Thesis

for the degree of M.D.

Subject — cases of Epilepsy,
with remarks

by

Peter Maclean M.B., & C.M.,
(Cecil place) Paisley Road. W.
Glasgow.

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Report of a case of Epilepsy of 19 Years' Duration, With Remarks on the Causation Symptoms and "treatment."

(It may be remarked at this stage, that the unfortunate patient whose case we are about to report is a brother to the writer, consequently, we had special facilities for observation and inquiry afforded us, from the commencement of the illness up to the present time.)

I. Present condition of the patient J. Maclean, merchant, aged 36, unmarried, and residing at Dervaig, Mull, Argyllshire. The patient suffers from severe attacks of convulsive fits, which occur with more or less irregularity, but usually at

intervals of a week, a month, and two or three months. These attacks occur usually in the morning, when the patient is in the act of getting out of bed, or within an hour or two afterwards. In the intival, and more especially for a day or two after a paroxysm, he is troubled with sudden and momentary turns of absentmindedness, which last for a few seconds only. During these short attacks, the intellectual faculties are completely in abeyance and his mind is entirely a blank. Sometimes as many as thirty of these take place in the one day. There is permanent dislocation of the left shoulder; the head of the humerus is displaced downwards and inwards into the axilla; this however occasions but little inconvenience

He complains of frequent and difficult micturition, demanding great effort in his part to empty his bladder. This symptom is aggravated and becomes painful in cold weather amounting at times to painful retention of urine.
The patient suffers frequently from headaches of a dull aching character and generally situated in the frontal region. The pain is not continuous, it is often present prior to a fit, and never absent for a day or two after a paroxysm. The tongue is coated, and there is a bad taste in the mouth, and he often complains of an oppression in the epigastrium after eating. The bowels are usually confined and this is one of the chief complaints made by the patient.

The appetite varies, and is sometimes very capricious; while the patient at times eats sparingly, at others, he has a voracious and ravenous appetite. Nervous tremors are noticeable in the muscles, especially in the arms, and are sometimes very annoying.
Coldness of the extremities is a constant trouble and annoyance to him, and even in Summer weather it causes him much discomfort.
He complains of mental confusion and loss of memory for recent events; but he has a wonderful power of recalling to mind occurrences long since passed
There is something peculiar in the patients expression which is very difficult to describe, but which is distinct evidence that the

cerebral functions are more or less deranged. He looks dull and stupid, his intellect is clouded, his mind is confused, and there is a marked wildness in the expression of his eye. "He has difficulty in grasping any new idea, and in applying his mind continuously to any course of laborious thought or investigation. He is headstrong and obstinate and determined for the time being in what he wills but changing his will continually." There is dustiness of the skin of the face sometimes observed, particularly about the eyes, this becomes more apparent at the approach of a paroxysm, when the interval has been prolonged. The patient is of medium height, stout-built, and muscular, and his general

health appears to be fairly good. He has always lived a very careful life, has been chaste, temperate, and a non-smoker. His business demands a certain amount of physical and mental exercise, but always within the limits of overexertion; besides he never misses his morning and evening walks, and occasionally he does a little farmwork. After careful inquiry and watchfulness, we are satisfied, that the patient never abused the sexual function

His heart beats 60 in the minute, and the pulse is regular; but small and weak. Respiration and the heart sounds are both normal. He sleeps well and wakes in the morning refreshed. His urine is scanty, but contains no albumen.

There is no tender or painful spot in any part of the head, or along the spine, nor paralysis of any part or organ of his body.
The skin and tendon reflex are unimpaired, and the general sensibility of the skin and mucous membranes are the same as in the normal condition.
The patient shows great anxiety to conceal his trouble from any person outside the members of his own family, and he harbours the idea, that even his most intimate friends are ignorant of his trouble.
If he is for any length of time free from the fits, he becomes very hopeful and even daring; he would unhesitatingly expose himself in dangerous situations, considering it unnecessary on his part to take

any special precaution, and he even would at this time, ignore the influence and watchfulness of his friends. In fact, he never seems to have realized fully the awful uncertainty that is connected with his trouble, nor the fearful liveliness that might result from careless exposure of himself in dangerous situations. These with other peculiar traits in his character, are a source of greater anxiety to his friends than the more palpable symptoms of the disease. He has become much resigned to his horrible malady, and he appears to bear up wonderfully with his present pitiable condition

II

Family history

Paternal relations

The patient's great grandfather and grandmother died at the advanced ages 84. and 89. years respectively. The cause of death is unknown in both cases. The former is reported to have been suffering from an affection of the heart for some time previous to his death, and the latter to have died chiefly from old age.

His grandfather died at the age of 84. of Bronchitis. This is said to have troubled him for a considerable time previous to his death. His grandmother died at the age of 95. of pure senile decay, she had all her lifetime enjoyed excellent health.

The patient has four paternal uncles;

two of whom are still living.

(1) J. — died at the age of 51, of Kidney disease. He left three sons, two of whom are since dead; One died at the age of 41. of "Cerebral haemorr-hage"; the other died at the age of 37 of "Aortic aneurism". Both had been healthy previous to their last illness, but of very intemperate habits. The remaining one is still living; but suffers from heart disease.

(2) P. — died at the age of 45; but the cause of death is unknown. It is reported, that he was for a short period an inmate in a Lunatic Asylum. This is said to have been brought on by family troubles and disappointment in business. He was Married, and left two sons, both of whom are living and in good health.

(3) D— is living, married, and never had a day's illness; but of very intemperate habits. She has two sons and two daughters, all living and enjoying the best of health.

(4) N— is living, married, and had always enjoyed good health; he is very temperate and abstemious in his habits. She has seven daughters and two sons all living and enjoying good health.

The patient has three paternal aunts, two of whom died when young, of typhus fever. The other is still living, married, and she has always been in good health. She has five sons all living and enjoying robust health.

Maternal Relations

The patients' grandfather died at the age of 90, the cause of death

is unknown. He is reported to have been a constant sufferer from Rheumatism during the latter part of his life. This constitutes the only trouble from which he ever suffered.

The patients' grandmother died at an advanced age; the cause of death is also unknown in this case. She is reported to have suffered much from Rheumatism and Bronchitis. He has two maternal aunts and one uncle Of the former, one died at the age of 70, of Kidney disease.

She was married, and left four sons and two daughters. These are all living and enjoying good health.

The other aunt is still living, married, and in good health. She has three sons and four daughters living and in good health, and one daughter who died at the age.

of 20., of Inflammation of the lung.
His only Maternal uncle was drowned at the age of 30.
Previous to this, he had always been in good health.
He was Married, and left one son, who is still living and in good health
The patients' father is living and never had a day's illness
He had always been very temperate and sober in his habits
He is however of a very nervous disposition; he has an irritable temper and is easily Moved to passion
The patients' mother is living, but crippled helpless from the effects of Rheumatic arthritis. With the exception of this, which troubled

her more or less for the last fifteen years, her health had been fairly good.

She has two brothers and three sisters, all living, unmarried, and never suffered from any illness worth mentioning

Neither the brothers, nor sisters, at any time, suffered from Convulsions, Chorea, or any other Mental or Nervous disorder whatever.

III. Personal history up to the period of the first attack

This part of the patient's history is remarkable for the entire absence of any serious physical or mental ailment, which would naturally interfere with the natural and healthy processes of development. It appears, as if Nature had been preparing him a strong and healthy mind and body, in order, if possible, to withstand the ravages of the formidable malady that was so soon to overtake him. In infancy, he was nourished almost exclusively on his mother's milk, and he passed the periods of first and second dentition enjoying robust health without interruption. He had no convulsions at either of these periods, nor showed any

sign of mental or nervous disorder whatever. He grew up a healthy and promising child, and no incident worthy recording happened until he arrived at the age of 10., when he had "Measles". At the age of 12. again, he had "Hooping Cough". Both were of a mild type and passed off leaving no after effects.

