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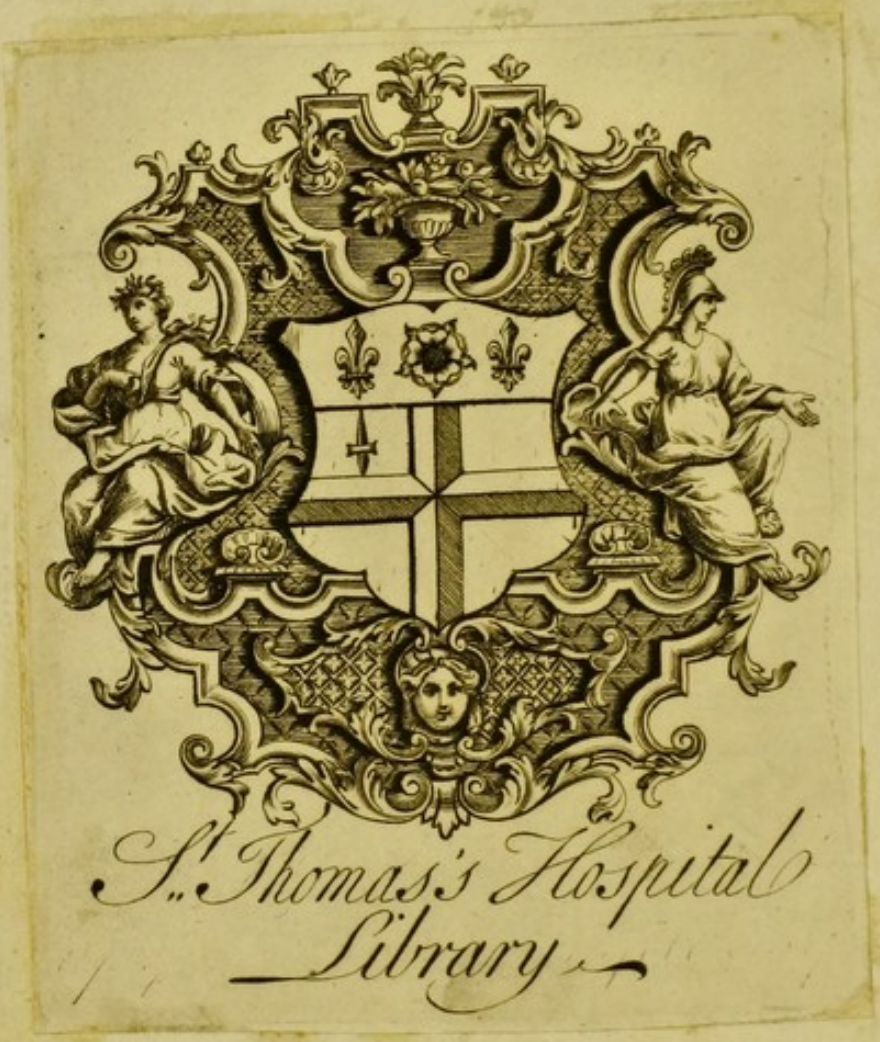

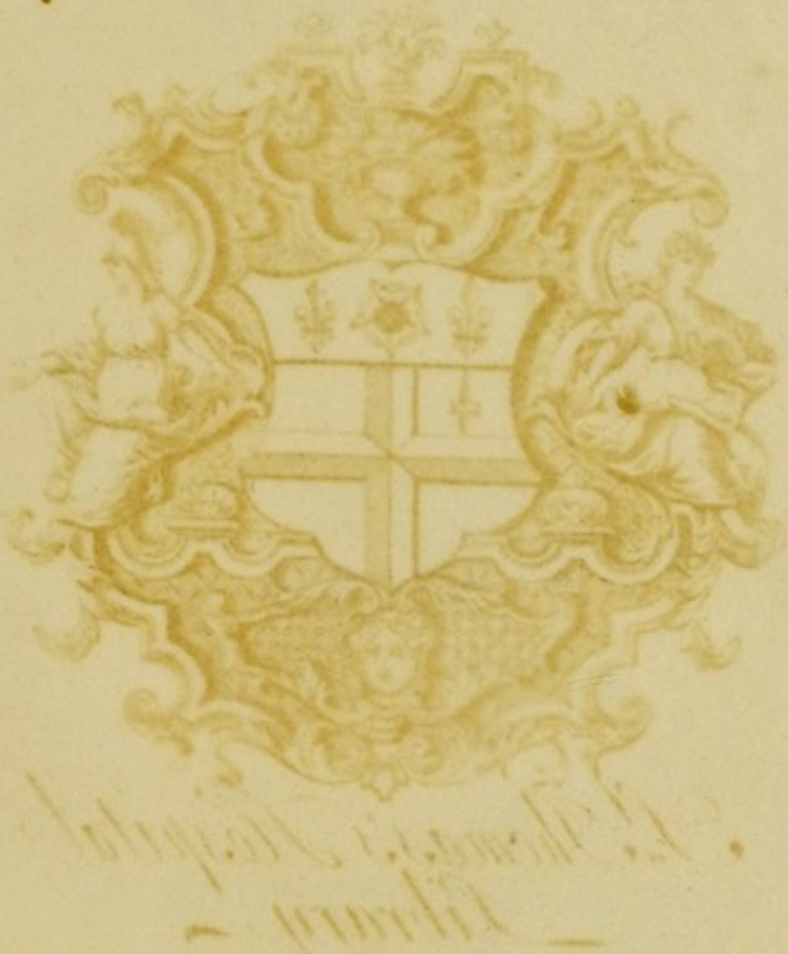

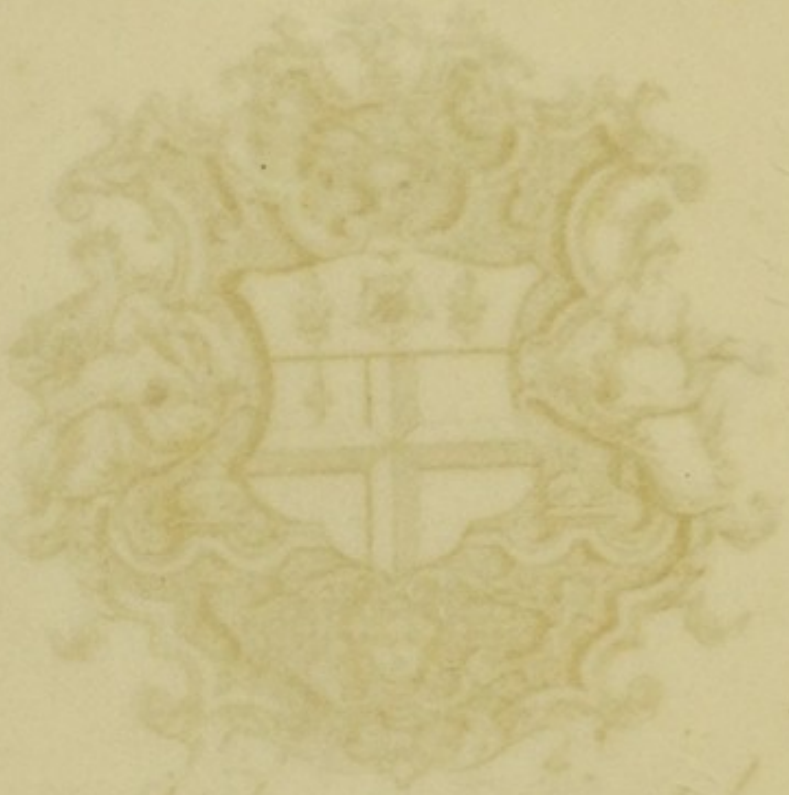

HISTORY

AND

METHOD OF CURE

OF THE VARIOUS SPECIES OF

EPILEPSY:

BEING

THE SECOND PART OF THE SECOND VOLUME OF

A TREATISE ON

Nervous Diseases.

