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WEST RIDING ASYLUM

MENSTON, NR LEEDS.

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Thesis

Epilepsy

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Epilepsy is a disease the knowledge of which extends into the regions of antiquity. This is not surprising for the terrible manifestations of the "grand mal" attack could not escape the most casual observer. In those times it was thought that the attack must be the work of some unseen agent of demoniacal ferocity & strength.

Perhaps the most concise & vivid description ever written to describe the paroxysm is that in the 9th chapter of St. Luke's Gospel:-

"And, behold, a man of the company cried out, saying, Master, I beseech thee, look upon my son; for he is mine only child.

"And, lo, a spirit taketh him, & he suddenly crieth out; and it teareth him that he foameth again, and bruising him hardly departeth from him."

Examples of this idea are common in the new testament and elsewhere. The man who wandered among the tombs in chains was very probably an

epileptic maniac.

Different ages had different names for this dread disease. Our own word 'epilepsy' comes from the Greek word, to seize.

The Romans called it 'Morbus Comitialis,' because if any person present at a meeting (comitia) was struck down with an epileptic fit, it was thought unlucky to continue the meeting.

Rather an interesting name is Morbus Hercules, I imagine that it got this name because Hercules was supposed to be afflicted with it. Epileptics are often very strong & Sir Lauder Branton regards Samson as an epileptic.

Other names were 'morbus sacer, morbus mensalis, morbus daemonicus, &c &c.

Not only in holy writ but in more secular writings of all ages do we find beautiful descriptions or references to this disease. Tennyson describes an attack of petit mal in "The Princess"; the hero suffering from an hereditary affection

"And, truly, waking dreams, were more or less
An old and strange affection of the house
Myself too, had weird seizures, Heavens knows what
On a sudden, in the midst of men and day,
And while I walked and talked as heretofore,
I seemed to move among a world of ghosts
And feel myself the shadow of a dream."

This passage describes what is very
common in a certain class of fits, namely,
what ^{Crichton} Crichton Browne calls the dreamy
mental state.

The treatment of epilepsy in bygone days
was in many instances very amusing.
A very popular remedy was certain roots
mixed with the dust of the crushed skull
of a criminal who had suffered capital
punishment.

Warm milk mixed with minced snakes
heads was considered a sure and quick
method of curing the disease.

An old Scotch practice was to burn
a cock's comb & the paring of the
patients' nails at the spot where
the first seizure occurred.

Many of the most eminent men
the world has ever produced are

said to have been epileptics. Caesar, Marlborough & Napoleon are well known cases in the military world. Then in the religious world there is little doubt that Mahommed was an epileptic. He is described as subject to attacks in which he fell to the ground foaming at the mouth & bellowing like a bull & he has himself related how he saw sudden visions of light & heard voices. Many people now believe that it was during these epileptic conditions that Mahommed received the utterances which he afterwards wrote, partly on skins & partly on the shoulder blades of sheep, & from which was formed the Koran.

Passing on to the later history of the disease, the next theory after that of demoniacal possession was that "Animal Spirits" were the cause of the malady.

With regard to the more modern scientific investigations, suffice it at present to mention some of them.

Kussmaul & Lenner, Brown-Séquard & Schiff & others established the anatomical

5.
starting point of the fits as being in the pons + medulla oblongata.

Brown-Sequard in his later investigations maintained that loss of consciousness was due to contraction of the cerebral vessels caused by stimulation of the vaso-motor nerves supplying them.

In 1870 Gutsch + Hitzig found that by stimulation of part of the parietal lobe about the fissure of Rolando or by removing the cortical centre for the anterior extremity, they were able to produce convulsions similar to those of epilepsy.

Dr Hughlings Jackson, the prince of neurologists, whose researches have thrown so much light on diseases of the nervous system, propounded the theory that the nerve cells were like Leyden jars, + gave off nervous discharge at intervals. Thus, he said, in epilepsy there is an instability in these cortical cells, + when they receive some very slight outside stimulation they discharge + cause a convulsion.

Nearly every investigator has brought forward some new theory, but we know

little more about this obscure disease than was known by our great-grandfathers.

The Cause of Epilepsy is not known, but certain things predispose people to the disease. There is no doubt that heredity stands first. In exactly half of the cases under my care, I have been able to find some close relation who has had fits. I also note during my references to the "Case Books" & to friends that the greater number of the remaining had a neurotic family history.

Of 315 patients admitted to the London Epileptic colony at Swell, a faulty heredity was present in 50% distributed as follows:-

- Insane Heredity 19%
- Epileptic Heredity 17%
- Alcoholic Heredity 10%

These results agree in the main with my own observations, except that in the Swell colony insane heredity has a larger percentage than epileptic heredity. The results of various writers vary. Echeverria out of 306 patients had 80 with a hereditary tendency, or 26.1%. Gowers

Age	Number	Percentage	Age	Number	Percentage	Age	Number	Percentage
Infancy	23	13.8	19+20	4	2.4	38+39	0	0
Between 1+2	9	5.4	20+21	3	1.8	39+40	1	.6
" 2+3	5	3.0	21+22	4	2.4	40+41	2	1.2
" 3+4	11	6.6	22+23	2	1.2	41+42	0	0
" 4+5	3	1.8	23+24	0	0	42+43	0	0
" 5+6	0	0	24+25	1	.6	43+44	0	0
" 6+7	8	4.8	25+26	3	1.8	44+45	2	1.2
" 7+8	9	5.4	26+27	4	2.4	45+46	0	0
" 8+9	5	3.0	27+28	2	1.2	46+47	1	.6
" 9+10	4	2.4	28+29	2	1.2	47+48	0	0
" 10+11	3	1.8	29+30	1	.6	48+49	0	0
" 11+12	3	1.8	30+31	2	1.2	49+50	1	.6
" 12+13	6	3.6	31+32	0	0	50+51	0	0
" 13+14	6	3.6	32 +33	0	0	51+52	1	.6
" 14+15	12	7.2	33+34	2	1.2	52+53	1	.6
" 15+16	2	1.2	34+35	1	.6	53+54	0	0
" 16+17	4	2.4	35+36	0	0	54+55	1	.6
" 17+18	5	3.0	36+37	0	0	55+56	0	0
" 18+19	2	1.2	37+38	1	.6	56+57	0	0
" 57+58	1	.6	58+59	0	0	59+60	0	0
" 60+61	0	0	61+62	0	0	62+63	0	0
" 63+64	0	0	64+65	0	0	65+66	2	1.2
" 66+67	0	0	67+68	0	0	68+69	0	0
" 69+70	1	.6						

Total 166 100

in Allbutts System of Medicine gives hereditary influences at 41%; while W. A. Turner who studied the question in 676 epileptics gives it as 37.2%.