When a boy, he was more of a thoughtful than a playful disposition; he was obedient and affectionate, and was considered wise above his years. At School, he distinguished himself for diligence and proficiency, he was quick and intelligent, and had a very retentive memory, and was considered a favourite with both teacher and Scholars

He carried his strong and robust-
health with him through the
period of boyhood, and he mani-
fested no sign of mental weak-
ness or deterioration
At the age of 16, precisely twelve
months previous to the first mani-
festation of the disease, he was sent
to a small island on the coast,
about 30 miles from home, and
remained there for a year.
There were only three families resid-
ing in the whole island, and the
F.C. Minister in the Parish, taking a
special interest in the education
of the children, arranged with him
accordingly to go there as a teacher.
Here, he suffered much from priv-
ation and mental anxiety. The
lonely and outlandish nature of
place, which is only accessible

in favourable weather, together with being entirely excluded from any communication with the rest of the family to whom he was so fondly attached, seemed to have preyed heavily on his youthful mind. We have vivid recollections of the sad accounts he used to give of his sufferings during this period of imprisonment, "as he termed it himself". There is nothing will convince him to the contrary, but that the privation, grief, and mental anxiety, which he suffered at this place, had been the sole cause of his trouble. Notwithstanding what he suffered in this respect, and that the food never agreed with him, (as these people lived principally on fish) he got both tall and stout, and appeared

to be strong and healthy. He was troubled, however, for a considerable time after his return with an acne like eruption on the face and neck, and also with boils and styes, and other signs of an impure and disordered condition of the blood. Within a week after his return, he was seized with the first pulmonary symptom. This dates the commencement of the fearful trouble, which by degrees, brought him to the lamentable condition which we have already described.

IV.

Paroxysmal Symptoms

These singular disturbances of the nervous system, which frequently usher in Epileptic seizures, and which has been termed the "Epileptic aura", is absent in this case. There is no premonitory symptom, that the patient or his friends can rely upon, as indicating the approach of a paroxysm. Although, at times, the symptoms present during the intervals are aggravated at the approach of a fit, at other times, he is seized when these are absent, and when is to all appearance well, and even when he declares himself better than his usual and ever.

The symptoms present during the fit, are those of the "Haut-Mal" or "Morbus Major" and variously

designated by different Authors. This appears to be the most frequent and most familiarly known form of the disease.

The Paroxysm has been so fully described by various writers on the subject, that it is unnecessary for us to give more than a brief sketch of the leading phenomena manifesting themselves during the fit. The Patient, while engaged at his ordinary occupation, or in the midst of a Conversation, loses Consciousness. He appears deeply absorbed and preoccupied, and his gaze becomes fixed for a few seconds. Then the face is turned towards one shoulder, and his body is slowly turned in the same direction, as if by a series of little jerks, at the same time that he utters a

-pression inarticulate and prolong-ed cry, which somewhat resemb-les a loud groan. The upper and lower halves of his body are "slowly and powerfully drawn towards each other, and if the patient is standing, he falls down, on that side of the body towards which the face was turned at the outset.
The convulsive phenomena now become apparent and the stage of tetanic convulsions begins. Every muscle in his body appears to be firmly and rigidly contracted, and respiration is entirely sus-pended. During the entire stage, which lasts only a few seconds, the body does not move from the position in which he has fallen.
"The tonic spasm of the muscles

begins to relax, and the clonic convulsions make their appearance, at first mild and local ized, and then, growing more diffused and violent, until, in a very short time, the whole body is in a continual state of Museular Contraction and relaxation" The face, which had begun to grow dark during the latter part of the first-stage, now becomes dusky and turgid. The eyes glare, and the features are disfigured by terrible grimaces and contortions. On rare occasions, the foam, that issues from between the teeth, is reddened with blood from the bitten tongue. After a period, varying from three to five minutes, this condition subsides. The clonic convulsions grow milder gradually,

The dusky hue of the face begins to disappear, and the patient lies perfectly quiet. Sometimes, he immediately rouses from his comatose condition, opens his eyes, and looks round with a stupid and frightened look, and muttering some inarticulate words, then lapses into his previous condition. Generally, however, he falls into a deep lethargic sleep, (from which he may be roused to consciousness) and wakes up, after a period, varying from five minutes to an hour. The patient usually wakes dull and heavy, complains of headache, and has a tired aching feeling in the muscles, as if he had been engaged in very heavy work. Sometimes, and more especially if the fit had been severe, or if

any ligatures encircling his neck have not been removed in time, his forehead and neck have a mottled appearance from the presence of minute subcutaneous ecchymoses. These remain for a few days only and then disappear.

The patient does not recollect anything of what occurred during the fit. If he had much difficulty in micturating prior to the paroxysm, this disappears, and he now empties his bladder without any apparent effort; this relief lasting only for a day or two.

The duskiness of the skin of the face disappears after a day or two, and his face again resumes its usual colour and freshness.

Sometimes he feels better mentally than he did previous to the paroxysm

as if the convulsion had cleared his brain, at other times, he is dull and stupid for a day or two, and although he apparently acts in a rational manner, he may not retain perfect remembrance of the occurrences during this period, showing that the unconsciousness is still slightly impaired. Sometimes the patient performs a series of automatic acts immediately after the cessation of the coma, such as, trying to adjust his collar and button his shirt, which have been loosened during the paroxysm

IV. History of the illness
and
the effect of treatment

This part of the report extends over a period of 19 years, and, in order to follow the course of the disease through this long series of years, we shall necessarily divide it in to specified periods

(1866 to 1870) The patient's illness began in 1866. in the following manner. One afternoon, in the month of August, he was found in a field adjacent to his father's house, lying on the ground, and apparently in a heavy sleep. On being spoken to, he started up immediately, and although he appeared confused and bewildered for a few minutes afterwards, he soon regained his

usual condition. As he could not account for this strange occurrence himself, it was supposed by his friends that he had fallen asleep, and no more notice was taken of it at the time. This undoubtedly had been the first manifestation of the disease. Judging from his condition after this seizure, as compared with that after subsequent attacks, we have no difficulty in concluding that this had been a mild attack, probably one of the Petit mal variety. Nothing unusual occurred previous to this, which either the patient or his friends could blame for bringing on this attack. Precisely three months after this date, the patient was out shooting one morning, and accompanied by his younger brother, when he was

seized with a violent paroxysm.
He uttered a loud cry, and fell
down, "senseless, writhing, convulsed,
and cataleptic". Unfortunately, there
could be no mistake as to the nat-
ure of his trouble now. The mystery
connected with the condition in which
he was discovered three months pre-
viously, was now dissolved. He lay
in bed for two days after this fit,
with a severe headache, and feel-
ing bruised, tired and sore. All
these symptoms passed off, however,
and he soon regained his usual
health and vigour.
Shooting is a sport, of which he was
excessively fond, and the excitement
connected with it was evidently
responsible for this attack.
For the two succeeding years, the par-
oxysms occurred at regular in-

tervals of three months, and, with the exception of feeling somewhat out of sorts for two or three days after a fit, his health continued excellent in the intervals. At this time, however, there was a marked tendency to a determination of blood to the head; stooping for a short time, or physical exertion, would cause the face to become swollen and turgid, and the eyes to become blood shot. Besides, he complained of giddiness and stomach disorder.

In this period, he was cupped on the front of the chest and along the spine, (by a local surgeon) but, without any appreciable effect in diminishing the frequency and severity of the fits. In the Winter of 1869, he took inflammation in

the right lung, from which he completely recovered. His recovery from this illness was followed by a relief from the fits for a period of six months. He was so much encouraged by this prolonged respite, that he did not look forward to a recurrence of the fits. They returned, however, for, at the end of six months, he was seized with a paroxysm of unusual severity, dislocating the left shoulder in the convulsive struggles. This was a new element superadded to his former trouble; it increased the patients sufferings greatly, and, besides, it intensified the anxiety of his friends

(1870 to 1878) In this period, the fits became more frequent and irregular in their occurrence. We find, that

instead of occurring at intervals of three months, they now return in so many weeks, and still retain their accustomed severity.

