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Thesis On Epilepsy; Its Causes, Symptoms And Modern Treatment.

Epilepsy may be defined as a disease in which convulsive attacks occur, associated with the loss of consciousness. This is the definition of the type of the disease, but the symptoms may be much more variable than the above definition would lead one to imply. Dr. Wilks, of London, has pointed out that the disease Epilepsy may be present even if not accompanied by one, or more, or perhaps all, of the above symptoms.

In this respect, he points out,

x. An address on some of the more unusual phenomena of Epilepsy.

S. Wilks. British Medical Journal

2nd Jan. 1892.

Pages 3 & 5.

" The symptoms which may often be said to characterize the disease may be absent. &c "

that it bears a striking analogy to Graves' disease[x]. Like it, it may sometimes be diagnosed when some of the most characteristic symptoms are absent. I believe that the tendency to Graves' disease, if not the disease itself, may often be diagnosed from the acceleration of the pulse, and the excessive pulsations in the neck and abdomen, plus the tumors and the liability to exacerbations. In like manner, when we have a patient suffering from nervous symptoms, to be detailed further on, and who has a neurotic family history, we may rely a prompt diagnosis of the

tendency to Epilepsy, be able to arrest the disease.

We can distinguish four principal varieties.

I. Le petit mal, where there is a momentary loss of consciousness, without the occurrence of convulsions.

II. Le Grand mal, where there are severe attacks of convulsions, with loss of consciousness.

III. Jacksonian Epilepsy, in which the attacks are caused by an irritative lesion of the cerebral cortex.

IV. Irregular or Atypical Epilepsy in which consciousness is not completely abolished. When in this condition the patient may perform automatic movements.

Etiology.

Heredity in all my cases has been a very important predisposing cause, in this respect agreeing with Dr Jones' estimate of 28% to 35%, which is the percentage of nervous disease found in the family history. Dr. E. C. Seguin also supports this view in his book on "The Treatment and management of Neuroses". He says "that the parents of the Epileptic child have usually been debauched, addicted to liquor and other excesses, the victims of syphilis or chronic alcoholism." The most predisposing influence of heredity may be admitted

and as a corollary, the children of neurotic parents should be subjected to hygienic and other treatment in order that the predisposition may be counteracted.

Judging from the records of my cases I should say that a neurotic father has more influence for evil than a neurotic mother. This may however be due to the fact that the father is more often subject to diseases likely to be transmitted, and so taint the nervous system of the offspring.

Syphilis, though of remote date in the family history seems to have a strong

X History of a case of Cerebral Tumour
March 14th 1891. B. M. J.

predisposing influence, probably through the nervous system, the cause of an unstable condition of the nervous system.

Traumatism, especially injuries to the head, causing a lesion in the motor region of the cortex, is also an indisputable cause. In such cases, surgical treatment, when possible, gives the most satisfactory results, for example, when a cicatrix is pressing upon the brain grey matter, and causing irritation. Vide, case of Dr. J. Buchanan and Dr. McCall Anderson, reported in the British Medical Journal. Masturbation, excessive sexual intercourse, mental distress, and all other causes which

have a determinating effect upon vitality, may each be a factor in originating it. Many epileptics blame some 'reflex irritation' for being the cause of the disease. In one of my cases a stone in the bladder was the primary cause of the fits, in the patient's opinion.

The first menstruation may induce an epileptic fit.

Eye Strain is said by some to be a possible, probable, cause, of Epilepsy. I believe it to be a factor in the etiology of nervous diseases in general and I have often found that relieving the eye strain helps to promote the cure of the fits.

Sometimes the art of fitting glasses to epileptic patients is extremely difficult, as irritating combinations of Astigmatism, Hypermetropia, and Myopia are often present. Once the patient has become subject to Epilepsy any slight peripheral irritation will induce an attack, especially sensory irritation. Twice I attempted, rarely, to make an ophthalmoscopic examination of the eyes of a patient, but each time I only succeeded in precipitating a severe and typical convulsion. He attributed the fit to the examination and was very chary about coming to have glasses fitted on. As an example of a different kind

kind of reflex irritation, I may here mention a case recorded in the British Medical Journal of 14th September 1889 by Dr Granville Macdonald in which removal of a polypus in nasal fossa caused the fits to cease.

