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Remarks on Epilepsy

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In the following remarks on epilepsy I propose, from the reported cases which accompany them to point out the salient features in which they resemble & differ from the acknowledged views on the subject.

In the small number of cases reported I have aimed as far as possible to make them representative of the various forms which the disease may present, & not to deduce principles so much as to summarize the various points of interest observed in the cases which though not complete present much that is of interest.

The subject is one on which so much has been written & so much investigated that I can only hope to corroborate in the light of the experience afforded by these cases the researches that has hitherto been made. I propose so far as they illustrate the different points to follow out the evidences they afford in the Etiology Symptomatology Pathology Diagnosis Prognosis & Treatment. In classifying my remarks I have followed the same plan as that in Bowes Manual on the subject.

Case I A.—M— 36 years of age has had fits since a girl but cannot say when they first began. No history of fits choea or insanity in the family. A fright has been blamed for the onset of the disease by the parents. At one time she had attacks as often as twice & thrice in the week & about two years ago was paralysed in one arm & leg (left) for about a month when it gradually wore away leaving no ill effects as patient has now full use of the limbs. Is generally in bed when the fits begin. Has a distinct sensation like wind or coldness (as she says like wind from a pipe) rising up the left side to the head & a feeling of giddiness lasting for about a minute & giving her time to run to her bed before she becomes unconscious. Fits are distinctly worse in winter & have no connection with the menstrual period during which she is usually exhausted & does not take any food but the discharge is normal. Heart & lungs are normal & she is stout & healthy in appearance.

Suffered from Eustachian deafness which readily yielded to Politzer's method of inflation & the Eustachian catheter. Her seizures when she came under treatment numbered twenty three weekly & she had generally as many as six distinct fits each time. Croton oil has never failed in reducing the number, generally only

occurring when it was promptly administered. In this case no cry is emitted & the convulsions are equal on both sides of the body. Has never passed urine or feces during the fits.
A combination of Pot. Brom. & Belladonna has reduced number of fits to a great extent, intervals as long as three months having lately occurred

Case II Mary Green aged 26 father alive mother dead, no history of fits in family, has one sister. Began to take fits about 18 years ago. Becomes a fright by a dog as first fit occurred immediately after, have occurred monthly since but have no connection with menstruation. A sensation of giddiness at one time preceded the fits. This has given place to what she describes as a weakness at the heart during fit the head rotates to the right & body thrown round two or three times before falling, both sides of the body are convulsed & attacks in this case are unusually severe. Tongue is bitten & urine often voided during the fits. Treatment in this case appears to have had little effect in diminishing the number or severity of the attacks. Urine normal & no albumen or sugar could be found before & after the fits

Case III Jane N—— aged 24. father alive & mother also, mother an inmate & has often suffered from multiple ulcers of legs which have readily healed under Iodoform dressing & Poap Solid. Began to take fits at 6 years blames a fright, a girl putting on a white sheet. Had first fit immediately after & since have continued with remissions sometimes as long as three months & sometimes as often as every third day. has 4 fits occurring at same seizure. At first fits confined to day & night, at one period only at night, now both night & day but never. When in the erect posture. First fit in an attack is generally at night & she remains unable to rise & is a semi-comatose state during next day when the fits may occur more or less numerous. During attacks urine is often passed. When about 6 years of age left knee was attacked by strumous disease for which it was amputated about 5 years ago. Previously patient felt at onset of fit for a few minutes cramps in left leg which was drawn up these were only felt in the knee & extended up the thigh, but did not begin in the toes. The fit ensued directly afterwards & was a distinct forerunner as she distinctly knew that a fit was impending when the contractions were felt. Since removal of the limb patient is unconscious of any aura attacks being instantaneous

At onset a cry is emitted which is described as unearthly & immediately she is convulsed, head & eyes are rotated to the right, bites her tongue & pupils wide. Vomiting during attacks is well marked & persistent. Does not recover consciousness between the fits of same seizure, some hours usually intervening, during which breathing is natural but cannot reply to questions or take food & has no recollection of what happens in the interval or how many fits have occurred. Succeeding the attacks there is severe headache & soreness all over the body. Large quantities of pale coloured urine are passed. Bowels are regular though flatulence is troublesome. Appetite poor, tongue flabby & often furred. Menstruation is regular & fits have lately occurred immediately before the period. Bromides have decreased the number of fits as when stopped they are again more numerous. The characteristic skin eruption of the drug in this case readily disappears when five minims of Liq. Arsenicalis are given along with each dose.

Case IV Mary M'L— aged 32. Power loom weaver. father & mother both dead neither of whom ever had fits. Her father had two brothers & three sisters who each had numerous families & in each of them there was one daughter who was epileptic, none of the sons in these families were affected. Patient cannot take of any one in the families if the cousins were affected. Began to take fits at 14 years of age just at commencement of menstruation. Can assign no reason for their onset & does not remember any fright or other cause.

At age of twenty she had four fingers much crushed in the mill where she worked. The fits immediately after increasing so much as to necessitate her giving up her employment, occurring as often as two & three in the week. In this case the attacks occur invariably at night & she is often only reminded by the bitten tongue & severe headache in the morning that a fit has occurred. A cry described as most invariably always precedes the fit. Fits of moroseness & sullenness are varied with periods of excitement (& threats of violence occasionally) before an attack these being regarded as forerunners by the nurse & her fellow patients. Has been three times confined in the lunatic asylum violence being then well marked. During attack head turns to left & that side is most convulsed. Healthy except slight bronchitis. Bromides have reduced attacks to one a month but never longer

Case V Marion P— or M—. aged 43. father died 14 years ago, mother alive no history of fits in the family or other neuroses. ... No exciting cause can be traced.
Attacks occur (distinct & separate) sometimes as often as twice in a day. No premonitory symptoms are felt unconsciousness setting in at once. Patient has many scars of burns & received during fits owing to the absence of aura. Falls suddenly down & is then convulsed, bites her tongue, urine & faeces are voided during the fit which usually lasts for half an hour. After this she appears to recover, gets up takes off her clothes folds them up neatly then unfolds them & put them all on again in perfect order, during this time she remains in the place where the fit seized. Afterwards she proceeds to repeat the work done by her some day such as washing cans sweeping up the floor putting coals on the fire which she fills up so long as a bit remains & doing other work such as falls to her in the intervals. All this time she is quite unconscious & has no remembrance of the acts, on being spoken to gives no reply it does not appear to hear. A light held close to the face does not appear to cause any blinking or other indication of its presence. Immediately after the fit she secretes bits of soap, pins, needles, laces bits of worsted & such valuables from. Fits are distinctly worse during menstrual period. Poor appetite