His left shoulder is dislocated at every return of the fits, except on a rare occasion, when he is caught in the act of falling and the convulsive struggles are kept under control. In this period, he was seized with a paroxysm while walking along a precipice, and fell over a height of 20 feet on to the ground below, but escaped with a scalp wound and other minor injuries and bruises. He soon recovered from the effect of these, but without influencing his previous condition, either for the better or worse. His memory, which hitherto remained unimpaired, is now becoming sensibly

affected. Restless and wakeful nights are becoming frequent and troublesome, and appear by their effects to increase the frequency of the fits.
The sleeplessness is due chiefly to lancinating pains in the limbs and about the chest, which now trouble him for the first time. These symptoms, as a rule, bear no definite relation to the paroxysms
At this time he consulted a leading Glasgow Physician and acting according to his instructions; a stream of cold water was poured from a height on the back of his head every morning, immediately on getting out of bed. Besides, he got a small bottle, directed to be taken in drop doses night and morning (which we presume had been Atropine in solution). The former treatment was

continued for years, but both failed to have any beneficial effect on the condition of the patient

(1875 to 1880) In this period, the paroxysms attained their utmost frequency, with little or no modification in their severity. We now find him frequently attacked at intervals of a week. The impairment of memory and other symptoms mentioned in the preceding period are now becoming more confirmed. Periods of nervous excitability and irritable temper, alternate with periods of despondency and petulance. He complains of momentary turns of absent mindedness for a few days after a paroxysm.

The case has now become more complicated by the dislocation of the right shoulder during a severe paroxysm, and the permanent dislocation

of the left. Towards the end of this period, he was suddenly seized with pain and difficulty in micturating, brought on in the first instance by exposure to cold and wet. Becoming alarmed at the continuance of these symptoms, which resembled those of stone in the bladder, he came to Glasgow and consulted Professor Macleod. The latter on careful examination, gave as his opinion, that these urinary symptoms were a manifestation of the irritable condition of the patients nervous system. He prescribed bromide of Potassium in 30 grain doses, thrice daily, (or 3ijs per day) to begin with, and this quantity to be increased or diminished according to it effects. The patient was strongly advised to take the medicine regularly, as prescribed

to watch carefully the effect produced, and was explained, that in all probability some time would elapse, before any decided benefit would be obtained.

We shall now give a brief outline of the condition of the patient at the time of Commencing treatment

The paroxysms occur frequently at intervals of a week or ten days, and rarely at longer intervals than a month. They are more frequent and severe during the Summer and Autumn months.

The left shoulder is permanently dislocated, and the right, with rare exceptions, is dislocated at every return of the fit

The third stage of the paroxysm usually lasts about an hour.

In the interval, he takes frequent turns of absence, especially for a few days after a fit. He frequently passes restless and wakeful nights, from cramping pains in the limbs and oppression over the heart. He has pain and difficulty in micturating; this is relieved for a day or two after a fit. Digestion is imperfect, and the bowels are as a rule confined.

His memory is markedly impaired, his ideas are confused, his mind is enfeebled, and there is impairment of perception, and depression of spirits.

Periods of nervous excitability alternate with periods of despondency, and the entire nervous system is in an unstable and irritable condition

The following is a list of the number of fits taken in 1876 and 1877, as taken of Calendus, discovered in the patient's place of business.
He was in the habit, for a number of years, of keeping a record of the fits, by marking on these "Calendus" the date of occurrence of every seizure

1876	April	24	Monday	fit
"	May	2	Tuesday	"
"	June	4	Sunday	"
"	"	10	Saturday	"
"	July	6	Thursday	"
"	"	14	Friday	"
"	"	21	Friday	"
"	Aug	14	Monday	
"	"	21	Monday	
"	"	29	Tuesday	
"	Sept	8	Friday	

1876	Sept	12	Tuesday	fit
"	"	24	Sunday	"
"	Nov	7	Tuesday	"
"	"	15	Wednesday	"
1877.	Jan.	2	Tuesday	"
"	"	9	Tuesday	"
"	Feb	20.	Tuesday	"
"	"	26	Monday	"
"	Mar	24	Saturday	"
"	"	31	Saturday	"
"	April	13	Friday	"
"	June	3	Sunday	"
"	"	11	Monday	"
"	"	20	Wednesday	"
"	July	22	Sunday	"
"	"	30	Monday	"
"	Aug	9	Thursday	"
"	"	15	Wednesday	"
"	"	21	Tuesday	"
"	Oct	1	Monday	"
"	"	10	Wednesday	"

1877. Nov 24 Saturday fit
" " 30 Friday "

The effect of treatment

We shall only describe under this heading, the effect of treatment on the condition of the patient, as observed shortly after commencing treatment

In the "Winter" of 1879, the patient began the treatment by bromide of Potassium, 30 grains of the salt (dissolved in Water) was taken three times daily, on an empty stomach.

Almost simultaneously with the use of the drug, there was an improvement observed in the condition of the patient.

The first thing noticed by the patient was, that he slept soundly and

awakened in the morning refreshed. The cramping pains in the limbs disappeared, and, with them, the restless and wakeful nights, which caused him so much annoyance. He also observed, that the urinary symptoms were becoming less troublesome; he micturates less frequent and with much less pain and difficulty. He takes his food and enjoys his exercise better, his head is less oppressed, and he feels his general health improving. He is less nervous and excitable, and also less fretful and despondent. The fits are becoming less severe; this is evident from the fact, that the right shoulder, which, previous to treatment was dislocated on every return of the fits, is never dislocated now. His friends also observe, that the third

or comatose stage of the fit is gradually getting shorter, sometimes, he is able to attend to his business, within 20 minutes from the termination of the second stage. The patient appreciates the improvement in the intercurrent minor symptoms, even more than the diminution in the frequency of the fits — These were all along a source of greater annoyance to him than the fits, and the beneficial effect of the medicine in this direction, imbued him with great confidence in the treatment, and with the consciousness, that he was making favourable progress. In fact, he fully expected that a complete cure would shortly be effected. The effect of treatment on the frequency of the paroxysms will be obtained, (approximately at least) by comparing the

the subjoined and previous list.

Treatment commenced in February 1880 and has been continued with slight intermissions up to the present time During this time the patient was noting carefully the dates time of day &c, of the occurrence of every paroxysm

1880.	March 2	fit	Morning	Tuesday
"	" 11	"	"	Thursday
"	April 22	"	"	Thursday
"	" 30	"	"	Friday
"	May 9	"	"	Sunday
"	July 30	"	"	Friday
"	Aug 7	"	"	Saturday
"	" 16	"	"	Monday
1881	Feb 3	"	"	Thursday
"	" 8	"	"	Tuesday
"	" 18	"	"	Friday
"	June 16	"	"	Saturday

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Treatment commenced in February 1880 and has been continued with slight intermissions up to the present time During this time the patient was noting carefully the date time of day &c, of the occurrence of every paroxysm

1880.	March 2	fit	Morning	~~Tuesday~~
"	" 11	"	"	Thursday
"	April 22	"	"	Thursday
"	" 30	"	"	Friday
"	May 9	"	"	Sunday
"	July 30	"	"	Friday
"	Aug 7	"	"	Saturday
"	" 16	"	"	Monday
1881	Feb 3	"	"	Thursday
"	" 8	"	"	Tuesday
"	" 18	"	"	Friday
"	June 16	"	"	Saturday

1881	June	26	fil—	morning	Tuesday
"	July	29	"	"	Friday
"	Aug	4	"	"	Thursday
"	"	13	"	"	Saturday
"	Nov	1	"	"	Tuesday
"	"	9	"	"	Wednesday
"	"	19	"	"	Saturday
1882	Feb	27	"	"	Monday
"	Mar	8	"	"	Wednesday
"	"	23	"	"	Thursday
"	July	9	"	"	Sunday
"	"	15	"	"	Saturday
"	"	24	"	"	Monday
"	Aug	23	"	"	Wednesday
"	Sept	1	"	"	Friday
"	Nov	24	"	"	Friday
"	"	30	"	11 p.m.	Thursday
1883.	Jan	26	"	Morning	Friday
"	Feb	2	"	"	Friday
"	"	10	"	"	Saturday
"	Mar	7	"	"	Wednesday

