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On Epilepsy.

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Imperfect Epilepsy — Petit Mal or [illegible]
Incurability of Epileptic Insanity? p 20

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καλὴ μὲν οὖν καὶ θεία, εὖ ἴσθι, ἡ ὁρμὴ, ἣν ὁρμᾷς ἐπὶ τοὺς λόγους· ἕλκυσον δὲ σαυτὸν καὶ γύμνασαι μᾶλλον διὰ τῆς δοκούσης ἀχρήστου εἶναι καὶ καλουμένης ὑπὸ τῶν πολλῶν ἀδολεσχίας, ἕως ἔτι νέος εἶ· εἰ δὲ μή, σὲ διαφεύξεται ἡ ἀλήθεια.

ΠΛΑΤΩΝ.

Authors consulted in writing this Thesis:—

Dr. Laycock on Mind and Brain.
Dr. Brown-Séquard on the Physiology and Pathology of the Central Nervous System.
Dr. Claude Bernard's lectures on the Spinal Cord.
Dr. Radcliffe on Epilepsy and Epileptoid Seizures.
Dr. Skhroeder Van der Kolk on the Spinal Cord.

Few subjects of Medical inquiry are so fraught with interest as Epilepsy. From the dawn of Medicine to the present day it has been regarded as one of the most mysterious, and, at the same time, as one of the most fascinating phenomena which fall within the sphere of the Physician's observation. Its symptoms have been described by Hippocrates and Aretaeus with a degree of minuteness which goes far to prove the interest which it had for those great observers. Celsus has left on record an accurate description of its outward manifestations, and, regarded as it was by the Jews as a sign of demoniacal possession, it is put forward

ward in the Gospel History as furnishing occasion to the miracles, and evidence to the Messiahship, of Jesus Christ.

But while ancient observation has left almost nothing to be done by modern science in describing the outward signs of the Epileptic seizure; and while in the name ἐπιλημψία — literally "sudden attack" — there is implied a vagueness which modern research has not yet removed, the aetiology has been investigated with such ardour and such assiduity that the problem — as to how Epilepsy originates — has been reduced to much smaller dimensions, and may fairly be regarded as within the reach of no distant generation of medical observers.

ers. The combined labours of the neurologist, of the neuropathologist and of the medical psychologist, have reflected light on every aspect of the subject, and are daily adding to the vocabulary of medicine the signs by which the riddle will be deciphered.

A man, apparently in perfect health, shall utter a sudden cry and immediately fall to the ground insensible and convulsed. He strains and struggles violently. His breathing is embarrassed or suspended; his face becomes turgid and livid; he foams at the mouth; a choking sound is heard in his windpipe; he appears to be at the point of death by apnœa. But presently, and by degrees, these alarming phenomena diminish,

and

and at length cease; the patient is left exhausted, heavy, stupid, comatose: but his life is no longer threatened. And in a short time he is once more to all appearance perfectly well. The same train of morbid phenomena recurs, however, again and again at different and mostly at irregular intervals." *

Such is a brief description of an ordinary attack of Epilepsy.

The disease may be conveniently regarded as divisible into three stages, to wit,

1°. The pre-paroxysmal stage,
2°. The paroxysmal stage, and,
3°. The post-paroxysmal stage.

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* Watson's Practice of Physic: vol. I. p. 632

I.

The pre-paroxysmal stage of Epilepsy.

It is remarkable how little aid is afforded by morbid anatomy in investigating the aetiology of Epilepsy. Again and again has the pathologist eagerly scrutinised the brain of some typical ~~case~~ victim to Epilepsy, but without being able to detect the slightest change from the normal state. In the absence of any appreciable lesion or visible sign, the nosologist has had to resort to hypothesis; and Conjecture has given place to Conjecture with monotonous regularity. Dr Todd supposed that the phenomena of an epileptic attack were due to some materies morbi, which, gradually accumulating in the circulation, at

at last reached an explosive point,— and so caused the convulsive paroxysm. This explosion-theory, however, being deficient in proof, has been itself exploded.

Schroeder Van der Kolk announces as the result of an elaborate series of researches that the primary cause of Epilepsy consists in an exalted sensibility and excitability of the medulla oblongata which is thus made to discharge its vis nervosa in non-voluntary reflex movements, on the application of appropriate irritants. The irritant may be external, as (for example) the ramifications of the trifacial nerve; or it may be internal, that is to say, in the brain. Epilepsy may appear

appear in Children as the result of the irritation of intestinal worms, or of constipated bowels. In adults it may be produced by intestinal irritation or by the vice of self abuse. It has supervened on Amenorrhoea, on Chlorosis, on uterine congestion, on hysteria, etc. At first, there is only exalted sensibility, which may be subdued and thus be made amenable to cure; but when the disease has continued long, organic vascular dilatation takes place in the medulla oblongata, — blood is supplied in excessive amount, — and the ganglionic centres are too powerfully stimulated. Vascular dilatation is increased with every fresh attack of the disease. The permanently distended vessels keep up an excessive supply of

of nutrition, so that the vascular tunics become thickened, — the medulla oblongata hardened, — and fatty degeneration, or softening, are the results.