Of the sexes, the female is the more predisposed to Epilepsy, the proportion being 6 to 5 (Gowers.) Dentition is often the time of the beginning of the fits. This is accounted for by the theory that the higher centres at this time, have not the power (inhibitory) over the lower centres, which they subsequently acquire.

It may well be doubted whether this explanation suffices, for healthy Children as a rule do not suffer in the highest

~~no~~ degree from teething, but those who are Rachitic, or who are predisposed to nervous diseases very rarely escape having fits. I saw two children, lately, who had suffered from convulsions since birth. They had both been delivered by forceps and had the indentations, caused by the blades, on their heads. In these children there were two factors in the causation of the fits, viz., the traumatism and a nervous constitution. They will probably suffer from typical epileptic fits in later years. The age of puberty is a very common age for the fits to begin, and this can easily be understood, because at that time

the sexual system is approach-
-ing its full development, and
as there is a reciprocal
relationship between the sexual
and the nervous systems, any
undue excitement or irritation
of the sexual system will
react upon the nervous system.
For example, amenorrhœa, is an
undoubted cause of nervous
convulsions, more often, perhaps, of
an hysterical character, than of
the true epileptic nature.
We may take it that the
function of the encephalon becomes
deranged in consequence of the
imperfect action of the sexual
organs. Such cases as these are
mainly reflex in origin, with
an underlying neurotic predis-

-position. In many cases the unstable condition of the brain is the cause of the impaired action of the sexual organs, as in cases of arrested development of the brain at puberty, and consequent arrested development of the sexual organs. In such cases Epilepsy is very frequently associated with Idiocy. I have already mentioned Eye Strain. Dr. J. Stevens of Newyork was the first to direct attention to this subject. He stated, as the result of the examination of 225 cases, that in 59%, hypermetropia, or hypermetropic astigmatism was to be found; that in 23%, myopia or myopic

astigmatism was present, and
that in 18% refractive errors
up than 1 D. were present.
Dr. Stevens believes that a
want of parallelism between
the two eyes in a vertical
plane is the main cause
of eye strain, the muscles
not being equally balanced.
Considered as a kind of
peripheral irritation I do not
see why eye strain should not
be an exciting cause of
convulsions, if the epileptic
tendency already exists.
I have seen two cases of
convulsions in children from
"phimosis" in which circumcision
was a complete cure, in
one cases being performed

during a convulsion, the attacks ceasing immediately afterwards. It may be argued that these convulsions were different from epileptic convulsions. That may be the case, but I maintain that even in true idiopathic epilepsy, when we have removed every source of reflex irritation we will have decidedly modified for the better the character of the fits. As a matter of fact we find this to be the case. I will report two such cases under treatment.

I am not aware of any differential diagnosis between fits due to reflex causes, and fits due to idiopathic epilepsy.

I do not mean to assert that the two kinds of convulsions are similar, or that because the cure of phimosis in these two cases arrested the convulsions, so should the relief of eye-strain cure epilepsy, but I wish to point out that in a person subject to Idiopathic Epilepsy the eye strain may act as an exciting cause. Thus the sensory irritation caused by an ophthalmoscopic examination was quite sufficient to precipitate a true epileptic fit, with biting of the tongue, unconsciousness and convulsions. Further, in this patient, treatment by glasses mitigated the attacks and lessened their

number. Personally I do not believe that Eye Strain can originate epilepsy, and I think that when it appears to do so a strong predisposition is already present. I do believe, however, that the relief of eye-strain in an epileptic person is an important part of treatment.

The Symptoms of Epilepsy.

In the first place to take Idiopathic epilepsy we may divide it into two classes.

I. Those with an aura.

II. Those without an aura.

Most cases of true epilepsy that is to say cases of epilepsy

The Physiological Seat of Epileptic Disturbance; by Victor Horsley. B.M.J. April 2nd 1892.

X. Epileptic fits were thought as due to vascular disturbance of the brain by the fact that the face was observed to be pale at the commencement of a fit. Anaemia of the brain is probably not the cause of the fits. "During the last seven years I have directly observed, in a large number of experiments in which typical fits were started by absinth, the conditions of the vascular supply of the nervous centres and it was then obvious that so far from being anaemic they are actually hyperaemic. These observations have been confirmed by Tschirjew who not only by actual observation of the cortex, but also by manometric measurement of the blood-pressure in both the distal and central ends of the Carotid, found that there was colossal hyperaemia of the cerebral centres, at the commencement and development of the fits excited by absinth or electricity."

