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A Clinical Study of points bearing upon the ætiology and course of some forms of Syphilitic Insanity
by
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Crichton Royal Institution.
Dumfries.

With eight cases.
J.L.
Admitted October 24th 1896.

History.

Patient has a distinct history of Syphilis confirmed by his family Doctor. The facts point during the whole course of the case to vascular degeneration. At the age of 23 he had an attack of paresis (with the symptoms of Thrombosis) of the right side. He was recommended a sea voyage and the paresis gradually, after twelve months' interval, passed off. From that period until the present attack of Mania he has been what his friends termed eccentric. He was restless, could not settle, spent his time taking long walks (on an average 30 miles a day) playing billiards, cards, etc. and was intemperate in his habits.

History of the present attack.

It is of eight days' duration and first showed itself by delusions and impulsiveness. He imagined that his food was poisoned and stated that when the impulse came on he would have killed his mother, brother, or sister as opportunity offered. He was excitable, restless, incoherent and stated that he had been insane for many years, but was now of sound mind.

Disposition - He is of the nervous Diathesis of loose habits and Intemperate.

Causation - Predisposing - Syphilis and Vascular Degeneration.
Exciting. Alcohol.

No previous attacks and no hereditary predisposition.

State on Admission.

Patient has marked mental weakness, so much so that it masks and modifies greatly his exaltation and excitement. His memory is defective, but he can answer simple questions coherently. He is a stout well built man with an enfeebled and stupid expression, his muscularity is good, there is an excessive deposit of fat in the subcutaneous tissues. Pupils are equal. They react to light and accommodation is normal.

Nervous System.

The motor signs are limited to slight unsteadiness in gait and diminution in the knee reflexes. No sensory phenomena.

Special Senses. Speech is indistinct - He is so weak mentally that the usual test words cannot be tried.

Heart and Lungs - Healthy.

Appetite Good.

Tongue brown and furred. Bowels constipated.

Urine Acid Sp. gr. 1028. No albumen or sugar.

Height 5 ft 7 ins. Weight 12 st 111bs.

Temperature Normal. 98.4°

Notes on the progress of the Case.

11.11.96. Continues in the condition described on admission. He is noisy, restless, and
incoherent, stupid and greatly weakened in mind; his memory is defective, he has no idea when or how he came here, is untidy and dirty in his habits.

1.12.96. Enfeeblement progresses, he is more confused and stupid, speech is very indistinct. He sleeps badly and is noisy and restless. From this time till the end of March 1897 he became more demented, on December 22nd he developed a Haematoma Auris on the left side with more than a usual quantity of effusion; on the right side there was chronic thickening of the aural cartilage.

Towards the end of December the left pupil became widely dilated and left sided Ptosis developed. He was so restless on many occasions that Sulphonal in 10 grain doses was administered, this drug given at intervals was stopped at the end of February. He continued restless and noisy for six weeks and then came a remission in which he brightened up.

9.4.97. Treatment by was of no avail.

Today for the first time since admission he began to talk, his expression became brighter, he showed more co-ordination in his actions but still remained restless. His weight has fallen to 152 lbs.
12.4.97. Close examination for the last three days shows that his vocabulary is very limited, he has a tendency to repeat day by day what he says. He was so sensible that I was able to test his speech and writing. His writing shows no defective formation of letters, and he spells correctly what is asked of him. As regards his speech there is no defective articulation or syllable stumbling when he echoes, but when he tries to produce speech there is distinct slurring.

12.6.97. Progresses toward complete mental enfeeblement, his speech has become more distinct but his vocabulary is very limited, he can whistle a tune or sing a song accurately. He is still restless and excitable, and requires an occasional dose of Sulphonial.

There is nothing of note in his case till September when a paroxysmal cough developed and on examination of his chest, early Phthisis at the left apex was discovered. The dilatation of the left pupil and the Ptosis are stationary.

Weight 153 lbs.

Under tonic and nutrient treatment his physical health improved, cough disappeared and no fresh symptoms obtruded themselves.
till December when he developed a Haematocele of the right testicle. On careful examination the conclusion that it was idiopathic and not due to injury received seemed the most probable diagnosis. No history of injury or shock the usual concomitant of testicular could be found; the effusion was large in amount and probably came from some ruptured vessel.

1898. Under treatment by rest, support, and application of ointment, the effusion became absorbed in three weeks and an examination then showed that the body and Epididymis were enlarged and indurated, the cord also was enlarged. In another month this disappeared and he improved mentally became brighter and quieter. An examination of his urine from time to time showed that he had Glycosuria alternating with bile in the urine, the urine was not excessive in amount and there was no albumen. In February his enfeeblement has passed into quiet dementia, and there was no change or fresh addition to the motor symptoms.

10.4.98. Continues as above, no change to be noted.

General Considerations.

1st. In the history the confirmed presence of Syphilis with the attack of left sided hemiparesis. Recovery from the motor symptoms with continuance and progression of the mental weakness.
2nd. An acute attack of mania with Impulsiveness occurring 25 years after with mental enfeeblement to such a degree as to masking the other evidences of his mania.

3rd. The progress and events in the case pointing to vascular degeneration.

4th. The presence of speech symptoms.

5th. A distinct remission in which the speech symptoms improved and finally disappeared.

6th. The occurrence of left sided Ptosis and dilated pupil on that side.

7th. Failure of treatment by antisyphilitic remedies.

8th. The stationary condition of the motor symptoms.
Case No 2.

Mr. E. J. Age 31.

A typical case of Syphilitic Insanity.

Previous History.

There is a distinct history of syphilis with the prominent symptom of severe headaches which were so violent that they incapacitated him from work.

History of the present illness.

Disposition.

He was naturally clever, was a Member of the Irish Bar, and had worked very hard. He was self reliant, had a sanguine and happy temperament.

Habits.

Loose. No trace of an alcoholic tendency.

No previous attacks, and no hereditary predisposition.

Causation.

Predisposing. Syphilis.

Exciting. Hard and anxious professional work.

Primary Symptoms.

Mental. The first mental symptoms were change of manner and irritability, following this an attack of mania with grandiose ideas. During this attack he went about ordering large quantities of silly and useless things. The orders he gave were excessive and far beyond his means. To what extent he went may be gauged by a remark of his mothers when he was about to be discharged recovered, 'Do you think', said she, 'that people will ever have confidence in him again and employ him in professional work,' he did such silly and extraordinary things when he took ill.
Physical.

Then were observed some of the physical signs of locomotor ataxia, for example, the peculiar way in which he walked. He was sent away for a month's yachting, but no signs of improvement were seen, rather the contrary, he became restless, developed fresh delusions of grandeur, wrote continuously under the impression that he was a great author, and was sure of his fortune by his writings. He sent the writings of that month to his friends to be published, and developed the delusion that he was fabulously wealthy in consequence. This was thoroughly worthy of a General Paralytic, because he stated that although he knew they could not yet be published, still he had received untold wealth for them. Other ideas followed, he gave away what he called cheques for hundreds of thousands of pounds to all his relations and to various charities, and said he was soon to be made Lord Chancellor of Ireland.

State on Admission.

He has an extremely self-confident manner and bearing, has delusions of grandeur. With this exaltation there is marked mental weakness. When his ideas were questioned, his emotions overcame him, and facileness took the place of confidence, he smiled placidly and silly as he declared that these things could not be otherwise.

Memory is good. He is coherent and can answer
questions sensibly and accurately. The delusions
described before still exist strongly.

In appearance he is a thin spare man with a pale
skin, blue eyes and a fair complexion.

His pupils are irregular, the left being the
larger of the two. Reaction to light, and accomo-
dation lost.

Nervous System Motor - There is loss of motor power
in the lower and upper extremities. He has an
ataxic gait such as occurs in locomotor ataxia. The
Rhomberg sign is present, and he cannot co-ordinate
to walk along a straight line.

Co-ordination is impaired in the upper extremities.

Sensory - Sensation to touch and common sensibility
are blunted in a marked degree.

Reflexes - Knee reflexes are absent. The plantar
reflexes are normal, the cremesteric reflex is lost
on the left side, the abdominal reflex on the left
side is diminished.

Special Senses - Speech is not affected. Hearing,
taste, and smell are normal. Vision is not affected.

Respiratory System - Healthy.

Circulatory System - Pulse rate 106 per minute.

Regular in force and time, tension low, vessel walls
healthy. Heart sounds are weak but there are no
murmurs.

Alimentary System - Appetite good. Tongue is coated
and moist. There is diarrhoea from a paretic
condition of his sphincter muscles.
4.

Urine. Acid. Specific gravity 1030 no abnormal constituents.

Temperature 98.4°.

Height 5 ft. 10 ins. Weight 9 st. 3 lbs.

On the whole his bodily condition is not good.

General observations and progress of the Case.

This case was diagnosed and sent to the Institution as an incurable case of General Paralysis, and it had many points which tended towards the formation of that opinion. On closer observation, however, the diagnosis of Syphilitic Insanity was substituted on the following grounds.