By JOHN COOKE, M.D. F.R.S. F.A.S.

FELLOW OF THE ROYAL COLLEGE OF PHYSICIANS, AND LATE PHYSICIAN TO THE LONDON HOSPITAL.

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IN TWO VOLUMES.

VOL. II.

ON PALSY

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OF EPILEPSY.

ON

NERVOUS DISEASES.

OF EPILEPSY.

CHAP. I.

Definition and History.

In the former part of my treatise on nervous diseases, I have given an account of the opinions and observations of a great number of writers, both ancient and modern, respecting the history, nature, causes, and method of cure of the various species of apoplexy and palsy; two very important diseases, as they frequently occur, and are highly dangerous. I now propose, in like manner, to treat of epilepsy, a nervous disorder, in some respects resembling them, and not less important.

Epilepsy is a complaint which is often accompanied with very extraordinary symp-

toms and circumstances, and has therefore, at all times, particularly attracted the attention both of medical men and of the world at large. It has been described by Hippocrates, Galen, Aretæus, and all the ancient Greek physicians with whose works we are acquainted; by Celsus and other Latin authors; and by the most distinguished among the moderns; yet its nature or proximate cause still remains unknown, and the method of its cure difficult and uncertain. Some valuable information, however, may be collected from various sources; of which, together with a few observations of my own, I propose now to give an account.

Hippocrates has devoted a whole book to the consideration of epilepsy; and the disease has been at considerable length described by Galen, Ætius, Alexander Trallianus, and Paulus Ægineta; but I find very little respecting it in the works of these authors which seems important.

Aretæus appears to me to be the only writer on epilepsy among the ancients who is worthy of much attention. He has given a very good description of its symp-

toms, causes, and treatment; and what he has said on the subject may be read with considerable advantage. We are, however, chiefly indebted to modern systematic writers, and to the various medical journals of this and other countries, for useful facts and practical observations relative to this disease.

Epilepsy has been distinguished by a great variety of names, such as *morbus sacer*, *comitialis*, *Herculeus*, *caducus*, &c. Aretæus says, it may have been called sacred on account of the magnitude of the evil, it being customary to call what is great by that name; or because it is to be cured rather by divine than by human power, or because persons labouring under it have been thought possessed by demons.* Hippocrates, although he has described the disease under the title sacred, ridicules the opinion that it has any connexion with supernatural influence. The complaint called sacred, he says, appears to be in no respect more

* Aret. de Caus. et Sign. Morb. Acut. lib. i. c. 4.

divine than others, having, like them, its own particular nature and origin. He maintains that he can point out many disorders not less wonderful in their symptoms, to which no one ever thought of applying the term sacred. Besides, he remarks, if we attribute the disease to the gods, we ought to seek its cure in the temples. * Some of the ancients were of opinion that epilepsy was denominated the Herculean disease, because Hercules was subject to it; but Galen says it was so called on account of its power or magnitude. Epilepsy was denominated *morbus comitialis*, either because it frequently occurred in the crowded assemblies of the Romans called *comitia*, in which the passions of the people were often much excited, by which it might be occasioned, or because it was customary to dissolve the *comitia*, if, during the sitting, any person should be affected by it. † The application of the term *caducus*, or fall-

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* Hip. de Morb. Sacr. p. 1.

† Manutius de legibus Romanorum, Scribonius Largus, Quintus Serenus Sammonicus.

ing-sickness, is too evident to need illustration.

Epilepsy has been variously defined by different authors. I think it may be accurately and shortly described, by saying, that it is a disease consisting of paroxysms of convulsion, returning at uncertain periods, accompanied by an abolition of sense and voluntary motion, and ending in somnolency or complete sleep.

The attacks of epilepsy are sometimes sudden; sometimes, as in apoplexy, they are preceded by certain premonitory symptoms, such as languor, torpor, pain or giddiness in the head, drowsiness, or disturbed sleep, dimness of sight, and tinnitus aurium. Besides these, many other precursors of epilepsy have been mentioned by authors. Among them, Aretæus enumerates fulness and distention of the veins of the neck, and nausea and vomiting, especially after eating. Immediately before the fit, he says, flashes of light appear to the eyes, of purple, or black, or of various colours mixed together, as in the rainbow; there is a singing in the ears; disagreeable odours are perceived; and persons become

bilious, and apt to be angry without cause. Two or three days before the accession of the fit, he observes, persons sometimes experience perturbation of mind, pain and swimming in the head, and weakness of stomach.* A celebrated physician remarks, that, in some cases, a few hours before the paroxysm, a slight alienation of mind is observable; that persons are sometimes affected with a sort of vapour of the smell and flavour of musk †; with pain in the bowels; looseness; vomiting; pain in the head; obscurity of sight; impeded or suppressed speech; difficulty of breathing, and coldness of the extremities.

These circumstances and symptoms warn us of the approach of an epileptic fit; but

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* Ην δὲ πλησίον ἴδε῾ ἢ τοῦ παροξυσμοῦ, κύκλῳ μαρμαρυγαὶ πρὸ τῆς ὄψι῾ πορφυρέων ἢ μελάνων ἢ πάντων ὁμοῦ συμμεμιγμένων, ὡς δοκέειν τὴν ἐν οὐράνῳ τετανύσθαι Ἶριν· ἦχοι ὤτων· βαρυοδμίη· ὀργίλοι πικρόχολοι παραλόγως.

Aret. de Caus. et Sign. Morb. Acut. lib. i. c. 5.

† Gustu et odore moschi. *Heberden.* — In a particular instance, mentioned to me by a medical friend, (Mr. Hutchinson,) the approach of epilepsy, which generally came on immediately before the menstrual evacuation, was marked by the appearance of a singular blue colour of the gums.

the most remarkable precursor of the disease is a sensation which persons find great difficulty in describing, which generally passes from the extremities to the head, and is immediately followed by the paroxysm. This sensation has been likened by some to that of a cool and gentle air blowing on the part affected, hence called *aura epileptica;* by others, to that of a stream of cold water running from different parts to the head, or to a sense of the creeping of insects from the extremities upwards, denominated *formicatio.*

This symptom, or as some call it, cause, of epilepsy has been noticed by almost all writers on the disease both ancient and modern.

