A. Thesis.

Some of the Pathological Relations of Insanity: With a Consideration of Certain Medicinal Agents used to influence directly the Insane State.

by

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The treatment of the insane has an importance, and entails a responsibility on those who undertake it, which can only be measured by the widely disastrous and far-reaching effects that insanity induces. 

"It extinquisches knowledge; confuses eloquence and buries it in everlasting silence; it saps waste all accomplishments, ..."
all accomplishments, renders beauty itself plain.

ful or fearful to behold; whilst it breaks up domestic happiness, & power's or amiable
all the habits and affections which impel comfort & joy. Value to human existence.
And yet it is only of late years that the subject has attracted anything like the attention which it deserves. The condition of the insane so late as the end of the first quarter of the present Century was deplorable in the extreme. They were regarded as moral lepers & shunned by their fellows. Confinement in cells into which the light of day never penetrated; restraint in the shape of manacles, fetters, chains & other mechanical instruments diabolical in their inhumanity were parts of a routine method of treatment. This none of that "moral management" which is so marked a feature of the present humane "non-restraint system", the inmates of asylums were generally left to drag out an unutterably miserable, joyless, hopeless existence.

Such a treatment of the insane had its foundation in a mistaken belief. The Mind was regarded as an "intangible entity" having an existence separate from that of the body, and in no wise influenced by physical laws. The resources of Radical Art could not touch its diseases. "Insanity

this Journal of Mental was a disease of the Soul; and the burnt

shame Oct 1811. pg 387. standing over a miserable lunatic, chained
to a staple in a wall, and flogging him in
in order to cast his devil out, was a logical
outcome of this hypothesis" (Bullet 70th jill). But during recent years our knowledge of
the functions of the nervous system has
been much extended, and at the present
day we know that "the manipulation of
Mind takes place through the nervous system
and that its derangements are the result
of nervous disease" (Haldoly). To produce
a state of Consciousness with all its
Kain & physical phenomena is one of
the special functions of nerve cells (Prof.
Rutherford). Mental processes have a
physical substratum in the molecular
vibration of nerve particles. A mental
plate is the subjective side of a nervous
process.

But though the connection between
the nervous system and the Mind is
generally admitted, the extent of the
influence which the former exercises
upon the latter has not been defined.
The Materialistic school of psychologists
would ascribe all the phenomena of
Mind to the action of forces physical in
their nature operating through the Channel
of the Nervous System; while Carpenter, Cohn,
Wood, and others assert that the action of
the nervous system is insufficient to account
for all the facts of Consciousness and of Human
Conduct, and would premise the action of an
immaterial "Will", which "does not depend upon
for its existence any play of Physical or Vital
forces, but which unites these forces enthrallent
to its determinations (Carpenter).

The study of disease has thrown much light on our knowledge of brain function in relation to mind.

Dr. Haslam was I believe one of the first in England to draw attention to the close association of insanity with brain disease. He described 37 cases of insane London, 1839. With histories and morbid appearances met with on dissection, only one single case were the brain and its membro free from disease. In a series of thirty cases described by Dr. J. B. J. Tuke Needham, "in every case there was noticed a marked departure in the form or shape from the healthy structure of the brain." To the naked eye were met seldom with brain in those lying insane which appear healthy. In an analysis of 236 cases made by Dr. Howden, 146 were perfectly normal. And in 60 out of 157. 70 cases recorded by Dr. W. G. Reid, no lesions could be found. And, when Resident Clinical Assistant at the West Riding Union Hospital, I had several opportunities of seeing at first moments such apparently normal brains. But, doubtless in most of such cases, histological changes would have been met with if looked for. Our pathological knowledge of insanity has not yet attained to anything like accuracy. Given a diseased brain the case in very instances indeed specify the form of insanity associated with it. Lesions which
are apparently similar in some respects to symptoms that differ much. We are unable to map definitely regions of the brain as the seat of various mental faculties, though the peculiarities of Hitzig, Ferrier, & others, as to the localization of mental & sensory functions in the Cerebral Cortex, tend it not impossible that "as further progress is made in brain physiology," and "mental diseases," we shall be able to localize Dr. Clinton, p. 166. In the brain the cause of mere perceived mentalization of different kinds.