If epilepsy is hereditary, the first occurrence of its symptoms is generally early. From my cases I find that in those showing a family history of epilepsy, insanity or intemperance, the average age at which the disease manifested itself was 14 1/2 years.

Echeverria holds that it generally arises before puberty. If an individual with a hereditary predisposition remains healthy up to the 20th year he runs a good chance of escaping epilepsy.

Turner says that about 78% of hereditary cases arise during the first 20 years of life.

II. Age The accompanying table shows the age at the commencement of the disease in 166 cases who were treated in this asylum. From it we are able to deduce the following conclusions.

- (1) The greatest number of cases of idiopathic epilepsy begin during the first year of life (13.8%)
- (2) Almost half the cases (48.1%) begin during

8.
The first decade of life, & slightly over three quarters (76.3%) begin under 21 years of age.

(3) The second largest number of cases begin at the period of puberty.

(4) Less than one quarter of the cases (23.7%) begin after 20 years of age.

I think the tables prove that the disease may make its appearance at any age, but as three quarters of the cases arise under 21 years of age it must be regarded as a disease of early life.

It is during the period of growth & development of the central nervous system & the period during which the reproductive organs become active that the disease commonly starts.

Sex Taken altogether I think it is the general opinion that as many males as females are the subjects of epilepsy. Gowers says that for every 20 males, 21 females suffer from epilepsy, & that female epileptics exceed male epileptics in early life, but that in adult life more males are attacked.

In the Registrar General's report for 1904, 1557 males & 1357 females died from epilepsy in England & Wales. Other years show a similar proportion.

IV Consanguinity of Parents has, I think, some influence. I have in mind one very marked example of epilepsy arising in a family hitherto free from the disease.

V Toxicity of the blood is another cause. Such cases arise from Syphilis, Lead poisoning & alcoholism.

VI Climate:— In certain parts of the world we find the disease more common than in others. In Norway & near the alps the percentage of Epileptics is larger than in most other countries.

Exciting Causes:— Fright & Mental anxiety are mentioned. Both I am convinced play a part in causation in a cerebrum of weak & unstable balance. Sunstroke & traumata are also mentioned by some. The fits begin not very infrequently after Scarlet Fever which is a point in favour of the Toxic theory.

Reflex causes play an important part in causing individual fits, & we can often trace the first convulsions to them even in adult life.

Eye Strain has received a good deal of attention as an exciting cause. A very large number of epileptics suffer from errors of refraction

Gould & Bennett in "American Medicine" Sept. 13, 1902 publish an interesting report on their researches in this direction. They examined the eyes of 71 epileptics & in only 3 were they normal. Of the remaining 68 67 had astigmatism & of these 33 or, 50%, had asymmetrical astigmatism; a defect which is said to produce injurious results on cerebral functions. It is quite possible therefore that sewing, reading, &c., with uncorrected astigmatism may share in the causation of epilepsy as it does in other neuroses.

Teeth of epileptics are as a rule very carious & they seem to suffer a great deal from toothache. In examining the epileptics under my care I could not find one with a good set of teeth & the great majority were extremely bad.

Digestive troubles & parasites such as taenia, round, & thread worms are frequently the cause of epileptiform convulsions which may persist even after the cause has been removed. Kauffman in the "Lancet" of July 14th 1900 says that he does not think that the worms cause the fits reflexly but by producing a chronic

catarrh of the gut.
 Disorders of menstruation especially when they arise about the period of puberty have a close relation to the onset & relapse of epileptic seizures. Another point of interest is that in women the seizures commonly occur in series just before or after the menstrual period.

Emotional disturbance. Close & continuous mental exertion, long continued depressing emotions & fright occasionally give rise to epilepsy in a cerebrum of weak & unstable balance. There is a well known case recorded of a schoolmaster who suffered from epilepsy, & several of the scholars who saw him in a fit developed epilepsy. Gowers tells of a sentry on duty beside a churchyard developing epilepsy by getting a fright by seeing a white goat which he thought was a ghost, running through the graveyard.

In concluding this part of the subject I should just like to mention a case who was treated in this asylum for a short time & in whom the disease could not be traced to any of the above factors.

12.
A young man aged 26 was admitted on Feb. 23 '06 in a state of epileptic furor. He had been well till a few months before admission. He had become very much overheated one day while playing foot ball & had taken a prolonged drink of cold water, when he immediately fell down in a fit. The fits continued for the next few months frequent & severe. He became irritable & depressed & on one occasion was found drinking some turpentine with suicidal intent. At times he had been violent to his relatives. Such was his condition on admission, but he soon settled down & the fits entirely ceased. He was discharged on May 12. 1906 quite recovered.

Pathology

Of the pathology of epilepsy little is known & it is only from the symptoms the disease brings on that we know that some detrimental change is going on within the cerebrum. Luth thinks that heart lesions may cause epilepsy. He says that pressure on the carotids cause fits from "cerebral anaemia". The obvious answer to this statement is of course that fits

(i.e. convulsive movements) do not constitute epilepsy. Epilepsy is a recurrent manifestation of nervous energy which in a fully developed condition shows with each a preperoxyzomal stage, an aura, a tonic stage, a clonic stage & a post-epileptic stage. To say that because pressure on the carotids causes convulsions & therefore is a cause of epilepsy is equivalent to saying that because Phloridzin causes glucose in the urine therefore it is a cause of idiopathic diabetes. He also maintains that arterio-sclerosis is found in nearly all cases of senile epilepsy. In the post mortem work I have done I cannot say I have found arterio-sclerosis more common in the senile epileptic than in the senile Demented or maniac. Gowers has proved that there is no anaemia of the brain during an ordinary fit as on several occasions he happened to be examining the retina of an epileptic when a fit came on & the Retinal vessels which he managed to watch during the fit, did not contract. Clouston says that any source of irritation

in a brain of unstable quality may cause epilepsy. He thinks that mischief about the motor area is more liable to cause fits than in the lower centres. Bevan Lewis is of opinion that the fits are caused by the nerve cells in the second layer of the cortex losing their power of inhibition on the motor cells below, & hence the restraining influence being at times removed, the attacks come on.