1st - There was in the history conclusive evidence of Syphilis with cephalic headaches, this was made absolutely sure by the confession of the patient that he had had Syphilis five years ago. Against General Paralysis there was the sudden onset and the fact that the motor symptoms were too far advanced for the length of the illness which was only of one month's duration, and speech symptoms were absent.

When one examined the history of the onset apart from the suddenness it was next to impossible to differentiate from General Paralysis the change of manner, irritability, restless and delusions at once put into action being what one finds in that disease, but not in that disease alone. Some forms of alcoholic Insanity and Syphilitic Insanity have these symptoms in common. Therefore only on
consideration of the case as a whole, and the results obtained after the administration of Iodide of Potassium could syphilitic Insanity be diagnosed.

Notes on Progress.

19.9.97. Patient talks in an off hand way about his delusions as if they were more apparent than real, he emphasizes the point that it is only in the last month that he has become rich, before that time he had only what he made at the Bar. He has a good appetite, sleeps well, exhibits no restlessness, and talks sensibly on general subjects. He suffers from incontinence of faeces, and says he has lost control over his bowel. This last is not an uncommon symptom in Syphilitic Insanity.

Treatment:

\[ \text{Potassii Iodidi} \text{ Figg} \]
\[ \text{Sulph. Ammon. Arou. Figg} \]
\[ \text{Stry. Gent. Co ad Figg} \]

Malt Extract to be given after meals.

His weight being registered every three days.


22.9.97. He was given paper and writing materials today. His writings showed his grandiose ideas, but there was no defective formation and no repetition of letters and everything
was correctly written. He still continues to work at the manuscript of his book.

24.9.97. His mental condition continues as indicated above. He has gained two pounds in weight and regained power over his rectum.

28.9.97. During the morning visit patient enquired about the amount of money which he said he possessed, and when told, exclaimed, 'I must have been off my head when I came here, because I have only what I make at the Bar'. This looked hopeful, and showed his delusional tendency was passing off, but he still maintained that he had written books and that last week among the papers he sent off to the press for publication, was the manuscript of a book. Beyond this tendency of his delusional condition to pass off, his mental symptoms are unchanged. He has gained 3 lbs since the 24th making in all 5 lbs since admission.

1.10.97. On examination of his physical signs, marked improvement is shown. He co-ordinates much better and with greater ease when walking, the locomotor ataxic gait being less marked, he can now turn quickly without losing his balance. His mental symptoms show he is still delusional, this morning he sent off a bundle of papers through the attendant to the Publisher, these being he said the last of the manuscript of a book.
he had written. The dose of Iodide has been increased to twenty grains.

8.10.97. During the last week his mental enfeeblement shows signs of passing off, he has more initiative and attends to his dress and personal appearance in a more marked manner. (On admission he was careless and untidy in his personal habits).

The physical signs are in the condition indicated by the note of 1.10.97. with this exception that his pupils now react to accommodation though not to light. Tonics substituted for K.I.

Weight 135 lbs.

18.10.97. There is still further improvement in his mental condition, his delusions about being an author is not so strong, he never refers to it and has ceased writing.

20.10.97. Treatment by K.I. begun again.

4.11.97. Mental improvement is still more marked.

All medicinal treatment (for the time being) has been stopped. He puts on weight to the extent of 1 lb per week.

12.11.97. Patient has now recovered from the more acute mental symptoms. His delusions have disappeared, he recognises that they were delusions - the memory of his illness being very perfect, he is able to tell all that he thought and did. He writes sensible
and coherent letters to his friends, and talks and acts in a rational manner. There is no further improvement in his locomotor Ataxia. Weight 141 lbs.

3.12.97. Improvement still continues, there is only a faint trace of enfeeblement. He has become a sane individual, takes the initiative in conversation and expresses opinions of his own. He is calm and composed, mixes with the other convalescent patients, plays billiards, and altogether he has recovered his place as a sane social unit. Tonic treatment is being pursued and his bodily health is improving. Weight 143 lbs.

12.12.97. Today he was examined with the following result - His mental system is in good tone, its processes are clear and healthy, he is decisive in his ideas and judgments; All delusional tendency has disappeared, his memory is not defective, and he is capable of doing mental work. His locomotor ataxia is stationary, but his co-ordination has improved, and although ataxic in his gait his movements are interfered with little; his pupils are unequal and still fail to react to light, reacting to accommodation.
18.12.97. Discharged recovered with the following medicinal directions, that as a gouty person takes prophylactic treatment so should he take K.I. The ordinary precautions as to regimen and overwork were given.
Case No. 3.

A case of Syphilitic Insanity progressive in its character

J. R. C.  Age 44.

History.

The history points towards sexual excesses from an early date. He had an attack of Syphilis twenty seven years ago, and since his marriage fifteen years later, another attack. The manifestations have been solely physical till the present attack of Insanity. Seven years ago he found that his vision was gradually becoming dimmer, he was examined and grey atrophy of the Optic Nerves in an early stage was discovered. He then went abroad to Aix-la-Chapelle for a course of antisyphilitic treatment, no benefit ensued, the disease was progressive. This degeneration with accompanying obscurity of vision is gradually increasing.

Disposition.

He is of a nervous excitable temperament and hard working.

Habits.

He was an intemperate sensual man for many years before and since his marriage, but has been temperate under medical treatment for some years.

Causation.

Predisposing. - Syphilis.

Exciting - Worry connected with his business and alcoholic excess.
2. History of the Present Attack.

Symptoms. Mental, For two weeks past he has changed in manner, is irritable both at home and in business and particularly so to his own relations e.g. his brother, his wife and family. He suffers from Insomnia.

Bodily. Grey atrophy of the Optic Nerves.

Recent Symptoms. During the last ten days grandiose ideas became developed. He imagined he was worth large sums of money, had invented and patented ideas connected with his business which would make his fortune. Acting on these he signed cheques, and gave presents which his means could not afford. This delusional state is not limited to a grandiose condition, he has delusions of suspicion with a homicidal taint, talks about shooting people etc. The sleeplessness continues, and he refuses to take sufficient food.

State on Admission.

He is in a state of Mental Exaltation, has grandiose ideas of varied character, at one time he imagines that he will soon be a millionaire from the money his patent will bring him, at another time he is a champion boxer and recounts the history of his prize fights. There is considerable excitement with restlessness, irritability and impulsiveness, especially if he is contradicted. Mental weakness is present in a marked degree, he has no initiative, readily agrees with whatever is said, talks about his private
domestic affairs in an open way and frequently breaks down into floods of tears. He gives away imaginary things e.g. when I examined his eyes he said he would order me the newest and finest set of Ophthalmoscopic Instruments to be had. His memory is good, he is coherent and can answer questions.

He has a dull apathetic expression suggesting Cerebral Syphilis, the upper eyelids are drooping and the whole expression is apathetic. Perhaps in part due to his Amblyopia.

Skin is normal, Eyes are blue and eyeballs bulging. Pupils contracted, they react tardily to light and accommodation.

Muscularity poor. Fatness poor.

Nervous System. - There is no loss of motor power either in the arms or legs. Co-ordination is only slightly impaired; this might easily be accounted for by his eye condition but his gait has somewhat the appearance of that found in early Spastic Paralysis (lateral Sclerosis).

Knee and plantar reflexes are exaggerated.

There are no sensory phenomena.

Special senses - Speech is not affected. He has dimness of vision and contraction of the field of vision produced by grey atrophy of the Optic Nerves with contraction of the discs. Hearing is not affected.

Respiratory System - Healthy.
Circulatory System - Heart sounds normal.
Pulse 100 per minute of regular rhythm and low tension.
Alimentary System - Appetite good, tongue large and flabby, bowels constipated. Temperature 98.4°.
Height 5 ft. 7 ins. Weight 9st. 9 lbs.

General Considerations and Progress of the Case.
The case was sent to the Institution with a statement that Syphilis was the cause of his trouble, but that in all probability the disease was General Paralysis. From the following points a diagnosis of Syphilitic Insanity was made.

(a) The acuteness of the attack.
(b) The entire absence of speech symptoms.
(c) Firstly, the presence of primary degeneration of nervous tissue in the optic nerves which was of seven years' duration. Secondly, the probability of a similar degeneration in the lateral columns and it may be in other parts of the cord, diagnosed from his gait, his markedly contracted pupils, and his exaggerated reflexes.
(d) The marked degree of mental weakness present with an acute attack of less than one month's duration.
(e) The fact that there was a localisation and differentiation in his mental symptoms, on some subjects he could talk sensibly and coherently.
(f) The unequally developed state of the mental and
motor symptoms and the absence of certain motor
signs of General Paralysis such as affection of
Speech. Certainly

Certainly there was absence of cephalic
headaches, Insomnia, and an active rise of tempera-
ture at night, but the process is a primary grey
degeneration of nervous structure and not an active
formative change. A differentiation had to be made
between Cerebral Syphilis with and without localised
gummatous formation.