It is generally agreed that the grey matter of the Cerebral Cortex has to do with the elaboration of mental processes. To the naked eye this grey matter is divisible into two zones, which are described by Luys as (1) a superficial submeningeal zone of a yellowish colour, transparent and (2) a deeper zone underlying the preceding of a more distinctly reddish colour. These zones differ in the size of their nerve cells, those found in the deeper region being on an average twice as large as their fellows in the superficial submeningeal zone. From the morphological analogy presented by the nerve cells found in the anterior abdominal Cornua of the Spinal Cord, Luys argues that the submeningeal regions subserve a sensoric & psychic function being the Sensory Cornua, while the deeper zone comprises "Centres of emission appropriately
to mental phenomena.

According to Burian and others, the anterior lobes of the cerebral hemispheres are concerned in the higher intellectual operations - the outer region, lying on either side of the fissure of Rolando, separating the higher psychic in front from the sensory behind. But these conclusions have been assailed by Bastian, Horsley & others. Who contend that pathological evidence proves that the occipital lobes are largely concerned in the carrying on of intellectual processes. Numerous cases have been recorded in which lesions of one frontal lobe have not been followed by symptoms of mental deterioration. Dr. Victor Horsley supports the view that the frontal lobes are the seat of the Emotional Centre, and that the highest intellectual operations are "mostly energized" from the occipital lobes.

A consideration of the influence of organic functions on mental operations throws great light on the pathology and causation of mental disease. And first, the influence of the vascular system.

For the due activity of nerve cells it is necessary that they be supplied with blood of a certain quality and in definite quantity. The quality of the blood may be varied (a) by the condition of Anæmia (b) by Chemical
An anaemic condition of the blood is generally regarded as an exciting cause of insanity, at any rate in cases that have a hereditary predisposition to mental instability. That mental weakness, not amounting pathologically to insanity, is generally associated with marked anaemia is a matter of every day observation. And an anaemic condition of the blood is undoubtedly very generally associated with insanity. Blandford states that the Insanity of Lecktron "is due to the anaemia brought about by prolonged quacking, or by the mother making undue efforts to nurse & to sustain her strength". The varieties of anaemic Insanity are rare, and at the Royal Edin. Asylum, fifteen cases were met with out of 3145 in the nine years 1874-82. Dr. Rutherford MacPhail has recorded some interesting Clinical Observations on the Blood of the Insane who arrived at the following among the Conclusions: That the blood of Demented, General Paralytic, Epileptics, Maniacal Patients, & those addicted to Masturbation shows a marked alteration of quality, being deficient in haemoglobin and blood corpuscles; that in patients who recover the quality of their blood improves during residence in the Asylum; and that there appears to be a close connection between gain in weight, improvement in the quality of the
blood, a mental se{}ery.

Chemical poisons circulate
in the brain. Blood influence mental
processes. The physiological effects on
the brain of such drugs as Opium, belladonna,
indica, Cannabis indica, bromides, etc., are well known, and are utilise in
the treatment of the insane. That
the abuse of several of these plants
in a causal relation to Insanity is
without doubt. Protracted excessive
indulgence in alcohol may result in
mania terminate in Dementia. Cannabis
indica is responsible for the Causation
of a large percentage of the Insanity
met with in Turkey, Persia, India, the East generally. The habit of opium-eating
in some individuals induces physical
and mental weakness with impairment
of memory. The prolonged use of Chloral
in increasing doses is a Cause of Insanity.

Dr. George Savage states that he has seen
the constant use for one or two years
melancholia associated with great protuberance, with strong suicidal tendencies.

Bright's disease a form of mania
is sometimes met with as the result
of arsenic poisoning; Dr. Hildreth has
recorded several such cases. Dr.
Glennon states that he has also met
with several cases of the above named
Poisoning by lead is recognised
as leading to Insanity, the symptoms of
which generally resemble those occurring
I would here mention "Fever" as a cause of death.

