this last way.
The relationships which Cardiac Disease bears to insanity are by no means so clearly marked out as are those of Phthisis. But it cannot be denied that the proper working of such a delicate and complex structure as the brain must depend very greatly on its proper nutrition i.e. on the proper circulation of oxygenated blood through it. And if disease of the heart with a deficient circulation does not cause insanity it has probably a certain influence on its course and symptoms.

A. In the cases of heart disease apart from insanity, especially when the condition is advanced and cyanosis and dyspnoea are marked - certain pretty constant mental changes are seen. The patient has fits of depression of spirits. But there is also considerable irritability and restlessness and in many cases there is a slight amount of morbid suspicion. There is also marked insomnia. The patient is not insane. His judgment is fairly clear; he is not delusional; but the line of demarcation between these symptoms and those of actual insanity is a very faint one and they only require to gain a little in intensity for the patient to be technically insane - melancholic and with delusions of suspicion. And usually the sole cause is a crippled heart; impoverished blood; a badly nourished brain. Even in vigorous brains these effects are seen - and much more as the patient grows older.

B. The action of Toxins on the Nervous System has been
widely studied - the explosions of misdirected nervous force in Epilepsy have been explained by this theory; the toxin, probably of alimentary origin acting at intervals on an unstable brain, and [v. infra] other causes would seem to indicate that other unusual substances in the blood may cause symptoms of true insanity. The blood in Cyanosis which a crippled heart circulates in the brain is not only non-nutritious but even poisonous. For with \( CO_2 \) in such excess it cannot fail to produce bad effects on the cortical structure and here the poison acts constantly and there is no interruption in the symptoms as in Epilepsy.

C. But there is no doubt that even if the Cyanosis be great unless the brain is below par the effects will not be more than those noted in A. The symptoms will not cross the line that separates sanity from insanity.

It is different where the brain is already senile or atrophied or where the effects of chronic poisoning by alcohol or other substance have made themselves felt. The whole tendency is now retrograde and the cortical elements have no surplus strength to resist the insidious poison that is constantly in contact with them and as a result they functionate morbidly. Or if there is a well marked hereditary tendency to mental disease it is very probable that a crippled heart and blood with oxygen and \( CO_2 \) in improper proportions may tend to finish the work which hereditary tendency has made easy. It is therefore probable that in cases where a failing heart can claim a share in the causation of
Insanity there is 1. A brain past its best - where the tendency is retrogressive - the vital powers failing, and the defective blood supply merely produces improper action in the place of failing action - and if life be prolonged the former diminishes as the latter becomes more evident.

2. There is a marked hereditary tendency to insanity and the results of Cardiac Disease simply turn the potential into the actual.

As regards symptoms - in the two classes these are quite different. In the former the type is pretty well defined - delusions, suspicions, irritability and restlessness - it may be impulsiveness with sleeplessness - being the most prominent features. In the latter class the type is much less of a constant character - as other factors in the causation - the age of the patient - the kind of hereditary history etc. are bound to modify the symptoms. In both, Cardiac Disease is a factor in the causation. In the former it, however, tends to cause symptoms of a characteristic type. Dr. Clouston who has paid special attention to the Etiological value of physical disease in Insanity groups a class of cases under the name "The Insanity of Cyanosis". This of course includes Cyanosis from other causes than Cardiac Disease but of all causes of the symptom Cardiac Disease is the most common. When the clinical symptoms of this class are analysed they are found to be nearly allied to those given above - namely -
Delirium with confusion

Hallucinations of sight

Sleeplessness - vague fears - suicidal impulses.

The combination of such symptoms is not a common one, and they are all traceable to malnutrition of the brain, from improper blood supply in the first instance. But in addition to this there must almost certainly be in such cases a weakened cortex, with probably also hereditary tendency and certainly advanced heart disease.