1883	March	7	fil -	night	Wednesday
"	"	13	"	Morning	Tuesday
"	"	28	"	"	Wednesday
"	April	22	"	"	Sunday
"	May	4	"	"	Friday
"	June	17	"	"	Sunday
"	"	26	"	"	Tuesday
"	Aug	6	"	"	Monday
"	"	11	"	(9. p.m.)	Saturday
"	"	21	"	Morning	Tuesday
"	Oct.	2	"	"	Tuesday
"	"	7	"	"	Sunday
"	"	18	"	"	Thursday
"	Dec	3	"	"	Monday
"	"	15	"	(3. p.m)	Saturday
1884	Mar	2	"	Morning	Sunday
"	"	8	"	"	Saturday
"	"	18	"	"	Tuesday
"	April	12	"	"	Saturday
"	"	18	"	"	Friday
"	"	29	"	"	Tuesday

1884	May	31	Morning	Saturday
"	June	9	"	Monday
"	Aug	3	"	Sunday
"	"	4	Night	Monday
"	"	15	Morning	Friday
"	Sept	30	"	Tuesday
"	Oct	8	"	Wednesday
"	Nov	20	"	Thursday
"	"	28	"	Friday
1885	Jan	10	"	Saturday
"	"	16	(1 p.m.)	Friday
"	"	25	Morning	Sunday
"	Feb	12	(5 a.m.)	Thursday
"	"	12	(10 a.m.)	Thursday
"	"	20	Morning	Friday
"	Mar	7	"	Saturday
"	"	14	"	Saturday
"	"	22	"	Sunday
"	April	10	"	Friday
"	"	16	"	Thursday

VI

Remarks on the Causation

The pathology of Epilepsy is still held to be in a great measure shrouded in mystery and therefore undetermined for practical purposes Numerous experimental investigations have been made, in order to shed some light on the pathology of this disease but opinions are still at variance on this point. "It probably consists in a morbid excitability of some part of the nervous system; and the paroxysm in a morbid excitement or irritation". Some authorities locate this part in the Cerebral Convolutions, others in the Pons and Medulla, and some even regard the Spinal Cord as the true seat of this morbid excitability

It appears also from the results of

frequent investigations with regard to this disease, that there is no true pathological Anatomy of Epilepsy. All the lesions that have been obtained, are either secondary or shed no light on the real cause of the affection.

Some authorities make as many varieties of Epilepsy as there are organs in the body; they give each variety a qualification signifying the nature or seat of the cause which they attach to it.

In treating of the cause of the disease, we shall mention two species, which may be said to include all the other different varieties (these are the Idiopathic and Sympathetic).

When the morbid condition causative of the paroxysm, cannot

be attributed to organic lesion of the brain, its membranes, or cranium, or on irritation sent to the brain from a diseased or disordered condition in any other part of the body, it is called Idiopathic. This variety is probably functional, it is often hereditary, and belongs to the Constitution of the patient When the disease depends on organic disease of the brain, or on irritation sent thither from disease in some other part of the body, it is called Sympathetic. This variety is sometimes called Symptomatic. Reflex. &c.

It is not always easy to make this distinction, but when it can be made, it has an important influence on the prognosis and treatment of the case.

In reference to the case which forms the subject of this paper, we are obliged to distinguish it as Idiopathic, inasmuch as we find nothing, either in the history, or in the symptoms, of sufficient importance to justify us in supporting the opposite view.

Predisposing Causes of Epilepsy.

The highest Authorities on the subject place "heredity" foremost as constituting the most important factor in this class.

"Trousseau speaks of hereditary taint as the most powerful predisposing cause. He says. (Clin. Med. Vol I. Page 79) if you question your patients seriously, and carefully inquire into their previous history, you will, in many cases, discover, either in the direct or collateral

relations, symptoms analogous to those which they themselves present, or mental alienation in one of its various forms, or mere eccentricities of character or of manner, or, again, disturbance of innervation, characterized by strange symptoms by precocious phenomena which indicate an unfortunate predisposition, transmitted from generation to generation"

"Brown-Sequard asserts (Epilepsy Tuke's Dictionary of Medicine) that of the reputed causes, none but heredity can be looked upon as the real cause of the Idiopathic variety. he also Maintains that the other factors give rise to predisposing causes only, except fevers, which he says, predisposes to Epilepsy by interfering with

the nutrition of the brain; and this
variety according to his views is
very amenable to treatment."
"In 38 cases under Reynolds care, 12
presented a history of nervous dis
ease in the family (Epilepsy Symp
toms and treatment 1861)"
"Gowers found (Brit. Med. Journal
Mar 6. 1861) that, among 1250. pat
ients in whom this point was care
fully investigated, an hereditary
neurotic tendency was present-
in 432 or 36 per cent. This Author
has included in his statistics, only
such cases in which there was
no reason to suspect cerebral
tumour, chronic meningitis,
and syphilitic or other organic
disease."
The powerful influence of heredity
is also shown by the fact, that

guinea pigs, which have been rendered epileptic by experimental means, may transmit the disease to their offspring

Age appears to be an important factor in the ebiology of this disease

"Romberg remarks (Diseases of the Nervous System vol II page 308) that the predisposition afforded by a certain age is of great importance. The proclivity to the disease, during the first four quinquennial periods of life, is three times greater than it is subsequently"

It appears that those individuals in whom the disease is due to hereditary influence, the disease makes its appearance, in a large number of cases, before the 15th year of life

It appears also, that the majority of cases of Epilepsy, occurring late in life, are due to causes other than heredity, such as Syphilitic and other organic diseases of the brain, Traumatism, Alcoholism, &c. Still, we find cases recorded where the disease has been developed late in life, in patients with a distinct neurotic family history; but these cases are exceptional. "Sir Thomas Watson mentions malformation or want of symmetry in the two sides of the head, and the Scrofulous diathesis, as frequent and important predisposing causes."

Sexual excesses and continence, Marriages of Consanguinity, Puberty, fright, Sex, &c, have all been included in this Class.

Exciting Causes

These are very numerous. Whatever strongly disturbs the cerebral functions may prove an exciting cause. Mental excitement, or anxiety, mental or physical over exertion, teething, puberty, bodily injuries, cessation of the menstruation (in women), irritation from diseases situated in various parts of the body, &c, &c.

These extracts and statistics supply us with a few instances of the views generally held by some of the ablest authorities on the subject, concerning the etiology of this disease.

According to these views the majority of cases of epilepsy "Idiopathic" have inherent in their system

a predisposition, transmitted to them from Epilepsy or other nervous disease in their ancestors; this predisposition becomes developed and only requires a certain state of the system, or some external influence, in order to manifest itself in the epileptic paroxysm

We turn now to consider the case we have been endeavouring to report, and which we have already distinguished, as belonging to the Idiopathic or true form of Epilepsy in order, if possible, to arrive at a definite conclusion, as to the cause of the disease in this particular instance

If we review the personal history of the patient, we find that from childhood upwards he enjoyed robust-health, and manifested

no symptom of nervous disorder, until he arrived at the age of 17, when the disease first showed itself. But for the twelve months preceding this, we observe that he was subjected to great privations, mental anxiety, and suffered besides from want of suitable nourishment.

Again, if we review the family history of the patient, we find that the maternal part of it shows nothing whatever, that we can with justness include in the category of predisposing causes; in fact, the only diseases we find occurring in the history of those of them that have died, and those of them that are still living, belong either to Rheumatism, or Chest-affections.