Galen says, that in the early part of his life he had seen an epileptic boy, about thirteen years of age, who spoke of this affection as a certain something which he could not clearly describe, ascending along the thighs, the loins, the sides, and the neck, up to the head; which was followed by a total loss of memory or recollection. He also mentions a case, in which the sensation was compared to that of a cold

wind ascending to the head. * Paulus Ægineta likewise describes this *aura frigida* as going from the legs, or from the fingers to the head. He speaks of a woman who, during pregnancy, had epileptic fits, which were preceded by a sense of a cold air ascending from the uterus to the brain. Schenckius has described this sensation as it affected a boy of twelve years of age, who was subject to epilepsy. †

The aura epileptica, in some cases, seems to be the consequence of an irritation of a nerve in the part from which it arises. Galen thus explains the phenomenon, which he compares to the effect of the bite of a venomous animal. Modern authors, also, consider this sensation as an evidence of some irritation or direct stimulus, acting on a part, and communicated to the brain.

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* Αὔραν τινὰ ψυχρὰν ἔφασκεν εἶναι.

Gal. de Locis Aff. lib. iii. c. 2.

† A little before the accession of the paroxysm percipiebat a pede aliquid, quod tamen nesciebat, ad genu ascendere, mox ad coxam, indeque paulatim serpens, ad caput perstringebat, et subinde statim cadebat, neque per octavam horæ partem, aliquid sentiebat.

Schenck. p. 106.

A late eminent writer * thinks, "that it may arise from an affection of the extremities or other parts of a nerve, acted upon by some irritating matter and following the course of such nerve;" but he remarks, "that he never found it distinctly taking the course of such a nerve, for it generally seems to pass along the integuments." Several authors mention cases in which the aura epileptica appeared clearly to arise from distinct local disease. † Donat attended a woman subject to epileptic fits, which were preceded by a pain in the breast, and by the sensation of a vapour ascending from that part to the head. The breast, in this case, was inflamed, and became ulcerated, matter was discharged from it, and whilst that continued to flow, the woman remained free from the complaint. A young lady, who was subject to frequent fits of a convulsive nature, which resisted all medicines, was told by a celebrated physician at Oxford, that they were occasioned by the dis-

* Cullen.

† Fonetus, Fernelius, Haller, &c.

location of a small bone of the great toe, and that the amputation of the toe would remove the disease. The amputation was performed, and her health was restored. * Other cases of a similar kind might be quoted from a variety of authors.

Sometimes epilepsy makes its attack without having been preceded by this or any other premonitory symptom, when the patient falls suddenly to the ground in a state of utter insensibility. He neither sees, nor hears, nor is at all conscious of impressions, however powerful they may be. † The most violent stimulants pro-

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* Dictionnaire Univ. de Med.

† Van Swieten says, in epilepsy, all the external and internal senses are wholly abolished; and this, I believe, is the opinion of the generality of pathologists; but a physician, to whose opinions I pay great respect, informs me, that he doubts very much whether the will be always inactive in epilepsy, and whether the muscles are not to a certain degree obedient to it. The resistance to the exertions, he says, made by the bystanders to confine the limbs, appears to me, in some cases, to be voluntary, and to argue some perception of that resistance, and some desire to overcome it. The state of mind, in these cases, appears to me like that which takes place in dreaming and in delirium.

duce no effect. Voluntary motion is entirely abolished, the muscles being no longer obedient to the will, or rather the will being no longer in action. Involuntary muscular power, however, remains, and is indeed excessive, and sometimes preternaturally violent. *

A modern writer † is of opinion, that a degree of consciousness sometimes remains through the whole paroxysm. Dr. Good thinks that there a few rare instances of some degree of consciousness and perception throughout the paroxysm; but he says the exceptions are few, and by no means enough to disturb the general rule.

The powerful contractions of muscles, especially of the face, are often such as to terrify the beholder. The body is sometimes bent forwards, till the chin touches the breast ‡; sometimes it is drawn back-

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* A young girl, in an epileptic paroxysm, has been seen in a state of convulsive muscular action so powerful that four strong men could scarcely restrain her. *Van Swieten*, 391.

† Dr. Prichard.

‡ Aretæus.

wards with prodigious force. The eyes roll furiously, or are so distorted that the white part of them can only be seen; the lips are dreadfully convulsed, and covered with a frothy saliva; the tongue is thrust violently from the mouth, and is sometimes shockingly lacerated by the spasmodic contraction of the muscles of the jaws, which bring the teeth together suddenly, and with great violence. The face is very pale, or else livid, or almost black. The muscles, expressive of various and as it were contending passions of the mind, are sometimes together thrown into a state of powerful involuntary action; which, with the rolling of the eyes, the foaming at the mouth, and the gnashing of the teeth, give to the countenance a horribly wild, and, as some fancy, supernatural expression, as if the wretched patient were possessed, or, in the language of Scripture, *torn* by some malignant demon. *

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* Lucretius has briefly and very strikingly described an epileptic paroxysm in the following lines:

Quinetiam, subita vi morbi coactus
Ante oculos aliquis nostros, ut fulminis ictu,

In a paroxysm of this disease, the vital and natural, as well as the animal functions, are often much deranged. The heart palpitates, the pulse is irregular, the breathing oppressed, and sometimes highly laborious, and even stertorous.

The secretions and excretions are also more or less disturbed: bile in large quantity is, in some cases, ejected from the stomach, and a thick viscid saliva from the mouth. Not unfrequently the semen, fæces, and urine, are involuntarily and forcibly discharged.

These are the principal symptoms and circumstances which attend an epileptic paroxysm, in addition to which, many others might be quoted from various

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Concidit, et spumas agit, ingemit, et tremit artus,
Desipit, extentat nervos, torquetur, anhelat,
Inconstanter et in jactando membra fatigat:
Nimirum, quia vis morbi distracta per artus
Turbat agens animum, spumanti ut in æquore salso
Ventorum validis fervescunt viribus undæ.
——— Ubi jam morbi se flexit causa, reditque
In latebras ater corrupti corporis humor,
Tum quasi talipedans primum consurgit, et omneis
Paulatim redit in sensus, animamque receptat.

Lucret. lib. iii.

authors who have described particular cases. Schenck mentions an instance of epilepsy, which was always ushered in by a strange involuntary whirling of the body* round and round: and an eminent writer speaks of a Jewish woman, who, in the fit, had the lips alternately contracted and elongated, thrust out into a sharp beak, and then drawn back with such celerity as to make the beholders giddy.† In some cases, on the accession of epilepsy, the eyebrows are violently contracted, as when persons are agitated by excessive anger, and the patient utters loud cries or frightful screams. Sometimes the forehead is much convulsed, and also the scalp, so that the hair seems to stand erect. The moveable part of the face, which reaches from the eyes down to the chin, says Van Swieten, and which is composed of a great number of muscles, found by anatomists to differ in different

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* Vidi quendam epilepticum singulis diebus aliquoties in epilepticos paroxysmos incidere solitum, prius multoties in gyrum veluti verti, ac agitari et tandem in humum collabentem epilepticis convulsionibus mirifice torqueri magna astantium commiseratione.