Mr. B. C. Clowston, stated that it usually occurs in a brain fever, the term "brain fever" being used by everyone in the province of Canada, as well as in the United States. The condition is of great importance, and the following figures are given in the following year:

<table>
<thead>
<tr>
<th>Year</th>
<th>Cases of Fever</th>
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<tr>
<td>1882</td>
<td>1.2</td>
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<td>1883</td>
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from drink, & those met with in the early stages of General Paralysis.

The prisons of Syphilis, Pneumonia, Goit, are acting causes of insanity.

Pathologically we often meet with changes in the cerebral circulation in those dying insane, & in many instances these are the only morbid appearances.

In the brains of patients who have died during an attack of acute mania, emphysema of the sinuses and vessels of the meninges, discoloration & refilling of the brain substance from blood extravasation, with hyperaemia of the brain generally are the chief morbid phenomena. In states of melancholia an intense anaemia of the brain or often the only morbid naked-eye character. Dr. Sankey describes a thickening of the coats of the arteries as being very frequently met with also a varicos condition of the capillaries, especially in cases of General Paralysis.

Various other observers have described similar lesions in the blood-vessels. The heart has frequently been found changed in structure, hypertrophy of the left ventricle with dilatation & refilling of the right chambers being the most usual lesions; but it is generally believed that the heart lesions do not precede the mental disease, but are the results of the violent efforts of continued agitation of the patient.
2. The influence of the alimentary system.

For the brain cells to act in a healthy manner, the organism must be supplied with nourishing food. The food energy so furnished undergoes a subtle transformation into thought, emotion, and impulse.

When digestion is impaired, the mind suffers; the irritability and ill humor of chronic dyspepsia illustrate its influence. The corresponding listlessness, apathy, are frequently associated with the mature type of chronic ulcer of the stomach and with a phlegmatic condition of the mind may merge into melancholia.

Obstinate constipation with loss of appetite and distaste for food are often the first noticeable symptoms of an attack of insanity.

Pathologically, diseases of the stomach, alimentary tract, and liver are often associated with insanity; but at the present day they are looked upon as effects rather than as leading causes of the insane state.

Great importance was formerly attached to diseases of the liver, especially as inducing the condition of melancholia. The ancients described a hypochondriac variety of melancholia occasioned by inflammation of the parts in the hypochondria adjacent to the stomach, by which venous curae or vapours were transmitted to the brain, sometimes from the substance of the bile: they also
regarded melancholia and mania as closely allied. Paul of Aegina states that "When the complaint is occasioned by yellow bile, which by too much heat has been turned into black, it will bring on the disease termed mania."

A displacement of the transcend colon has often been noticed, but its pathological significance has not been settled. Blandford suggests that it is probably due to 'violent struggling and straining especially under necessity of restraint.'

(3). The Influence of the Sexual System.

The extent of the influence which the development of the sexual system exercises on the mind has been mainly defined by Dr. Blounton in a paper on 'Puerility and Adolescence viewed Psychologically Considered.' Dr. Blounton states that at the age of puerility slight attacks of nervous and mental derangement are common, but that for the production of actual insanity, requiring hospital treatment, at this time of life, a strong neurotic predisposition must be present. That the period of adolescence, between the age of 18 to 25, is fraught with more danger to the stability of the mind than the time of puerility, and is very liable to those psychological cataclysms in weak brains, attacks of mania, that have a special relationship to the function.
of reproduction. At this period of life, love affairs, seduction, religious revival, and other moral causes would come into play to upset the equilibrium of a brain not so hereditarily stable; and to it also are generally attributable the insinuate of masturbation—Ammon. Loca.

At the climacteric period of life with the atrophy of the sexual organs there is associated mental and physical decay. And at this time a form of Insanity is met with marked by depression, suicidal tendencies, delusions of sulphur.

Dr. Blum, in a lecture on Mental Insanity, under the head of "Maro Mamo," in which delusions of intercourse were common, in which he believes to be connected with diseases of the ovaries & neighbouring parts. Dr. Blumetin referring to this affection which he designates "Old Maid Insanity" says: "There is really no doubt that the ovaries are either disturbed so function or diseased in structure" in such cases.