But; if we examine the paternal part of the family history, we find that of his four uncles; one is of intemperate habits, another is reported to have suffered temporarily from insanity, together with the patients' father being of a nervous disposition

Apart from this, none of the other paternal relations give evidence, at any time, of having suffered from Epilepsy, Insanity, or any other disease claiming connection with the patients' trouble

In this review of the history of the case, we observe the elements of a predisposing cause; circumstances which may be regarded as having a share, at least, in the etiology of the disease

In the first place, we observe a-

certain amount of mental instability evidencing itself in the patients' father and uncles.
In the second place, we find that the patient was placed under very trying circumstances (privation grief and mental anxiety) at a very critical age.
If we consider the relation in which insanity and other nervous disorders stand to Epilepsy, and the importance attached to them as predisposing causes of the disease, we have good reason to suppose, that the patient inherited a predisposition, which had become developed and transformed to Epilepsy in his case.
On the other hand, we find some Authorities on the Subject - Countenancing the view, that apart

from hereditary influence, prolonged mental strain may, by its influence disturb the central functions to such an extent as to establish a predisposition to the disease, in our opinion, this is more likely to happen at the age of puberty, when the system is undergoing such important changes, and the nervous system is more excitable and more easily thrown into disorder

Another thing may be advanced in reference to the causation in this case. We have seen, that for the period of twelve months previous to the first manifestation of the disease, the patient had been living principally on fish. May we not suppose, that this kind of diet might lead to

excessive nutrition of the brain, and consequent accumulation of nervous force, the sudden liberation of which, (according to Hughling Jackson's speculations) causing the phenomena of the disease. In this connection, we may notice the evidences of a determination of blood to the head and the signs of a disordered state of the blood, which were manifest at the commencement of the illness.

Without offering an opinion as to which of these theories contains the true physiological factor of the disease, or the share contributed by each in causing the Epilepsy in this case, we shall draw the following conclusions.

The patient very probably inherited

a predisposition, which remained latent in his system, and, of itself, would be incapable of causing Epilepsy, or any other nervous disease; but the severe mental strain, privation, age, &c stimulated this latent predisposition and with their cooperation assisted in the development of the disease.
In support of this conclusion, we may notice the age at which the disease first manifested itself, the outbreak of hereditary Epilepsy usually takes place before puberty. Then, again, we may notice, that of 21 cousins, and the other members of his own family, none, hitherto, gave any evidence of having inherited a predisposition to Epilepsy or any other nervous disease.

In our opinion, these facts help to show, that besides hereditary influence, other agents have been at work and contributed their share in the causation of the disease in this case

With reference to Exciting Causes, we may remark, that at the commencement of the illness, it was observed, that some definite exciting cause was responsible for the occurrence of every paroxysm, but, as the disease became established, less of an exciting cause was necessary the paroxysms ultimately occurring under ordinary healthy influences
The exciting causes in this case may generally be referred, either to mental excitement, or anxiety,

Besides, wakeful nights; constipation of the bowels, and physical over exertion have often been blamed (and that with sufficient reason) for bringing on the attacks.

What might prove an exciting cause at one time might not do so at another. The balance of the nervous system appears, in this case, to have been very easily disturbed at times, and we may expect, that very little of an exciting cause would then be necessary to precipitate an attack.

VII

Remarks on the Symptoms.

Epilepsy is symptomatically divided into the "Haut mal" and the "Petit mal", according as the paroxysms are of the most-severe, or mildest-form; or according as they are of the well developed, or undeveloped forms.

Between these two varieties, the various features present numerous modifications, in point of intensity and mode of combination, with other conditions, and this, not only in different subjects, but in the same individual.

The salient point in this obscure disorder is the loss of consciousness during the paroxysm; it is a common feature in all the different varieties and alone constitutes the mildest-type.

From the sketch we have already given of the paroxysmal symptoms in this

case, it is obvious, that it belongs to the most severe type of the disease, or the "Haut mal". This appears to be the most common form in which we meet with the disease, and its various features are found fully described in works on the subject. We shall, therefore, confine our remarks to a few points, where we observe this case differing from the descriptions usually given.

We have already remarked that neither the patient nor his friends get any definite warning of the approach of the paroxysm

The most common condition in which we find the patient a few hours previous to an attack, may be referred to an altered state of the feelings, either gloomy, irritable or cheerful. If some time has elapsed

Since the last fit, the coming paroxysm often forewarns him of its approach, by causing a heaviness and oppression in his head, and, often, his friends observe some indescribable peculiarity in his expression. These precursory phenomena may be present a few days prior to a fit—

The state of apparent reverie, immediately preceding the fit, is often so short, and merges so closely with the loss of consciousness, that it can scarcely be looked upon as a premonitory sign. It certainly gives no warning to the patient himself; but it is of some importance in drawing the attention of those watching him, and in affording an opportunity, however short, for making an effort to protect the patient from injury. The only reason we can give for

for suspecting the separate existence of this condition, is, that the patient may sometimes be made to resume his usual condition, by calling on him loudly when in this state, and drawing his attention to something which may interest him at the time. In this manner, he may be prevented from becoming somnescient and the fit may for the time being be postponed. We observe a similarity in the fit being thus postponed, to cases occasionally met with, where the "Aura" shows itself by causing sudden and involuntary muscular contraction, and where, the fit can be postponed by forcibly extending the muscles. In cases like the present, where we have terms of absence manifesting themselves in the interval, it is possible that this state of reverie may be nothing

More or less than one of these occurring immediately before the fit. But we consider this condition more likely to be unconsciousness in its early stage, and gradually stealing over the patient, and that until it reaches a certain point he may be recalled to consciousness. If this state may be said to have a separate existence, the phenomena of the paroxysm appear in the following order,

loss of consciousness; the face turned towards one shoulder (usually the left), the utterance of the cry at the same time with the onset of tetanic convulsions, and the turning of the body slowly round as he falls

All these phenomena may be said to occur simultaneously, for the difference between them, taken in order, is scarcely appreciable

There is no pallor of the face observed at the commencement of the fit.—
He almost invariably falls on the left side of the body and he was never yet observed to fall on his face, or directly backwards
The patient never falls down suddenly; this seems to be accounted for, by the manner in which he is seized with the tetanic spasm of the muscles. The upper and lower halves of his body are slowly and powerfully drawn towards each other, (thighs towards the abdomen) at the same time that his body is being carried to one side. These movements appear, in some way, to counteract each other, and thus prevent him from falling down suddenly and violently. After falling the tonic contraction of the muscles is general, and one side of the

body does not appear to be more affected than another.
The dislocation of both shoulders was not due, in the first instance, to the fall; but to the violence of the convulsive struggles. Respiration is entirely suspended during the first and greater part of the second stage. Unconsciousness is always complete during both stages, which last as a rule about three minutes.
The three stages of the fit are distinct and well defined, the stages of Tonic and Clonic convulsions, and the Comatose stage. This last stage varies greatly in duration, but usually averages about fifteen minutes.
The petechial eruption, sometimes observed on the patients face and neck, is often caused by tight ligatures encircling his neck (such as the shirt band,

than by the severity of the paroxysm. The patient has never been furious or maniacal after the fit, except, perhaps, when the reduction of a dislocated shoulder was attempted during the tertiary stage of the fit, or before consciousness had been completely restored. Under these circumstances, he was sometimes observed to be in a condition of excitement approaching mania.

From the commencement of the illness, it was observed, that the fits presented a certain order in their occurrence. During the first two years, they occurred at regular intervals of three months. Afterwards, on increasing in frequency, as a rule, two, but often three, occurred at successive intervals of a week or ten days, rarely, at shorter intervals than a week. This series of weekly terms

was always followed by an interval or pause, lasting about a month, sometimes, two, or three months, rarely longer than three months.

We have to wait for a correct explanation of this peculiarity in the order of their occurrence until the pathology of the disease is better understood, but the following may be advanced as a possible interpretation

During the prolonged interval, the morbid excitability (essential to the disease) gradually accumulates, until it arrives at the stage necessary to cause the phenomena of the paroxysm. The excessive excitement of the paroxysm exhausts this excitability, in part only, so that the residue, together with the succeeding week's accumulation, is sufficient preparation for the second attack.