Page 694, B.M.J. April 2nd 1892.

not due e. g. to Syphilis, begin with an aura, but many cases do not.

Victor Horsley classifies the phenomena of an epileptic convulsion as follows —

I. Semi-involuntary movement.

II. Change in respiration, and inspiratory spasm, with epileptic cry, and beginning asphyxia.

III. Simultaneously with (II) loss of consciousness.

IV. Muscular Spasm, tonic stage.

V. Muscular Spasm, clonic stage.

VI. Exhaustion.

The calibre of the blood-vessels undergoes an alteration coincidently with the early phenomena.

X. vide opposite page.

I will give a résumé of

of Dr. Horsley's account of the phenomena of convulsions.

Re Loss of Consciousness.

It is known that consciousness depends upon the functional activity of the cortical perceptive centres of the cerebral hemispheres. He employed agencies which abrogated the functions of the cortex cerebri, and he divides them into two classes, intrinsic and extrinsic.

Extrinsic Agencies. —

1. Narcotics II. Reduced Circulation
Vulpian.

Intrinsic Agencies.

1. By suitable excitation of a sensory nerve (Optic) the functional activity of the

of the cerebral cortex may be profoundly depressed, and that the rays may be attributed to a sudden perversion of the nerve protoplasm. Its argues that the theory that anaemia is the cause of the loss of consciousness is fallacious, the only basis of the theory being the pallor which is observed at the beginning of the convulsion.

Dr. Hasley experimentally induced fits by injecting one minim of a solution of Absinthe and after the lapse of 14 to 20 seconds he noted the phenomena which are tabulated above.

Dan Mc Kalk held that medulla was the seat of the initial

disturbance, assuming that the medulla was the sole seat of the coördinations of artificial respiratory impulses. But it has now been proved that the cortex and the spinal cord are also concerned in coördinating respiratory impulses. If I can make out why the convulsions are ~~respiratory~~ General in type with, we must assume that the agency excites the whole of the neural axis at once. Dr. Hartley then tried a second experiment. He divided the pulls, induced artificial respiration, and injected absinthe. He now found that he could not induce a fit from the centres below the section. From these data he drew the inference that the spinal centres have no power of initiating the convulsions, and that the initiating centres are situated in the cortical mantle of the hemispheres. He considers that even if the cortical centres do not initiate the convulsions, they at any rate are affected very early in the fit. This accords with Hughlings Jackson's theory of explosive discharges in the cortex cerebri during the cause of

of the convulsions.
Re Muscular Spasm.
In middle level fits, (Jacksonian Epilepsy) the convulsions usually begin in the thumb or in the great toe, and are due to the nerve cells in the cortex, corresponding to those organs, discharging first.
The discharge from those cells affects the neighbouring cells and causes them to discharge also, and so the whole leg or arm may be convulsed.
The neighbouring centres in the order of their proximity are then discharged and ultimately the whole body may be roused into convulsions

"Paralysis follows and signifies exhaustion of nervous elements previously excessively functioning in the paroxysm."

"Hughlings Jackson"

"There would be exhaustion of the cells of the cortex, not only of those of the discharging centre but also of those collateral cells which it as a fulminate compelled to discharge excessively. There would be exhaustion, too, of the fibres passing down from both sets of cells".

(J. Hughlings Jackson in Lancet 12th April 1890.)

It is curious to note the order in which the

collateral cells are affected.
Thus in one of my own
cases of summatous Jackson-
ian Epilepsy the spasm
always began with twitch-
ing of the muscles of
the thumb of the left
hand, then the muscles
of the left ~~arm~~ hand were
affected, next the muscles
of the arm, and finally
the muscles of the left
side of the face. The
patient also lost the power
of speech (Aphasia) for
a few seconds.
The curious circumstance
of the Aphasia being
associated with the convul-
sions on the left side

I can only account for supposing that there must have been two or more lesions. The patient did not lose consciousness and could swallow during the attack and could understand what was said to him. After the attack was over his hand & arm and left side of his face felt numb. He had acquired the Syphilis ten years prior to the time of having these attacks.

In idiopathic epilepsy the tonic spasms are succeeded by clonic spasms, and in connection with this point

Dr. Horsley's experiment may be mentioned. If we stimulate the motor region of the cortex we will evoke tonic spasms followed by clonic spasms in the muscles which answer to the cortex which has been stimulated.
If we now excise the cortex, and stimulate the subjacent fibres of the corona radiata we only evoke the tonic spasms.
We know, that when a nerve impulse passes along a nerve, that it produces an electrical change in the electrical state of that nerve, and we also know that when a nerve fibre is cut across, the seat of injury becomes electro-negative to the rest of the nerve.