The following negative signs excluded the
former. 1st, his optic atrophy is grey and not
inflammatory. 2nd, there is no headache or vomiting,
3rd, there are no localising signs motor or sensory.

The eye condition presents some interesting
points. 1st, with primary grey degeneration one
would have expected dilatation of the pupils from
interruption of the optic Oculo motor reflex.

Instead of this they were markedly contracted
and reacted tardily and slightly to the action of
light and to accommodation. The most probable
explanation is that there is a Paralysis of the
dilator centre with irritation of the cilio spinal
centre. 2nd, the slow course and development of
dimming of visual acuity and diminution of the field
of vision. (Gowers) quotes a case where in a
syphilitic case it took fifteen years before the
patient became blind. Generally however it comes
on quicker and when it occurs as a phenomenon in
late tabetic disease blindness generally ensues in two years' time.

Progress.

6.10.97. Patient sleeps well, and has a good appetite.

Treatment R. Pot. Iodid grs. $x$

Ex. Ammon Ar $y$

Ext. of Malt $z$

after meals.

11.10.97. His condition is an active one, he has many delusions of an exalted nature, also delusions which savour of suspicion and persecution, e.g. he imagines that the attendants use him roughly and harshly, though as a matter of fact they only control his morbid activity. He is restless and talkative, but is coherent. When articulating there are twitchings at the right naso labial fold which according to his own statement he has noticed for some time. On the whole his mental condition is very variable, and shows marked mental weakness. He suffers from paroxysmal attacks of abdominal pain - (Gastrodynia and Enteralgia)

His weight has decreased 3 lbs, and is now 132 lbs.
16.10.97. Under the Iodide treatment his weight has fallen six lbs in eleven days, notwithstanding that he is on nutritive diet, and is sleeping well. Weight 129 lbs. He is very pale and anaemic, but has a brighter expression than he had on admission.

20.10.97. His condition continues to be active and progressive, he forms fresh delusions every day, sleeps well, eats well, but still loses weight, there are no other symptoms or signs of Iodism.

Weight 126 lbs.

22.10.97. Pot. Iodid stopped and Quinine and Iron substituted.

1.11.97. Under this change of treatment his weight has increased, and he looks better. There is no mental change, he is still delusional, restless, and more irritable than before. The only change in his motor signs is that his pupils are irregular, the right has dilated and now looks about the size of a normal pupil, that is about 4 millimetres.

Weight 138 lbs.

22.11.97. Successive notes made in the interval show that there is no improvement in his mental state. He was visited by his wife but could not talk rationally to her, and after talking to her for the greater part of an hour of his delusions, he said, 'I must say goodbye and abruptly left her'. He
improves physically, and his weight has now returned to what it was before the Pot. Iodid. treatment.

1.12.97. During the last week he has been very irritable and quarrelsome. He forms many fresh delusions but they all come under one of the classes of his former ones. Bodily weight has gone down 4 lbs. He sleeps well and eats well.

14.12.97. Mental condition is still active, his delusions centre around feats of strength e.g. he believes he is the Champion Boxer while the attendants are other prize fighters whom he punishes every day. This idea of enormous strength is a very evident delusion, and in marked contrast to his physical health which is failing. Weight 130 lbs.

20.12.97. During the last few days patient has developed a great longing to get home, and constantly asks to get away with the next train. He is restless, dull and stupid, his manner in marked contrast to what it was a week ago.

21.12.97. He has been very restless and delusional all day with marked mental confusion, and an irritable tendency. In the afternoon while walking he became combative and disposed to struggle if restrained.
Evading the vigilance of the attendant on entering his ward he impulsively threw himself under a table and fractured his 7th rib on the left side. This penetrated inwards and produced surgical emphysema, he suffered from severe shock but rallied in two hours. Ordinary treatment was adopted viz. a broad flannel bandage and the administration of opium.

22.12.97. The following notes are interesting and instructive, representing as they do the sequence and changes in the mental condition following the shock. The fracture and emphysema despite his restless and excited condition made an uninterrupted recovery and could not at any time be said to be such as would directly influence his mental symptoms. He passed a good night till 4 a.m. when he became wakeful and restless, asked why a bandage was round his chest, and asserted there was nothing wrong with it. When seen in the morning his pulse was 88 and of fair tension. Temperature 98.4°. He had passed no water since the accident, but no signs of injury or rupture could be detected. A catheter passed easily into the bladder and 20 ozs of water were evacuated. Urine was examined and no abnormal constituent found. There was a large
deposit of Urates.
At midday he became quiet and his mental condition is well described by saying he was in a mild incoherent muttering delusional state, such as would be termed in an ordinary medical case, a mild muttering delirium. He talked about the Greeks having been the cause of his accident, mistook the identity of those around him, associating them with the people he had been accustomed to meet before he took ill, and still had the grandiose tendency muttering to those who attended to him he would knock them down. Towards night he became restless and could not pass water, a catheter was again passed.
Temperature has gone up to 100.2°. Pulse 120. Respiration 26.

23.12.97. He passed a good night but was restless when he happened to wake, which he did at times soon falling off to sleep again. In the morning the delirious state had passed away, he was active, lively, and in good spirits, but still delusional, though coherent in what he said.
Temperature 100.4°. Pulse 124. Catheter passed.
Towards noon he passed into the delirious state and continued so all day, he takes
11.
food well, tongue moist, and clean and passed water himself, bowels moved easily. Temperature 100.2. Pulse 100.

24.12.97. He was restless and sleepless till 3 a.m. slept well after. Pulse 104. Respiration 26. Temperature 100.2°.

He is quiet and though still delusional, more rational. Towards evening he improved in colour and expression, he passed water, and the bowels moved well. Temperature 98.6°. Pulse 100.

27.12.97. The emphysema has disappeared, his general condition has improved, his bladder has recovered its tone. His mental condition has been very variable and changeable, periods of depression alternating with restlessness and excitement. Temperature 98.4°. Pulse 88.

28.12.97. He has been restless all day, his excitement and restlessness made removal to a strong room and the administration of Sulphonal necessary.

31.12.97. Patient has been quiet under the influence of Sulphonal, sleeps well and eats well. Temperature 98.4°. Pulse 80.

An examination of the side today showed that bony union has taken place, there is no recurrence of the emphysema and no lung change. Towards the afternoon he was ordered to get up and sit in an easy chair
under the care of a special attendant.

1.1.98. Under the action of the Sulphononal the motor restlessness has subsided, but the elements of danger are still there, in that he is very delusional and exhibits all the rashness of a G.P. in his delusions. His appetite is better than it has been since the accident and he sleeps well. His temperature is 98.4° and the pulse though of small volume and low tension is not rapid, never going above 90.

4.1.98. His mental condition varies greatly, despite the sulphononal he is easily excited and when so he exhibits great motor restlessness. He may remain quiet for hours, and in half an hour's time become maniacal in his restless delusional state. At night he is sometimes sleepless and restless, but the seclusion of a single room modifies this greatly and he sleeps on an average about 6 hours per night.

5.1.98. Today I saw him in an acutely delusional state with a syncopal tendency. He accused the attendant of firing a bullet through his heart, and complained of great pain in the cardiac region; examination of the chest gave negative results, and in an hour's time he settled down and forgot all about it.
6.1.98. Patient was seen by his lawyer today, but could not talk connectedly or coherently about his affairs.

6.1.98. Continues in the state above described, is sleeping better at nights.

15.1.98. An examination of his mental condition shows that he is much more enfeebled. He has still grandiose delusions, but they are less systematized and are more delusions of enfeeblement. He is now incoherent in his conversation, never mentions his relations, is careless and untidy in his dress and habits. He is restless, stupid and confused. He sleeps well and eats well. Weight 130 lbs.

There is no fresh development in his motor symptoms, his vision is dimmer but this may be due to dulling of his sensory impressions by mental enfeeblement.

18.2.98. The enfeeblement progresses in a marked manner. Sulphonal is stopped at intervals for a day or two but is needed because of his marked impulsiveness. He recklessly throws himself about and would injure himself.

Remarks on his mental symptoms after the accident.

1st. The mild incoherent muttering delusional state produced - this lasted for four days, and represented the mental shock. It was
succeeded slowly but surely by a reaction. He became restless and excited, his motor power gradually reasserting itself till it reached a condition of mania in which for the first time he tore off the bandage. He passed into a condition of acute delusional mania which though only manifestation required active treatment as a separate condition.

2nd. The alternation, attacks of depression alternating with excitement during the initial stages of the reaction showing the passing instability.

3rd. The fact that this shock markedly hastened the progress towards enfeeblement as shown by the examination contained in the note of 15.1.98.

4th. The rapid progress towards complete enfeeblement shown in succeeding notes.

5th. On the physical side the tendency to rapid recovery in a syphilitic case, the exudation and rapid absorption in the fracture and the rapid absorption of the air.

30.3.98. Since the last note was made his mental and weakness progresses rapidly towards Dementia and his bodily health is failing. On this date he developed an acute pneumonia and died with hyperpyrexia on April 2nd 98.