Case VI Ellen M^c^a— aged 34 housewife married. Began to take fits between 14 & 18 years of age. Menstruated before she was Married. Father & mother dead. Has two sisters living & one dead who was a chloral drinker. No history of fits chorea or insanity in the family. Father was a great drinker. Cannot account for their onset in any way. One brother died of disease of spine. No aura, or warning of onset. Notices that for a day or so before the fit she has repeated calls to make urine & passes large quantities of it, pale coloured also that night before sometimes for two nights before attack she is very restless & has dreams all night long about various subjects being remarkably free from dreams other nights. Shows that attacks are imminent when she has dreamt. The attacks are instantaneous in their onset. Has had eight attacks this month six of whom were bad & two severe. While speaking to the patient in the act of saying Doctor she suddenly leaned forward over the table & immediately began clutching at the table-cover apparently trying to pick it up with her fingers, features twisted very much & face very pale, a great contrast with the minute before, eyes turned up, jaw dropped, mouth pursed up & emitting a sucking sound. This lasted perhaps half a minute & then

She mothers ceased the face flushed slightly & she looked more better & wiped her eyes but on being spoken to did not reply. The attendant handed to her her knitting & spread her pattern book before her, she took two or three stitches put it down spread the tablecloth a little & looking entirely different resumed her attitude of attention. On being questioned Mary was not surprised could not remember anything that had taken place. This is described by attendant as one of her medium turns or a mild attack as when in bed only a sucking of her lips & a slight twitching of the fingers can be noticed she then sits up smoothes the cloths & after a little may enquire if she has had a fit, finding herself sitting up & no recollection of getting into the position or the severe attack she falls down without a cry, & is convulsed. Usually on the right side bites her tongue & passes urine. This lasts for five minutes perhaps when she immediately gets up & walks about but looks stupid for some time after. On two occasions since last admission to asylum on 25th Sept 1882 she had preceded by a fit, a maniacal outburst singing shouting & dancing all night without any sleep for two nights & a day when she suddenly enquired why she was in seclusion & dressed. This taken out dressed & went about as formerly during day time. Is fairly healthy heart & lungs normal. Appetite good & menstruates regularly fits having no reference to period. Fits are always single. Any excitement shortens the interval, a quarrel sometimes bringing on two in one day. Has two children one of whom is fairly healthy the other suffers severely from eczema & has had an arm & leg amputated in consequence

Case VII Hugh M'L— aged 57. Joiner, unmarried, has two brothers & one sister none of whom have ever had fits or other neuroses. Patient was always a moderate drinker but never drank to excess. Was a healthy man until date of injury to head with the exception of measles whooping cough in childhood has never had any acute diseases. About 16 years ago while working on a scaffold three stories high it gave way & precipitated him to the bottom falling on a heap of stones & other rubbish, he was picked up insensible & remained so for three or four days when he gradually recovered, a large cut on his head however did not healing for five or six weeks after. Admits having practised masturbation at school but gave it up early & long before onset of disease. On examination a scar & depression of bone can be felt over & slightly to the right of the occipital protuberance about an inch in length & half an inch in breadth & having a direction upwards & to the right. The late Mr. Syme proposed to operate by removing this portion & recognizing its proximity to the sinuses warned the patient of its dangers, he however consented but on the proposed day of operation Mr Syme died.

His fits occur once a month as a rule & as a rule two or three on a seizure

the first being the most severe. He states that on a few occasions before the fits he felt jerks in his head & neck which nodded violently but less at the onset & preceding the fit he sees visions of distant countries ideas of which he has taken from books, old remembered faces & people pass before him like a flash & he loses consciousness. Patient has noticed that Nocturnae emissions have preceded fits on a great number of occasions, in fact he has come to regard this as a warning of an attack. During the intervals he has noticed that if suddenly surprised & startled by anyone & he should happen to have anything in his hand the impulse to strike is overwhelming. Recently he has noticed that the same day of attack the taste in his mouth resembles "the smell of gas from water-closet" & would effect attacks on recurrence of this taste. No cry is emitted at onset but after aura above mentioned consciousness is lost. Succeeding the attack there is a sensation of fear & inability to recognize surroundings Incontinence of urine & passage of feces have occasionally accompanied the fits & tongue is often bitten. Notices that his urine is scanty & dark after attacks.

Health is fairly good, slight bronchitis is complained of. Constipation is the rule accompanied by flatulence. Appetite fairly good.

Case VIII C. OR age 18 no occupation (at home) has had his sisters both of whom are living. No history of epilepsy chorea or insanity in the family. Menstruated at 14 & one year after fits commenced. But as long as she can remember previously she had what she describes as fits of weakness during which her father would take her on his knee & she would recover in ten minutes or so afterwards.
Blames seeing a man in a fit in the streets for the commencement of the attacks as first fit supervened same night. Menstruation since first period has been normal.
Pulse is patient has three fits in a month one just before one just after & one midway between the periods, that preceding the period being remarkable for its severity. There is no time of the day in which the fits may be expected as she has had attacks at all hours.
Patient became paralysed on the left side in infancy but little can be learned from her regarding its onset & progress & as her mother can tell her little except that on returning after a short absence she found her in this condition. The face is not paralysed but one eye (right) is smaller & when she says the result of an injury. The tongue can be protruded & withdrawn any deviation to the side.
The leg has partially recovered so as to enable patient to walk but is much atrophied especially below the knee & is slightly shorter than the other. The arm seems to have recovered in a much less degree & is also shorter