Voisin & Petit hold (a) that a hereditary predisposition exists in the central nervous system for the production of epileptic onsets; (b) that epilepsy may result either from some reflex disturbance or from auto-intoxication, & that this may be caused by auto or hetero-intoxication. In the analysis of the urine of epileptics they have found after the fits periods, a substance with a peculiar musk like odour, soluble in water & of extreme toxicity towards lower animals. Its subcutaneous injection caused death with convulsions. They maintain that antecedent to the epileptic accessions the urine was hypotoxic & after the fits hypertoxic.

Excluding the toxins produced by micro-organisms & that of such agencies as alcohol & lead there still remains a third class of toxin. Its exact nature has not yet been discovered. Kindred toxins of this class are to be found in Diabetes & Eclampsia. Dr Cololian thinks that this toxin resembles Absinthe. Krainsky that it is composed of various substances, but the chief irritant is "Ammonium Carbonate". This toxin may be present in excessive quantity in the patient, who suffers from idiopathic epilepsy. It acts on the inhibitory cells in the cortex of the cerebrum, in a more detrimental manner than on the other cells. It causes vacuolation & degeneration of the former & the fits start. Once a start has been made in causing a degeneration in these cells I believe that all the other toxins play a part in helping to induce a general break down in this inhibitory power. Voisin holds that a person is more likely to be the subject of epilepsy if there is an unstable equilibrium in his nerve

cells, but he does not think the fits would occur from the instability alone. There must be some exciting cause & of all theories the toxic seems to be the most probable.

It might be argued that if the attack were due to a toxin in the blood one would expect the attacks more frequently; e.g. after each fit the blood is in a more toxic state & therefore one would expect a fresh attack to follow almost at once. However, the motor cells, after the fit has passed, are in a somewhat exhausted state & unless the inhibitory power of the cortical cells is entirely gone they are not likely to set up convulsion after convulsion. If the inhibition of the cortical cells is entirely gone then the person will pass into the 'status epilepticus'

Herber & others have experimented with the blood of cases before, after & between the fits. They find the toxicity of the blood markedly increased before & after the fit. Between the fits the toxicity is not so great. They withdrew the blood at the stages mentioned & injected the

serum into rabbits. It was found that the rabbit could stand more serum between the fits than it could before & after. Therefore it would appear the blood is richest in toxin just before the fit, as it is then that the poison has so far paralysed the inhibitory cells as to allow a fit to take place. After the fit has passed this toxin would still be present in addition to others which have accumulated in the system due to the sudden liberation of so much muscular energy & consequent waste of tissue.

The results of post mortem examination of the brains of epileptics are somewhat disappointing. Out of 30 cases examined by me, I have noted the following. In sixteen of them ① that the scalp was coarse & thickened ② that the parietal & occipital bones were hard & difficult to saw through & were thicker than normal ③ that the dura mater was very fibrous, tough & coarse. In ten cases I found wasting of the convolutions over the parietal & frontal areas. In

one case I found the dura mater ossified in three separate parts over the cortex. Their size varied from a sippence to half a crown. The largest was $\frac{1}{8}$ " in thickness. In three of the cases I could find nothing abnormal in the cerebrum. I have observed that the weights of the two halves of the cerebrum in the epileptic vary more than the weights of the two halves of the organ do in other mental cases. The following are eighteen cases whose brains I have carefully divided & weighed.

	Right Hemisphere	Left Hemisphere
1. Epileptic mania	270 grms	475 grms
2. Epilepsy	700 "	635 "
3. "	572 "	562 "
4. "	525 "	575 "
5. "	700 "	695 "
6. "	420 "	460 "
7. Dementia & Epilepsy	430 "	445 "
8. Status Epilepticus	625 "	645 "
9. " "	390 "	390 "
10. " "	730 "	720 "
11. " "	475 "	470 "
12. " "	720 "	680 "
13. " "	610 "	570 "

	R ^L Hemisphere	L ^L Hemisphere
14. Status Epilepticus	460 grms	460 grms
15. Epileptic Mania	620 "	645 "
16. " "	530 "	525 "
17. " "	530 "	570 "
18. Epilepsy	500 "	470 "

of the eighteen cases the weights were the same in two. In seven the left Hemisphere was heavier than the right. In nine the right hemisphere was heavier than the left.

Description of the Disease

Gowers says Epilepsy is a recurring sudden brief discharge of energy in some part of the cerebral cortex not due to the normal cause of such discharge.

Ottolenghi says epilepsy is a functional degenerative syndrome which takes more or less intensely one of the following forms: motor, sensory, or psychic convulsions according to the character of the individual in whom it is manifested.

In a large percentage of cases epileptics become affected mentally if the disease lasts long enough. The best care & treatment often fails to prevent mental decay. It would appear as if the disease broke

up the mental faculties. The same epileptic after a time may have Mania, Melancholia, Dementia, or Delusional perversion. Out of seventeen female cases here, I find, on referring to the Case Books, that two became mentally affected after having fits for six months. Five had fits for periods varying from two to ten years before becoming mentally affected. One had fits for twenty-seven years before she was sent here. In nine of the cases the ^{character?} of mental derangement was Dementia; In seven, Mania, & in one Melancholia. If we take the seventeen as a fair average it would point to Dementia as being the commonest form of Mental Alienation. In many of the fits the patient expends a great amount of force, much more than the normal physiological outlay, so that after the fit has passed, the motor end plates are too fatigued to respond to stimuli from the nerve. Waller & others have proved that the nerve fibre itself can transmit impulses to an extraordinary degree without showing fatigue.

Any part of the cerebrum may be the site

21.
of an epileptic discharge. The discharge may be in the sensory or motor area. If in the former the symptoms are subjective & our information has to be obtained from the patient. If in the latter the symptoms are objective & we get tonic & clonic contractions. Now, although the wave may start in the sensory area it very often spreads to the motor area & convulsions ensue. It is worthy of note that sensory attacks do as great if not greater mental damage than motor attacks. Different patients are affected in different ways by their fits. Some have them frequently & at regular intervals, & show but little mental change; perhaps they become a little excited after & till the next fit comes are quiet & sensible. Others have their fits at long intervals & after them are depressed & melancholic. Voisin & Petit show that the fits often occur or recur in groups (Arch. de Neurologie) In the interval between these groups of fits the patients are well. Before a series of fits the tongue gets furred & there is general upset of the digestive system. In a day or two after this the fits begin.

After the attack is over the tongue cleans & the patient will remain well until the next group comes. Pommey has cited two examples of his own + one of Lepine's as illustrative examples of this condition. Out of 60 epileptics under my charge, I have three such cases.

I divide the epileptic Paroxysm into four stages.