*The post mortem examination showed advanced degeneration of the nerve cells of hypoplasia of the Nervus with Penicillitis. The examination microscopically is not yet completed.*
Case No. 4.

A Case of Syphilitic Insanity passing into General Paralysis.

Dr. J. M.

Admitted December 1895.

Previous History.
There is a distinct history of Syphilis.

The History of the present attack.

Disposition. - Nervous and irritable.

Habits. - Sensual and intemperate.

No previous attacks. No hereditary predisposition.

Causation.

Predisposing - Syphilis and alcoholic excesses.

Exciting - Mental worry connected with his professional work.

Symptoms - Mental - Grandiose ideas, irritability of temper, and hallucinations that he got messages from God.

Physical - Paresis of the left hand. Diminution of the knee reflexes.

The attack is of six weeks' duration.

State on Admission. - He is mentally exalted, says that he gets messages from God, and that nothing is impossible to him; this state of exaltation alternates with attacks of depression. He is excited, talkative, irritable and impulsive, has religious delusions and delusions of suspicion that people outside try to poison him. His memory is good and he can answer questions coherently.

In appearance he is well nourished and of medium height.
and build. Pupils are equal, they react to light and accommodation is normal.

Nervous System. - Motor - There is paresis of the left hand and diminished knee reflexes. No sensory phenomena.

His bodily health is good, Weight 11st. 8lbs.

Course and Progress.

He gradually recovered from these symptoms in six months and was discharged.

He remained well till March 1897 when he was admitted in another attack. In this attack the evidences of mental weakness were more marked.

State on Admission. - He is mentally exalted, has grandiose ideas that he is worth countless sums of money and is able to do everything; there is no trace of depression. He is restless and unsettled, picks up and stuffs his pockets with all sorts of rubbish particularly bright objects. His memory is fairly good, but he is incoherent and sometimes refuses to answer questions. His physical condition is in marked contrast to what it was when he left. He is pale and anaemic and only weighs 9st. 2lbs. Pupils are equal, they react to light and accommodation is normal.

Nervous System - Reflexes are exaggerated, but there is no trace of paresis. His bodily health is greatly lowered but there are no signs of physical disease. Tongue furred and flabby, appetite poor, bowels constipated.
He has varicose veins of old standing in both legs.

**Course and Progress.**

14.3.97. Patient is excited, noisy and irritable; he is constantly interfering with the other patients in his gallery.

21.3.97. This state of excitement and restlessness is telling on his bodily health, he is thinner and does not take food well. He is noisy and restless at night, sleeping only a few hours each night.

Treatment. - Tonics and nutrient diet.

28.3.97. His excitement is more acute and his bowels constipated, O1. Crotonis m2. was administered and since then he has become quieter and takes food well. His grandiose ideas and mental weakness are very marked.

10.4.97. He has become restless again and stupid and impulsive. At night he frequently tears his bedclothes and passes restless nights.

15.4.97. This state of excitement is passing off but he is still restless, talks and laughs to himself continuously. His speech is slurring and indistinct but owing to his mental state it cannot be systematically examined.

6.5.97. He is quieter but is more impulsive.

15.5.97. He has passed into a state of depression is quiet and not so restless, but won't talk.
and sometimes refuses a meal. He exhibits at times a suicidal tendency.

28.5.97. Patient has been very depressed today and has not spoken. During the early part of the night he was restless, got out of bed and tried to overturn his bed, in doing this he injured the dorsol surface of his right foot by fracturing the first Phalanx of his big toe and lacerating the veins. It was treated in the usual way and he was put in opium.

29.5.97. Patient's restlessness continued till early morning when he became quieter and slept a few hours. When seen in the morning he talked more sensibly than he has done since admission. His memory is good, his mentalization is good and there is no defect in his speech.

30.5.97. He is depressed today and refuses to converse.

June. Cellulitis and Suppurative Phlebitis of both legs giving rise to septic infection occurred, and he died on the 18th.

General Considerations.

1st. - a. The primary attack was one of Syphilitic Insanity with recovery. b. Continuance of the alcoholic irritant produced a second attack progressive in character.
5.

2nd. - Primary Attack

The Primary Attack was acute in character and was characterised by the combined presence of motor and mental symptoms. b. The motor signs showed that the brain and spinal cord were affected. c. Gradual recovery without antisyphilitic treatment.

3rd. - Second Attack.

a. The symptoms showed more mental weakness
b. The reflexes are exaggerated.
c. The occurrence of speech symptoms.
d. The temporary remission caused by the shock see note 29.5.97.

*Post Mortem examination could be obtained*
A Case of Syphilitic Insanity of the formative type

Dr. R.T.

Age 30.

Admitted July 1894.

Previous History. - Syphilis contracted in 1892, primary sore in September of that year; secondaries and tertiaries appeared all inside a week some months afterwards. Under treatment by Mercury and Potassium Iodide he got well and remained so till the present attack.

In this attack he was admitted to the Whitworth Hospital under the care of Dr. Nugent who made the following notes:— He complains of pain in the upper sacral region especially towards the left of the spine, with occasional tingling in the left hand and arm, left leg and foot, and left side of the face right up to the centre of the scalp. The pain in the back first appeared in November 1893, remained for a couple of days and then disappeared till December. Since Christmas it has been more or less constant and is worse in the evenings. Though generally fixed the pain sometimes shoots round his abdomen down into the right leg and into the testicles. If he puts his heel roughly on the ground a shock of pain passes through the spot in his back.

State on examination.

There is a tender spot below the level of the crest of the Ilium over the left half of the base of the sacrum, the pain complained of is increased by pressure and extends as far as the spine at the same
level, it is relieved by heat. Knee reflexes are exaggerated, the left markedly so, no knee nor ankle clonus. Sensation is normal. Pupils equal they react to light and accommodation is normal.

After being treated by antisyphilitic remedies the backache and pain disappeared and he left the Hospital on the 9th of March much improved. He was readmitted on April 25th complaining of pain in the head and slight pain in the back. For two or three days he was very somnolent as if he had been overdosing himself with morphia. In addition to the above symptoms there is Ptosis on the left side and when asleep his left eye is slightly open; he has ankle clonus on the right side, the tongue when protruded deviates slightly to the right of the middle line, during sleep the right side of the face twitches occasionally. He complains of pain over the left frontal eminence, has hallucinations of sight and is amnesic at times.

May 3rd. The right foot drags a little in walking. May 8th. Dr. Swanzy examined his eyes Ophthalmoscopically today and found them normal. In the afternoon he had a quasi apoplectiform attack in which he could not speak and was unable to move the right arm and right leg. On being put to bed he developed clonic convulsions on the right side and became semicomatose, and pupils are irregular the right is dilated, knee reflexes are exaggerated, and there is ankle clonus. He could be roused by talking loudly
to him and was able to raise his right hand when asked for it. During the night he had repeated clonic convulsions of the right side.

May 10th. There has been no recurrence of the clonic convulsions, he has dysplegia and incontinence of urine.

May 17th. There have been no twitchings for the last ten days, his mental condition is that of weakness, but he is gradually improving.

June 12th. Patient left the Hospital today greatly improved. He can walk unaided, can dress and feed himself and swallow all right; he has control over the bladder and rectum, but is sometimes unable to command his saliva. His hand writing has improved and his speech is more intelligible, the ankle clonus is still present.

Treatment - Since April 28th 1894 he has been taking the following prescription:

\[
\begin{align*}
\text{Ammun.} & \text{ Zd.} \\
\text{Potas.} & \text{ Zd.} \\
\text{Sod.} & \text{ Zd.} 3i \\
\text{Sul. Ammon.} & \frac{3}{4} \\
\text{Aqua. Chlor.} & \frac{3}{4} \\
\end{align*}
\]

with occasionally a short course of Mercury.

State on Admission.

He is in a state of mental weakness with slight depression, has an apathetic expression and bursts into fits of idiotic laughter from time to time. His memory
is markedly affected but he is coherent and can answer questions.

Nervous System - Motor - There is partial right sided Hemiplegia with motor aphasia and a tendency for food to be retained in the mouth. No sensory phenomena.

His bodily health is good.

He complains of great frontal headache, is somnolent and sleeps a great deal.

Treatment, Potassium Iodide July 50th. There is no change mentally, dose of the Iodide increased to...

August 30th. His mental and bodily conditions are unchanged. From this time under the Iodide treatment he slowly improved, his speech became intelligible and his motor signs passed off. His mental condition is that of mild dementia. He is simple and childlike in his conversation and actions, slow and awkward in his movements and very facile. He became very stout and in this condition was discharged on the 1st of March 1896 to the care of his brother. The subsequent history of this case as described by his brother is that he became progressively demented.
A typical Case of Syphilitic Insanity.

Dr. T.

Admitted September 1895.

Previous History. - An attack of syphilis many years ago.

Disposition. - He has a sanguine temperament and is hard working.

Habits. - Loose. He is given to sexual and alcoholic excesses.

No hereditary predisposition. No previous attacks.

Causation.