Now if a single impulse passes along that nerve then the electric difference is diminished. This is certain. Du Bois Reymond termed the "negative variation". Professor Hartley has, moreover, found by means of an instrument like an electrometer that the impulses sent down from the brain via the cord are of the characteristic form — tonic — followed by clonus. These experiments prove conclusively that the motor part of the epileptic discharge is situated in the cortex cerebri.

It may be noted if one happens to witness an epileptic convulsion from

the commencement that each successive convulsion tends to increase in severity, and this has been explained by Dr. Mercier. (B. M. J.) to be due to the increasing interval of time between each successive shock.
He explains the increasing severity by theorizing that the force accumulated must overcome the resistance, which is constant for each interval of the same length.
In a case of poisoning by Coccules Indicus, the convulsions became distinctly more intense as each succeeding one came on, and the last two or three shocks

were very severe and pro-
-tracted.

The Pulse, is frequently abnor-
mally slow during a seizure
and is supposed to be due to
an insufficient amount of blood
being sent to the brain
This explanation is not satis-
factory. The slow pulse is
is more probably due to the
heart beating more slowly
and strongly in order to
overcome the resistance
offered to it during the
convulsions.

The Temperature.
Dr. Bourneville in the Revue
de Medecin has recorded
the following observations.
1. During the epileptic seizure

isolated fits cause the temperature to rise from 1/10 to 1½°C.

2. In a series of fits, with intervals more or less long, during which consciousness alternates, the temperature behaves as in the first class."

The rise in temperature caused by each fit is accounted for by the increasing magnitude of each successive shock.

The increased work done by the muscles causing an increased production of heat.

The temperature often rises to 103°F in haut mal.

The Status Epilepticus is that condition in which the shocks follow each other in quick succession, and so

divided by Dr. Bourneville into two periods "I. Convulsive, II. Meningitic" "After the temperature has risen considerably corresponding to the convulsive period, matters improve and the temperature falls.

The Aura.

The aurae are of almost endless diversity. I need not detail here the various kinds. It may be regarded by the patient as a friendly warning, as by various mechanical means ligatures, tight band round wrist, the fit may be arrested if these means be applied to, or near the part, whence the aura originates.

Patients may often by exercising a little will power arrest an fit coming on.

This one of my patients, whenever he is present in a crowded assembly, begins to experience a queer sensation in his head. If he concentrates his attention on this feeling he is absolutely certain to have a fit, but if he ignores it and firmly fixes his attention upon something or other in the room, such as a lady's bonnet, so as to divert his thoughts from himself, he can in many instances avoid having a fit. This patient is possessed of an inquiring turn of mind, and his cases are usually

voices in his ears.
He began to listen to them, and endeavoured to make out what they meant, but he found that the convulsions which followed were always very severe, so he relinquished his study.
Mild attacks of Epilepsy may occur without the patients knowledge.
For instance, he may be reading quietly when suddenly you hear him make a gurgling noise in his throat, and in a few minutes he is all right again.
This has been called "abortive" or "Irregular

"Epilepsy".

One of my patients told me that, while sitting one day at his desk in his office he must have fallen from his chair and have lain on the ground for a few minutes; and then got up from the floor and, have sat down on his chair again, without having known anything of his movements. It was only after having sat in a dazed condition for some time that he felt his arm sore and bruised, and having looked at his jacket found it to be covered with dust. He

could not have lain on the floor more than a few minutes because he had just before the attack, sent his clerk into an adjoining room to get a book for him, and the clerk said when he came back, that he had only been away a few minutes.

That is a good illustration of Petit Mal.

In a convulsion, Haut Mal, both eyes are usually turned toward one side. This is called conjugate Conical deviation of the eyes. It may be the result of organic disease of the cerebrum, but it is often a distant Symptom, caused by spasm of the muscles

It is a somewhat misleading symptom in some cases, and requires to be taken in conjunction with the other cerebral symptoms to be of value for diagnostic purposes. It may be a prominent symptom in haut mal, in Jacksonian epilepsy, and in cerebral haemorrhage. In cerebral haemorrhage the eyes are turned towards the lesion in the brain and away from the paralysed side.