I Preparoxysmal Stage. This stage varies in different cases. Some are unaware of any sensation until the fit comes on. It is impossible in such cases to detect any change in their behaviour before the fit. A patient here has been having fits regularly for five years, but when told of it he never believes he has had one fit. He maintains he feels nothing before or after the attack + is constantly appealing to our committee to let him go. Some become gloomy + irritable before the fits. Besides Psychical Prodromata we may have motor or sensory prodromata. In the former the patient may run round in an aimless manner or he may show out his tongue + make facial contortions. In the latter the patient

may feel pains all over his body or they may be confined to his head or he may think he is going to choke. These symptoms may occur for a day or two before the fit, or only for a few hours. They are sometimes to be regarded as minor seizures. In any case the prodromata only occur in a few cases.

II Premontory or Aural Stage. The word Aura is differently derived according to various authorities. Some say that it describes a cold wind on the neck which is sometimes met with as a premonitory symptom. Gowers ascribes it to the old idea that the arteries contained air & that the beginning of a fit was due to some vapour arising in them. The aura indicates the actual site of origin of the fit.

I divide Auræ into four classes I Sensory II Motor III Vaso Motor. IV Visceral V Special Sense auræ. An example of the first is the numbness & tingling often felt in an extremity. In the insane the stage is very often absent or unrecognized. The reason appears to be that

aurae are more marked in the slighter attacks, because consciousness is not lost so soon. It is also possible that those same insane patients who did not remember auras had them. Among the 60 epileptics under my charge I have been unable to find one confessing to have ever had an aura. They all say that they feel no sensation at all before the fit.

III Epileptic Paroxysm. During this, consciousness is nearly always lost. In a few cases the patient may be partly conscious throughout the attack. We divide the Paroxysm into two: The Grand mal & the Petit Mal. No hard & fast line can be drawn between them as the one gradually shades off into the other.

The Grand mal - the patient may look confused, squint slightly, & ask for her attendant & at the same time stagger to a seat. Then may come the epileptic cry which is often of a peculiarly shrill character due to violent involuntary contraction of the expiratory muscles forcing air through

a spasmodically contracted Rima Glottidis. Most authorities say the cry is present in less than 50% of cases. Out of 38 cases only 13 give the typical cry here. The face at this stage is pale, hence the idea that the brain was anaemic but as soon as the breathing stops the face begins to get cyanosed & the pupils to dilate. Tonic spasm now begins & with it rotation of the head & eyes-conjugate deviation. This is due to unequal affection of the two sides & generally takes place towards the side on which the convulsion begins, if one side is affected first. Deviation of the head is sometimes accompanied by rotation of the whole body. In the tonic stage the body often lies in a typical position. You get flexion at the elbows & wrists & metacarpophalangeal joints with extension of the two terminal phalanges. The legs are usually extended & the feet are inverted. The cessation of the breathing & cyanosis are of course due to spasm of the respiratory muscles. The stage lasts from 10 to 30 seconds in our milder cases but in the severer cases it may last 2 or 3

26.
minutes. Throughout this stage I often observe the unconscious pupil contracting & dilating under the influence of involuntary muscular fibres. I find this symptom present in about 90% of my cases. It is a useful sign to note as it cannot be imitated, however skilled the malingerer is in simulating the epileptic paroxysm.

Clonic spasm now begins & blood stained froth can often be seen exuding from the mouth. The tongue is commonly bitten in the clonic stage, but the accident may happen in the tonic stage if the tongue should have been protruded at the beginning of the attack. The patient gradually recovers after this. Some sleep for an hour or two. This is nature's way of letting the exhausted structures recuperate. Some walk away in a dazed state after the fit. These cases very often complain of severe headache for a day or two. One patient here has her fits generally during the night. Next day she complains of violent pain in the frontal region. Sometimes local paralysis or paresis follows the attack, but this is far more characteristic

27.

of organic (Jacksonian) epilepsy than of the idiopathic variety. Aphasia may occur sometimes. Post epileptic automatism is another common phenomenon. I have seldom seen a better instance than the case I am about to describe. The patient was sent here from prison. She had been committed for three months for assaulting her mother. After a 'grand mal' attack she will use vile language & threaten to kill everyone near. If an opportunity presents itself, she will strike out in the most ferocious manner. If this case is secluded after her fit she is quiet & will wander about her room on his hands & knees groping under the mattress. When well she does a lot of useful work. She thinks she never has fits.

Petit Mal. No convulsions are ever seen in this form. The attack is often imperceptible. The patient may stop a few seconds in his conversation or his work, & then begin again where he left off. The minor attacks are far more frequent than the major; often they occur every

day + sometimes a large number of seizures will occur in a single day. The Petit Mal seizures have a more damaging effect on the intellect than have the Grand Mal seizures. I think the causes are i because they are as a rule more numerous + ii because they involve the higher centres more than the other type. According to Hughlings Jackson the cause of the mental breakdown in the minor attacks is because they affect the very highest nervous arrangements + those which have the greatest integration.

Post Epileptic Phenomena are very common after minor attacks. Sometimes the attack is quite unnoticed + the automatic actions may lead to trouble with the law. Kleptomania is very common after the fit.

IV Post Paroxysmal Stage:- After the fits, emotional disturbances, disorders of perception, dementia or mania are not uncommon. Mania is a common sequel to the fit. Some people used to think that the maniacal attacks were independent of the fits. But this view I am unable

to reconcile with the results of my own observation, which induce me to believe that some slight attack of 'Petit Mal' has taken place giving rise to no apparent symptom but of which the maniacal seizure is the result. A.B. - a case of epileptic mania has her fits (visible) at intervals of about a month. About every fortnight or oftener she gets an attack of mania without any visible fit. Between the times she is quiet + works well. The Status Epilepticus is that condition where the fits are frequent + where the patient remains unconscious between the attacks. During the fits the temperature may run up to 104° + 105° F + the pulse may beat 130 - 150 per minute. Twitchings often occur in the intervals between the convulsions.

I had a patient here who had as many as 400 fits in 24 hours.

Mental State in Epilepsy:- We may divide the patients suffering from the disease into three large groups.

- I Those without Insanity
- II Those with Insanity
- III Those without typical fits.

The patient of the first class is to

be found everywhere. If the disease has begun in the child & he is carefully treated we may hope for a good result. It has been shown already by our Colony treatment that with care every case will improve by getting the patient to lead a careful & regular life. Many chronic cases have quite recovered after years of treatment. If the fits have lasted over a long period & treatment has been neglected this group is very apt to pass into group II.