& Summer than the right. The wrist is motionless but the elbow has some power of movement & this is increased in the shoulder joint though not quite normal. The wrist is strongly flexed by the carpal flexors, the fingers flexed at the metacarpo-phalangeal joints & extended at the middle & distal articulations, the thumb being flexed inwards on the palm. In the foot the great toe is strongly extended. Sensibility on the paralysed side is slightly affected. Patient states that before the fit comes on for two or three minutes previously she has a feeling of what she describes as heaviness in the left (paralysed) arm beginning in the shoulder & passing down to tips of fingers till whole arm is heavy this feeling then passes to side & lastly travels down the leg (left) when consciousness is lost & fit proceeds. This sensation invariably precedes the fits & always in the order & progress named. Only one fit occurs at a seizure & my eye is omitted. Convulsions begin in the paralysed side but are not confined to it. Head rotates towards towards left (paralysed) side, convulsions are general the tongue bitten & urine often passed during the attacks. Patient recovers consciousness almost immediately & does not sleep after attacks. The Bromides have been given & have visibly decreased the number of fits a combination containing Hyoscyamus having had most effect. On this case though taken regularly the Bromide & Potassium has not produced any of the characteristic skin eruptions of the drug

Case IX Patrick Mc—— age 43. Clerk, father living Mother dead of bronchitis No history of fits insanity or chorea in family. Began to take fits at 3y years of age. In 1859 when in the army he contracted Syphilis & was treated for it. Three years after sores appeared on his legs & he was discharged in consequence. Up till this time he had not felt any ill effects. After discharge he became a teacher in an Irish School & continued here for two years during which time the sores on his legs were healed. In 1874. on the 6th Dec at 9 a.m. he had a fit & was convulsed on the right side only, lasting for three quarters of an hour at the termination of which he was found to be paralysed on the right side, arm & leg but no final paralysis. Same night he had another fit during which he lost consciousness but his tongue &c. This one lasted close on an hour. Fits have recured with varying intervals ever since. A fortnight before this he fell down a few steps four or five feet in height on to his head was a little stunned but felt no ill effects after. Has not mentioned this in the previous histories which have been taken of his case. Previous to first attack in 1876 suppurating sores were established on the scalp & continued

discharging for nine months during which pieces of bone were exfoliated described as being as large as a threepenny bit & a shilling respectively. Three weeks after first attack he entered the Royal Infirmary. Glasgow. Where he remained for three months under treatment & was improved. In October 1878 he went into the Western Infirmary for treatment the fits then occurring once a fortnight. During his residence here more bone was exfoliated from the skull. Remained for seven months & disease was greatly alleviated under Dr Lauder's treatment so much so that from 120 at a seizure in twenty four hours, when he left he was free for three months from any attacks. This was brought about he believes by large doses of Iodide & Potassium as much as 120 grain doses having been given. Since then fits having recurred at intervals of a month & six weeks he came under Dr Robertson's treatment when under Bromide & Iodide of Potassium the fits again decreased for intervals of four months. Afterwards. When working at Port Dundas Station he suffered from sleeplessness horrible dreams & starting of the limbs on the paralysed side, which by this time had much recovered. To alleviate this he took as much as ℥j of Bromide of Potassium in one dose & found

that even this large dose had no nauseating effect, was not followed by drowsiness but was on the whole soothing. While thus treating himself with doses of Bromide of Potassium from 3ii – 3j at bedtime his fits did not visibly decrease but continued at intervals of a month & six weeks. At the same time he often drank to excess & blames this for increasing the number of fits in the seizure.

At present the interval between the attacks is slightly shortened as he has given up taking the Bromide & Iodide for some time. So far as he can tell the Bromide has had little effect unless combined with the Iodide.

Admits having practised masturbation from school days till he joined the army at 18 years of age when he gave it up entirely.

Before fit comes on patient has for ten minutes previously spasms of pain down right (paralysed) side accompanied by a feeling of loss of power & sensation & fear of death, fingers begin to twitch & jerk & spasms at the shoulder & side of the neck. Then he has a feeling as if struck by a gong on the left side of the head causing his head to twist to right, his vision is then lost & fit supervenes. A reversion of the above process takes place when the fit passes off passing down

Ending in a twitching of the great toe. Paralysis (complete) of right arm takes place & passes off gradually after some time.

No cry is emitted previous to onset of convulsion now, nor has been at any time previously. His general health is now fair with the exception of a mild cough. Bowels are regular & appetite fair.

On comparing the paralysed side with that the right leg is found to be distinctly thinner than the left. The difference is however not so marked in the arm which has recovered more than the leg both in appearance & usefulness

In considering the foregoing cases the first points in the Etiology are,

Predisposing causes

1st Sex. It has been found from carefully prepared Statistics by Lowes that females are more subject than males in the proportion of 6–5 Lowes when hysteroid cases are included they constitute according to the same author still 52 per cent of the whole, & including hysteroid cases sixty six per cent. These conclusions have been arrived at from an analysis of 1450 cases in the National Hospital for the paralysed & epileptic

2nd Hereditary Predisposition. In the cases reported by me & in a number of other cases at present in the Lowes Hospital Glasgow the only case in which distinct heredity could be traced was that of Mary Mc—. No history could be obtained from the remainder all of whom either state that they are the only member of the family affected, or are unable to give any account of the condition of their parents & families. The proportion of cases showing evidences of heredity was found by Echeverria to be 28 per cent by Reynolds to be 31 & by Lowes to be 38 per cent. These observations being made in each case

on different numbers of cases, that of Sowers being the largest may therefore be accepted as the nearest approximate.
According to him inheritance affects the female to a greater extent than the male 53 per cent female & 45 male. In the case of Mary M.L— though she & 5 cousins (all females) suffered, heredity could not be traced beyond the fact of so many suffering in the same connection.
Excepting the fact that her father was drunken & doubt entertained as to his having committed suicide neither he nor her mother suffered from fits or insanity.
This case then seems to point out that an inherited tendency is more likely to affect females than males as although there were quite a number of males in these families not one of them seems to have been affected. In this case hæmorrhagia has been from father to daughter & from mother to daughter in equal proportions. Of new this disease traceable in the history of epileptics epilepsy itself is said to be by far the most potent. Chorea & insanity also exert their share in its production though in less numbers. The conclusions therefore to be drawn from the case of Mary M.L— are that heredity undoubtedly exists in her case & has in all probability descended from the grandparents & by

a possible process of atavism (if we except the doubtful history of the fathers suicide) but whether the original malady was epilepsy or insanity there is no evidence to show.