Such is the doctrine of Schroeder Van der Kolk, who agrees in many essential points with Brown-Séquard.

The researches of the latter investigator have led him to believe that Epilepsy essentially consists in "an increased reflex excitability of certain parts of the cerebro-spinal axis and in a loss of the control that, in normal conditions, the will possesses over the reflex faculty. The base of the encephalon and, especially the medulla oblongata, is the most frequent seat of the increase in the reflex excitability so that this part of the nervous

Centre

centre is the ordinary seat of Epilepsy. The disturbance in the functions of the cerebral lobes, during, and immediately after, a fit, and in the inter-paroxysmal periods, is chiefly due to the alterations taking place in the brain during the fits. This hitherto mysterious coincidence of loss of Consciousness, or, in other words, loss of the function of the cerebral lobes, with an increased action of the base of the encephalon, in a complete epileptic seizure, may now be easily explained." * Dr. Brown-Séquard had already tried to shew that the same cause which produces the first convulsions in some muscles of the neck — the eye — the larynx — and the face, produces

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* Brown-Séquard on the "Physiology and Pathology of the Central Nervous System." p. 183.

duces also a contraction of the blood-vessels of the brain proper, which contraction is necessarily succeeded by the loss of Consciousness.

The same explanation of the abolition of Consciousness in Epilepsy was arrived at independently, and almost at the same time, by Messrs Kussmaul and Tenner.

The furthest point, then, arrived at by Dr Brown-Séquard and other Continental neuro-pathologists is this:—

"The loss of Consciousness in simple vertigo or in complete attacks of epilepsy does not depend upon a disease of the brain, but upon a contraction of the blood-vessels of the ~~spinal~~ cerebral lobes — Contraction due to ~~the~~ some irritation of the vaso-motor nerves of these vessels either by some direct cause irritating

irritating them in the base of the encephalon or the spinal cord, — a by a reflex influence."*

The views of Dr. Laycock, as they may be unfolded from his work on "Mind and Brain", embrace much of the preceding doctrine, while at the same time carrying it out to a higher generalisation.

He maintains that Consciousness ideation is suspended by the Epileptic attack, while at the same time, ~~this is~~ it is probable that the Coenaesthesis is also annulled. The epileptic cry is automatic, from reflex irritation of the vocal muscles, and it does not necessarily, therefore, imply terrour or pain. The supply of aërated blood is indispensable for the manifestation

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* Op. cit. p. 200.

manifestation of consciousness, as is proved by the abolition of the latter when a ligature is put round the carotids. There are vaso-motor nerve-centres as there are musculo-motor nerve centres. The former, which are in relation with consciousness and thought, Mr. Laycock places in the medulla oblongata and cerebellum; and he holds that it is through these that those general modifications of the circulation in the encephalon take place by which the Consciousness is abolished in epilepsy proper, or partially diminished in the minor forms of Epilepsy. Hence, it follows, that the changes in the nutrition of the brain and its membranes and of the cranium itself — as seen in insanity and in epilepsy — are readily explained by this morbid action

action of vaso-motor nerve centres, or, in other words, are the effects and not the cause of the epileptic states. It is a local morbid activity or paralysis of the hemispheres which leads to all the peculiarities of ~~the~~ insane epileptics.

So much for one of the most essential symptoms of Epilepsy — the Abolition of Consciousness.

It remains to consider another phenomenon of the pre-paroxysmal stage — to-wit, the suddenness of the seizure. Without an attempt, at least, at explanation of this remarkable feature of the disease, the present résumé would be incomplete.

We have seen that the ~~sudden~~ abolition of consciousness is due to the sudden contraction of the vaso-mo-

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tor nerves, and that the seat of this vaso-motor activity, which affects the functions of the hemispheres is in the cerebellum. Now, there are two theories as to the mode of action of the vaso-motor nerves, to wit,

1°. That of Brown-Séquard and of the great majority of neurologists, who maintain that the capillaries are regulated by one set of (vaso-motor) nerves, the relaxation or stimulation of which causes paralysis a contraction of the vessels.

2°. That of M. Claude Bernard who maintains that the capillaries have two properties, the one of contraction and the other of dilatation and that the first of these properties ~~is set~~ is put in play by one set of vaso-motor

tor nerves and the other by an other set. "The great sympathetic nerve", says he *, "resembles the cerebro-spinal apparatus in all respects save consciousness of its own activity."

Assuming this Doctrine of M. Cl. Bernard to be correct — based as it is on many experiments and on much plausible reasoning — it follows that this distinct excito-contractile function, possessed by the vaso-motor system, is liable to the same sudden stimulation as the motor or sensory nerves of the cerebro-spinal apparatus, and that, consequently, the circulation in the hemispheres may be as suddenly arrested by

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* Lectures on the Spinal Cord: Medical Times & Gazette, June 22nd, 1861.

by a morbid stimulus applied to the vaso-motor nerve-centre, as the muscular function may be suddenly developed to an abnormal extent by the morbid stimulus applied to the motor system in Chorea and Catalepsy.