II Before they become members of this group their fits may have lasted for years, or perhaps only for days. Some are mentally affected from birth. The majority suffer from either mania or dementia. The maniacal attack may come before or after the fit. Very often it may last for years or perhaps only for days. Some are mentally affected from birth. The majority suffer from either mania or dementia. The maniacal attack may come before or after the fit, very often it may last for a day or two. They are a difficult class to manage, being jealous, selfish, destructive & revengeful. Clouston says

their impulsive & revengeful nature is a typical symptom of the disease. The demented patients are not so difficult to manage. They sit about in a contented way & eat when told. In the more advanced cases they are often dirty in their habits.

III The third class, or as some call it Psychic epilepsy is that type in which there is no fit (apparent at least) at any period of the attack. The patient may suddenly become impulsive or may get up & kill someone without any motive for so doing. At a recent meeting of the British Association it was proposed to place certain cases of recurrent mania in this class.

Care & Treatment

Many epileptics have a great craving for food. They are always hungry no matter how much they eat; overloading the stomach is about the worst thing the patient can do. Besides the quantity eaten, the quality has also to be considered. The fluids given to such cases also call for attention.

Spratling of the Craig Colony says:-

"I know of no single factor in the treatment of this obstinate affection that proves so quickly & permanently beneficial as proper food properly prepared. Among the admissions ^{here} I find almost all the epileptics show signs of gastro-intestinal disturbance such as coated tongue, foul breath & anorexia. Some of the patients improve after a milk diet & a purgative, others do not. The symptoms they show do not always serve as guides to the true condition of the stomach. I have found stomach disorders existing in such cases without giving rise to any marked symptoms. In a case that is not responding to treatment, I think it is well to make a practice of analysing the stomach contents.

I find that my cases have done best when they were made to exist on that quantity of food which just served to keep up their weight. A heavy meal often proves injurious to the patient. Small meals at frequent intervals are best. I prefer to give

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a patient five meals a day if by doing so I can make her feel more satisfied; supposing she only eats the same quantity at the five sittings that another patient has done in three. The following are the meals I put certain selected cases on.

Breakfast - lunch - dinner - tea - supper.

The patients I put on this diet did not complain of hunger, as they did when on three meals per diem, & the amount of food consumed each day was just the same. As an example of how injurious excessive quantities of food are I may cite the following experience. An epileptic patient told me one morning that she was being starved. On referring to her chart for the month I found she averaged one fit in every three days. They were nearly all grand mal in type. For a month from the date of her complaint I put her on double diet at each meal. The food was all consumed. At the end of the month she had had exactly three times the

number of fits & had been much more troublesome & violent than when on smaller quantities of food.

Quality of the food:- My favourite diet is eggs, milk, bread, fish & fruit. Meat i.e. beef, mutton, pork, I believe to be detrimental to the progress of the case. Clouston & Bevan Lewis both allow a little butcher meat.

They prefer mutton to beef, & chicken or rabbit to mutton. In my dieting of cases I ~~follow~~ allow the following:- Milk $3 \times \times \times \text{viii}$, Potatoes 3iii , flour 3viii , sugar 3i , butter 3iv coffee 3ip , fruit $3 \times$, eggs 4. At Eight a.m. milk $3 \times$ mixed with coffee, 2 pancakes made with milk, flour, eggs & sugar. Eleven a.m. milk $3 \times$, bread 3ii one egg, butter 3ii Two p.m. milk 3viii made into a pudding with two eggs. Fruit.

Five p.m. Bread & milk.

Seven p.m. Balance of milk with water.

As will be seen from the diet table there is no sodium chloride given. In fact the table aims at reducing it to a minimum. In addition to the above I gave fish

twice a week without any salt being added. My first difficulty in giving the above diet was to get the required quantities for each individual case. To obviate this I multiplied the quantities for each meal by four & then had it divided into four parts when it came to the ward. Instead of salt I mixed three grains of Pot. Brom. & three grains of Ammon. Brom. i.e. for the four cases twelve grains of Ammon. each. The mixed Bromides are supposed to take the place of the diminished chlorides in the system & much smaller doses to produce the same beneficial effect. About 210 grains of sodium chloride are consumed daily by the average individual & by the above treatment less than thirty grains are taken.

Dr. Percy Bryant of the Buffalo State Hospital says that Idiopathic epilepsy is due to "Acute Intestinal Toxaemia". With this opinion he drops bromides altogether & purges his patient & puts the case on a milk diet, which is small at first, & then gradually increased.

He says for two days he gives nothing but water then one glass of milk, gradually increasing it. I agree that Intestinal Absorption plays an important part in causing the fits, but I do not believe it is the sole cause.

Fluids to be allowed:— Alcohol of any kind is strictly forbidden. It is certain that it often acts as a cause of an attack. If a stimulant has to be given I prefer champagne to any other wine. In the last case of the "status epilepticus" I treated, I gave 3j doses as the case required them. It certainly improved the pulse & did not increase the number of fits. Sometimes I find it absolutely necessary to give a little stimulant for a few days after admission, especially if the patient has been consuming large quantities of alcohol before coming under treatment. Milk & soda water has a soothing effect on the stomach if the cravings for alcohol are great. Beef tea sipped hot often relieves the gnawing & satisfies hunger. As

with solid food, small quantities of fluid frequently administered usually give the best results.

Medicinal Treatment:- The bromides have been the favourite drugs for the treatment of epilepsy since their discovery. The experimental evidence of the action of Bromides, shows that the cerebral cortex while under their influence does not respond so quickly to electrical stimuli. The experiments have been mostly carried out on the brains of animals. Hence it is an easy & almost certain deduction that when a patient is under bromide trivial exciting causes of fits (e.g. gastric & intestinal disturbances) are much less capable of exciting them. The vaunted value of bromides is based upon its influence in suppressing the convulsions, not in curing the disease by removing the cause. Some consider it doubtful whether any special stress is to be laid on the base with which the bromine is combined. Ammonium & Sodium

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Bromide are less depressing than Potassium Bromide. As depression is an action that is needed, I prefer the Potassium salt. The number of fits is in a large percentage of instances reduced to a minimum by doses of Bromide, gradually increased in the stubborn cases.

Although the frequency of the fits may be reduced by the use of Bromide the condition of the patient may be worse than before. The administration of large doses of Bromide tends to make insane patients more irritable, dirty, & difficult to manage. In some of my cases here I find that the number of fits increases with Bromide treatment.