3rd Inherited Syphilis In none of the cases reported was there any evidence of the above, nor did a careful examination of a number of new cases reveal any evidence that pointed to this as the cause

4th Consanguinity of Parents. This is stated by one authority to be a probable predisposing cause & drugs I have met with no instances in the reported cases but it may be an important factor in the production of this as of many new congenital deficiencies

5th Age. The age from which the first attacks dates varies between the extremes of infancy & old age, cases having been recorded as late as the seventieth year. By far the greatest number begin in the first twenty years of life. In infancy & at puberty females predominate but after puberty the number of males in proportion attacked increases until at middle life both sexes are attacked in equal numbers. Thus the climacteric period does not seem to be so critical in this respect as the onset of menstruation at which period the

cases of Mary M'L— & Cath O'R— developed.

Exciting causes

Mental causes (emotion) Of all the immediate exciting causes fright seems the most potent. Thus in four of the cases reported & in three not reported this is given as the cause. In one it was seeing a man in a fit in the street. In another it was a fright from a dog. In another from seeing a girl dressed in a white sheet & in another in a fight caused by a change of sheets. In one case that of Jane M'— first fit occurred immediately after, as also in the case of Mary S. In the case of Cath O'B— fit supervened same night & in the other cases immediately on sight of the policeman brought to arrest him. Fright as a cause is more common in females than in males. In infancy the proportion is the same but as age advances the proportion of males rapidly decreases. This is no doubt due to the fact that the emotional feeling is stronger in the female. Comes gives it that under 10 both sexes suffer equally between 20-30 the proportion is as 3-13 & over thirty all were women. That fright causes a disturbance of nerve centres may be seen in the sudden start & paleness often observed. The tremor which often persists indicates the enduring disturbance of the nerve centres. Infantile causes. Rickets stands perhaps first as nearly two thirds

Of the cases begin in the so called dentitic convulsions due to the retarded development which occurs in this disease & the instability of the nervous system which accompanies it. This may occur in infancy in these cases & disappear only to re-appear when the electrogenetic period of puberty is reached.

Traumatic causes. In these a considerable proportion of cases are due & here the male sex is most liable, the nature of their occupations determining this. However in cases occurring in youth this does not operate & the numbers are nearly equal. A fall or a blow on the head is the usual cause. The case of Hyde W.L— is an illustration of this, though it is possible that there may have been laceration or coarse injury & further that there may still be depression of bone & consequently pressure at the seat of injury. This was probably the point of Mr Lyons when he proposed trephining. It is just possible that permanent injury to the cerebellum may have resulted causing temporary discharges in which the power of the cerebellum in co-ordinating muscular movements is impaired. If as stated by some the cerebellum has any connection with the generative organs the nocturnal emissions complained of by this man may be indications of commencing irritation (see report) Ferrier has found that

irritation of the upper surface of the cerebellum resulted in movements of eyes - head & limbs. This case should probably be considered as one due to organic disease but undoubtedly many cases occur in which no permanent injury is sustained & are still followed by the same effects. The case of Patrick M'C. may illustrate this where a fall was sustained a fortnight before the first attack stunning the patient but not resulting in any extensive injury. This in this case may readily have been the exciting cause but who depend very much or whether we consider this a case of post hemiplegic epilepsy or not.

Exposure to the sun. Cases of sunstroke are often followed by chorea like affections of the muscles & epilepsy & in this which differs little from apoplexy the lesion may be much the same as obtains in the post hemiplegic condition.

Acute diseases. This may follow acute diseases such as Scarlet fever Measles Typhus fever Rheumatic fever &c.

Chronic Alcoholism. Though I have obtained in a number of cases histories of hard drinking & Habby in the case of Patrick M'C— & others, I have been unable to connect this with the onset of the disease though some confess that its progress is decidedly influenced by it

Epilepsy from absinthe drinking is rare with in France, the toxic properties after long use giving way to an impairment of the nerve centres.

Renal disease. Among the functional consequences of this disease are disturbances of nervous centres. Convulsions occur in paroxysms resembling true epilepsy at short intervals associated with coma & terminating in death. This condition however may be perfectly chronic & last many months without uraemic symptoms being at all prominent, hence the importance of an examination of the urine in all cases.

Masturbation. This is manifestly a different subject on which to obtain information. In both the male cases reported there is a history, & in a number of other cases, some at present in hospital, have obtained a history of this practice, which though admitted to have been practiced is always stated to have been given up at dates long anterior to the onset of the fits, & a general unwillingness shown to connect this in any way with the disease. Whether this is productive of the disease or is only the result of a neurotic tendency is a question to be decided in individual cases heredity & temperament no doubt

determining its effects to a great extent
Jones believes that it is much less frequently the
cause of true epilepsy than of unsystematic attacks
sometimes intermediate between hysterical & epileptic forms
& does not doubt the etiological connection.
Syphilis. Convulsions distinctly epileptiform in
character are characteristic of cerebral tumours
but mitte these but unlike are often unattended
with loss of consciousness. They may however
occur at distinct intervals or in daily
paroxysms. In syphilitic brain disease
epilepsy is common & may continue after
treatment has rendered the syphilis
comparatively harmless. Fournier has
stated that in the epilepsy of the early
period of constitutional syphilis & in that
of the secondary period the brain is
without visible lesion. This is contradicted
by Jones & Echeverria who state that organic disease
is by no means rare & that in most cases lesions
may be found. The case of Patrick McC—
is illustrative of syphilis in the causation of
this disease. We have a distinct history of
syphilis contracted & an almost unbroken chain
of evidence of secondary & tertiary manifestations
up to the date of seizure. In the year
previous to attack we have the history of
suppurating sores on the scalp & exfoliation
of bone without any history of treatment till after the
hemiplegic seizure whose recurrence may be readily attributed
to favour the opinion that the disease had not been due merely to
or been set up independently in the membranes or substance of
the brain. Further confirmatory are the effects of treatment
& his testimony that the bromide was of little service
unless combined with iodide

Symptoms. The symptoms which precede a fit of epilepsy may very much & have been divided into,- Precursory symptoms. Auræ divided into Unilaterae, Bilaterae or general. Visceral or Pneumogastric. Vertigo. Cephalic. Psychicae. Special sense as Olfactory. Gustatory Ocular & Visual & Auditory. The symptoms of the developed attack will be considered later. I will consider the above phenomena only so far as they are illustrated by the cases reported.