The very opposite obtains when it is due to spasm, whether from an irritative lesion in the brain, or in idiopathic convulsions. I have often observed it in the

the convulsions of infants, perfect recovery resulting.
(Vide Finlayson in Clinical Manual Page 193.)

It is of great importance in Jacksonian epilepsy when one have not had the opportunity of seeing the convulsions begin.
In accordance with Dr. Finlayson's rule, the eyes in this case will deviate to the convulsed side of the body, and away from the side of the brain in which the lesion exists.

Ptosis. I have often seen dropping of the upper eyelid in convulsions due to reflex causes. We call it a distant symptom in contra-distinction to it when it occurs as the result of organic disease affecting the 3rd nerve, when it is a direct symptom.

Hemiopsia is sometimes

a symptom in Jacksonian Epilepsy, when the brain is situated in the mesial centre (angular gyrus) in the occipital lobe, or when the optic tract is pressed upon.

In a case of my own in which the patient was epileptic, and had had a piece of silver inserted into the occipital bone, I found that he saw flashes and beheld halos of light - of variegated colours, especially when he looked at a gas flame. He did not complain of hemianopsia, and I have not yet had a case in which that symptom has been experienced.

Pathology.

The pathology is still an unknown

quantity. Hughlings Jackson's theory, which however, is more physiological than pathological, is as follows —

In 1873, he advanced the theory of explosive discharges in the cells of the grey matter being the cause of epileptic attacks, the cells being in a state of mal nutrition.

Echeverria's theory is, or rather was, that the sympathetic ganglia were concerned in the causation of Epilepsy. Dr. Alexander of Liverpool, based an operation on that theory, for the cure of Epilepsy.

Distinct changes have been noticed in the Sympathetic in cases of Graves' disease, but not, that

I am aware of, in Epilepsy.
Van der Kolk in 1859 stated
that the vessels of the posterior
half of the medulla were
abnormally dilated, and acting
on this suggestion, Dr. Alexander
introduced another practice,
the object of this one, being
to lessen the Quantity of blood
sent to the medulla. He
ligatured the vertebral arteries.
Dr. Hughlings Jackson's theory taken
in conjunction with M. Horsley's
experiments seem to me to
afford a satisfactory work-
ing explanation; but the
morbid anatomy, per se, has
still to be determined.
Consequences of Epilepsy.
Mental apathy, defective memory,

irritableness and absent-mindedness always result from this disease sooner or later.

As an example of the absent-mindedness characteristic of this disease, I will just give the following case, as an illustration, told to me by a patient.

One day this gentleman left his wife in his office at closing time, until he should return, promising to be away not many minutes, and then to return to escort her home. He went to his club, forgot all about his wife and his promise, had dinner, and by the time he remembered his promise, his wife had been in "durance vile" for two or three hours.

This same person, while chatting to a friend, whom

He had known well for many years, when suddenly he said to his friend, "Do you know I have quite forgotten your name", His friend was somewhat vexed but knowing his infirmity he said nothing.

The Diagnosis of Epilepsy.

Many physicians now recognise a liability to Epilepsy and this condition is much more amenable to treatment than when the disease is fully established.

This condition can sometimes be diagnosed from the attendant nervous symptoms, which are often very slight. Dr. Goodhart says that

if the patient can combat these symptoms, the bad neurotic habit which he is acquiring, may be broken.

These symptoms are very apt to lead to an erroneous diagnosis, as in the following case.

This patient complained of pricking and numbness in his fingers (or hands). At times his fingers were jerked up. He had slight fainting attacks occasionally. There was a neurotic family history. He also complained of a dimness before his eyes. An ophthalmoscopic examination showed his optic discs to be perfectly clear and well defined, but on examining his throat

I saw the cicatrices of old ulcerations, and in his nose there was a distinct vibratory on the right side of the septum, probably due to the breaking down and subsequent healing of a gumma. He had suffered from nocturnal headache, and had aching in his legs at nights. He strenuously denied ever having had [redacted] Syphilis, but Syphilitic treatment made the diagnosis clear by curing the twitching and numbness and the nocturnal headache.

I have only mentioned this case to show how closely Syphilis simulates neurotic conditions which are

allied to Epilepsy.
Optic Neuritis, in my experience, does not help us much in the differential diagnosis of these conditions, i.e., Syphilitic Epilepsy &c.