† Boerhaave, Van Swieten, § 1073.

bodies, and by the changes of which painters and statuaries know how to express the affections of the mind, are surprisingly convulsed.* In the beginning of the paroxysm the cheeks are red, but in its advance they contract a livid colour, as does also the face; the vessels of the neck are distended, and the voice is like that of a person almost suffocated.† In these cases, respiration being impeded, the blood cannot be freely transmitted through the lungs, and the right ventricle of the heart cannot evacuate itself: hence the venous blood is accumulated near that ventricle‡, and the conspicuous veins become turgid, especially the jugular veins, and those of the forehead, and under the tongue; and

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* Mobilis autem illa faciei pars, quæ sub oculis ad mentum usque extenditur, numerosis musculis constans, qui in singulis fere cadaveribus diversi reperiuntur ab anatomicis, et cujus partis sola mutatione pictores et statuarii omnes animi affectus exprimere noverunt, miro modo agitari solet. *Van Swieten, Com.* § 1073.

† Ὡς ἐν πνιγὶ ἀφωνίη. *Aret. de Caus. et Sign. Morb. Acut.* lib. i. c. 5.

‡ Unde sanguis venosus accumulatur circa cor dextrum. *Van Swieten.*

hence the livid or almost black colour of the face.* In some cases, after a violent fit, the face remains tumefied, and affected with ecchymosis. M. Tissot was consulted by a patient in whom this ecchymosis was very strikingly apparent, especially about the forehead and eyes, the rest of the countenance exhibiting here and there small red spots; which, however, after a few hours, disappeared.

The state of the circulation of the blood is very different in different cases of epilepsy. The heart sometimes palpitates with great violence, and the pulse, during the fit, is always quick; indeed it cannot well be otherwise, in such violent exertions of the muscles. In the beginning of the paroxysm the pulse is small, and often irregular; but in the advance it becomes fuller.† This is the account which writers in general give of the state of the pulse in epilepsy. Aretæus says, in the beginning it is vehement, quick, and small; towards the end

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* Van Swieten. † Tissot.

full, and slow, and languid; throughout the whole, disturbed or irregular. *

The degree of convulsive action in this disease is different in different cases. We are informed that it is sometimes so violent as to break the teeth. The lower jaw is sometimes pulled with such force from the upper, that it is dislocated; and in the case of a young person to whom this happened, the luxation not being at first reduced, the mischief remained during life, which was for several years. †

In epilepsy, all the muscles may be violently and involuntarily thrown into the various actions of which they are capable in a state of health, and when subject to the will. Those of the breast and abdomen are sometimes most powerfully affected with spasm, so that, emprosthotonos, or opisthotonos, or the general rigidity of tetanos, supervene. Boerhaave remarks, that

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* Σφυγμοὶ σφοδροι, καὶ ταχέες, καὶ σμικροὶ εν τῆσι ἀρχῆσι· μεγάλοι δὲ, καὶ βραδέες, καὶ νωθροὶ ἐπὶ τῳ τελει· ἄτακτοι δὲ ἐς τὸ ξύνολον· *Aret. de Caus. et Sign.* lib. 1. ch. 5.

† Van Swieten.

there is no gesture, distortion, or posture which epilepsy has not sometimes represented. It imitates all kinds of motion; running, walking, whirling round, falling prostrate, &c.—What Sydenham has said of hysteria, respecting the difficulty of describing all the symptoms which occur in its different forms, may be truly said of epilepsy.*

In the paroxysm, the symptoms above mentioned, sometimes sooner, sometimes later, gradually give way.† The convulsions become less violent, the breathing more free, the pulse more full, slow, and

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* Dies me deficeret, si omnia, quæ adfectus hystericos gravant symptomata, enumerare velim; tam diversa atque ad invicem contraria specie variantia, quam nec Proteus lusit unquam, nec coloratus spectatur chamæleon.

Syd. Op. p. 394.

For an account of many varieties and anomalies of epilepsy, vide *Tissot, Traité de l' Epilepsie.*

† Aretæus thinks that the disease begins to remit, on the excretion of fluids from certain parts. The strangulation becomes less when an inundation of humours bursts forth from the nose and mouth. Foam, he says, is thrown out, as by the sea agitated by violent storms, and the symptoms disappear. Ἀφρὸν δὲ ἀποπτύουσι ὥσπερ ἐπὶ τοῖσι μεγάλοισι πνεύμασὶ ἡ θάλασσα την ἄχνην.

De Caus. et Sign. Acut. Morb. lib. i. c. 5.

regular, the countenance more composed, and the patient falls into a state of somnolency or profound sleep, on awaking from which, he by degrees returns to his usual state, nothing more than languor or lassitude remaining.

The paroxysms of epilepsy in different cases greatly vary, both as to their degree, their duration, and the time of their return. When the disorder appears in its worst form, and in its highest degree, it is attended with the frightful circumstances and symptoms above mentioned; and the description which I have given, is by no means an exaggerated account of it. Much more frequently, however, it appears in a milder form, when the patient, with or without warning, falls to the ground, remains for a short time convulsed, and soon passes into a state of quiet sleep. Sometimes the fit happens in the night, and the patient on awaking in the morning, feels nothing more than a slight weakness and oppression. In some cases, the epileptic person does not fall to the ground; and experiences no inconvenience further than that of some agitation of the head or

limbs, attended, however, with a loss of sensation, and voluntary motion, in a greater or less degree.—In many cases, even of slight epilepsy, some foaming at the mouth is observable.—Both in the severe and the mild disease, the patient, on recovering, seems wholly unconscious of what has happened during the paroxysm, only recollecting circumstances which occurred previously to its accession. Aretæus has described epilepsy in both its forms, and has given it a place both among the acute and chronic diseases. Speaking of the acute epilepsy, he says, it is an evil of a various and portentous kind, fierce in its paroxysms, acute and pernicious, or deadly; for sometimes a single fit proves fatal.* In the fifth chapter of his first book, De Signis et Causis Morborum Acutorum, he has very minutely, and with much elegance and power of language, detailed the history of this disease. Paulus Ægineta likewise describes

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* Ποικιλον ἠδε ἀλλόκοτον κακὸν η ἐπιληψίη· θηριῶδες μὲν εν παροξυσμοῖσι, καὶ κάτοξυ, καὶ ολέθριον ἔκτεινε γάρ κοτε παροξυσμος εἷς. *Aret. de Caus. et Sign. Acut. Morb.* lib. i. c. 4.

epilepsy under two forms; the one proving suddenly fatal, the other of long duration, which, if not mitigated or removed at the time of puberty, or of pregnancy in women, at last destroys the patient. Alexander Trallianus, and the other Greek medical writers, agree in opinion with Aretæus and Paulus on this subject.