1st Precursory symptoms. Under this I will consider only the premonitory symptoms which precede the attack by some hours or days & not the immediate warning which will be discussed under Auræ. In the case of Hugh McL— the fits have on a few occasions been preceded by one of the commonest of premonitory symptoms viz sudden starts & jerks confined in this case to the head & neck & occurring for some hours previous to the onset of attack, more generally there are fears in the arms & legs.

In the case of Ellen McA— she states that for a day or so before the fit she has repeated calls to pass urine & that large quantities of it are passed pale in colour but otherwise clear & without sediment. That for the night previous to attack she is restless & dreams all night long on various subjects. Consider these symptoms as conclusive evidence of proximity of attack. In none of the cases reported could any premonitory symptoms be learned excepting in these two.

The other precursory symptoms which may be felt for some time previous have been described as giddiness, dyspnoea, loss of sight, flashes of light & colour, & automatic actions such as running epilepsia cursiva.

Auras. This subject was first investigated by Hughlings Jackson & in several of the cases reported make instances occur. The proportion of cases in which an aura is felt have been variously stated as by Gibbes in five out of every hundred, by Lowes it is stated as occurring (at least realisically) in fully one half. My own experience leads me to believe that the latter opinion is more nearly correct than the former. An aura has been described as a sensation which is referred to the periphery but is merely the result of the commencing process in the brain. The peripheral origin of the aura was at one time held to be proved by the fact that a lesion & irritation of a nerve sometimes caused & could be demonstrated in the part where the aura occured. That the aura is merely the commencement of the fit & not its cause is well demonstrated in the case of Jane N — where cramps beginning in the knee & extending up the thigh were the certain forerunner of a fit. Complete removal of the limb of the aura in this case was followed by the cessation of any premonitory symptoms but the course of the disease was not manifestly altered by it. The fact however that an aura commencing in a limb may be

arrested by the application of a ligature has been quoted by Brown-Sequard as evidence of the peripheral origin of the disease & of the importance of the aura in the causation of the fit with this view in his chapter on treatment he advocates ligature, section of nerves, blisters setons cauteries &c in the neighbourhood of the aura. "It is now known that the ligature will arrest a fit as effectually & as frequently when due to cerebral tumour &c as when due to any other cause" There are however undoubtedly cases in which the removal of foreign bodies & other powers of irritation from the peripheral nerves has been followed by a cure Such cases are undoubtedly rare, several such are quoted by Brown Sequard in his "Researches on Epilepsy" Of the different forms of aura, the unilateral falls first to be considered & of this, which is found to be common in seizures due to organic brain disease we have corroborating illustrations in the cases of Cath. O'R— Patrick Mc— both of whom are hemiplegics & in both the aura is referred to the paralysed side. In the case of Cath O'R— it is described as a feeling of heaviness descending the arm to the tips of the fingers & afterwards to side & travelling down leg, when it reaches the loss consciousness is lost. In the case of Patrick Mc— spasms & pain first down right (paralysed) side accompanied by a feeling of loss of power fingers twitch this ascends to shoulder, neck & head before consciousness is lost. This seems to be a

case in which a sensory aura descends & a motor aura ascends the limb.

Of Bilateral or general auras there is at present one case here in which the arms are extended & jerk for some little time before the onset of fits. Fits purely epileptic in their character are more generally preceded by the unilateral than the bilateral warning.

Pneumogastric or visceral auras. A. L. M— describes a feeling like wind passing across the heart & up left side to the head.

Mary S— at one time also had giddiness preceding the fit but this has given place to a sensation of weakness across heart which by the way is generally referred by these people to the pit of the stomach. Various other feelings are described as numbness pain burning coldness trembling choking &c. One fourth of the attacks characterized by this aura are said to be hysterical the sensation in them being apparently the same as the globus hystericus, a rising to the head choking &c.

Of Vertiginous & Cephalic auras I have met with no instances though they are common & minutely described.

Psychicae These may be associated with other auras as in the case of Patrick M— in which a sensation of fear & dread of death accompanies the passage of the sensory aura.

Of Special sense auras. Olfactory. I have met with no instances of this though various have been described such as the odour

of rotten eggs & various other unpleasant smells.

Gustatory In the case of Hugh McL— he complains that he feels a taste in his mouth like "the smell from closets" & therefore offensive. This is associated in his case with an—

Ocular & Visual Aura he describes that just before the fit he sees visions of distant countries, ideas of which he has taken from books; old remembered faces pass also like a flash. In another case (not reported) large black objects are seen floating across the field of vision. Many forms of this aura are described such as diplopia loss of sight sparks flashes of light colours in various combinations. Micropsia visions of persons, ugly faces, animals, beautiful places &c. &c.

Auditory In the case of Patrick McC— the last step in the march of the aura was a sound as if struck by a gong on the side of the head. Another patient describes in addition to a visual aura a sound of whistling which resembled a man whistling one long drawn note. Various sounds may however be heard as an explosion, beating of a drum, humming ringing, whistling, while in others distinct articulate words may be heard. Various combinations of this aura may occur as with a visual or an olfactory or with a psychical aura as in the case of Patrick McC. & the other case mentioned above.

We come now to consider the symptoms of the developed attack. The epileptic cry is a phenomenon which is not always present but when it is is considered characteristic & is variously described as unearthly & as resembling the cry of a distracted peacock (Reynolds). This symptom will be noticed in reference, to occur in the cases of Jane N— & Mary McL—. In the majority of cases at present time this symptom is not present. It is caused by spasm of the laryngeal muscles, & contraction (tonic) of the respiratory & abdominal muscles forcing air through the narrowed glottis. The following account copied from Bowers will give a succinct idea of what occurs during a seizure of the Grand mal or Major attacks.