The question of the relation of Uterine Disease to Insanity is very unsettled. In an interesting paper on "Uterine Disease and Insanity," Dr. Weylesworth concludes that uterine abnormalities are of frequent occurrence amongst the insane, and is of opinion that instances must occasionally occur in which the non-recognition of uterine disease must result in a case at one time curable, eventually passing.
beyond this category.

(2) Influences of the Respiratory System.

Under this head we have to note

the presence of a "Physical Insanity". Dr.
Blandford in his principal exponent of this variety,
and he asserts his conviction "that a phthisical
insanity exists", in typical cases is well
masked in its characters and that it is
different in many essential points from
any of the other forms of anaemia or idiotic
insanities." This insanity usually appears
before the lung symptoms of phthisis, and as
generally the chest symptoms are at first
latent even after the lungs have become
markedly affected. The type of this form of
insanity is in most cases melancholic;
and it is curious to contrast this with
the "open phthisics" - the proverbial hope
fulness of phthisical patients who do not
die insane. Not all the asylum patients
who die of phthisis are the subjects of
phthisical insanity: during the ten years 1873-82 at the Royal Edinburgh Asylum
Dr. Blandford gives the Mortality from phthisis
as 15 per cent, while the patients admitted
suffering from phthisical insanity were
recorded at 2 per cent.

Dr. Blandford states that in his
experience phthisis and insanity have
often occurred in the same family, some
of the members being insane while
others were phthisical.

Mental derangement is occasionally
the result of other lung diseases. Dr. Blandford
mentions a form of delirium with hallucination of sight and hearing caused by cyanosis from bronchitis. The delirious excitement at times met with in cases of pneumonia is also due to the imperfect oxygenation of the blood combined with its high temperature.

A consideration of the pathology of insanity would be strikingly incomplete without reference to its "allied neurosis". The fact that hereditary predisposition plays in the causation of insanity is recognized to be a most important one. And it is also known that the insane delirium is allied to and interchangeable with this nervous temperament. The inheritance of this peculiarity of mind may then itself as insanity in one child, epilepsy in another, idiosyncasy in another, hysteria in another (Bucknill). And in like manner epilepsy, neuralgia, hysteria or this form of nervous disease in the parent may manifest itself as a tendency to insanity in the offspring (Mandell). The transmission of this delirium from generation to generation ultimately ends in sterility and the extinction of the stock; Dr. Bucknill being of opinion that it seldom descends through four generations.
II. The medicinal agents which have a decided nervous action, and are used therapeutically to influence directly the insane condition.

The medical treatment of insanity was recommended to be classified under three divisions, by a committee appointed by the Medical Psychological Association: viz.

1. That intended to nourish and strengthen the body, e.g. extra diet, alcoholic beverages, cod liver oil, quinine and such like generally recognised tonics.

2. That intended to remedy an ascertained disorder of function other than that of the nervous system.

3. That intended to act on the disorders brain function directly.

It is the latter class that we shall consider briefly in this Thesis.

10. Chloral.

As a sedative this drug is largely used at the present day. Its action as a hypnotic is not to be excelled by any other drug. The process. As a general rule, Chloral causes no discomfort, headache, nervous depression, constipation, sickness, or loss of appetite; and the sleep it produces is generally calm, refreshing, and dreamless. Its drawbacks are that in some cases Chloral produces delirious excitement instead of sleep; and its administration is accompanied with some little danger.
as cases have been recorded in which fatal results followed from a sudden stoppage of the heart's action, the doses given not having been excessive. (By Dr. Francis's Lecture.)
In excessive doses it also paralyses the respiratory centre.
In the treatment of the Insane, the use of Chloral should be restricted to producing sleep, for which purpose it ought only to be given at bedtime.
Continuous doses of Chloral have not been found of any benefit and indeed are in many cases harmful.
Restless, noisy General Paralyses are effectually quieted by it, and its usefulness in acute Mania is undeniable. In epileptic Mania the benefit obtained from Chloral is "very great and very certain". Dr. Geo. Savage states that he has frequently seen a case that without Chloral was dangerously maniacal, sleep quietly after thirty grains of Chloral and wake up sane, having had an epileptic fit but no fever.
Its use is indicated in cases where an outbreak of Insanity threatens, the patient being restless or eliptic.
Its sedative and hypnotic action seems to be increased by an addition to it of Brandy or Potassium & Morphia.
At Montreal House Asylum it is used in doses of 9 gr. Combined with 
1 gr. of Bromide of Potassium, no dangerous results have been known.
To follow its administration.