Epilepsy varies not only as to its form and degree, but as to the duration of the paroxysms, and the time of its return. Accounts of great varieties in these respects, might be adduced from numerous authors. The fits may last for a few seconds or minutes, or for many hours.* In the case of a girl twenty years of age, the paroxysms, though not very strong, always lasted for fourteen hours.† — The ordinary duration of these attacks, is from ten to twenty minutes, when, the disease having arrived at its height, the respiration becomes more slow and easy, and the other symptoms disappear.

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* Tissot. † Barbette.

The time of the return of the paroxysm is also various. In different persons the periods of their recurrence are very different; and even in the same person they are seldom regular. We have, however, on record, a few instances of the contrary, when the disease has recurred every day, or week, or month, or at every new and full moon, or in the spring and autumn of the year, or at the end of one, or even two years; but, generally speaking, the intervals of paroxysms are quite uncertain. In some cases the fit returns with great rapidity. An eminent pathologist tells us, that he has seen many epilepsies, in which patients suffered several paroxysms in the course of twenty-four hours. * In a few instances this complaint has disappeared for several years, and afterwards returned. A case of this kind is recorded, in which, after an interval of thirteen years, the disease returned, with more frequent and more violent paroxysms than before. † Dr. Abercrombie thinks epilepsy one of the

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* Van Swieten. † Heberden.

most obscure and difficult subjects in medical pathology. Referring to the modification of it, which depends upon organic disease, he says, a remarkable circumstance in regard to it, is, the long intervals which sometimes occur, though the cause remains the same. He describes a case in which the patient had been free from the fits for many months, when, on a sudden fright, they returned at short intervals, and continued to recur till his death.

The terminations of epilepsy are likewise various. After frequent attacks, it sometimes ends in apoplexy, sometimes in paralytic affections, particularly of the nerves necessary to hearing and vision; but its common termination is in idiotism or fatuity. The faculties of the mind, especially the judgment, the memory, and the imagination, gradually fail, and a total imbecillity supervenes. Innumerable instances of this kind might be quoted from Van Swieten, Tissot, and others. I know no author who has more impressively described the wretched state of those who have long laboured under this disease, than Aretæus, in the fourth chapter of his first

book, De Causis et Signis Acutorum Morborum.

If the disease, he says, be of long duration, patients suffer from it, even in the intervals of paroxysms. They become torpid, languid, and dejected; they avoid the sight and the society of men; time does not afford any mitigation of their sufferings; they are often oppressed with watchfulness, and when they do sleep they are terrified with horrible dreams; they loath food, and digest with difficulty; their natural colour disappears, and changes to a leaden hue; they have a difficulty of comprehension, on account of torpor of mind and of sense; they are dull of hearing *, are affected with a ringing in the ears, or a confused sound in the head; the tongue is unable to do its office, either on account of the nature of the disease, or from injuries which it may have received in the paroxysms; they are agitated by convulsions; and sometimes the mind is so disturbed by the complaint, that persons labouring under

* Νωθέιη γνώμης τε, καὶ ἀισθήσιος.

it become quite fatuous, or idiotic. — He describes these wretched sufferers, dragging on a miserable existence, in pain and ignominy *; and sometimes, by the violence of the disorder, driven even to madness.

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* Ζῇ μὲν ἄισχεα καὶ ὀνείδεα καὶ ἄλγεα φέρων·
Aret. de Caus. et Sign. Morb. Acut. lib. 1. c. 4.

CHAP. II.

Dissections.

As an account of the appearances observed on the dissection of persons who have died of epilepsy may assist us in endeavouring to understand the nature, causes, and distinctions of the disease, I shall, previously to my consideration of the latter subject, communicate what I find most valuable on the former.

On the dissection of persons who have died of epilepsy, or subject to that disease, morbid appearances have been found in various parts, but chiefly within the cranium, many of which are similar to those which I have repeatedly described, when treating of apoplexy and palsy. These are chiefly effusions and tumours of various kinds; abscesses; exostoses; depressed portions of bone, sharp-pointed spiculæ, &c. which may mechanically press upon and injure the brain and its investing mem-

branes. After epilepsy, marks of disease have been found in the investing coats of the brain, on its surface, in its substance, and in its ventricles, from wounds, contusions, abscesses, and the like.* The blood-vessels of the brain are very often found greatly distended; a modern author says, that in this disease the most frequent morbid appearances are those of vascular turgescence, and its consequences.† This appears probable, when we consider that epilepsy very frequently terminates in apoplexy. Considerable effusions of blood, alone, or mixed with water, or blood in a concrete state, are often seen in various parts within the cranium after this disorder; for a particular account of which I refer to the dissections of Bonetus, Lieutaud, Morgagni, Tissot, and other writers. According to their accounts, however, the most common appearance in these cases, is that of serum effused in various parts of the brain. A great quantity of this fluid has been seen overflowing the sinuses, and

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* Boerhaave. † Mansford.

washing the whole substance of the brain, filling the head, and effused into the ventricles. A thin limpid water, of a yellowish colour, has been often observed in these cavities; sometimes in a large quantity. In one case, the two lateral and third ventricles contained as much as two pints of this fluid. *—In the heads of epileptic persons, says Morgagni, yellow and acrid serum, a yellowish lymph, and a citron-coloured water of a saline taste has been observed, but more frequently a thin pure limpid water.

A mucous viscid humour, or jelly-like substance, has in some instances been found after epilepsy, in various parts of the brain; abscesses also, deep seated in the substance of that organ, containing pus in considerable quantity, have been seen; in one case, as much as three ounces was observed; in another, a fœtid fluid was effused between the dura mater and the cranium, and in the cerebrum itself.— In the case of an officer of cavalry, who had become epileptic

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* Bonetus.

in consequence of a fall from his horse, an abscess was discovered, which had been produced by a large sharp-pointed piece of bone, which had injured the dura mater. *

On dissection after epilepsy, a great variety of other morbid appearances have been observed, particularly mal-conformation of the skull; a diseased state of the meninges; a too great hardness or softness of the brain; many morbid affections of the cerebrum and its investing membranes, from injuries done by wounds, blows, falls, and fractures. — In various parts within the cranium, schirrous tumours, fatty or flesh-like tubercles, and hydatids in the vessels of the plexus choroides, have been seen by those who have particularly examined persons who have died after this disease. For an account of these I must refer to Bonetus, Morgagni, Lieutaud, and others.