"The attacks or seizures which characterize epilepsy being divided into the Grand mal or Major seizures & the Petit mal or Minor seizures

"Grand mal: At the onset of the severe fit spasm is tonic in character, rigid, violent muscular contraction, fixing the limbs in irregular positions. There is usually deviation of the eyes & rotation of the head to one side, & this rotation may involve the whole body & sometimes cause the patient to turn round, two or three times. (See case of Mary S—). The tonic spasm involves the muscles of the chest & abdomen. The features are distorted; the face, usually pale, becomes suffused & then livid, as the chest is fixed & respiratory movements are arrested. The eyes are open or closed; the conjunctiva is insensitive; the pupils

delate widely as cyanosis comes on. As the spasm continues, it commonly changes in its relative intensity in different parts, so that slight changes in the position of the strained limbs occur. Presently: when the cyanosis has become intense the forced tetanic contractions of the muscles can be found to be vibratory & the vibrations increase to slight visible remissions. As these remissions become greater the muscular contractions become more & more like in character & the stage of clonic spasm is reached in which the limbs, head, face, jaw, trunk are jerked with violence. In the resulting movement of the chest air is expelled from the lungs & bloody saliva is frothed up between the lips. The air entering the lungs is at first inaudible to listen the breath & the pulse seem to be at the point of death. But as the intervals between the shocks of spasm lengthen & the remissions become greater more breath enters the chest & the breath hisses. As becoming less frequent the muscular contractions do not become less strong & the last jerk is still as violent as those which have preceded it. At last the spasm is at an end & the patient lies deadly pale & usually sleeps heavily for a time & then can be roused. ~~Some~~ Some frequently & fewer occasionally air is passed in the fit. In some cases the first spasm is more deliberate in its onset. Instead of commencing immediately as the muscles of

The body is begin in one region to the face or arm & then spreads first to the limbs on the same side the head & eyes being turned towards that side & then legs on the side first affected & invades the limbs on the other side with the corresponding rotation of the head. Such attacks may commence with one spasm but frequently they commence with & consist of clonic spasm only. This form of convulsion is that which is most common in organic cerebral disease such as tumour but it is also met with also in idiopathic epilepsy. In such cases consciousness is often lost late so that the patient is aware of the commencing spasm.

A considerable proportion of the cases observed by me have presented most of the appearances above described; while in a notable proportion the symptoms though coinciding in the principal features were deficient in some & diminished in violence in others. All the cases reported lost consciousness early even the case of Ellen M'A—. Where the seizures may be elapsed as belonging to the petit mal retained no recollection of what had happened in the fit observed by me & referred to in the report of her case. Some consciousness may be retained in the bilateral case of petit mal & in the grand mal consciousness may be lost later in the seizure in cases of convulsion from organic brain disease than in idiopathic epilepsy. In the case of Cath. B— it will be observed that the convulsions begin in the left side & that the head is rotated

in the same direction This is the rule in fits which begin unilaterally & in this differs from hemiplegic rotation in which the rotation is from the paralysed side. Though this case is one of post hemiplegic epilepsy it will be noticed on reference to the case that there is no paralysis of face or limbs. Complete rotation of the trunk occurs in the case of Mary L—.

Pupils It is stated that at the onset of the fit the pupils are contracted but I have never been able to notice this, while dilatation attending every stage in which I have examined them nor have I observed the stage of pallidation which is said to succeed the fit.

Sphincters Relaxation of these often occurs the passage of urine being more common than feces. In the cases reported it will be noticed that though several instances occur in which urine is passed in only one case of Mania St— did defecation occur.

Of minor attacks or petit mal the case of Ellen McA— presents a very noteworthy illustration at times however complicated as even with seizures of the grand mal. The petit may be defined as a fit which does not pass beyond the prodromal stage, or the stages may be so rapidly completed, altogether absent, or blended, or new conditions superadded.

Automatism. The case of Ellen McA presents this or a condition which is commonly associated with the petit mal in which the patient goes on with the work she was occupied in previous to attack. In her case on being handed her

knitting she took two or three stitches & then
pushed up a stitch which had been dropped
at the over of the fit. During this time she
was perfectly unconscious. Various instances of
this are quoted as by Rosseau in which a woman
went on playing as usual & by Radcliffe of a
young lady playing the most difficult music
while in this condition. Other actions which
require a close attention & concentration are
recorded in which patients have put them-
selves in the most dangerous positions without
accident. The condition of automatism most commonly
succeeds the petit mal & after slight attacks
of the major seizure. That it may however occur
after fits of an unusual severe character is
shown by the case of Marie A— in which
most of the symptoms of that condition may
be observed to the existence of days from time
to time showing the past nature of the
complaint. & the occurrence of slight convulsive
associated with biting of the tongue & passage
of urine & feces. In addition to the automatic
performance of work familiar to her every day
employment, & the act of undressing another
very common act peculiar to the condition
may be noticed in referring to the report
viz— The searching of articles without reference
to their value as bits of dirty lace &c.
In this case there seems also to be an
element of post epileptic hysteria as any
attempt to take them away from her
is accompanied by shrieks &
resistance

Post Hemiplegic Epilepsy. The case of Cath O'B- is an illustration of this condition to which the female is said to be more subject than the male sex. As in her case recurrence is more common on the left than the right side. The onset of the disease in her case dates from the fifteenth year, though as will be seen on referring to the report that she was as long as she can remember nervously subject to fits of weakness which may have been epilepsy of the petit mal or less pronounced major seizures. The recurrence however of the first acute seizure is by no means uncommon as long as fifteen to twenty years after the hemiplegic attack more especially when this dates in infancy as in the case in question. The commonest cause of infantile hemiplegia is a thrombosis occurring in a cerebral vessel & probably caused by coagulation of the contents due to a weak circulation. In this case then the fright sustained may have been the exciting cause of the disease or may have only rendered acute a disease that had pre-existed. A description of the chief features which in the condition of the paralysed side is given in the report. The seizure is remarkable in this case for its severity & convulsions though at first confined to the left side rapidly become general. Sensation though generally normal is slightly affected in this case on the left side

The case of Patrick M'C— is also an illustration of this condition, though as will be noticed the onset of the hemiplegic attack was simultaneous with the epileptic.