If the second does not completely exhaust this excitability, a third attack takes place, in the same manner, after which a prolonged pause again begins, and the morbid excitability becomes closed up as before.

According to this theory, the occurrence of the fits, at intervals of three months, may also be explained, the excessive excitement of one paroxysm being at this time sufficient to cause the complete exhaustion of the morbid excitability accumulated in the interval

In this connection, we may notice, that of a series of fits occurring at short intervals, the first is always more severe than the succeeding ones, which diminish in intensity until the prolonged pause again begins

It may be remarked in this place, that these weekly attacks appear to take place without any apparent exciting cause, and this looks all the more remarkable when we remember that the patient during these short intervals rises more free dom with himself, (knowing that he is rarely attacked at shorter intervals than a week) and often exposes himself to powerful exciting causes, circumstances at least, which, with a prolonged pause, would in all probability have been followed by a paroxysm. This we apprehend shows, that, in this case, the existence of an exciting cause is, not only not necessary, but also incapable of producing a fit, — unless, when, the balance of the nervous system is exceedingly unstable, and morbidly ready to respond to this in-

influence of the slightest stimulus.
The reason why the fits should occur in the morning within a few hours after getting out of bed and why they should ~~they~~ be more frequent and severe during the "Summer" and "Autumn" Months, we shall not attempt to explain.
For the first four years of the illness, the health of the patient during the intervals was remarkably good; determination of blood to the head, with its accompanying headaches, giddiness, and slight disorder of digestion were the only complaints. These became less troublesome before the invasion of the terms of absence and impairment of the Mental functions. These symptoms of mental debility are remarkable, because of the length of time the disease had

been present before they made their appearance. This may be explained by the long interval that existed between the paroxysms at this time, affording sufficient time to the nervous system to recover itself from the effects of the paroxysms

The times of absence are very probably attacks of Petit mal; thus affording an example of the two extreme forms of the disease manifesting themselves in the same subject.

Their appearance, about the same time as the symptoms of mental infeeblement, suggests some connection to exist between them. The frequency of these times is no doubt responsible, to a great extent, for the mental confusion, loss of memory, impaired perception, and other existing signs of mental impairment.

These symptoms of the disease were only present, at first, for a day or two after a paroxysm, but they gradually became more continuous. They are still aggravated by a paroxysm; but improve again with the duration of the interval

We need only to mention the dislocation of both shoulders during a paroxysm, in order to give an idea, of the degree of severity of the convulsive struggles.

VIII.

Remarks on the treatment

Epilepsy has been known among the ills that afflict mankind from the remotest historical audeven pre historical period.

The conception which was formed of the disease remained unchanged for centuries, and it is only within comparatively recent times that the views of the profession, concerning the scope and boundaries of this affection, have undergone a radical change and amplification

It appears that the ancients were alive to the formidable and miserable nature of the malady, and that all their attempts in its cure proved a failure.

It appears also, from the testimony

of Rosseau, that the advance of Science changed matters but little in this respect.

At the present time, most physicians look upon the eradication of the disease as entirely beyond the power of our art. Some pronounce it so incurable, that they don't even attempt to heal it. Yet, if we look at periodical medical literature, or peruse some works written on Epilepsy within a comparatively recent period, we find that a great variety of very efficient remedies have been proposed and that wonderful cures have been performed by their administration. All probability, the truth lies between these two extremes.

At all events, there has, hitherto, been no known specific for the

disease, and probably, none will ever be discovered; inasmuch as the disease depends upon causes so very varied, consequently, those medicinal agents which may be prophylactic in some cases, and even remedial under certain circumstances, may under other conditions, not only not mitigate, but positively aggravate every symptom.

There is one method of treatment, (that by bromide of Potassium) which, if it does not cure the disease, possesses a marked power of diminishing the frequency and severity of the paroxysms, and of favorably influencing, for a time at least, the condition of the patient; and that, in cases presenting the most unpromising

features of the disease.
The incurable nature of the disease has often been a source of great grief to the physician when appealed to for relief; but at the present time, we may take cases under our care and with a degree of confidence almost amounting to certainty, that by this treatment (bromide of Potassium) the paroxysms will be diminished in frequency, their severity moderated, the patient's general health improved, and the evil hour when the system will sink under the oft-repeated attacks, postponed.

We consider it of sufficient importance here, only to mention the order usually followed, and some of the remedies that have been em-

ployed in the treatment of Epilepsy.
In our remarks, we shall refer to the
treatment by bromide of Potassium
in our own case chiefly.
The treatment of Epilepsy is usually
divided into two parts; namely,
that during the paroxysm, and
that during the interval
In cases where the paroxysm is pre-
ceded by an "aura", and where the
warning is sufficiently long, vari-
ous means are employed, with
the object of preventing the onset
of the paroxysm; thus, when the
"aura" starts from a limb, firm pres-
sure by a ligature &c, is resorted to,
and sometimes succeeds in warding
off the attack. Again, when the
"aura" shows itself by causing in-
voluntary muscular contraction,
forcible extension of the same

is resorted to, and, in some cases, prevents the paroxysm.

Purgatives, emetics, the inhalation of Chloroform, Ether, Nitrite of Amyl, &c. are employed, according to the indications afforded by the premonitory signs, and are reported to succeed in some cases. Some authorities entertain the view, that one paroxysm produces changes in the brain which prepare other attacks; but whether this view be correct, or not, the importance of preventing the paroxysm, when possible, is obvious.

The treatment during the paroxysm consists chiefly, in using means to protect the patient from injury, and to restore him to consciousness as early as possible.

To protect him from injury, he

remove all tight ligatures that encircle his body, place a wedge of wood or some other material between his teeth, and control the struggles of the patient as much as possible.

To hasten the return of consciousness we endeavour by some means to remove the turgidity of the face, to diminish the congestion of the head

For this purpose a great variety of restoratives are recommended and employed.

The treatment during the interval varies with the indications afforded by the cause.

In a certain number of cases, the cause can not only be determined, but also, can be readily made to disappear

These cases belong to Sympathetic Epilepsy and their treatment be long partly to Surgery and partly to other branches of Medicine.
Diseases of the throat, chest, Abdomen, urinary and genital organs, &c act as causes of the Epileptic paroxysm, and the treatment in these cases is similar to that resorted to in such affections.
But in the majority of cases, the cause of the disease cannot be ascertained, and even when it is determined, it is of such a nature, that it cannot be removed, either by surgical or medical means, consequently, in the majority of cases the disease can only be treated symptomatically.
The remedies used in the treatment of Epilepsy may be divided into the

"General" and the "Medicinal".
The former includes the food, exercise, (Mental and physical) Countenance above, (by blisters setons &c) baths, Galvanism, depletory remedies when the bloodvessels are too full and the blood too rich, and when the General health is below par; the ordinary tonic remedies, such as Iron, Quinine, Codliver oil, &c

We shall not attempt the enumeration of all the different "medicinal agents" which have at various times been employed in the cure of this disease. We perceive in their countless number the best proof that could be brought forward, of the inefficacy of the whole of them, and that the disease often resists the most zealous efforts in conquering it.

There are, however, a few, which some of the most competent Observers report to have proven serviceable in their hands; yielding in some cases excellent results.

"M. Herpin of Geneva extolled the efficacy of Oxide of Zinc, and from the result of many cases, he lays down the following proposition.

The oxide of Zinc seems to be the remedy indicated for youth and old age; the metal often fails to cure adults, especially of the male sex. When it is employed with women, it should be given a long time and in large doses."

Oxide of Zinc appears to be gaining more favour recently than it formerly enjoyed. It is employed either alone, or in combination with bromide of Potassium. The lactate and

valerianate are sometimes employed instead, but they don't seem to possess any great advantage over the oxide.

"Belladonna was highly praised by Trousseau. He says (loc. cit.) I have employed it for thirty years, and it seemed the least inefficacious I have ever tried or seen tried, indeed, I can now count a certain number of real cures, and in many cases, I obtained an improvement which I dared not expect."