It is strange, that in the accounts of morbid appearances found after epilepsy, on dissections made by eminent anatomists, no notice has been taken of the state of the

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* Bonetus.

cerebellum. This is the more surprising, as a celebrated modern physiologist confidently asserts, that, on examinations made by him, the cerebellum has *always*, in these cases, been found very greatly injured. The person to whom I allude is Monsieur Wenzel, professor of anatomy and physiology, in the College of Mayence, who enjoyed great opportunities for observation, and who shewed great zeal and diligence in instituting anatomical examinations relative to this subject. The result of his enquiries has been published by his brother, under the title, *Observations sur le Cervelet, et sur les diverses Parties du Cerveau, dans les Epileptiques.* As this work is very interesting, and seems to be but little known in this country, I shall here introduce a short account of it. M. Wenzel informs us that, having for a long time lamented the sad condition of persons suffering from the attacks of epilepsy, and the inefficacy of medicine in such cases, which he in a great measure attributed to our ignorance of the nature and causes of the disease, he had determined to study the complaint with par-

ticular care, in order that he might, if possible, obtain a knowledge that would enable him to afford relief to the wretched objects who had so greatly excited his compassion. Being persuaded, however, that a single individual could make but a slow progress in such an enquiry, he instituted a society for the express purpose of assisting him in this investigation. This society, which consisted of M. Militer, professor of chemistry and pharmacy at Mayence, and several other physicians of eminence, entered completely into M. Wenzel's views, and agreed to make idiopathic epilepsy the object of their particular attention ; to endeavour to ascertain its nature and causes ; to make diligent observations on the effects of new medicines ; and to select for their study such cases as had been of long standing, and in which the remedies usually employed had been found inefficacious. A great variety of modes of treatment were employed by M. Wenzel, and his associates, but without success. Not discouraged by this, the society resolved to persevere, and to institute new trials, at the same time determining

to make very careful examinations, by dissection, in order to discover, if possible, any appearances that might tend to illustrate the nature and causes of the complaint, or that might account for the failure of the medicines which had been administered.

As M. Wenzel had for many years been in the habit of dissecting the brain, he readily undertook the task of making the examinations recommended by the society; and he was fortunate enough to obtain many opportunities for observation, of which he diligently availed himself, and from which he derived much curious, interesting, and important knowledge, which is very minutely detailed in this publication.

The account of M. Wenzel's dissections is prefaced by some very judicious and scientific instructions, as to the best mode of examining the parts contained within the cranium; and he lays great stress on the necessity of having, for this purpose, an accurate knowledge of these parts in their healthy state, in order the better to discern their morbid condition. M. Wenzel himself was so attentive to this, that whenever

he had occasion to dissect the brain of an epileptic person, he always was provided with the head of some one who had never been affected with that disease.

Before M. Wenzel enters on the account of his examinations, he presents the reader with a particular description of the lower bones of the cranium, and of the soft parts resting on them; in which he points out their natural structure, and the changes which they undergo at different periods of life, or by general disease; and to the study of this subject he attaches much importance.

After this M. Wenzel enters upon the most interesting part of his work, namely, the description of the morbid appearances found by him on dissection after epilepsy.

M. Wenzel had an opportunity of examining the heads of twenty persons, who had died, after epilepsy of the worst kind, and he has minutely described many curious alterations of structure, singular effusions, and other marks of great and uncommon disease, or at least of disease not hitherto noticed, of parts within the cranium, which are particularly interesting.

The brain, properly so called, has been generally considered as the chief seat of disease in epilepsy; M. Wenzel, however, in a very great proportion of the heads he examined, found that organ in a healthy state, but the cerebellum uniformly and in a very extraordinary degree and manner diseased. In fifteen of the twenty cases above mentioned, the brain was uninjured, but of the other five, in two the meninges were slightly diseased, in four, an effusion of a thick lymph was observed on the surface of the brain, and in three, a considerable quantity of water in the ventricles, in consequence of which the corpora striata and the thalami nervorum opticorum were much injured, and in one instance a softening and an enlargement of the brain was seen; but in fifteen of the twenty the brain was found to be in a sound state.

The parts which M. Wenzel in these cases discovered to be principally affected, were the pineal gland, and the cerebellum; the former often, the latter always, injured in a greater or less degree. In ten instances the pineal gland was almost entirely of a grey

colour; in one, it was white in its anterior part, and of a pale red in one half of its posterior part. In another case, on the superior surface of the pineal gland, a brownish yellow transparent vesicle was observed, from which a considerable quantity of a clear yellow fluid was thrown out; in a third, the pia mater surrounding the gland was thicker than ordinary, and partly of a red, partly of a yellow colour. The pineal gland was always found softer, and in all the instances, excepting two, smaller than natural; in those two, however, it was much enlarged.

In three instances, the infundibulum was more firm than usual, and round about it, a thick lymph was effused, which in some places could be raised up like a membrane. The superior part of the infundibulum was in this case of a red colour, and bore marks of inflammation. In one instance, through its whole length, it was extremely red.

The most extraordinary morbid appearances, however, discovered by M. Wenzel in these dissections, were those which he found in the cerebellum. He observed that organ to be morbidly affected with re-

spect to its surface, its consistence, its colour, its size, and the state of its internal parts. In one case, the whole surface of the cerebellum appeared unequal and furrowed; in another, about the insertion of the infundibulum, there was a very large excavation, from a loss of the substance of almost the whole of its superior surface; and in a third, there was a great depression of the anterior edge of the cerebellum. In two instances, its superior surface was of a fibrous appearance, and much furrowed.

The colour of the cerebellum was sometimes of a pale, but more commonly of a dusky red, of different shades, and approaching to blackness; sometimes it was of a whitish or yellow colour, and in two instances its posterior lobe was of a pale grey.

In three cases, M. Wenzel found the cerebellum very soft, but in five others, it was harder and more compact than natural. Its size was often considerably increased; sometimes, under circumstances to be hereafter mentioned, it was prodigiously enlarged.

The most remarkable and important alterations observed in these dissections were those found in the interior of the cerebellum, which had probably occasioned its increased size, and the diseased appearances on its surface, above mentioned.

After having made one or two horizontal sections of the cerebellum, M. Wenzel, in ten instances out of the twenty, found between the lobes, at the point of their union, a yellow, friable, solid matter, which almost always had produced not only a separation of the lobes, but a loss of their substance. This matter could easily be raised in pieces. Sometimes, at the junction of the lobes, a half fluid viscous lymph was seen separating them; sometimes, upon the superior surface of the cerebellum, spots were produced, by a collection of a perfectly white or yellowish brown lymph, which had become solid. In those cases in which the cerebellum was observed to be much enlarged, a great quantity of lymph, more or less thick, was seen between the lobes. In one instance, on separating them, a large quantity of a thick colourless fluid was thrown out, which ran to the point of their

union. M. Wenzel thinks, that if the subject of this dissection had lived longer, the fluid observed would have gradually acquired the appearance and colour of the matter seen in other cases, on examination after epilepsy. In one case, on cutting the cerebellum where the lobes touch, a round ball was observed, containing several small globular transparent bodies, much resembling the granulated substances often seen in the pineal gland. On the superior surface of the cerebellum, marks of inflammation were sometimes visible.

These were the chief morbid appearances found by M. Wenzel, in his examinations of the brain of persons who had been affected with epilepsy. For further particulars respecting these and some other curious appearances, I must refer to his publication.