I have used Chloral in several cases of Epileptic Mania, but have not found it to do away altogether with the maniacal paroxysm, although its benefit has been decided in subsiding the feverish fever, and restraining the fury.

The prolonged use of Chloral in increasing doses has been known to result in Insanity.

(2) Hypocampane.

Hypocampane is a Remedy of Some Antiquity, but its use as a sedative in the treatment of Insane Patients has been of late years enforced by the introduction of its alkaloid. The pure alkaloid is a mass of minute Crystals, but in addition there is a Brown Extract prepared by Merck, which is Chosen to be generally used. Merck's Extract is very soluble in Spirit, a solution of 95 in 5 being Convenient for use. The dose I generally employ is a range from 1/4 to 1/2 gr. rarely going as much as 1 gr. For small doses of 1/12 to 1/8 gr again and morning, I have found it very useful in quieting General Paralytics; in Gastric I am not with patients who are destruensive, and irritable; and in curbing Chronic Epistaxis. In larger doses it Calms patients who are acutely maniacal. As a rule the Drug does not Cause Sleepiness or Loss of Appetite. If used to any extent, its physiological effects are evidenced by widely dilated pupils, impairment of vision, and
nearly, past.

The drawbacks connected with the use of
the drug are (1) that it sometimes intensifies
existing excitement, (2) that even small
doses occasionally cause intense restlessness
and great prostration.

I beg to append notes of some cases
illustrating the action of the drug:

G. N. Snow. Is an epileptic gentleman. His fits are
very frequent, and attacks of excitement in which he becomes
abusive and destructive. At such occasions, he
leaves his clothes, scratches at doors, breaks
windows, yells at attendants, and so on, and is
generally very much in a state of a fit.
Nov. 14, 1877. His condition has been as described
above for the last three days. Ordered 1/2
gr. of hyoscyamine night and morning.
Nov. 16. Pupils widely dilated. Is now
much quieter. Walks about the living-room
in an orderly manner, and has not torn
his clothes. Hyoscyamine stopped.
Nov. 18. The patient is as bad as ever. Hyoscyamine
prescribed.

It was continued for three days. The patient
at the end of that time was quiet and
well-behaved, and remained so for a week.
Towards the end of this period he developed
a severe jaundice with enlargement liver and
pain on pressure over the gall bladder, and
died on the night of November 30th.

Samuel Bond. A Case of Chronic Mania.
March 11, 1855. - For the past two days the patient has been very destructive. Has broken a picture, smashed a window, and torn up his bed clothes. When spoken to on the subject he answers mildly that it was "all an accident." To be have 1/12 j of p of hyoscymine nightly now.

March 13th. Last night he slept with a strong rug on, which he made no attempt to destroy. Was fairly quiet yesterday. Ordinary bed clothes to be returned to him.

March 18th. Hyoscymine stopped. Since the previous entry, the patient has shown no destructive tendencies.

March 31st. For the last three nights the patient has been again leaving his bed ways. Has smashed crockery during the day.

Hyoscymine renewed. His destructive tendencies were again checked; the drug was continued for a week; and the patient has for the last three weeks been quietly behaved.

Dr. W. Evans. In epileptics fits are not frequent but are always accompanied by severe attacks of mania; these attacks sometime take place without any fits and would seem to preface them. Has various religious delusions, which are very prominent just before a maniacal outbreak.