2. In many cases the difficulty is not to be able to say that cardiac disease and its sequelae were factors in the causation but to estimate the relative value of these as compared with other causes. For we must always take into consideration the primary causes which have paved the way in the structure of the organ for the production of the symptoms associated with cyanosed blood, and it is sometimes very difficult especially in the case of chronic alcoholics to say how much is due to the effects of the alcoholic poison which has left its mark and how much to the bad blood which is still in contact with the cortical structure. Moreover we can say that cardiac disease only produces symptoms of insanity in brains which are retrograde or where there is a marked hereditary taint. 2. There is a certain class of symptoms which are by experience associated with cardiac patients among the insane and that this only occurs when the cardiac disease is advanced and of long standing and when the brain has departed from the normal level of healthy vitality.
In the summary (see table) the influence of cardiac disease on the cases under consideration is shown—along with the symptoms produced. In the first five cases the physical disease played a major part in causing the mental symptoms. In the last three only a minor part could be assigned to it as a cause. In 18 cases it was simply a concomitant, of no importance mentally, and hardly causing any general physical disturbance. These last will be detailed in Part III along with other forms of physical disease or disorder accompanying the special classes of insanity.

Of the other diseases which occur, the most interesting from a causation point of view in relation to mental diseases, are albuminuria and diabetes. Arguing a priori it is only reasonable considering the terrible nervous disturbances of say puerperal eclampsia and diabetic coma etc., to say that in all probability these diseases in their more chronic or slighter forms will produce morbid effects on the functions of the highest nervous structures. And here and there in Asylum practise such a case crops up. They are rare but distinct. Such a case reported by the Writer, J. M., July, 1896, occurred at Perth District Asylum, where an old lady suffering from melancholia with many strange delusions was found to be suffering from diabetes dependent on disordered liver function in a gouty subject. Under appropriate remedies and diet the sugar disappeared and at the same time the mental symptoms. She was kept under observation for a considerable time and eventually discharged. Recovered, she remained well. Such a
case proves that such substances in the blood, as sugar and others resulting from imperfect metabolism do produce on certain brains profound psychic disturbance often simulating as in the case referred to, grave organic brain disease.

In the cases under consideration there are several which show albuminuria and sugar in the urine but such were all slight — several were temporary symptoms and none possessed any etiological significance.

They will be tabulated among the physical diseases in Part III.
Summary of Cardiac Cases

Out of 28 cases with symptoms of organic heart disease—In 5 cases there was no hereditary predisposition to insanity but from the symptoms it is probable that the impairment of the heart had something to do with the disturbed brain action. In all 5 cases the patient had exhibited mental changes during the period when the mental powers were declining.

<table>
<thead>
<tr>
<th>No.</th>
<th>Name</th>
<th>Age</th>
<th>Family History</th>
<th>Personal History</th>
<th>Insane Symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Mr. A</td>
<td>60</td>
<td>Rheumatism</td>
<td>Diabetes</td>
<td>Insanity symptoms, weakness, tremor, neglect, auditory delirium.</td>
</tr>
<tr>
<td>2</td>
<td>Mr. B</td>
<td>54</td>
<td>Hashed hippsial</td>
<td>Cancer</td>
<td>Insanity, confusion, depression, at times UNCOMPREHENDABLE.</td>
</tr>
<tr>
<td>3</td>
<td>Mr. C</td>
<td>70</td>
<td>Has a manic attack at 50.</td>
<td>Diabetes</td>
<td>Insanity, confusion, neglect, depression, at times UNCOMPREHENDABLE.</td>
</tr>
<tr>
<td>4</td>
<td>Mr. D</td>
<td>75</td>
<td>Long continued insanity,</td>
<td>Diabetes</td>
<td>Insanity, nervous frigidity, suspiciousness, delusions.</td>
</tr>
<tr>
<td>5</td>
<td>Mr. E</td>
<td>68</td>
<td>Malnutrition, systolic</td>
<td>Diabetes</td>
<td>Insanity, confusion, neglect, auditory delirium.</td>
</tr>
</tbody>
</table>

In other 3 cases—Family History of nervous disorders obtainable and the influence of heart disease only secondary in importance.

<table>
<thead>
<tr>
<th>No.</th>
<th>Insanity</th>
<th>Bereaved,</th>
<th>Insane dementia,</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>Manic</td>
<td>Bereaved</td>
<td>Insane dementia,</td>
</tr>
<tr>
<td>7</td>
<td>Neurosis</td>
<td>Bereaved</td>
<td>Insane dementia,</td>
</tr>
<tr>
<td>8</td>
<td>Insanity</td>
<td>Bereaved</td>
<td>Insane dementia,</td>
</tr>
<tr>
<td>9</td>
<td>Neurosis</td>
<td>Bereaved</td>
<td>Insane dementia,</td>
</tr>
</tbody>
</table>
Part III

The Relative Frequency of Different Forms of Physical Disease in the Various Classes of Insanity.