Predisposing. - Syphilis and alcoholic excess.

Exciting. - Mental worry.

History of the present attack.

The attack was acute in onset and is of ten days' duration. It first showed itself by exalted ideas, excitement, incoherency and violence towards others.

Physical signs. The presence of muscular tremors with loss of the knee reflexes.

State on admission.

He has various exalted ideas says that he owns hundreds of horses, that all the charitable Institutions in Dublin are run by him and that the Queen is under his power. He is in a state of mental excitement his utterance is aphasic and he is occasionally incoherent. His memory is good, and he can answer most questions put to him.

In appearance he is tall and thin; pupils are equal, they react normally to accommodation, tardily to light.
Muscularity is fair but there is loss of fat over the body.

Nervous system. - Motor. - Muscular tremors of the face and some of the skeletal muscles. Knee reflexes are absent. There are no sensory phenomena.

Circulatory and Respiratory Systems. - Healthy.

Appetite is good, tongue is clean and moist, bowels are regular.

Urine. Acid. sp. gr. 1024. No abnormal constituents.

Height 5ft. 10 ins. Weight 10st.

Bodily health as a whole is reduced.

Notes on the Progress and Course of the Case.

14.9.95. Patient slept well last night and is not so excited. The excess of motor energy shows itself by his degree of talkativeness, the tremor is less marked and he can articulate perfectly many test words.

15.9.95.

He was noisy last night, and slept very little.

This morning he is exalted, excited and violent, says he owns one million pounds of money and is all powerful. During the course of the day he got very depressed and emotional.

16.9.95. He was so noisy and dangerous to himself last night that he required to be removed to a padded room. He tore his nightshirt into shreds and spent the night singing and shouting.

19.9.95. Patient has become quieter and less impulsive. His ideas are still exalted
and his conversation erotic. He is being treated by tonics and nutrient diet with open air exercise. He is quieter and sleeps better at night.

24.9.95. He still has delusions of grandeur, is incoherent and has confusion of ideas. He sleeps well at night.

24.10.95. Patient is slowly improving, is quiet and not so excitable. In his general conversation he is incoherent but when drawn up sharply he can pull himself together and talk coherently. His power of attention and of fixing his ideas is very limited and after talking coherently for a short time he becomes confused in his ideas and again incoherent.

10.11.95. He is now more rational in his conversation and actions but still has occasional relapses in which he talks in a grandiose manner. He is emotional and has attacks of weeping. The motor signs are still present but are not so marked.

26.11.95. Since the last note was entered the motor signs have completely disappeared, his grandiose ideas are not so marked and the delusional tendency is passing off. From this time he slowly improved became clear in his mental processes and recovered from his delusions. In July 1897
he was visited by his friends who saw so much improvement that they insisted upon taking him away although Dr. Rutherford warned them that he would most probably break down. When he left he had improved markedly but there was still mental weakness and an excitable tendency. His bodily health has greatly improved, weight 12st. 21bs.

He remained in an unstable state for two weeks, then relapsed and was readmitted.

State on Admission.

He is mentally exalted has many grandiose ideas, is excited, restless, confused in his ideas, and incoherent. His memory is now affected and he can only answer a question imperfectly.

In appearance he is healthy looking and well nourished. Pupils are equal, they react to light and accommodation is normal.

Nervous System. - Motor - Co-ordination is affected, he is ataxic in his gait and cannot co-ordinate to write. His speech is paretic, being slurring and indistinct. The knee reflexes are absent, No sensory phenomena.

Notes on the course and Progress.

12.8.96. He is restless, excited sleepless at nights and inclined to injure himself.

15.8.96. He continues in the above condition and is being treated by tonics and nutrient diet.

1.9.96. Patient is improving, he is quieter not so excitable and less incoherent. He is childish in his
and has marked mental weakness. The motor signs are unchanged. He has a good appetite and sleeps well.

30.9.96. He is still improving, has more initiative talks rationally and takes a greater interest in his personal appearance. His speech has improved and only shows a slight defect in articulation, the other motor signs are stationary.

12.10.96. His motor signs are improving he is more co-ordinate in his gait and can write fairly well.

From this time he slowly improved, the mental weakness and delusional tendency passed away, his memory improved and he talks coherently. The power of co-ordination in speech, walking and writing returned. In four months he could co-ordinate to walk and write perfectly but was longer in his speech improvement.

13.4.97. His friends have removed him on probation

He is more stable than when they last removed him but is still excitable and when excited becomes aphasic.

16.10.97. His recovery is now complete, and he has been certified by Sir Thornley Stoker to be fit for Medical practice.

General Considerations.

First, This case was diagnosed as General Paralysis with remissions.

Second, There were no evidences of syphilis and no history could be obtained at the time.
Third, It showed a decided tendency towards spontaneous cure and recovered without antisyphilitic treatment.

Fourth, it is a typical case of syphilitic insanity with mental exaltation.
A Case of Syphilitic Insanity progressive in Character occurring in a female.

Mrs. K. Age 36.
Admitted January 1897.

Previous History.

There is a distinct history of Syphilis. No previous attacks. Hereditary predisposition through the collateral line, a paternal uncle is insane.

History of the present attack.

Her husband states that her illness first showed itself by an attack of "Cleaning and putting things right at home, getting rooms repapered etc." In a few weeks it passed into acute mania with religious delusions. She was sent to Sunderland Asylum from which she was transferred on the above date; the duration of the attack is 18 months. Dr. Elkins wrote when sending her "This lady has had the signs and symptoms of General Paralysis which is so common in this county. While resident here her symptoms were mental exaltation with delusions of grandeur and persecution, she was excited, restless, violent and incoherent.

State on Admission.

She shows great mental exaltation, says she is Lady K., that before the world began she existed; she is excited, restless, and emotional, has marked association of ideas and is occasionally incoherent. Memory is good and she can answer questions rationally and correctly.
In appearance she is a small thin nervous woman. Pupils are irregular, the right being larger than the left; the left does not react to light, the right only slightly, accommodation is normal.

Nervous System - Motor - She has general muscular weakness but co-ordinates well, the knee reflexes are absent.

Circulatory and Respiratory Systems Normal.

Urine Acid. sp. gr. 1012. No albumen.

Her bodily condition on the whole is reduced.

Notes on the Progress and Course.

15.2.97. She is restless and talkative, speech is rapid but shows no defective articulation. She is incoherent and associates long strings of words associated by similarity or contiguity e.g. "Harrow-on-the Hill, Plough and Harrow, Arrowroot,;" "Worcester, Worcester Sauce, Yorkshire and Durham".

Treatment Potassium Iodide

20.2.97. Patient is emotional and childish in her actions, but is quieter and not so incoherent.

24.2.97. She has become depressed, has developed delusions that her food is poisoned and full of acid and requires to be fed by the stomach tube. Potassium Iodide stopped.

15.3.97. This state of depression is increasing, she is now in a stuporose condition and very inactive; she requires to be fed by a
spoon, her lips are covered with sordes and her alimentary system markedly disturbed.

1.5.97. The temperature rises slightly at night, she is stupid, confused and cannot answer questions, suffers from incontinence of Urine.

10.5.97. The stuporose condition is passing off and all she shows is muscular weakness. Potassium Iodide resumed.

1.7.97. Patient is improving, she is quieter, more sensible and will answer questions. Her mental state is that of weakness, there is slight hesitation in her speech but no syllable stumbling.

22.9.97. This morning she spoke to the night nurse at 4 a.m. and was evidently in her usual state; at 6 a.m. she had a convulsive seizure. On examination the temperature was 100.6° and a congestive attack was diagnosed. She had fourteen seizures between six and twelve noon, and two more before eight p.m. The seizures begin with conjugate deviation of the eyes to the right side, the head is also turned to the right and the face muscles drawn over to that side. The right arm then becomes extended in tonic contraction and as the rigidity passes to the lower limbs the clonic contraction begins in the face and uncon-
Name: Mrs. Reynolds
Age: 67
Disease: Congestive attack
Result:

<table>
<thead>
<tr>
<th>Date</th>
<th>22nd</th>
<th>23rd</th>
<th>24th</th>
<th>25th</th>
<th>26th</th>
<th>27th</th>
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<tr>
<td>Time</td>
<td>AM</td>
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<td>P.M.</td>
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</tbody>
</table>

Temperature (Fahrenheit):

- 106°
- 105°
- 104°
- 103°
- 102°
- 101°
- 100°
- 99°
- 98°

Pulse: 105, 115, 120, 110, 105, 100, 110, 115
Resp.: 18, 16, 15, 14, 13, 12, 15, 17
Urine: + + + + + + + +
Bowel: 0 0 0 0 0 0 0 0

Weigh drawn 16
Incas given
sciousness is complete. Urine is retained or passed at the height of the fit. (See Chart) Pupils are small and equal. She requires to be fed.

23.9.97. Patient is still unconscious, had one fit this morning in which the Urine was retained. The pupils are unequal, the left is rapidly contracting while the right remains moderate.