It appears that more benefit is obtained from the use of belladonna, in cases of Nocturnal Epilepsy and in the various forms of Petit mal. At the present time, Atropia is used in preference, as the alkaloid is much more constant in its effects, and the dose can therefore be regulated

more carefully. Trousseau recommends the use of nitrate of Silver and Sulphate of Copper, at the same, & different times, in cases where the belladonna fails.

Nitrate of Silver has for a long time occupied a prominent position in the treatment of Epilepsy, and Cases of recovery are reported to have occurred under its use At the present time, it is rarely administered, and this is undoubtedly due in part to the fact, that patients are occasionally met with, whose entire skin has become blue from the long continued use of the drug, while the epileptic convulsions have persisted with all their original severity and frequency. Favourable results are reported by various Authors, from the use of

Arsenic, Strychnine, Cotyledon umbilicus, Sumbul, Digitalis, &c &c

Sir Charles Locock was the first in this country to administer bromide of Potassium in the treatment of Epilepsy. At a meeting of the Royal Medico-Chirurgical Society of London (13 May 1857) and while taking part in the discussion on a paper on Epilepsy by Dr. Sieveking, he made known, for the first time, the results obtained by him from the use of this drug.
He was induced to try this remedy by reading in the British and Foreign Review, an account of some experiments performed by a German upon himself. Dr. Locock tried it in the first instance in Hysteria, then in Hysterical Epilepsy, and with the result, that out of 15 cases of Epilepsy treated by

him previous to this, only one remained uncured

At first, this remedy was only employed in cases of Epilepsy depending on disordered menstruation, gradually its use became more general, and at the present time, it is administered freely in the treatment of Epilepsy and other diseases, both in this, and other countries.

The results obtained by Drs Brown-Sequard, Radcliffe, Locock, Bennet, Jackson and others, are sufficient to warrant the conclusion, that it is the most potent of all the medicinal agents that have hitherto been employed in the treatment of this disease.

Physiological action of bromide of potassium

"When it is given in medicinal doses to an individual in health, it acts as a sedative of the nervous system, and thus disposes to rest and sleep. If it is given in large doses, for a lengthened period, it produces poisonous effects on the system, which are demonstrated by a combination of phenomena, to which the term "bromism" is applied.

The following is a brief summary of its toxic effects—

There is a sense of mental weakness and heaviness of the intellect, the memory is impaired, and the ideas are confused. There is partial aphasia depression of spirits, and a great tendency to somnolence. The sensibility of the skin and

mucous membranes is diminished, reflex excitability is lowered. The special senses are weakened and the sexual functions are weakened or abolished. The body, as a whole, is infirm and the gait is staggering and incoordinated. The skin is pale, the muscles are soft and flabby, and the extremities are cold. The skin is often covered with an acne like emption. The action of the heart is slow and weak, and the respiration is shallow, hurried and imperfect, and the digestive functions are disordered.
In any individual case of "bromism" many of these symptoms may be absent, but when the use of the drug is persisted in they become developed to an intense degree, and imbecility and paralysis may ensue.
These symptoms usually disappear when

the use of the medicine is kept off.
Bromide of Potassium is usually administered in doses ranging from 15 to 60 grains, twice or three times daily on an empty stomach.
One or more of the following are often given in combination with it — Bromides of Sodium and Ammonium, iodide of Potassium, bicarbonate of Potash, together with some bitter tonic infusion

We turn now to observe the effects, "Physiological" and "Therapeutic", produced by bromide of Potassium in the case we have been reporting.
For the first three months of treatment, the drug was administered in 30 grain doses three daily.
After this, the same quantity was given four times daily instead,

and continued with slight intermissions for a period exceeding over five years. Hitherto, the mental and physical condition of the patient did not appear to have suffered in consequence, and no symptom of "bromism", with the exception of the acneiform eruption, has been superadded to the symptoms of the disease present, at the time of Commencing treatment.

This eruption first showed itself within six months after commencing treatment, and continued to break out in successive crops for the ensuing two years; after this, and without any special treatment being employed, it disappeared entirely. The skin and tendon reflex excitability and the general sensibility are unimpaired. The fauces and

conjunctivae are both sensitive, as in the normal condition. The use of the medicine has had no deleterious influence on the general health of the patient; the digestive functions are even in a better condition than before, the circulation, respiration & nutrition of the tissues are not injuriously affected. There are no signs of aphasia, or of an excessive degree of somnolence, and the special senses, and the sexual function are not unfavorably influenced.

It is not easy to account for the absence of these physiological phenomena, unless it was due to the highly excitable condition of the patient's nervous system, which rendered it more unyielding to the depressing influence of the drug; or, that the epileptic constitution is more

tolerant of the use of the drug, than that of an individual in health, or, lastly, that the occasional intermissions in the administration of the medicine prevented its accumulation in the system.

In reference to the Therapeutic effect of the drug in this case, we shall in the first place consider, how the interparoxysmal condition of the patient was influenced. We have already observed its beneficial effect — on the symptoms of nervous instability and on the phenomena dependant on the irritable condition of his nervous system.

The improvement in the condition of the patient, in this respect, commenced simultaneously with the use of the medicine, and was observed throughout the whole period of treatment, up to the present time.

Its effect, in this direction, appears to be permanent, inasmuch as these symptoms showed no tendency to suppression during the intermissions in its administration

Since the time that the mental powers were first observed to be impaired, it was noticed that these symptoms were always aggravated in proportion to the frequency of the fits, and were also observed to improve again with the duration of the interval

During the first three years of treatment, there was a decided improvement observed in the condition of the patient in this respect. In all probability this had been the result of the diminished frequency of the paroxysms, and not a direct consequence of the use of the drug.

After this the improvement ceased

to be so apparent, and the failure of memory, confusion of ideas, impaired perception, mental weakness again resumed their downward career.

At the present time, the mental functions are more impaired than at the time of commencing treatment. But, we are not to infer, as is sometimes done, that this is the result of the injurious effect of the drug. For when we consider the progress made by these symptoms since the time of their first appearance, and the extent to which the intellectual faculties were impaired at the time of commencing treatment, and if, at the same time, we are to suppose (keeping the question of treatment out of sight for a moment) this impairment to progress at the

same rate up to the present time, we have no difficulty in concluding that the treatment has had no injurious influence on the condition of the patient in this respect. On the contrary, we are of the opinion, that the beneficial influence of the medicine for the first three years has been extended to the patients' present condition, inasmuch as it acted as a check to the deteriorating ~~process~~; and that as a result, the mental condition of the patient, at the present time, is better than had no treatment been employed

The effect of treatment on the times of absence was also observed to be favourable during the first three years of treatment. After this, they resumed their accustomed frequency

and continued to bear the same relations to the paroxysms as before.
The amount of improvement, under any form of treatment, is usually calculated by the Epileptic, by noticing the effect produced on the frequency of the paroxysms
We find by referring to the "lists of fits" given above, that the effect of treatment in diminishing the frequency of the paroxysms, was undisputed for the first three years at least.
He was entirely free from a return of the fits for six months of the first year. This is the longest interval between the fits, (except on another occasion at the beginning of the illness after an attack of Pneumonia) that occurred in the history of the illness, and this, of itself, indicated to the patient the benefit he

was deriving from this form of treatment—

In the first-list of fits we assume, that from March 1876 to March 1877, the patient took in all 22 fits, or an average of one every 16 days.

This only represents their frequency three years before treatment began, therefore in comparing results, a certain allowance will have to be made for the increase in their frequency in these three years.

During the "first" year of treatment, (1880) the patient only took 8 fits, or an average of one every 45 days.

During the "second" year, (1881) he took 11 fits, or an average of one every 33 days.

During the "third" year, (1882) he took only 10 fits, or an average of one every 36 days.