After even a slight amount of experience in Asylum practise one cannot fail to gather the general impression that certain physical diseases are much more frequently met with among the insane than others. In the Tables which are appended a statistical estimation of the relative frequency of the different varieties of physical disease in the four commonest classes of insanity (apart from General Paralysis and Epilepsy) is given. The first four tables show the amount of each systemic class of physical disease or disorder - and in the last the most common forms of disease or disorder are calculated in percentages for each of the four classes referred to.

1. In regard to the Nervous System;

It cannot fail to strike a Medical Officer in any Asylum how few cases of Nervous Disease, as apart from Mental Disease, are to be met with among his insane patients. In a hospital for Mental Diseases it would not be unreasonable to expect that there would be a considerable number of cases exhibiting symptoms indicative of nervous disease, but this is not so. One rarely sees cases such as disseminated sclerosis or progressive muscular atrophy. Even locomotor ataxy is a rarity
amongst the insane though some authors [Bevan Lewis] describe cases of General Paralysis dependent on this lesion in the first instance. There are of course the great classes of General Paralysis and Epilepsy which bulk largely in asylum records. Hysterical symptoms are by no means uncommon among the female patients and here and there we meet with cases of chronic chorea with its accompanying slow brain degeneration leading to dementia. Peripheral Neuritis, notwithstanding the frequency with which we meet with alcohol as a cause of the mental disease, is by no means common.

Then there are the old patients in whom we get softenings with localized or more General Paralyses - sometimes Aphasia; or diseased arteries may at length give way giving rise to cerebral haemorrhage and its sequelae. But after all an asylum is not the place where you find those nervous diseases which are so common in the out-patient departments of General Hospitals.

It is rather functional disorders that are seen, referable more accurately to the general mental condition than to any definite nervous lesion. In the following Table [Table 5] Nervous Disorders have been drawn up under three heads —

1. Paresis or Paralysis
2. Twitchings or inco-ordination
3. Sensory changes.

From the statistics these cases supply it would seem that the males are more liable to exhibit the first two classes of nervous symptoms than the females - while the last
probably owing to the greater frequency of hysteria with its accompanying sensory disorders in women, gives a higher proportion for women than for men. But none of the figures are high. In no class does the amount of Nervous Disorder rise to 20%.

8. In regard to the Circulatory System:

Of all the forms of physical disorder in the insane, perhaps the most common are those belonging to the Circulatory System. [This is if we except the one disorder of the alimentary system, Constipation]. Cardiac troubles have always been considered of great importance in insanity though in older Medico-Psychological literature they were much overrated. Nasse [Zeitchr. für Psychiatrie Aertze - 18.18.11] from statistics gathered from older works on the subject concluded that Heart Diseases were frequent and of great importance in the insane. Subsequent observers differ much in opinion regarding their frequency.

The Statistics are as follows:

Esquirol met with affections of the Heart in 1/5 of his Melancholics
Webster " " " " " " 1/8 " " "
Bayle " " " " " " 1/6 " " "
Calmeil & Thore " " " " " almost 1/3 [Griesinger]

The latest statistics show only an average frequency.

The statistics of Cardiac Disease found at the autopsies of Insane patients vary considerably. In the Vienna Asylum - Out of 502 autopsies - Cardiac Disease was found in 1/8.
Colditz reports that "heart diseases appear in rather high proportions in the autopsies".

1st. Report - 75 Autopsies - 12 Cases - 16%

2nd. " - Slight affects of Valves - 3/5

3rd. " - Marked Cardiac Disease 1/25

"A considerable number"

Tyermann of Colney Hatch found Cardiac or Valvular disease in 1/7 of the female patients.


The differences in the statistics seem to be due to a want of exactitude in defining exactly what lies within the limits of the term "heart disease". It is probable that, as far as post mortem records are concerned, the latter statistics, in stating organic heart disease as only of average occurrence, are accurate. But there are very many patients in asylums who do not actually possess cardiac murmurs but whose hearts are nevertheless far from normal. It is therefore to be expected that the number of patients who present cardiac abnormalities while alive will be larger than the number at whose autopsies macroscopic traces of cardiac disease will be found. For in many of the former cases the defect has no obvious organic basis.