Sept 26, 1854, The patient has been quiet for the last day or two, brooding over patients about 41. Valdes excited by 9 on an un recalled strain on religious topics.
is under observation, I have been ordered a mixture of bromide of potassium (pro xxx) and quiet cannabis indica (mills) three times a day.

Sept 27. Today he made a violent attack on an attendant. Has been placed in a single room. Mixture he refused by 1/8 tsp hydrocyanic 300 daily.

Sept 29. Is much worse. He continually grinds his teeth; his eyes have an intensely wild expression; he knocks himself furiously against the partitions of his room, and would seem to be fighting some imaginary antagonist.

1/4 tsp hydrocyanic acid given in the morning and repeated in three hours. When seen in the afternoon his pupils were widely dilated, he was drowsy and stupid, and he was unable to stand. Shortly afterwards he had a fit, and then fell into a sound sleep which lasted for three hours.

Sept 29. Has had no sleep at night; is very excited this morning—got a hydrocyanic acid given. When seen in the afternoon there was no improvement in his condition. A draught of 300 xxx of chloral ordered to be given at night.

The next day the patient was quieter; the chloral draught was repeated at night. The day after, the attack had quite passed off.

On the recurrence of the maniacal attack sometime after, I again tried hydrocyanic acid, and it again seemed to intensify the excitement and do harm.
rather than good; while Chloral had a distinctly beneficial effect in restraining the violence of the paroxysm and curtailing short its duration.

(3) Bromide of Potassium, + Indica Cannabis. These drugs have long been known as powerful sedatives, but to Dr. Blomston the profession is indebted for introducing a combination of the two as being more powerful than either. The following are Dr. Blomston's conclusions:—The Combination of bromide of potassium + Indica Cannabis indica produced the effect in 90 per cent of the times it was given. Bromide of Potassium alone can produce the most violent, paralyzing effect, but only when given in immense and dangerous quantities; and its effects are as accumulative when so given, that after they have once begun to appear, they increase for days after the medicine has been stopped, almost paralyzing the Cerebrum and the sympathetics. The effect of Cannabis indica alone in quieting excitement is comparatively slight, and lasts only a few hours. By giving bromide of potassium and Cannabis indica together, not only is the effect of either given separately immensely increased, but the combination has an essentially different action from either of them given alone. Its patients do not lose weight after a lengthened trial, their appetites are not interfered with, and the medicine showed no signs of losing its effect after being used for eight months. When the medicines are given together, the first symptoms developed
are those of the Caucausian Indian, but these soon merge into a state ofdrop in aches of the nervous system which is in all respects the opposite of nervous irritability. Fever cases of simple melancholia were benefited by the borax alone or along with Indian hemp they are. The form of Insanity: some were even made worse. Of these of each are the most efficacious, if the mixture is to be given continuously for a lengthened period, the dose of each may be increased to 37 grains occasionally.

I have given Dr. Amonston's mixture with great advantage to several patients, and I would record the following case as one in which it was the only relieving I found of any benefit:-

J. Heaton - Admitted December 7th. Belladonna aged 23. First attack of about three months' duration. He somewhat intemperate habits, and was lately suffered from phthisis. On admission:

He talked in a quick, lively manner, and seemed to have a runched sense of the great. States that he is to give a lecture in the House of Commons, expects to be made a Peer tomorrow with the title "Earl of Wiltshire," that he is a man of great wealth; that he comes from there. His pupils were unequal, the right being the larger. His facial muscles were wanting in tone, there was some indistinctness of articulation.

At night he was very restless, being often in and out of bed. He was very impatient of control, and would attack the attendants with a chair or kick at them if they interfered.
when there is a marked tendency to cerebral congestion, opium is contra-indicated as it would intensify this pathological condition.

The objections to the use of morphia

opium do not apply quite so strongly to that of

morphine, which is said to be less constipating

& less liable to produce nausea & loss of

appetite. These unfavourable effects are further

minimized by the hypodermic injection of

the alkaloid. But this method of treatment

has several disadvantages. It not unfrequently

causes a good deal of treatment, and repeated

 administrations followed by considerable depression.