24.9.97. She became semi-conscious at twelve p.m. and was able to take some fluid nourishment.

25.9.97. Consciousness has now returned and she is able to take sufficient nourishment. She is restless and confused, her speech is paretic, there is repetition of syllables of words, twitchings of the muscles of expression and articulation. Impressions are not effaced for many minutes and she is correspondingly slow in answering questions. She has slight association of ideas but not so marked as on admission.

26.9.97. This confusion is gradually clearing away. The Iodide which has been stopped for the last four days is being continued.

27.9.97. As the mental confusion clears away the increase of mental weakness is very marked; her speech is more like that of a General Paralytic.

1.12.97. Mental weakness is increasing, she is inactive and has no initiative; her speech
is very tremulous, bodily health is improving.

10.12.97. She had a slight congestive attack today. in which she had four convulsive seizures between 8 and 10 a.m. Temperature 99; Consciousness did not return till 4 p.m. Potassium Iodide discontinued.

12.12.97. She is becoming more weakminded is stupid refuses to talk and very dirty in her habits. Her bodily condition is failing.


30.12.97. This drug has cleared up her mental condition and improved her bodily health. The progress of the Case from this date is towards dementia, she is restless, unable to recognise her friends and dirty in her habits. Her motor signs are stationary, they are paresis of her muscular system and paretic speech.
A Case of Syphilitic Insanity with symptoms of Mental Depression.

Mr. D. Age 41.

Previous History.

There is a distinct history of syphilis occurring some years' ago.

Disposition.

He is of the phlegmatic temperament.

Habits.

Sexual excess some years ago, temperate as regards alcohol.

Previous attack.

One similar attack eighteen months ago from which he recovered in four months. No hereditary predisposition.

Causation - Predisposing - Syphilis.

Exciting. Mental worry about business affairs.

Symptoms. - The mental symptoms were gradual in onset and I could not get from the friends any history of a premonitory stage. He became stupid at business, confused in his ideas, and suffered from an insane fear of impending evil; as his condition progressed he became incoherent and talked continually to himself. He has lucid intervals of short duration and is very variable.

Physical - Loss of motor power and general muscular weakness.

State on Admission. - He resembles very closely the condition of melancholia attonita, stares about him
2.

in a vacant manner and has marked mental weakness. He has no initiative and is sluggish in all his actions. He is a tall, well built, and well nourished man. Pupils equal, they react to light and accommodation is normal.

**Nervous System** - His motor power is weakened and he has a paretic ataxic gait; there are fibrillar twitchings over the surface of the tongue and nictitation of the eyelids. The knee reflexes are absent.

No sensory phenomena.

His bodily health is good, and the only thing to be noted is that there is a macular pigment eruption over the upper part of the back.

**Course and Progress.**

Patient was treated by

He stands the Iodide well and presents no signs of Iodism.

25.3.98. He continues in this state of paralysis of energy, is apathetic during the day and sleepless at night; he refuses to talk and frequently speaks to himself.

25.4.98. Patient is slowly improving, the motor symptoms are passing away rapidly but the mental improvement is very gradual.

I have no general considerations to record on this type with mental depression. This is the only case I have seen.
In mental Work there is so much that is possible beyond our present knowledge of the therapeutics of the nervous system that one hails with satisfaction a disease which in many cases yields to energetic and prompt medical treatment.

Change in structure whether it be a gross recognisable change or a more subtle dynamical alteration brings corresponding change in function. In the nervous system a pathological change is of the highest importance because of that perfect connection which causes co-ordinate action. This fact is constantly brought before us perhaps more prominently in gross changes than in dynamical alteration because we are able to trace a pathological basis and connection and can follow centripetally or centrifugally from the seat of the lesion the changes known as nervous degeneration. Still to the eye of the physician one of whose duties it is to observe symptoms the evidence of alteration comes in abundance. In studying this disease we have to do with both classes, but in this paper more especially and more importantly with disease due to dynamical alteration.

When once a process of disease produces a gross change in the nervous system, owing to the intimate correlation of its component parts and its sympathetic and sensitive structure, it necessarily is progressive and spreads to a greater or less degree. In some cases we can aid the vis medicatrix naturae by therapeutic agents, but these sink into
insignificance before the vast number in which at present we are practically helpless. In apoplexy and other vascular changes we may by appropriate means limit the damage and so modify the change, but when once a slow progressive disease establishes itself we feel powerless for the most part and have to play the part of passive spectators in its onward progress, no matter how anxious and interested we may be to arrest its course.

In studying the structure of the nervous system from the standpoint of a physician one finds no difficulty in coming to the conclusion that the highly organised and delicate structures known as nerve cells form its endall, the importance of the other structures lies in the fact that they are necessary for the growth, development and healthy action of these cells.

Changes in function are produced by alteration in their structure but the same changes may be produced by alterations De Novo in the nerve cells the other structures for the most part and for a time being so far as we can tell healthy. One very important cause of this last condition is the action of toxins.

Of late years much has been written on toxic Insanity, but there is ample room for further observation and research both in the field of symptomatology aiding diagnosis and therapy treatment. My interest has been awakened and stimulated greatly by
cases I have observed and by records I have had the opportunity of examining, most of which have come under the personal care and treatment of Dr. Rutherford. No explanation or apology is necessary for the study of syphilitic insanity; Syphilis takes its place in the first rank as a producer of toxins.

As regards the aetiology of syphilis there is much difference of opinion on minor points but there seems to be a degree of certainty in the supposition that it is micro-organismal.

Diseases due to micro-organisms owe much of their virulence to the chemical changes which they undergo in the tissues resulting in the production of toxins. Certain specific examples have forced their positions as nerve poisons e.g. diphtheria, influenza, beriberi, etc. and foremost in this group we must place Syphilis. The toxin (or toxines) of syphilis is certainly a very uncertain creditor, in some cases its effects are slight, in others it exacts to the full. It may affect nervous tissue in any of its stages, primary, secondary or tertiary. One observer suggested that there was a different toxin for each stage of Syphilis. Be that as it may the entity of Syphilis in any of its stages is capable of acting as a nerve poison.

The study of the phenomena produced by the introduction of toxines from without is very helpful in shaping and defining our ideas concerning this question of toxic insanity. These toxines for the
most part come under the designation of drugs, alcohol, opium, cocaine, chloral.

They vary greatly in their individual action, and in their action in individual cases but on the whole, the symptoms produced resemble very closely those of toxines formed within the body. The evidences produced by stopping the entrance of these toxines into the system follow closely the course of events in a case where we combat successfully the development and action of toxines formed within, it may be by the action of specific drugs or the administration of an anti-toxine.

In the study of disease the ideal is to proceed from a pathological basis, but in nervous disorders where mental symptoms predominate or are the sole manifestations, our endeavour should be to prevent that basis being established. As sure as change of function means dynamical alteration so sure does continuance of that alteration mean parenchymatous destruction and consequent impairment, Mental or Motor. That dynamical alteration in syphilitic insanity, can be arrested and progress checked, is proved by many cases as effectually as the other fact is proved viz. that it may go on to permanent damage.

Where is in syphilis a strong tendency for the Vis Medicatrix Naturae to assert itself and produce a spontaneous cure; this fact forms a strong adjuvant to medical treatment. In few of the cases however
do we find Syphilis the only toxine present, and generally we have to deal with both syphilis and alcohol. This combination is a much more serious matter as it is in all cases where we have syphilis plus another toxine. The combined action seems to hasten and intensify the dynamical alteration and to increase the tendency to permanent change. Cases I have here recorded and records I have examined lead me to state that without doubt the combination of syphilis and alcohol can produce that progressive change known as General Paralysis of the Insane. In this connection I would mention that combinations of toxines introduced from without especially if alcohol be part, produce more marked symptoms and effects which last longer than those produced when a single toxine is in action.

Although I do not intend to discuss fully the pathology a short statement is necessary to make my points clear.

The changes found are, a, formative, b, degenerative in character, and there are various combinations. The term gummata has been applied to the formative changes where there is an infiltration of tissue by round cells. These new formations take their origin from mesoblastic tissue and generally occur in connection with the Pia Mater. Sometimes the process spreads from the pia covering the convolutions along the lines of the vessels into the superficial cortex. When in this position the
nerve cells proper become degenerated secondarily for the most part by the effects of pressure or by the occlusion of their blood vessels. The formative changes in the vessels may be limited to the inner coat or to the outer or there may be a combination.

Before proceeding to the consideration of dynamical alteration and degeneration in syphilis a general consideration of the microscopic anatomy, physiology and pathology of a nerve cell is necessary. A nerve cell consists of a mass of highly organised Protoplasm surrounded by an envelope. This protoplasm is differentiated into three elements, firstly, an achromatic reticular part called the spongioplasm, secondly, an achromatic hyaline ground substance called the hyaloplasm, thirdly, the Chromophile element which is embedded in the hyaloplasm between the meshes of the reticulum. Where the meshes of the reticulum intersect there are nodal swellings of a chromatic substance.

Physiology.