In the appended tables cardiac troubles have been classified under three heads -
1. When there is organic valvular disease

2. Where there is no valvular lesion but where still there is inefficient action of the heart. The cause may be muscular atrophy, slight fatty changes or defective enervation but the general results on the insane patient are often as harmful as actual valvular disease.

3. A third class has been tabulated where there is no actual murmur but where there is some impurity with the first sound at the apex. This is very common in insane patients and is very probably due to some defect in the enervation of the heart. It is not unfrequently got along with a weakly acting heart.

Taking all the varieties of Heart Disease - In the cases examined some heart affection was more common in delusional and melancholic males than in females of these classes and less common in maniacal and demented males than in the corresponding females.

And compared with the disorders of other systems, diseases of the Circulatory system are the most important the Asylum Physician has to deal with and they occur with great frequency.

8. In regard to Alimentary Disorders -

Here as in Nervous Diseases the most striking fact is the comparative absence of the graver forms of disease of the Alimentary system. The word disease as opposed to disorder is here almost inapplicable. It is the disorders of the Alimentary system which have to be treated and not the diseases. But these disorders are extremely common and often
very difficult to overcome. Taken as a whole it is in the
classes of lunatics where the mental disease is more acute
that these disorders are chiefly found. Your chronic lunatic
is not so much troubled with his alimentary tract, but the
maniacal and especially the melancholic cases of recent date
are. Hence we find that alimentary disorders in melancholics
in the cases tabulated give a percentage of 56% in men and
69% in women. In maniacs 48% in women and 44% in men. In
as compared with the former two classes
dementia and delusional insanity the % all over is very much
lower in the women - and on the average rather lower in the men.

On enquiring into the commonest alimentary disorder it is
found that constipation is by far the most important. In the
last table the ages are worked out for this - and it is seen
that in the more acute forms the women suffer most; maniacal
and melancholic women showing constipation in just under 50%.
But on the other hand in the more chronic forms constipation
is more often met with in men than in women and it is entirely
due to this that alimentary disorders [taking them as a whole]
rank so high in delusional and demented males.

4. Respiratory Diseases - as was noted in relation to phthisia,
which for convenience has been included in this class, are now of
much less importance among the insane than formerly. The
general age for all classes only reaches 12%.

5. Urinary Disorders - are practically nil in the following
tables. They are limited to some slight cases of albuminuria
and glycosuria [see Sect. 2] and to bladder troubles in
6. There is however a class left which is of more importance in the course of mental disease. It deals with disorders of the Generative System and Organs. It is really not a class proper for the symptoms which appear in the course of the mental disease are not symptoms of disorder of the generative system but are themselves collateral symptoms of the nervous disorder which they accompany. The commonest of such symptoms among men is masturbation. It may be more common among women than is indicated in the tables for it is more difficult to detect]. The commonest among women is Amenorrhoea. With regard to the latter the relations it may bear to mental disease are varied.

1. It may be causal. Following on a sudden cessation of menstruation we may have Hyperaemia of the Brain with an attack of acute insanity. This is rare.

2. If we have continued menorrhagia and metorrhagia it may give rise to insanity - usually of a melancholic type by the continual drain on the system, much as in the same way as the Insanity of Lactation is produced.

3. The Disorder of the Function is usually due to some common cause which produces also the attack of insanity. In such a case menstruation may be suspended before the insanity declares itself and usually towards convalescence its reappearance gives evidence that a good recovery mental and physical has been made.
As regards Masturbation the age given in the table refers to the patients on admission. How far it is the cause in these cases it is difficult to say. In some it can only be regarded as showing the weakness of the nervous organization. In others it must at the same time be considered as the exciting cause of the mental disease. The percentage for all the male patients could not be accurately estimated. That it would be much larger is certain for there are few chronic lunatics who do not acquire the habit to such an extent, that eventually although absolutely demented they continue the practise automatically.

6. Skin Diseases - are of slight significance in the cases tabulated.

7. A Column has been reserved to express percentages in the patients who were alcoholic on admission. The general percentage is 25.42% for males and females. But of this the males contribute a rate of 41% while the female percentage is only slightly over 8%.
General Scheme of Percentages
found on
THE ANALYSIS OF THE CASES —

THE TABLES

Ruth Campbell
To accompany Thesis — 24 March 18