Paralysis may follow an ordinary epileptic seizure, affecting half of the body or it may be a clinic only. This may be purely functional as in the case of A— M— where it passes off without leaving any ill effects, but where it persists as in this case, is the result of an organic lesion & the convulsion are the consequence. This is rendered extremely probable by the whole history of Patrick M'C— which is an extremely typhlitic one by the persistence of the paralysis & by the effect of treatment that apoplectic or epileptic fits followed by hemiplegia & the result of tumour of the brain or its membranes either. There can be no doubt that syphilis is a disease in which gummatous tumours are developed in the dura mater pia mater & connective tissue of the brain is equally well established, it seems then only fair to assume that in this man in whom clinical ulcerations of a tertiary character with exfoliation of bone from the skull (a condition generally incurable to syphilis) were manifested, may have likewise suffered from internal manifestations which the symptoms refer to the brain. The temporary paralysis following fits of epilepsy has been explained on the ground of its being due to exhaustion of part of the brain by excessive action. This from which recovery

Pathology. Of the pathology of this affection I am able to add nothing to what has already been written on the subject. Different observers have referred its origin to almost every part of the brain, some calling it an anaemic & some a hyperaemic state, while the convolutions, the ganglia at the base, the pons & medulla, & the nervous centres as a whole have all been held responsible. It has been proved experimentally that anaemia of the brain suddenly produced will cause convulsions while convulsive torticollis are common during congestions. The pallor of the face at the commencement of the attack which has been ~~stated~~ stated by Jackson to extend to the retinal vessels as well, has been taken as evidence of an anaemic state of the brain, this however is not confirmed by Lowe. but Ophthalmoscopic examination during a fit is manifestly different. That this condition is quickly followed by a congested state is shown by the cyanosis that follows & by the presence of haemorrhages & congestion of the vessels seen post mortem. During the cyanotic state the veins of the retina look dark & distended. Further evidence of a congested state is shown by the researches of Schroeder van der Kolk who found the vessels of the medulla increased in size. Reynolds concludes

that the medulla & upper part of the cord are the parts concerned. Seeing that it is the parts at the base of the brain corpora striata & cerebellum. Kussmaul & Brown-Sequard. have shown that convulsion may take origin in the pons & medulla & Nothnagel has demonstrated a convulsive centre in the medulla. On the other hand Ferrier has shown that irritation of the cortex in the motor region has the same effect. Researches however seem to show that the deeper centres may be affected by irritation of the convolutions & that the discharges may come from the neighbourhood of the corpus striatum or the deeper & recent from the over action of grey matter, an ascending discharge resulting in loss of consciousness just as the descending results in convulsions as suggested by Dr Robertson of this hospital & which has been explained by Ferrier as the result of arterial spasms. Injuries to the spinal cord have been found by Brown-Sequard to produce convulsions resembling epilepsy, in animals viz 1st Complete transverse section of a lateral half. 2nd A transverse section of its two posterior columns of its posterior comma of grey matter & of a part of the lateral columns. 3rd A transverse section of either the posterior columns or the lateral or the anterior alone, 4th Complete section. 5th Simple puncture. That tonic & clonic spasms may be of spinal origin must be admitted, so that in the light of all this conflicting evidence we cannot frame a definite pathology to this disease

Diagnosis. The diagnosis of Epilepsy is manifestly often a matter of extreme difficulty from the number of affections which may simulate it in a greater or less degree & the multiform characters which it may itself present. Shamming of this disease is also extremely frequent but the fraud is usually easily detected by those familiar with the disease. Thus in the sham fit the tongue is rarely bitten or urine or faeces passed & the pupils are sensible to light & not dilated. It is said that insensibility of the conjunctiva may be produced but this must be rarely. The convulsion may often be well simulated & resemble the true fit to a great extent but attention to the above points will often elucidate the case. Further when the patient falls he does so in a manner not likely to injure him much & water thrown over him produces shrinking. Suggestions of heroic treatment often succeed in cutting these pretended fits short. Still there may be cases in which difficulty may be experienced.

From Syncope. This attacks weak persons under circumstances favourable to it as under conditions of mental emotion hot rooms &c. The other occurs indifferently in all classes of people & under all circumstances. In the one feeling of sickness or faintness may precede it, the other occurs suddenly, minor epileptic seizures may be accomp--anied by a feeling of faintness. Loss of consciousness is oftener in epilepsy than

in Syncope in which micturition & defaecation seldom occur. Automatism is never observed ~~after syncope~~ & as we have seen may ~~follow the other~~

From Hysteria. The following table taken from Gowers gives the main points of difference.

	Epileptic	Hysteroid
Apparent cause	Absent	Emotional disturbance
Warning	Any but especially lateral sympathic aura.	Palpitation malaise, choking bilateral foot aura.
Onset	Commonly sudden	Often gradual
Scream	At onset	During course
Convulsion	Rigidity followed by jerking rarely rigidity alone.	Rigidity or struggling throwing limbs or head about.
Biting	Tongue	Lips hands or more often other people and things
Micturition	Frequent	Never
Defaecation	Occasional	Never
Talking	Never.	Frequent.
Duration	A few minutes	Often half an hour or several hours
Restraint	To prevent accident	To control violence
Termination	Spontaneous	Spontaneous or artificial (water &c)

The above distinctions seem to leave little doubt as to the diagnosis between the two affections still there are cases in which the two appear to run into each other, hysterical epilepsy being a link between them & hysteroid convulsion often occurs as the sequel to to a true epileptic fit it being generally supposed that hysteroid convulsion setting in during sleep is due to this

From Infantile convulsions. It will be seen on reference to exciting causes that the majority of cases begin in the so called dentition convulsions & that a rickety constitution predisposes. That this condition should be early recognised is of the utmost importance & treatment adopted with a view to its removal as the persistence of the fits may thereby be prevented. Sources of reflex irritation should be carefully sought for such as intestinal worms as many cases of convulsion appear to be due to this & disappear on their removal Indigestible food & even the irritation caused by a fit have been the exciting cause in instances recorded. The convulsions in children or rather infants may depend on causes which may be easily removed or may be the early onset of a permanent disease. Attention to the above points will no doubt help to clear up a certain proportion of cases.

From Toxaemic Convulsions. These may be due to Alcoholism Lead & Strychnia. in all of which a careful enquiry into the history of the case & observation of the attack will clear up any doubt that may exist as to their origin.