During the "fourth" year, (1883) he took 19 fits; or an average of one every 19 days.
During the "fifth" year, (1884) he took 15 fits, or an average of one every 24 days.
These statistics show, that, (without making any allowance for the increase in frequency for the three years previous to treatment) for a period extending over three years, the number of fits taken annually, were diminished by more than "one half"; and that during the last-recorded year, they were diminished by about "one-third" only.
From this, we observe, that the beneficial effects, which were so striking for the first-three years, ceased to be so apparent, and at the present time the fits are almost-as frequent-as

they were previous to treatment.
In comparing the frequency of the fits before and after treatment, and estimating the therapeutic value of the drug in this direction, we must not loose sight of the fact, that before treatment, the paroxysms were gradually getting more frequent. Therefore, to give treatment the credit to which it is entitled, we must not only compare the frequency of the fits at the present time, to that before treatment, but we must also compare it with the frequency they would have attained to, at the present time, supposing the condition of the patient to have gone on unchecked.
On a further study of these lists we observe that the paroxysms are now occurring with greater

frequency during the Spring months, while previously, they were more frequent during the Summer and Autumn months.

We also observe, that they are deviating some what from their usual mode of occurring in the morning shortly after getting out of bed, and besides, that he is sometimes seized with more than one paroxysm in the 24 hours. While previously, he was never known to have taken more than one paroxysm in the 24 hours, and that, with rare exceptions, between 9 and 11 a.m. Within the last few years the medicine sometimes appears to become tolerated by the disease; it seems to loose all control over the paroxysms, at times, and the other symptoms of the disease,

particularly those connected with the impairment of the mental powers, become to be aggravated in consequence. When this is observed, it is withdrawn altogether for a few weeks, and when the use of it is again resumed, it acts with increasing effect.

These intermissions are never called for oftener than once in the twelve months at most.

Before concluding our remarks on the Therapeutic effect of the drug in this case, we may remark, that since treatment began, it was always observed, that, if the patient at any time left off the use of the medicine suddenly, he was invariably seized with a fit either the same or following day; while if the quantity was

gradually diminished before leaving it off, no unfavourable result followed in consequence.

We may again remark, that in this case, bromide of Potassium was administered in large doses, (3ii per day) for a period extending over five years, without producing any injurious effect, either on the mental or physical condition of the patient, or any deleterious influence whatever, which could be directly attributed to the toxic effects of the drug. Thus proving the harmless nature of the drug, even when given in large doses for a lengthened period.

We may also remark at the same time, that, all the symptoms of the disease, "paroxysmal" and "inter-

- paroxysmal" were favorably modified by the use of this drug, some only temporarily, while others appear to be permanently benefited. Thus manifesting the beneficial nature of the drug in this disease.
We have arrived at these conclusions from a careful study and recording of the clinical facts - as well as the progress of the disease, since the time that treatment was first employed.
The benefit - derived from the use of the drug in this case, which was an example of an unusually long standing, and severe form of the disease, and which presented the worst features of the malady, is of itself sufficient - to advocate the employment of the medicine, in this form of the disease,

however intractable may be the symptoms.

While we have thus observed, that the progress made by this case speaks favourably of the treatment employed, still, the chronic nature of the illness, the probability of it being hereditary, the presence of these terms of absence, and other unpromising symptoms, render the prognosis as to the ultimate cure of the disease very unfavourable

The present condition of the patient offers, however, a favourable prognosis with regard to life.

This Case is not uninteresting in respect of the healthy family history which the patient shows;
the obscure nature of the Cause;
the degree of severity of the Convulsion

struggles;
the combination of Epilepsies —
grave and mitior;
and also in respect of the beneficial
effect of treatment — in such an
unpromising case.

In concluding this paper we shall
give the outline of a few cases
of Epilepsy, at present under
observation, for the purpose of
showing how far they contrast,
and agree, (in their causation
Symptoms and treatment) with
the case we have been endeavouring
to report —
Case I. Duncan M.K — Lawyer's clerk,
aged 27, with a distinct Neurotic
family history; having two aunts
that suffer from Epilepsy. He was
in good health until two years ago,

when he was seized with the first-fit.
The paroxysm consisted of loss of consciousness, convulsions, &c (Haut-mal)
and occured once in the month.
Immediately preceding the paroxysm,
he had an indescribable sensation,
which started from the right foot,
and on reaching the abdomen, the fit
commenced. For some time previous
to the first-fit, the mental powers
were observed to be gradually becoming enfeebled, his memory was
impaired, his ideas were confused,
and he had great depression of
spirits.
He began the treatment by bromide
of Potassium shortly after the first
attack, (30 grains three daily) this
was followed by an improvement
in his mental condition, and a
diminution in the frequency of the

paroxysms, so that, at the end of 12 months, he had intervals of three months between the attacks. Last Summer, he took a severe attack of Rheumatic fever, and was so ill, that all hope of his recovery was abandoned. He recovered however, and since that time, (now twelve months) there has been no recurrence of the fits, and what appears more remarkable, his mind is in a perfectly healthy condition; consequently, the treatment has been entirely suspended.

There is a striking contrast observed in this case, with the cases we have been reporting, especially in respect of the family history; the relation of the symptoms of mental weakness to the appearance of the paroxysms, and also, in respect of the presence of an Aura

But at the same time, we observe a similarity in the beneficial effect of treatment, and also in the effect of the intercurrent illness in modifying the progress of the disease.

How the Pneumonia in the one case suspended the paroxysms for six months? and in the other, how Rheumatic fever suspended the disease for a period already amounting to twelve months? is not easily explained, unless it be due to the profound impression made on the nervous system by the intercurrent illness, aided in the latter case by the influence of bromide of Potassium in the same direction.

Case II. John M.L. Sailor, aged 37, married, and has five of a family; the youngest is about 9 months old. The family history shows nothing of importance. He confessed having contracted Syphilis

about eight years ago, with the exception of this, he had always been in good health. Three years ago, he was seized with the first paroxysm — (Haut mal). He has an "aura" shortly before the fit, which manifests itself by causing slight contraction of the muscles of the left arm and leg.

When the patient first came under our observation (18 months ago), he had slight paralysis of the left arm and leg, his mental powers were impeded, and the paroxysms were occurring with great frequency (as many as six in the one day)

Bromide and iodide of Potassium were administered, (3ii of the former and 3ß of the latter per day) and taken regularly since

He has been gradually improving since

treatment commenced, his mind is in a better condition, the hemiplegia of the leg has disappeared entirely, and, at present, he is three months without a return of the fits.

In this case, the cause of the disease is not far to seek, it is evident from the history and symptoms, that the epilepsy is due to syphilitic organic disease within the cranium. This case offers a striking contrast to the case we have been reporting in the cause of the disease, the presence of an "Ama", and in the hemiplegic phenomena &c

But, at the same time we observe, that like the previous case, it agrees with it, in the beneficial effects (with none of the injurious) produced by the use of bromide of Potassium.

Bromide of Potassium was administered in 30 grain doses three times daily. Almost simultaneously the paroxysms were observed to return with diminished frequency so that before the end of six months she was only seized at the menstrual periods. At the present time she is more than two months without having an attack. Her mental condition is greatly improved the headaches are less violent her memory is greatly improved and she is in excellent spirits.

We could supply notes of a number of cases of Epilepsy occuring in connection with disordered menstruation and of Epilepsy occuring in children during teething, which occured under our observation, and

Case III Elizabeth McG., aged 18, barmaid, unmarried, and has an excellent family history. She was in good health until two years ago. At this time, and while menstruating, she caught a severe cold, which caused the discharge to stop quad only. The day following the stoppage of the menstrual discharge, she was seized with the first paroxysm, which consisted of loss of consciousness, convulsions, &c (Haut-mal). At first she was seized with a paroxysm at every menstrual period only; but gradually they became more frequent. When she came under our observation, (12 Months ago) the paroxysms were occurring monthly, her mind was confused; she was very forgetful and was greatly depressed in spirits. She suffered greatly from headaches which were usually apparent prior to the paroxysms.

which appeared to obtain permanent benefit from the use of bromide of Potassium. but we consider these cases (recorded) sufficient to prove the beneficial nature of bromide of Potassium in this variety of Epilepsy (Haut-mal) whether recent or chronic from whatever cause arising or however much it may vary in its phenomena.