The latest researches on the physiology point towards a confirmation of the following views viz. first - that the chromatophile element is nutritive and in addition modifies the afferent and efferent currents of the cell. Secondly that the achromatic reticulum acts purely as a conducting mechanism being in direct continuity with the protoplasmic processes and the axis cylinder.

The chromatophile element is constantly undergoing changes of two natures, firstly, a process of building up or rest, secondly, a process of breaking.
down or activity. This alternating character led M. Marinesco to call it the Kinetoplasm and to lay special stress on the point that it is a producer of mechanical energy. He also calls the achromatic reticulum the Trophoplasm because it has been shown that if it is destroyed the axis cylinder will degenerate.

The nutrition of the cells is provided for in great measure by the protoplasmic processes which extend over a large area and are constantly absorbing and excreting. Most neurologists now admit that these processes are also capable of acting as conductors of Nervous Impulses. They collect and conduct the cellulipetal stimuli while the axis cylinder conducts the cellulifugal energy.

Pathology

The pathology has been carefully and extensively described by M. Marinesco in his masterly paper on the subject. He studied it by means of a, experiments on animals, b, observation of the effects of toxic and infective processes in man. Lesions of nerve cells are of two kinds, firstly, primary where there is distinct action on the nerve cells, secondly, secondary where there is pressure on the cells, e.g. tumour growth or destruction of the conducting structures. The appearances of reaction within the cell as demonstrated by the microscope are identical in both classes. There are three stages, firstly, reaction, secondly, degeneration, thirdly, a stage where there are two possibilities, a, recovery, b,
atrophy.

The Stage of Reaction.

In the case of a motor cell the reaction is shown by a disintegrative change in the chromophile substance called Chromatolysis. It begins as a rule near the axis cylinder and causes alteration in the appearance of the cell under the microscope. The achromatic reticulum is unaffected but owing to the disappearance of the chromophile particles it stands out more clearly. The nucleus is centrally placed and the shape of the cell is unaltered.

The stage of Degeneration.

This consists in an advance of the Chromatolytic process which spreads from the periphery inwards; the achromatic reticulum and the cell processes are now affected, the first named loses its normal striation and the cell processes disappear.

When this stage is reached you get two possibilities, a, atrophy, if the damage done is irreparable, b, recovery, where the damage is reparable. In recovery the cell gradually returns to normal, the chromophile elements first making their reappearance.

The microscopic detail of the change whether it is a peripheral, perinuclear, concentric or diffuse chromatolysis varies with the nature of the virus and the form of the cell. In some diseases a change occurs in the achromatic reticulum disintegrative or coagulative in its nature and is a condition of
of great gravity as regards the life of the cell. Both conditions i.e. chromatolysis and achromatolysis if progressive involve the death of the cell,

I now pass to consider briefly the relations of the Nucleus to the physiology and pathology of the cell. This body is formed of a reticular network with achromatic convoluted filament embedded in its substance and is placed like an islet in the cell. Owing to its intimate connection with the Achromatic Reticulum it is highly probable that currents passing through the cell set up changes in the Nuclear Plasm and that it in its turn modifies these currents. This theory supported by Physiological and pathological observations has been put forward as an explanation of the Psychic processes. Certain of these facts have a bearing on this question of cell degeneration and require a short study. I may describe some of them under the heading "The Specialization of the Cell". The state of our present knowledge does not entitle us to definitize with any degree of certainty but clinical facts combined with pathological appearances enable us to form hypotheses. It is well known that when a part of the Parenchyma of the brain becomes destroyed it is not reproduced by division of the healthy cells; the loss of tissue is largely compensated for by a hypertrophy of the Neuroglia and connective tissue. This is proved by the microscopic appearances in General Paralysis and in cases where the process has
been acute and has caused destruction of cells. In these cases we find that the number of cells is diminished, that many of the cells are atrophied and that there is a hyperplasia of the Neuroglia and connective tissues. This we find is the general law governing all specialized tissue, there is no replacement of destroyed cells. When we consider the process of disease in a tissue which is not specialized e.g. the various Connective Tissues we find that the cells not affected by the disease reproduce and multiply to form a tissue similar to that destroyed. The conclusion we draw is that when there is cell specialization the vegetative function of reproduction is replaced by the special function which the cells take on, surely we have a pre-eminent right to say that this is true of the highly specialized tissue which forms the nervous system. This is the conclusion M. Marinesco has come to about the brain cell. His idea being that in acquiring its special function the nerve cell has lost its vegetative faculty of reproduction.

The study of the Nucleus and the attempt to definitize its functions opens up a large field of controversy. It seems to me however very probable that it is concerned with the storage of memories. The latest researches in Physiology teach us that the cell structure apart from the Nucleus is highly unstable and is continually undergoing one of two chemical changes. I do not think it likely, that
that which requires as an essential that it does not alter, could be stored in that unstable part. The most stable part of the nerve cell so far as we know is the nucleus and in this we find a primary ground for the supposition that memories are here stored. A comparative examination of cells in motor and sensory areas proves that the nucleus is larger in the sensory cells. Now these sensory cells are the ones which have chiefly to do with the storage of memories, and in all probability the cell substance has to do with the production of nervous energy while the memories are stored in the Nucleus.

Clinical Pathology.

In studying the clinical pathology I have divided the cases into (a) formative types, (b) degenerative types,

One of the outstanding features of syphilis is its Polymorphism and accordingly we get varied lesions in the nervous system. The most important are (a) the gumma growing from the membranes, (b) the arteritic vessel changes. The gumma which is the one and only formative change produces well marked signs and symptoms. Case. No. 5 is inclusive in that both the brain and spinal cord were affected; it exemplifies in its course the law of surface lesions showing that they cause marked irritation as a primary condition. The sensory manifestation is pain at the site of the lesion, increased on pressure, and having nocturnal exacerbations. The motor signs depend
upon the site and the structures implicated. As in all gross brain lesions we may get from time to time seizures known as Congestive Attacks or Quasi-apoplectic seizures, so we find them occurring here. The notes given in the case describe some of the characters of such an attack, (a) the partial loss of consciousness, (b) the clonic convulsions (c) the paresis slowly passing off (d) the increase of mental weakness produced. The term "Congestive attack" implies the presence of hyperaemia, but in all probability this is secondary and due to some initial change in the nerve cells.

**Degenerative Types.**

One of the most important actions of the syphilitic poison is the production of a slow form of nervous degeneration, this fact being now given the place in the causation of nervous degeneration it rightly deserves. In all probability it acts not as a direct cause but as a powerful predisposing factor. (Its action is unknown and how in combination with other causes it can light up an active change is also beyond our knowledge, but that it does create such a change is proved by clinical cases. There are two conditions produced which we must distinguish (a) The slow degeneration, (b) The active change; they both depend upon the presence of the syphilitic virus but in the latter there is an evident change in the nerve cell.
The slow degeneration.

Edinger has put forward a theory to explain the various sites of this lesion. He says "That those tracts in the cord which, being constantly in use, (Muscular sense, equilibrium, motion) undergo most waste and repair, are more readily affected by anything that tends to interfere with such repair - e.g. a syphilitic toxin. Their frequent use will, with such interference, lead to exhaustion and decay". We find that the tracts affected are those, viz. the ascending tracts in the posterior columns and the descending motor tracts and that it gives rise to the meta syphilitic cases.

In this class two types are recognised, (a) the ataxic type, (b) the spastic type, corresponding to ascending and descending degenerations. In case No. 2 which is an example of the ataxic type, the degeneration in the cord was of three years' duration when the attack of insanity occurred. Case No. 3 represents the spastic type and in addition shows degeneration of the optic nerves of at least seven years' duration before the attack of insanity. I no have had the opportunity of recording the duration of the spastic condition in this case because it had not been recognised till admission into the Institution.

The active change.

To define its pathology is a more difficult task and in recording my opinion I have to state that it is a hypothesis formed from a study of allied lesions,
M. Marinesco's work on the pathology of nerve cells and clinical observations. These cases often recover from this acute condition as evidenced by cases 2, 4, and 6, and if they are progressive rarely die till an advanced stage of degeneration has been reached. This fact precludes the possibility of an examination of the early stage of the cell change and drives us to experiments for an explanation. The change known as chromatolysis occurs in acute insanity e.g. mania, also in acute conditions produced by poisons as proved by Marinesco; I would add that it is a likely theory that it is the initial change which develops into the advanced changes (Pigmentary, Granular) found in progressive degeneration of nerve cells. The clinical signs of excitement, restlessness, irritability, loss of control and delusions, acute and idiopathic in their origin strike us markedly as evidence of cell alteration. Some syphilitic cases prove that this alteration can be arrested in its initial stage and recovery follow, others with certain determining factors show that it may become progressive and develop into a general progressive paralysis. Marinesco has proved that alcohol tetanus and rabies which are acute irritants produce this change, and in fact all his observations go to prove that the cause requires to be an active one. This active cause in syphilitic cases is the result of combined action, addition of other factors being required. I have enumerated them in my cases as being alcohol, brain
exhaustion, sexual excess and mental worry. None of these in any one case can be eliminated and the question comes to be is it a single one or a combination which determines the change. I think it is a combination but that the presence of syphilis produces evidences which cannot be attributed to any of the others and which are not found unless it is present. In conclusion I shall state the points in favour of this hypothesis.