The 'Grand Mal' being replaced by more frequent 'Petit Mal' seizures. I am greatly averse to pressing Bromides. If a 10-20 grain dose three times a day fails to produce the desired effect, I am in favour of stopping the drug. I prefer giving three twenty grain doses at intervals during the day to one dose of

sixty grains. Excessive cerebral depression is best averted by reducing, after a time, the amount of Bromide administered to the bare minimum needed to avoid fits, or by adding a stimulant to the mixture e.g. strychnine or nuxvomica. If Bromide is stopped suddenly the status epilepticus is very prone to ensue. Charcot in giving Bromide gives it in doses rising in amount until the end of the third week when he drops back to the original dose.

By this method he finds out the quantity best suited for the individual. He often begins with a dose of 45 grains per diem for the first week. Then sixty grains the second week, & seventy five the third week. In the fourth week he returns to the first dose.

If one wishes to control the fits quickly Bromide is useless. If a case is passing into the 'status', I always give chloral, never bromide, & I find that one large dose of chloral is better than several small doses.

A patient E. G. aged 55 & the subject

of fits for five years had on the
 20th Dec ten fits during the day, & on
 the 21st 18 fits. Between the fits she
 was sleepy & in a state of
 semistupor. I gave chloral hydrate
 grs 40 & in an hour she was
 sleeping heavily. Thinking the pulse &
 respiration feeble I gave 200 grain
 Atrophina sulphate. Her fits were entirely
 arrested for the time being. In a few
 days she was about again but more
 talkative & incoherent than before. In
 cases such as the above the feeding
 & the bowels require careful attention.
 A large soap & water enema to
 begin with is a useful adjunct to
 the chloral treatment. Statements of
 attendants as to the condition of the
 bowels can seldom be relied on. If
 the rectum is cleared out one source
 of local irritation is removed. If
 the patient is unable or unwilling
 to swallow, feeding with the stomach
 or nasal tube should be tried, as
 it is important that the strength
 should be maintained. My favourite
 feed is one pint milk, two eggs beaten

up, & half a pint of beef tea. In a case I met lately I had great difficulty in passing either a stomach or a nasal tube. I concluded the cause must have been spasm of the lower pharynx as the tube stuck quite high up.

Organic stricture is also met with in some cases. Failing either tube I try nutrient enemata, but they are often returned however careful one may be, as many of the cases are so demented that their reflexes tend to return the fluid, the cerebrum itself having no inhibitory power.

The maniacal attacks of epileptics respond well to Chloral followed by Pot. Brom. & Tinct. Cannabis Indica in a few hours. One day in our epileptic ward a patient after a fit maltreated an attendant & when I arrived on the scene four attendants were struggling with her in vain. By means of a gag & the stomach tube I got her to swallow half a pint of milk containing chloral hydrate grs 20.

For an hour afterwards she raved in the padded room. I then had her taken out & gave Pot. Brom. grs 20 & Tinct. Cannabis Indica $\text{ʒ}\text{iiij}$. both suspended in milk. As she would not swallow I gave it by the tube. In two hours she was much better & was able to go in the airing court. I continued the Tinct. Cannabis Indica $\text{ʒ}\text{iiij}$ per diem for a week. She may continue well now for about a month when a recurrence will in all probability take place.

Bromide of Strontium if procured pure & if the drug has to be continued over a long period, is better than Bromide of Potassium. It is not so depressing. The bromide rash seldom appears with it, even though the drug is pushed. When it does occur it is milder than that found when giving the Potassium salt. Its less depressant effect is to be partly ascribed to the fact that the proportion of Bromine is much less ($\frac{5}{7}$) than in Potassium Bromide

If I suspect any specific disease about the case I give Iodide of Strontium combined with the Bromide of Strontium. Better results are obtained when using the drug if the diet is carefully regulated. I have never exceeded 3i in the twenty four hours & my usual dosage is twenty four grains per diem. My results have been satisfactory. If the patient is run down I give Syr. Hypophos. Co. in 3i doses morning & evening. The diet is as follows. Meat at noon twice a week. On other days soup & pudding. Milk & bread for breakfast. Tea, bread & an egg for the evening meal, which is given at five p.m. It is important not to let the case sleep with a full stomach. Keeping the bowels & skin going also help the treatment should the patient be unable to take sufficient exercise, I make the attendant massage the limbs & abdomen well morning & evening. The above treatment has been carried out on seven cases which had been

on Pot. Brom. & were suffering from Bromism. Four of the cases in the week lost all the Bromitic symptoms. The rash quickly disappeared. The voice was not so thick & the intellect was clearer. After a month I compared the number of fits with the number in the preceding month & found in none of the cases had they increased. In one they were considerably less. The three remaining cases were very anæmic when the treatment was started. The number of fits in each case was reduced by one third & their pallor at the end of the month was almost gone. I continued treatment for another month & was so well pleased with the condition of all the cases that I put them all on ordinary diet & only continued the drug treatment.

For many cases of "epileptic mania" I am of opinion that Hyosine Hydrobrom. is the best drug. It does not diminish the number of fits but often acts as an alterative. The patient after a dose often becomes quiet & happy

when before she had been violent & miserable. The fits become more "petit mal" in character after its use & the temper & general conduct nearly always improve. Savage has more faith in Bromides & purgatives than in a direct sedative such as Hyoscine. Gowers favours hyoscine, but does not believe in doses exceeding $\frac{1}{400}$ - $\frac{1}{300}$ of a grain, if they are to be continued owing to the cumulative action of the drug. I must confess I have often exceeded the above dose & continued the drug for a fortnight at a time without any bad effect on the patient. I have three cases meantime on the drug. The first & second were on Pot. Brom. grs 20 three times a day, till the end of last November. Both were violent & abusive & the drug was seemingly having no good effect. At the beginning of December I changed it to Hyoscin. Hydrobrom. gr $\frac{1}{200}$ twice daily. The result was excellent. Both patients within a week became quieter. They were less abusive

in the airing courts & both gained several pounds in weight. Up to the end of February the treatment was continued. Both having become quiet & well behaved I stopped it.

The third case is of exceptional interest.

Up to the 15th Dec. she was on Pot.

Brom. grs x, chloral Hydrate grs v t.i.d.

Her fits had disappeared but her temper had become so bad that both patients & nurses were afraid of her. I resolved to try Hyoscine.

I began with 500 gr t.i.d. & for the first two days she was much worse. On the third day I had to seclude her for two hours in the strong room.

Each day I increased the dose. On the sixth I had worked up to 100 gr t.i.d.