I have repeatedly examined the optic discs and retinæ in cases of Syphilitic Epilepsy, and have found them perfectly healthy in the majority of cases. Epileptic attacks are most common in cases of Meningeal Syphilis, and may be diagnosed by their being preceded by severe and protracted headache. Epileptic attacks in the course of chronic brain syphilis are usually characterized by:—
1. A monoplegia, which is

progressive unless treated.
2. Eye Symptoms, such as Ptosis, due to ocular-motor palsy; and Dilatation.
3. Aphasia, when lesion is in 3rd left frontal convolution.
4. Progressive mental deterioration.

Universal convulsions due to Syphilis differ from those due to Idiopathic Epilepsy in that consciousness is not lost, as the function of the centres which govern consciousness, is not abrogated.

Consciousness is certainly not lost when the convulsions are limited; but a sufficient number of cases have not been recorded to enable us to believe that the above statement will always hold good.

Convulsions beginning after the

thirtieth year, as according to Fournier, almost always due to Syphilis, that is to say if they are not uraemic or due to alcoholism.

Uraemic convulsions, may be erroneously diagnosed as epileptic, if the urine and the eyes are not examined.

Hysterical attacks may also lead one into error.

The Treatment of Epilepsy.

Surgical Treatment.

Dr Alexander's practice of ligature of the vertebral arteries has not been attended with good results, and he has now substituted another operation for it, viz.- "removal of the Supreme Cervical Ganglion". This, too, I believe, has not been particularly successful.

Trephining is the surgical
operation of the present time
in cases in which it is
indicated.

It has in many cases due to an
organic lesion in the Cortex Cerebri been
very successful. Take the case I have
already mentioned of Drs Anderson and
Buchanan. In this case Dr Buchanan
removed a small spicula called sarcoma
with complete success.

There need be no hesitation, I think, in
recommending this operation in cases
characterized by definite symptoms, and
especially in cases in which Mercury and
Potassium Iodide have already had a fair
trial, with no resulting benefit.

These symptoms are (1) the spasm always
beginning in the same way, and in
the same part.

2. Pain in the head, constant at one point.

3. Mark of injury on the scalp. This may have caused subsequent to the onset of the Epilepsy.

4. The symptoms which one would expect to result from a lesion of that part. For example, suppose an injury to posterior part of the frontal lobe, we would expect conjugate deviation of the eyes to the opposite side.

Analysis of the urine may also help to clear up some points.

Mechanical Treatment.

The treatment of cases of distraction and muscular weakness of the eyes. Some time ago a gentleman consulted me, who had been treated

for Epilepsy for some years by means of the bromide of potassium.
He is a librarian and the fits always came on at night, when he felt his eyes weak and tired.
I examined his eyes and found Myopic Astigmatism in the one eye. Vision was almost nil in the other eye — the disc being much atrophied.
I corrected the Myopia and the Astigmatism, and he can now read all day with comfort, and what is of much more importance and significance, the fits do not occur as often at night as they used to do.
I always correct errors of refraction and muscular insufficiency in cases of Epilepsy.
Hypermetropia is easily diagnosed, and treated, by glasses.
Retinal dissolution is what Dr. Stevens in his original thesis laid most stress on

and the reason for this is, that when either the superior rectus or superior oblique, or the inferior rectus or inferior oblique, is affected, crossed diplopia is the result.
There is, however, also crossed diplopia when one of the internal recti is affected.
To detect vertical deviation we place a 4° prism in front of each eye with the base inwards.
We then ask the patient to look at a flame (gas or candle) 20 feet distant.
If either of the two images is higher than the other we know that either the superior rectus or oblique is affected, and we know also that the patient must suffer from crossed diplopia.
Now, the superior rectus is affected, the image is displaced downwards and outwards. To correct the

defect a prism is selected which will the base upwards or downwards, as the case may require, will enable the patient to see the images on the same level.

To test the action of the internal and the external recti.

Place before the one eye a prism of 4 degrees and before the other a coloured glass. Make him look at a flame 20 ft away.

Now imagine a flame running vertically through the white image.

If the coloured image is on the same side as the coloured glass, then the external

recti are deficient, and
the patient suffers from Homo-
nymous Diplopia, i.e. there
is no due convergence of the
optic axes.
But if the coloured flame is on
the opposite side to that on which
the coloured glass is, we know
that one of the internal recti is weak,
and that there is divergence of
the eyes, causing "Heteronymous
Diplopia".
Dr Stevens recommends that the condition
should be treated by tenotomy of the
affected muscles, but this is far
too heroic a treatment, in my opinion
especially in the case of Vertical
Deviation. Prisms and Spherical
Glasses will do all that
is necessary in most cases.