Firstly, the experimental proof that the introduction from without of toxines acute in their action produces this change.

Secondly, the fact that it has been found in cases who died of acute insanity, preparations from which cases I have examined.

Thirdly, the fact that syphilis produces the toxin and in combination with other factors the acute change.

Fourthly, the clinical signs mental and motor showing that there is cell alteration.

Fifthly, the recovery seen in certain cases proving that in some the change is remediable.

In conclusion the opinions I have tried to substantiate are:

First, that the nerve cell change is the primary cause of the mental and motor manifestations.
Dynamical alteration I define as any pathological state of the nerve cell which permits of recovery. When that stage of recovery is impossible and you get
progressive degeneration and atrophy then it is no longer dynamical alteration but a gross change. Second, (a) that this change is produced by the syphilitic toxin acting in combination with other factors, (b) that the syphilitic toxin modifies the change in a particular way.

Third, that in many cases there is a tendency to spontaneous cure and that in these cases the administration of Potassium Iodide is followed by beneficial results.

Fourth, that other cases, especially where alcohol is a factor show a progressive tendency from the outset which does not react beneficially to antisyphilitic treatment.

Clinical considerations.

Having discussed the pathology I next pass to the clinical consideration of syphilitic insanity. Doubt has been expressed by some authorities (e.g. Dr. Savage) as to the advisability of using this term. They say that there is no special form of insanity produced by syphilis and bring forward cases to prove that the insanity is really, either a form of General Paralysis or, that the Syphilis is only a coincidence of the insanity.

In the study of disease we have various comprehensive terms set before us, two of which I take as examples, viz. Paralysis and Insanity representing pathological states of motor and mental
17.

processes. Clinically we meet with various types of each term which makes a classification necessary and we may take as a basis the pathological cause of the predominating clinical features. This enables us to call certain types postdiphtheritic Paralysis and certain other types spastic Paralysis. In the description of insanity we call certain types Delusional Insanity, other types "The Insanity of Adolescence", "the Insanity of Pregnancy". These last two types may and do often have delusions, but because the cause is supposed to be the fact of the patient being adolescent or the occurrence of pregnancy we classify them as above.

In syphilis we find that many cases show a degenerative process, which process also occurs in certain types of Alcoholic Insanity and in General Paralysis. By certain signs and by therapeutic treatment we are able to say that the cause of the Insanity is Syphilis and accordingly it is necessary for a clinical distinction to say that the case is one of syphilitic insanity.

With this explanation I pass to the etiology. Heredity.

In many of the cases I find a distinct temperament present called the neurotic temperament. The person shows a predominence of nervous energy, he is intellectual, cultured, and fond of any pleasure which requires mental energy and activity. The nervous system, in his economy, is the one where the pressure
is always high and where a break down is most liable to occur if the process of repair is in any way interfered with. His nervous system is highly sensitive and reacts in a marked manner to any outside stimulus. This same constitution is very common in General Paralytics and a study of the two diseases makes it very probable that there is in people who have this temperament a diathesis favouring nervous degeneration, if the required causes come into action. Direct heredity where there is a distinct predisposition to insanity and where there are actual cases of insanity either in the immediate family or in the collateral branches does not seem to play so important a part. I have seen eight cases where there was a very distinct history of syphilis but the condition produced was so modified that I could only say the syphilis acted as a predisposing factor and might increase the tendency to insanity. They closely resemble the cases described by Dr. Clouston under the delusional form and do not show any motor signs.

**Symptomatology.**

This disease is one which admits of definition and may be defined as a degenerative disease of the nervous system characterised by mental symptoms with motor accompaniments. In every case there are motor accompaniments and I do not consider that without them the case can be included in this form. The mental symptoms are very varied in character and seem to depend upon the temperament of the patient;
we find cases with exaltation and others with mental depression.

Cases with exaltation.

These cases present the symptoms and the evidences of mania and the condition might well be called syphilitic mania. The premonitory stage is short in duration and in the cases I have seen varies from ten to twenty-one days, it is marked by change in manner, irritability, eccentric acts, restlessness and Insomnia. In some cases it is so slight that the friends do not notice it at the time; it varies greatly in the intensity of its manifestations.

The stage of invasion is acute in its onset and characterised by mental exaltation, delusions of grandeur and, in some cases in addition, delusions of suspicion and persecution. This mental manifestation is described by many authorities (Savage and Mickle) as a rare condition and some describe a difference between its delusions of grandeur and those of general paralysis. In the cases I have seen it was not so, and Dr. Rutherford agrees with me, great difficulty was experienced in diagnosing these cases from General Paralysis and it was not from a study of their delusions that any difference could be found. The grandiose ideas were very extravagant and varied, they showed marked perversion of mental processes and seemed to be determined by the surroundings and bent of the man.
Quite a secondary part was played by the delusions of suspicion and persecution, they merely corroborated the fact that they are commonly found in toxic processes e.g. the insanities of alcohol, morphia, cocaine etc.

The other mental manifestations occur in ordinary cases of mania and are not peculiar to this disease, nor do they present any particularities. Four points, however, are worthy of special notice, first, the sleeplessness, second, the mental weakness, third, the variability of the mental condition, fourth, the occurrence of remissions.

Sleeplessness is generally very marked especially in the early stages, it should be actively treated from the outset. The active change in the nerve cells with the secondary congestion produced is most probably the cause.

The mental weakness is marked in every case and governs the objective manifestation of impulse. Impulse in these cases is not an organised one and generally what the patient does is to threaten much but do little. The mental element of the mental-motor act is strong but the motor is weak. I have not seen one case where it was a suicidal impulse. Two interesting points may be mentioned in this connection, (a) in simple acute alcoholic mania suicidal impulse is common, (b) in this disease where alcohol frequently acts as a causal factor we do not get it. Two explanations may be adduced,
First, the syphilitic factor may counteract the tendency, second, it may be due to the paretic motor condition found.

The Variability of the mental condition is a marked feature and is helpful I think in making a diagnosis. It varies from a passing instability to a marked alternation. I have seen a patient (Case No. 6) when talking about his grandiose delusions suddenly become depressed: he developed an insane fear of impending evil and in tears prayed God to protect him. In a few minutes this had passed off and he returned to his exalted state. As a rule, however, what we find is that a period of excitement lasting for days or weeks is followed by a period of depression and an alternation goes on.

Motor Signs.

They are invariably present and show a paresis of motion and a diminution of reflex excitability. Diminution of Kinetic power is a marked contrast to the active mental state and is not what we would expect to find.

The actual conditions I found were:-

First, Paresis, - Local or general.

Second, Paretic inco-ordination chiefly limited to the lower but sometimes affecting the upper extremities.

Third, Diminution or absence of the knee reflexes.

The lesions found in cases No. 3 and No. 5. explain the exagerated reflexes. An interesting point
and one I have already emphasized is that in case No. 4. the reflexes became exaggerated in the second attack. Sensory disturbances were conspicuous by their absence except in case No. 2. whose spinal condition accounted for them.

Pupil Changes.

Where there was dynamical alteration the pupils were equal, they reacted to light and accommodation was normal. Irregular pupils with irregularity or absence of reflex contraction to light and accommodation I found invariably a sign of a localising condition or of progressive degeneration.

Differential Diagnosis

There are three conditions which may be confused, first, General Paralysis, second, Acute Alcoholic Mania, third, Syphilitic Insanity, (The type with dynamical alteration)

The differentiation from General Paralysis is in many cases impossible for some considerable time. A consideration of the course of the case with the signs and symptoms I have described and the results of antisyphilitic treatment will generally within six months' time make a diagnosis possible. The presence of congestive attacks is not diagnostic of general paralysis. I have studied the records of two cases in this Institution who had frequent congestive attacks for the first four months of their illness and yet who recovered without antisyphilitic treatment. These cases resembled very closely in
their manifestations case No. 6.

In Acute Alcoholic Mania you get marked hallucinations of hearing and sight, and the process generally clears up in a month's time.

**Prognosis.**

This is very doubtful and these cases are always grave ones. It depends upon the developments in the course of the case and the result of antisyphilitic treatment.

**Treatment.**

Of the various antisyphilitic remedies Potassium Iodide is the most useful and gives the most successful results in these cases. I begin with doses of \( \frac{1}{4} \) three times a day and increase or diminish this according to the developments of the case. It is probably the best plan to alternate this treatment with tonics, every third week I stop the Iodide and substituted Eastons Syrup in \( \frac{3}{4} \) doses. There is still one important point, the bodily weight and condition should always be maintained by nutrient diet, Cod liver oil, malt extract etc. The cases that lost weight in spite of nutrient diet etc. invariably progress into Paralytic degeneration.
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