On the seventh day her tongue was dry but she was quiet & ate her breakfast peacefully. I immediately

dropped back to the dose I started with. At no time did the drug appear to make her sleep but about the end of the week she seemed to pass into an amiable & dreamy state. After a week passed in this

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condition she again got somewhat excited & the drug had to be again pressed. As soon as the desired result was obtained I dropped back to the original dose $\frac{200}{100}$ gr. Examination of this patient's urine when having maximum doses showed it to be quite free from albumin & sugar. There was no dryness of the mouth or throat except when $\frac{50}{100}$ gr doses were being given three times a day. The temperature during the whole illness was normal. The heart was irregular & a loud mitral systolic bruit could be heard at the apex.

By the help of Ludgeon's sphygmograph I took several pulse tracings before the above treatment was started, & during its progress. While the drug was being taken the ascent was shorter & the general curve long & low; the diastolic wave was lost. In the above & other cases I have found the pulse to become slower & less bounding in character when large doses are given. Small doses $\frac{1}{200}$ gr seemed to make but little difference. If the cases are violent

16 patients

exerting themselves they injure their hearts more than the largest doses of Hyoscine do. It is worthy of note that during the tonic & clonic stages of a fit the blood pressure falls. I have attempted to get a sphygmographic tracing but so far have failed. I have observed, however, that a patient falling & cutting his face does not bleed, or if so, very little during the tonic & clonic stages. Invariably after the stertorous respirations of the second stage of a fit the blood pressure rises & any wound incurred begins to bleed freely. Weatherly suggests the addition of *Spts. Ammon. Aromat.* to correct its depressing action. Many patients refuse to take their Hyoscine if this drug is combined with it. I think the ammoniacal smell suggests poison to them. Dr Alexander of the Maghall Colony strongly recommends Borax & Sodium Bromide, 20 grains each in old chronic epileptics. He finds this combination is less depressing than the Bromide alone & controls the fits well.

Gowers says "Minor Epilepsy" is much more difficult to treat than "Major" or the "Grand Mal" type. In some cases Bromide checks the Petit Mal attacks, in others it has no effect. Failing with the Bromides he suggests Zinc. He says he has tried the sulphate, the lactate, the citrate & the oxide & finds the last most successful. Some of his patients get nausea with grains ii twice daily while others stand $\text{grs } \bar{x}$ without any toxic symptoms. I have not used the drug in any case so far.

Sodium Biborate I have found valuable in the following way. In a case which has been on moderate doses of Bromide for some time, the fits becoming more numerous than formerly I stop the Bromide & try Borax $\text{grs } \bar{x}$ t.i.d. suspended in a little milk. Whenever I have tried it, it has arrested the increase in frequency of the fits. It also lets the system get a little respite from the Bromide. If after six months the bromide treatment is reverted to, I find that the patient

will react to much smaller doses. Borax combined with Bromide is useful in some 'grand mal' attacks. I have never stopped the Bromide & changed to Borax except in chronic cases where a ^{cure?} (case) was not to be hoped for. Some say it is better than Bromide in obstinate cases but my experience has not confirmed this opinion.

"Status Epilepticus":- my routine method is first a large soap & water enema repeated if necessary as I find there is frequently considerable accumulation of faeces notwithstanding the assertion that the bowels have been open every day. I next give from 15-30 grains of chloral according to the case, by mouth, or, failing this way, I give it by the rectum. I prefer chloral to Paraldehyde in such cases as I find the latter has not such a lasting effect & it often chokes the patient when given by the mouth. I also have tried Amyline ^{em?} Hydras in one case of the "Status". The patient was in the habit of having about fifteen fits per

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month on an average. On the night of the third of January she had ten fits. Next morning I had her sent to the sick ward. By noon she had twelve more & was quite unconscious. She was breathing stertorously & unable to swallow. During the morning she had an enema twice & some hard faecal matter had been brought away. I resolved to try the drug of which Dr. Naab of Bickfield Asylum is so fond. Ninety minims of Amylin Hydraz were suspended in an ℥i of mucilage & given per rectum. This being repeated every four hours. Every eight hours I gave a nutrient enema composed of milk ℥ii, beef tea ℥i, Lig. Pancreaticus ℥i. From noon till ten that evening she only had six fits. She did not regain consciousness. On the morning of the second day of treatment both medicinal & nutrient enemata were returned about an hour after they were given. The fits gradually increased till she was having about five per hour. I next tried intramuscular

injections of the drug. I gave minims 40 every six hours. In an hour after the first injection the number of fits decreased. She was only then having one per hour. Eight hours later the number again rose to three per hour & during one fit she died. Naab gives intramuscular injections i if he wants a rapid action of the drug ii In constipation iii In incontinence of faeces.

Linke has carried out Fleischig's treatment in a large number of cases. He found that during the opium course the epileptic seizures increased greatly in number & that the body weight in some cases showed a marked diminution. As soon as the bromides were substituted for the Opium the fits immediately diminished in frequency, & the body weight in the affected cases increased again. In nearly all the cases a moderate degree of constipation was induced when the maximum doses of opium were being given. One of his patients died owing to the deleterious action

of the opium
Rabbas says that he had better
results from this treatment than
he had from Bromide alone.
He experimented on sixteen cases in
which Bromitic treatment had failed.
He started with 3 grains of Pulv. Opii per
day & increased gradually to 9 grains.
While on opium the fits increased in
number. In one case only did the weight
remain stationary. In all the others there
was a diminution. In six, nausea &
vomiting occurred, but constipation was
not a marked symptom. On reverting
to the bromide treatment the fits
disappeared. In three of the cases
he says there was no fit for two
years. The treatment is one that may
certainly be attempted in cases of
some severity, although I believe it
is the Bromide that has the beneficial
effect not the opium.

Flechsigs opium treatment has proved
disappointing. Opium does badly with
the epileptic. He begins with less than
a grain & gradually works up to
4-5 grains for a period of 5-6 weeks.

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He then gives Bromides in doses of 1-2 drachms daily for two months. Dr. Meyer has slightly modified this treatment. It is much the same as Flechsig's as far as the Opium & Bromide goes. During the treatment he says the bowels must be kept well open. Then while giving the opium & Bromide the patient has a course of cold baths. When the treatment starts so do the baths. His first bath is given at a temperature of 24°C & the patient is kept in ten minutes. Daily he slightly reduces the temperature, till at the end of seven weeks it is only 22°C & then he keeps his patient in eight minutes. Then when he starts the bromide treatment he goes back to the first temperature 24°C & the ten minutes, & again gradually reduces it until 22°C is reached. He keeps to this temperature as long as the treatment lasts. He gives a light diet & avoids all nitrogenous foods. It seems rather quibbling to lay special stress on a gradual change

from a bath of 24°C to one of 22°C maintained for ten or eight minutes respectively, such change being spread over six or seven weeks. Both temperatures lie well within the points marked temperate & cool in Dr Forbes' specifications. Surely such a reduction of $3\frac{1}{2}^{\circ}\text{F}$ with a shorter immersion can have but a very trivial effect.