It may be readily inferred, if the foregoing conclusions are well-founded, that the diathesis most prone to Epilepsy will be the vascular-arthritic; and so clinical observation testifies. Every thing, then, that disturbs healthy vascularisation of the hemispheres, through the Cerebellum, must be regarded as belonging to the pre-paroxysmal stage of Epilepsy.

II.

The inter-paroxysmal stage of Epilepsy presents the immediate results of the foregoing morbid conditions.

conditions. There is, therefore,

1°. Abolition of Consciousness.

2°. Loss of muscular co-ordination and consequent falling to the ground.

3°. Convulsions.

These symptoms are always present in a fit of Genuine Epilepsy — the Grand Mal; and the parts successively affected are

1°. The head and neck.

2°. The trunk and limbs.

3°. The viscera.

The several muscles of the head and neck are affected functionally giving rise to strabismus, trachelismus, trismus, tetanus, etc.

The muscles of the trunk and limbs are violently convulsed so as often from their spasmodic action to inflict severe injuries on the miserable sufferer and on the individuals who endeavour to

to restrain the violence of his struggles

The visceral symptoms manifest themselves in contraction of the laryngeal muscles and consequent interruption of respiration; — in disturbance of the action of the heart, which is, at first, slow, then hurried; — in gastric disorder which gives rise to vomiting. Non-voluntary defecation and micturition have also frequently occurred in the interparoxysmal stage.

These convulsive movements are due to change in the respiration and to the circulation of undecarbonised blood through the vesicular neurine and through the muscles. (Dr. Laycock).

III.

The post-paroxysmal stage of epilepsy is also marked with peculiar

peculiar features. The sufferer is invariably left comatose; and even when he has passed out of this state he has often a stunned and confused aspect. That mental deterioration is the very frequent result of habitual epileptic seizures is a fact which is only too apparent in our larger asylums for the insane. It has often, indeed, been alleged that the fact of Julius Caesar, Mohammed, Napoleon I., Lord Byron, and other celebrities having suffered from habitual epilepsy is a sufficient answer to the doctrine which would make mental deterioration an invariable concomitant of the disease. But it may be safely rejoined that we have good reason to believe that even these great men would have been yet greater but for their subjection

jection to the cruel malady; and it may even be questioned whether much of the eccentric action and perverted judgment which is so conspicuous in the chequered careers of these men ~~are~~ is not to be directly traced to the unhealthy vascularisation of the hemispheres which Epilepsy always implies.

The tendency of Epilepsy is clearly towards mental derangement; and its deteriorating progress has been often marked by such apparently trifling symptoms as irritability of temper and loss of memory. Insanity associated with Epilepsy is proclaimed by M. Esquirol to be irremediable. Insane epileptics are conspicuous for their ferocity, — for their murderous or suicidal propensities — and also for their filthy and disgusting habits. The dis-

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ease usually subsides into incurable dementia.

The treatment of Epilepsy has been as various as the theories respecting its pathology. If the foregoing views as to the exciting cause of the disease are well-founded, then we shall have little difficulty in agreeing with Dr. Radcliffe and Dr. Sieveking that everything tending to depress the vital powers does harm. Mineral tonics, especially the salts of iron, zinc, and silver have frequently been prescribed with good effect. Dr. Marshall Hall recommended strychnia in tonic but not in stimulant doses, according to the following formula:—

℞ Strychniae acetat: gr: i
Acidi acetosi ♏ xx
Alcoholis ℥ ii
Aquae destill: ℥ vi
Ft.

sig: "Ten drops to be taken thrice a day". Dr. Brown-Séquard recommends the actual cautery to be applied to the nape of the neck or to the part from which the aura originates. Schroeder van der Kolk, on the principle of relieving congestion of the medulla oblongata, recommends setons or issues to be applied high up in the neck. Dr. Laycock has endeavoured to stimulate the medulla oblongata with ammonia, with powdered white hellebore, and with other nervines; and so successful has been the practice that I cannot better conclude this paper than by recording a very remarkable example of its efficacy which fell under my own observation in Millbotlen Lunatic Asylum.

C × × × R + + + had been epileptic

epileptic from his birth. Since his admission into the asylum some four years ago he has had attacks every ~~day~~ day. He utters no scream at the commencement of the seizure but falls instantly to the ground and is violently convulsed with rigid features and fixed eyeballs. The fits last only a few minutes and after their cessation he subsides into a deep sleep. He is always more or less drowsy and is sometimes violent.

To this (as to other cases) Dr Laycock applied the stimulus of ammonia or white hellebore, using the latter in the form of snuff, in order to accelerate the vascularisation of the medulla oblongata; and the result has been that C x x x R x x x has had few or no fits

fits; and so far from being in the former soporose state is now quite lively and good-humoured. He has so far regained his memory as to be able to repeat long strings of doggrel learned when a schoolboy. His appetite is vigorous and his general health much improved.

Other hardly less remarkable instances from the same asylum could also be cited.