The dose given hypodermically has to be increased

to keep up the residual effects of the morphine.

The injection may give rise to a cellular oedema at
the point of injection. And last but not least the patient is a more or less obdurate to the method, and a strong feeling of animosity is apt to be

instilled against the medical officer among the

other patients in the ward.

(3) Ergot.

The now well-known physiological effect

of Ergot in producing contraction of the vessels

of the cerebral cord, suggested to Dr. Brighton

the possibility of its possessing a similar

action in the muscles of the brain. Dr. Brighton

tried it extensively among the patients of the

Wakefield Asylum, and found it useful

particularly useful in certain varieties of

(1st) Acute Manic and (2nd) Chronic Manic with

Read intervals (3rd) Epileptic mania. It

produced agitation, choleric attacks, widened
the intervals between them, occasionally altogether preventing their recurrence; and assisted this perilous emanation by which treatment is so often succeeded. From 30 to 31 of the Inhales, from 36 to 37 of the Liquid Extract, or from 82 to 83 of Syphate may be administered without apprehension, no evil effects having been observed to follow from such doses. Even when long continued.

6. Electricity

The importance of Electricity as a curative agent in diseases of the nervous system has of late years led to its employment in the treatment of the insane. As yet the value of this method has not been generally recognized, and accurate clinical observations of its usefulness need to be multiplied.

The galvanic or fulgurant currents are the forms of electricity applicable, and of these the former, on account of its higher tension and the greater difficulty in measuring and regulating its strength, find less favour than the latter. The experiments of Pflego and Trous have shown that the passage of a continuous current along a nerve increases its excitability in the region of the negative pole, and diminishes it in that of the positive pole; if the current be too strong the negative pole eventually kills the nerve and lowers its excitability (Böhl. ratt. ford's lecture). Hence, according to the relation of either pole to the part of the nervous
nervous system we wish to influence may have an stimulant or a sedative effect. The passage of the current improves the nutrition of nerve tissue, and initiates chemical changes which may be of advantage in removing morbid conditions. Dr. de Wattenwille remarks that "in order to secure an effectual penetration of deep organs we must have resort to the galvanic current"... and, that "general paralysation is a good tonic & excitant of general nutrition."

It is advantageous that a battery (galvanic) when in good working order should fulfill the following conditions: (1) That it allows the strength of the current of the current being varied by means of a collector which throws into action any given number of cells (2) That it allow of the direction of the current being changed by means of a commutator, so that either electrode may be positive or negative at will (3) That the strength & direction of the current be measured by a galvanometer, introduced into its course. The electrodes should be of large size, and the skin of the patient should be made a good conductor by moistening with warm salt & water.

Of the cases in which electricity is likely to prove useful, one cannot speak with certainty. Dr. Blighford Albutt, from observation made in the West Riding Asylum came to the conclusion...
That under this method most improvement was noticed in cases of acute primary dementia: and that little or no change for the better was seen in recent secondary or chronic dementia, or in most cases of melancholia. In Dr. Newby’s experience, several cases of melancholia were actually improved by the treatment. Dr. A. Robertson records a case of twelve years’ duration, in which the type of insanity was melancholic with delusions of persecution & hallucinations of hearing, that after four months’ treatment with the continuous current recovered completely and was discharged cured.

Some of the most recent researches on the application of electricity to the treatment of the insane are those of Dr. Lowenfeld and Tiges. In the treatment of the insane, Dr. Lowenfeld recommends the use of peripheral paralysing with strong currents passing through the trunk & extremities, but would apply weaker currents through the head, continued from ten to fifteen minutes through the left hand or with moistened electrodes. Dr. Tiges found electricity produce marked improvement in several cases of auditory hallucinations. He also treated several cases of melancholia with spotty passage into melancholia with slips, by passing the constant current through the brain. He found that by such treatment the motor rigidity was relaxed, and the sensibility to pain appeared to be increased; the patient became more lively and less abusive.
In one Case there was Complete Cure; in another marked improvement; in six more there was amelioration of the symptom, without any decided effect on the general Character of the Disease.

—from—