When we consider, that in all the dissections after epilepsy, as far as M. Wenzel had an opportunity of making them, the cerebellum, without a single exception, was found diseased, we are quite at a loss to understand how it should have happened, that in the accounts of dissections in similar cases, made by former anatomists, no dis-

ease whatever of the cerebellum has been mentioned. — The work concludes with some general considerations and deductions from these examinations.

But besides the morbid appearances found within the cranium after epilepsy, various læsions have been observed by anatomists in different parts of the body, particularly in the heart, the lungs, the liver, the stomach, and intestines. Bonetus speaks of a gelatinous humour seen in the great veins near the heart, of a blackness of the right lobe of the lungs, and adhesions to the thorax, the brain and other parts being perfectly sound; and he describes a case in which great marks of disease were seen in the stomach and intestines of an epileptic child. He also mentions, that in a woman who had been subject to epilepsy and convulsions, the pancreas was ulcerated, and in a boy, the spleen was indurated and schirrous. Various other diseases of the viscera of the thorax and abdomen have been discovered after epilepsy; — carcinoma of the cardia, a morbid state of the liver, ulcers in the

bladder, adipose substances adhering to the intestines, schirrous affections of various parts, &c. How far some of these could with propriety be considered as immediately connected with the disease we are considering, it is not easy to determine.

Almost all authors who have written on this subject, speak of worms found in the intestines on dissection after epilepsy. * A Dr. Prout of Paris, in the year 1804, published a work entitled *Médicine éclaireé par l'Observation et l'Ouverture des Corps*, in which he has communicated many curious and valuable facts, established by dissections, respecting various diseases. Among others, he examined the bodies of many epileptic persons in the hospitals of Paris; and he assures us, that in all of them he found collections (*masses*) of worms in the intestines, generally accompanied with acrid substances in different parts of the alimentary canal.

These are the chief morbid appearances observed after epilepsy; but it is proper for

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* Bonetus. Tissott. Pritchard, 106.

me to remark, that in some instances, after this disorder, no marks of disease whatever, could be found within the cranium, the thorax, the abdomen, or in any other part of the body.

CHAP. III.

Distinctions and Causes.

EPILEPSY has been variously classed and distinguished by different authors. Galen considers the disease as of three kinds; the first being a direct affection of the head; the second primarily of the stomach, and secondarily of the head; and the third that in which the affection begins in some distant part and ascends to the brain.

Sauvages divides epilepsy generally into the perfect and the imperfect, which he subdivides into many species, according to the causes of each. Thus he describes the *plethoric* epilepsy, the *cachectic*, the *stomachic*, &c. *

Dr. Cullen considers epilepsy as a genus of the order, spasmi, and divides it into the *idiopathic* and *symptomatic;* the first including three species, the *cerebralis*, the

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* Galen de Locis Affectis, lib. iii. c. 11.

sympathica, and the *occasionalis;* the second containing a great number of species, according to the various diseases with which it may be connected, or by which it may have been caused.

The first species of idiopathic epilepsy, the *cerebralis*, arises suddenly, without any manifest cause, and is not preceded by any troublesome sensation, except perhaps vertigo or scotomia; the second, the *sympathica*, also arises without any manifest cause, but it is preceded by the sensation called the aura epileptica, proceeding from some part of the body, and ascending towards the head; and the third, the *occasionalis*, is produced by some evident irritation, and ceases on the removal of that irritation. The symptomatic epilepsies, as above mentioned, receive their names from the diseases to which they are related. *

M. De Maisonneuve, an eminent physician at Nantes, who has lately published a treatise on epilepsy, highly spoken of in France, has followed Cullen in his general

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* Cullen.

division, and has placed under the heads idiopathic and symptomatic, a great number of species. Under the first head he enumerates the *connate* epilepsy, the *spontaneous*, the *plethoric*, the *humoral* or *metastatic*, and the epilepsy caused by *moral affections*. Under the second head, M. De Maisonneuve has placed the *gastric* epilepsy, the *intestinal*, the *hysterical*, the *hypochondriacal* or *vapourous*, and the epilepsies which arise from affections of external parts.

In treating of the causes and method of cure of epilepsy, I shall consider the disease under the two general heads, *idiopathic* and *symptomatic*, the first a primary affection of the brain; the latter, that which has its origin in some other part of the system, and affects the brain secondarily.

Before I proceed to the consideration of the particular causes of idiopathic and symptomatic epilepsy, I wish to remark, that, in the list of general causes of the disease, some writers have mentioned supernatural agency, and the influence of the heavenly bodies. Many of the ancients believed that epilepsy is sometimes thus produced, and some eminent men in modern times

seem to have been inclined to these strange opinions. Van Swieten observes, that it is by no means suprising, that a disorder attended with such horrible and various symptoms, should have been ascribed to supernatural causes; and he thinks that the disease may have been produced by such causes. In favour of this notion he relates a case, and makes a reference to Scripture.

Some learned men have thought that the persons represented in the sacred writings as possessed by demons, were epileptics. The circumstances of one case in particular are pointed out as perfectly well agreeing with those of epilepsy. — A youth is said to have been subject to attacks, in which he uttered loud cries, and fell to the ground, or into the fire or the water, being so agitated and torn by an unclean spirit, as to gnash with his teeth, and foam at the mouth. During these seizures, he is said to have been possessed by a dumb and deaf spirit. This has been understood to mean, that in the paroxysms of the disease, he was dumb and deaf. The departure of the spirit from him spoken of, has been supposed to denote the interval between the

fits. It has been observed, that the miracles wrought on the demoniacs are often described by the same terms as those used to express the miraculous restoration of persons stated to have been *diseased.* It is said equally of demoniacs, lunatics, and paralytics, he *healed** them. The daughter of the woman of Canaan, who was grievously vexed with a demon was *cured,* or as it is translated, made whole. †

This is the view which Mr. Farmer, in his Essay on the Demoniacs of Scripture, has taken of the subject. That learned writer maintains, that the persons spoken of as having demons, suffered real and violent disorders; that the particular diseases which the ancients, whether heathens or Jews, ascribed to the possession of demons, were such only as disturbed their understanding; that the demoniacs mentioned in Scripture, were all either madmen or epileptics, and that the doctrine of demoniacal possession, instead of being supported

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* Εθεραπευσεν αυτους. Matthew, ch. iv. v. 24.

† Ιαθη. Matthew, ch. xv. v. 28.

by the Jewish or Christian revelation, is utterly subverted by both. In confirmation of these opinions, Mr. Farmer adduces many illustrations and authorities from ancient writers.

In the plays of Æschylus, Sophocles, Euripides, and Plautus, the persons spoken of as possessed, are either madmen, or those who personate insanity. When the Pythian prophetess was oppressed by too strong an inspiration, she was said to have been under the influence of a dumb and deaf spirit. *

Another extraordinary assigned cause of epilepsy, is that of the influence of the celestial bodies. Several of the ancients inclined to this opinion. Galen and Aretæus thought that the paroxysms of epilepsy were governed by the moon, and in this Alexander Trallianus agrees†, and some eminent writers of later times have adopted the notion. One of them says, " The

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* Αλλαλου και κακου πνευματος. *Plutarch de Orac. Defect.* p. 38.