From the impression of practitioners that I have heard patients give utterance to, after having had their errors of refraction put right, I think we cannot eliminate too highly the value of this line of treatment in Epilepsy. I am convinced that we can abate some of the symptoms by this treatment. I have seen many patients who have been treated solely by means of drugs, and who, despite their having complained of double vision, have never had their eyesight tested. I have one patient for years had been seeing every person he met with two heads, four arms and four legs and he eagerly

welcomed my suggestion to test his vision and correct it.

The Medicinal Treatment of Epilepsy.

The routine treatment with many still is the administration of Bromide of Potassium alone or in combination with adjuvants. I have had good results, especially in one case which was so far as I know, a complete cure, by giving it in combination with ergot and small doses of Strophanthus or digitalis. Probably in these cases there was a good deal of passive hyperaemia of the brain.

To get good results from the Bromide it must be given for an extended period of time. A favourite method and a very good one is to give it in doses of 30 grains C. 5 grains of the Iodide of Soda, daily for one or two years, stopping it for two to six weeks ~~each~~ every half year. Many cases do not yield to the Bromide and in these cases I adopt the following alternative line of treatment. I give the Valerianate of zinc in pill in 2 grain doses three times daily, a dose of Chloralamide at bedtime sufficient to procure sleep, and five grains.

℞ carbonate of ammonium gr ii
the morning on waking.
This treatment I have found
exceedingly beneficial. The
patient sleeps well at night
and his nervous system acquires
more tone. Sulphonal may
be substituted for the Chloral-
amide. I think it wise to
vary the hypnotic when
given at bedtime for obvious
reasons. The carbonate of
ammonia also helps forward
the bile.
Nitrite of amyl may be
useful in a convulsion
when asphyxia threatens, by
causing relaxation of the
glottis.
The bromides is one of

the most horrorsome of all the circumstances attending Epilepsy. No one, I imagine, who has not witnessed the scene, can conceive the utter misery of lying in bed, night after night, kicking, tossing, and plunging, and moaning no rest. The Epileptic victim may well think of the profound insight Shakespeare had into human afflictions when he wrote, "Sleep, gentle sleep, how have I frighted thee", and also "Tired Nature's sweet restorer, balmy sleep!" It is very satisfactory that we can give the sufferer, if not balmy sleep at

least a fair substitute, by
administering one of the
many hypnotics at Medical.
Again I would strongly
recommend that in cases in
which the bromide of potassium
fails to stop the attacks, or
in cases in which it causes
mental apathy, or loss of
sexual power (if the patient be
desirous of having offspring)
that this line of treatment
by Nitric &c may be given a
trial. The patients themselves
usually avow that they
have derived great benefit
from it.
Patients will sometimes ask the
bromide of potassium on the
ground that it weakens their

sexual powers. Sexual intercourse ought of course be very restricted or entirely prohibited. Tonic, though it appears to be a disturbant to the nervous and muscular systems, (Mitchell Bruce-Malaria Medica page 40) does not have the same deleterious effect upon the sexual system, that Phosphorus has. Sexual intercourse must be entirely interdicted in Women pregnant, who are epileptic, unless they are married, and anxious for children, when moderate intercourse may be allowed, but it must be very moderate. Country people, farm labourers, who are not subject to Epilepsy, may not suffer much from

from indulging in it, but in City Gentlemen with much brain work, I have observed any prejudicial effects from its indulgence. If this be the case in ordinary health what must it be in Epilepsy.

Light Open air exercise and plenty of milk and vegetables.

Alcohol in no form, in my opinion, is permissable. I have never seen it benefit any epileptic patient.

"The Status Epilepticus" should be treated by means of enemata of the bromide of potassium and chloral hydrate, and by counter irritation of the abdomen by means of mustard poultices. To this Thesis I have made no attempt to describe all the modes of treatment. I have only given those that I have found to be of value in my own experience. I have only touched the children of epileptic

parents should be subjected to such hygienic, ~~[illegible]~~ medicinal or other treatment which will build up the nervous system. These children should be found at the seaside or in the country, and should be kept on a liberal diet of bread, butter and milk &c. Cod liver oil may be given in the winter time. Educational worry must be avoided.