Camphora monobromata in doses of grss in Hysteroid Epilepsy is said to do good. Probably all the benefit is due to the Camphor, as the amount of Bromine is small in such doses as can be tolerated. Bechterew's Fluid is beneficial only on account of the Bromide it contains.

Complex Bromides e.g. Bromatin Bromipin, Bromidia are said to avoid the Bromide rash.

Methylene blue in two grain doses twice daily has been tried. As far as I have been able to learn it is useless. It colours the urine blue & is apt to set.

up cystitis. The faeces turn blue after exposure to air.

Roucoroni after a series of experiments on the brains of dogs found that calcium exerts a moderating influence on the cortical cells & that diminishing the salt is attended by increased irritability. This, he says, suggests that some lack of calcium may be the cause of certain forms of epilepsy. Ovarian extract has some beneficial result in cases suffering from menstrual disorders & diseases of the ovaries.

In 1900 Dr. Easterbrook published his analysis of 130 cases treated by Thyroid extract. He had 12 recoveries, & says 29 were improved. In the average case the results are disappointing although an occasional case is benefited.

As regards surgical procedures very few surgeons believe in them for idiopathic epilepsy. The results for traumatic epilepsy are poor. Kocher of Berne records cases where as long as drainage was maintained after trephining no further fits occurred

but as soon as the wound was closed fits came on again. In one case in which he had opened a cyst he maintained drainage for three years. Even if there is some removable cause such as a depressed fracture total cure will often only result if trephining is done soon after the injury. Gunn says (American Surg. Association Vol. I page 89) "It is rare that the patient submits to the dreaded operation till years have been wasted in the vain attempts to effect a cure by medication. In the meantime the constant irritation has begotten a permanent impression on the brain & nervous system, which remains after the offending point of irritation has been removed. This means, expressed in pathological terms, that a secondary meningo encephalitis has been produced which is in no way cured by the operation. Section of the Sympathetic is useless. Donath says the operation ought not to be tried. Some believe in sections of the Dura Mater, others in removal of

of parts of the cerebral cortex. The results prove neither method to be of much value. Some physicians now believe that the large intestine is useless. They think it only serves as an area where toxic absorption goes on. They argue that if it was removed or isolated no absorption would go on & the great cause of epilepsy would be removed. Some surgeons have performed colotomy, but the last condition of the patient was worse than the first. It was thought that after the disease was cured the junction might again be made.

Care in Institutions. It has come to be a well recognized principle in the treatment of epileptics that systematic employment for both the sane & the insane possesses genuine & distinctive merit, & the ample provision for the employment of all patients ought to be considered by all superintendents. In some Asylums the insane epileptic who is able to work, is prevented from doing so.

in case of accidents. This, I think is a mistake. I send my patients out for country walks as much as possible. Confining them to the airing courts causes them to worry & mope, & if they do so their mental state becomes rapidly worse. I have noticed on rainy days, when our working epileptics were unable to get out that the number of their fits as a whole was about one third more. The tendency of modern methods is towards the segregation rather than the aggregation of the epileptic. The large massive buildings where many herded together with other lunatics for safe keeping is slowly but surely being supplanted by the villa system, where the unfortunate can find a home. By the colony system, increased freedom & improvement for this class is aimed at. Many pauper epileptics are boarded out in the country. This system is being slowly adopted in America. The advantage claimed for it is, that

it is the most economical way of providing for this class. The great objection I have to this system is that constant association with an epileptic, especially if insane, has a demoralising effect on the sane, especially the young. The care of the epileptic is one of the questions now before the country. Many of the cases are unfit to be at large. They are a burden both to themselves & their friends. Parents get discouraged by the long medical attendance & the longer bills & in many cases treatment is given up, just at the time that perseverance is essential. The constant fits have a bad effect on the other members of a family. Many cases are unfit to follow an occupation & so develop lazy, drunken & immoral habits, & their children in all probability inherit the disease. It would be for the welfare of Britain that many more homes be erected for the housing of such persons. It is a reflection on both

the humanity + the common sense of the XXth Century that even now an epileptic has to qualify as a lunatic before the State will take charge of him. Many cases become maniacal + demented as the disease advances + treatment is too long delayed or prematurely given up, + the epileptic allowed to follow his own inclinations. If a temperate careful + suitable life was led, I believe that a large percentage would recover.

The first attempt to look properly after such cases was made when the "Ohio Hospital" for the epileptic was founded in 1890. As in many things our ^{American} cousins were the first to take the lead. Since then numerous colonies have been opened in Europe + in America. In Britain, alas, there are very few such homes. One of the best colonies is the "Maghull House" near Liverpool.

They have about one hundred + eighty cases under treatment. The benefit of the colony system cannot now be disputed. The ideal is to

treat the patient with as few drugs as possible + educate him. On admission to the Craig Colony in America the patient, after examination, has his Bromide gradually reduced to a minimum + then if the physician thinks it advisable he stops it altogether. Such cases have to keep regular hours, the diet of each receives special attention. The mind is occupied by some outdoor or indoor employment. No patient is overworked. In the evening amusements are provided. During the day two hours are set aside for cricket, tennis etc. Meals are served at 6 a.m. 12 noon, + 6 p.m. The food consists chiefly of cereals, fruit, milk, butter eggs + vegetables. Most of the diet is produced by the farm + garden. Soup is given every day as it is nourishing + stimulating + serves to dull the keen appetite of the average epileptic. Dr Spratling gives special attention to the education of his epileptic children + provides

training in many useful trades, after perfecting their education in cleanliness & behaviour towards each other.

Similar work is now being carried on in London under the "Metropolitan Asylums Board." The children are all more or less mentally affected. The cases are divided into three classes

I The best (from the mental point of view) are taught & trained at Rochester House, Ealing. If they are capable of it they are discharged at the end of the training as fitted to become useful citizens. II Children who are worse than this are taught in schools at Darenth Asylum. All are kept occupied as much as possible. Some are taught matmaking - others similar occupations. III The worst cases who are incapable of being taught are kept separately. It is of great advantage to prevent the aggregation of epileptics of all grades together especially in the case of children. One sees time after time how readily they learn bad habits from one another.