From, Organic Brain Disease. The diseases accompanied by convulsions due to organic brain disease & which may simulate epilepsy are, — Cerebral haemorrhage, or Cerebral softening. Gowers & Brennigates

The convulsions due to cerebral haemorrhage & softening and resulting from it are known by the persistence of the paralysis which does not grasp away in it may be a few weeks as may the case in the post epileptic hemiplegia & which is said to be due to exhaustion of a part of the brain only. In the former we have in fact all the symptoms of ordinary hemiplegia due to vascular lesion & in the latter only a temporary condition of fatigue brought on by frequent & continued discharges of nerve force. Chronic diseases such as tumour & meningitis (chronic) may also produce convulsions resembling epilepsy. These usually begin locally & affect one side only in all cases the probability of the above should be kept in mind. The case of post hemiplegic epilepsy quoted shows that organic brain disease long since quiescent or rendered latent to a great extent may still cause convulsions or that the original condition set up may persist even when the original irritation has ceased or been reduced to complete subinvolution.

Prognosis. Epilepsy is not per se a fatal disease. Except when the attacks occurred by the subjects of it are considered the danger to life is considerable. Thus should his occupation necessitate his working on elevated scaffoldings during a seizure he may fall, or he may fall into the fire & be burnt or may fall over a precipice or into the water or may be choked while eating or may be asphixiated as a consequence of turning on his face during a fit in bed. When a fit does prove fatal which is rarely it may be from asphyxia or the patient may pass into the condition of what is known as the Status Epilepticus in which attacks succeed attacks & the patient never conscious between the fits may die of exhaustion & collapse or of subsequent haemorrhage in one case which I have observed after an enormous succession of fits the coma gradually deepened the lungs became intensely congested frothy mucus was expelled in large quantities & the patient finally died of the combination. The spontaneous disappearance of the disease there is very little evidence to show that it occurs except in rare cases. Of the arrest or cure by treatment. Cases frequently occur in which as the result of treatment intervals of one or two

or three years may occur & in which time the cases having passed from observation may be set down as absolute cures whereas a return to former habits or a recurrence of exciting cause may have caused a renewal of the disease in its most acute form. The introduction of the bromides has undoubtedly altered the prognosis in this disease as by their use the disease if not absolutely cured may be rendered to a great extent quiescent & the intervals greatly lengthened as above stated to periods of years.

The occurrence of an aura is rather favorable than otherwise as has been proved by statistics. Slight mental change may also be observed from when treatment of the attacks is successful. Post hemiplegic epilepsy is obviously an Intimate form as here we have a brain lesion accompanying or it may be causing the disease & in advanced age likely little amenable to treatment. The duration of the hemiplegia will have to be remembered as if only symptomatic then treatment may avail much. To sum up then if the disease is due to some cerebral cause, & this is discovered then no further treatment may be necessary but should it be due to cause having their origin in the higher centres, then the utmost we can do is by the administration of the proper remedies to extend the interval between the seizures to the utmost limit

Treatment. In dressing the treatment of this disease by drugs I shall begin with that which has of late years gained most confidence & which has by its results proved its superiority to any other viz. The Bromide of Potassium which is a salt prepared by adding bromine to a solution of Potash. It is a sedative to the nervous system & after introduction into the blood acts on the brain & spinal system of nerves producing drowsiness by diminishing the quantity of blood in the cerebrum & lessening reflex excitability of the cord. Its action in epilepsy is probably not due to the amount of Bromine which it contains as of the three alkaline salts that of Ammonium contains least while therapeutically it has not been found equal to the Potash salt. If epilepsy be due to an instability of resistance in the nerve cells then the bromide probably acts by increasing the resistance. The experiments of Brown Sequard prove that it contracts all the vessels of the brain & cord, thus if the observation of Schroeder van der Kolk be true it may act by diminishing the quantity of blood in these parts which according to him are congested especially the Medulla & pons. It may be administered in various ways as regards time & dose, a drachm in the day being the usual amount & given in two or three doses

usually the latter. A larger quantity than this long continued may cause bromism the symptoms of which are lethargy & dulness with cold extremities & feeble pulse a semi comatose condition with drawling speech & dribbling of saliva. That extremely large doses of the salt may be borne & proved by the case of Patrick M.C. & by what is known as the maximum dose treatment in which a dose of say two drachms is followed in three days by one of four & in four or six days by an ounce which is the largest dose usually borne, more causing vomiting this is continued for a short time & reduced gradually. This proceeding has been much recommended as an initial step in treatment. The rash which so often appears after a course of this drug may be readily prevented or entirely removed by adding a few minims of Liq Arsenicalis to each dose. That this drug may be combined with advantage with others is I think established

Digitalis is useful especially when cardiac disease exists & may even be useful where there is none by steadying the circulation & keeping the blood supply of the brain equal. The cumulative action of this drug must however be remembered & guarded against.

Belladonna is also useful & in combination with the bromide has in my own experience

extended to three months an interval which seldom exceeded a week under the bromide alone. I have in this home cases where combinations with Zinc. (oxide & sulphate) Nux Vomica, Opium, Cannabis Indica & with the Ammonium & Sodium salts have all proved beneficial. Other drugs which have been used are,- Stramonium, Gelsemium Sempervirens Iron, Borax & Picrotoxine which last is the alkaloid of Cocculus Indicus a remedy also used. Iodide of Potassium in combination is also indicated more especially where Syphilis is suspected & may be given with profit as in the case of Patrick McCounter irritation is probably also of benefit as I have met with cases in which accidental burns have been followed by long intervals of freedom notably one at present in hospital here in which an interval of three months has preceded weekly attacks as the result of a severe burn sustained during an attack. Trephining is indicated where the disease has followed injury resulting in visible depression of bone or suspicions of compression or irritation.

Of the arrest of fits preceded by an aura by the application of a ligature there can be no doubt. This mode of treatment is mentioned by Lucas as having been first practised by Celsus & many cases are recorded by Brown-Sequard & others, the ligature being applied

above the point to which the ague has extended. Blistering has been followed by the same results.

Inhalation of Nitrite of Amyle is also very successful in warding off a fit.

Treatment during the attack. The horizontal position with care that the clothes do not touch light about the chest & attention to see that the tongue is not bitten or [illegible] injury sustained is probably all that can be done in the developed attack of this painful & witness & obscure disease.

Much has been written & much investigated on the nature & treatment of this disease & let us hope that the advances made in the past will stimulate researches leading to greater & more frequent results.

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