† Alexander distinguishes epilepsies by the term σεληνιαζομενοι. Some Latin writers have denominated epileptics, *lunatici*.

falling sickness, which is a difficult distemper, seems wonderful to physicians in this, that it has its returns every new and full moon." He adds, "Bartholinus saw a girl troubled with the falling sickness, who had spots on her face which varied in greatness and colour, according to the different phases of the moon; so great a commerce and correspondence is there betwixt ours and the celestial bodies." * — A work was published not many years ago, by a respectable practitioner in the East Indies, in which he attempts to shew, that several diseases are under the influence of the moon†; but an eminent physician on the continent asserts, that in the course of an extensive medical practice, continued for a number of years, with his attention constantly directed to the lunar periods, he was never able to discover the slightest connexion between those periods, and the increase or decrease of diseases or their symptoms.‡ Forestus§ goes so far as to

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* Mead. † Balfour. ‡ Dr. Olbers.

§ Non temere judicamus decreta astrologorum antiquorum, potissimum Ptolomæi (qui sincerius de iis

suppose, that even the more distant heavenly bodies may have influence in the production of epilepsy. He says, that we ought not to disregard the decrees of ancient astrologers, particularly of Ptolemy, respecting the connection between the configuration of thes tars, and the comitial disease.

I shall now speak of the usually assigned causes of epilepsy; and first of those which predispose to the disease. With regard to *predisposition* to idiopathic epilepsy, we have no clear and distinct knowledge. We cannot ascertain its nature, or even its existence in many cases, or whether or not, it be necessary to the formation of the complaint. Some pathologists are of opinion, that it is not necessary, and that epilepsy may be produced, and in some cases has been produced, by a new and

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scripsit) a medicis contemnanda esse qualia de configurationibus stellarum facientibus ad morbum comitialem scripsere. Habeo autem plurimas genituras epilepticorum, in quibus ea respondent præcipue quæ Ptolomæus de iisdem observavit.

Forest. lib. x. obs. 60.

strong impression in a perfectly well organized brain and nervous system, and independently of predisposition. Be this as it may, I am inclined to believe, nay, I think it is evident, that a certain constitution of brain and nervous system exists in particular persons, which renders them especially liable to this disorder; that there is a much greater sensibility, irritability, or what Dr. Cullen calls mobility of brain and nerves, in some persons than in others, which constitutes predisposition to epilepsy.

"We see some persons easily elated by hope, and depressed by fear, and passing quickly and readily from the one state to the other; easily pleased and prone to gaiety, and as easily provoked to anger and rendered peevish, and liable to strong emotions from slight impressions. This is the temperament qui colligit et ponit iram temere, et mutatur in horas; this is the varium et mutabile fœmina."* Whether, in all cases of idiopathic epilepsy, a particular

* Cullen.

predisposing constitution exists or not, it is certain, that the disease is excited, in some persons, by causes which do not produce it in others. A certain conformation of cranium, in particular, seems to predispose to epilepsy. Leduc remarks, that the head of epileptics is larger and the skull thicker than in healthy persons, and Lorry and others confirm this observation.

The predisposition to epilepsy is often hereditary, being transmitted from parents to their offspring. Many instances might be adduced of the prevalence of this disorder in particular families. Tissot mentions one, in which a father, who was subject to epileptic fits, had eight sons and three grandsons, who were cruelly afflicted with them till the day of their death. It is said, that this predisposition has sometimes lain hid in families for a generation or two, and afterwards appeared in its strong form.

That the constitution above mentioned predisposes to epilepsy has been inferred, from the circumstance that women and children, and others of delicate and weak habit of body, are more especially liable

to the complaint; but this alleged fact is not universally admitted; for, although Hippocrates, Forestus, and many others, both ancient and modern, are of this opinion, and although Tissot observes, that the sex influences temperament, which in women is in general weaker and more mobile than in men, Celsus, Dr. Heberden, and others assert, that epilepsy more frequently attacks men than women; and my own experience is in favour of this opinion.*

Perhaps this difference as to the fact in question may be explained on the supposi-

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* Celsus says, speaking of epilepsy, id genus sæpius viros quam fœminas occupat.

Dr. Heberden remarks, fœminæ cum sint viris infirmiores, videri possent etiam epilepsiæ opportuniores, quod tamen contra fieri observamus. Quamquam enim pueri et puellæ juxta corripiantur, fœminæ tamen rarius quam viri in eam incidunt.

Tissot says, qu' il y a sur un nombre egal de part et d' autre, autant de petit garçons epileptiques, que de filles, parce qu' alors les differences de temperament, qui characterisent les deux sexes sont bien moins marques que dans un age plus avance.

We are informed that the number of epileptic females in the Bicetre and Salpêtrière was in the year 1813, a third greater than that of the males in those institutions.

tion that those men are more especially the subjects of epilepsy who are of a delicate constitution of body, and of great sensibility of mind. Many men of high genius and talent have been afflicted with this complaint.* Julius Cæsar †, Mahomet, Petrarch, and Rousseau, were subject, we are informed, to epileptic fits. Among learned persons subject to epilepsy, Van Swieten mentions Columna and Francis Rhedi.

The predisposition to epilepsy, in whatever it consists, is evidently increased by a plethoric state of body. Almost all writers have placed plethora among the predisposing causes of this malady. Hippocrates remarks, that epilepsy prevails in

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* Van Swieten says epilepsy occurs in viris ad summa in rebus humanis negotia capessenda natis, et scientiâ claris.

† Suetonius informs us that Julius Cæsar enjoyed a good state of health, except that in the last part of his life, he was subject to fainting, and to terror in his sleep. He was also twice attacked with epilepsy while engaged in business. Comitiali quoque morbo bis inter res agendas correptus est. *Suet.* lib. i. c. 45.

the spring; and that a fulness of habit is one of its most frequent causes. A celebrated writer thinks that this state of body may so affect the soundest brain as to produce the epileptic disposition, which, when once formed, may be renewed on slight occasions. * — That plethora is very frequently connected with this complaint no person can doubt. In almost every case which I have had an opportunity of seeing, the disease has occurred in full habits and sanguine temperaments. An ingenious writer, however, is of opinion that there is no temperament which is in a very decided manner more subject to epilepsy than others. He has witnessed its appearance in every variety of habit, from the most exquisite examples of the sanguine to the most marked melancholic. †

Among the predisposing causes of epilepsy, some authors mention habit. Van Swieten thinks, that when paroxysms have been excited by strong impressions, a disposition to future attacks will be thereby

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* Van Swieten.

† Prichard on Nervous Diseases, p. 94.

produced; and he relates the case of a girl descended from healthy parents, and perfectly well, who, having been thrown into a strong fit, was afterwards, on slight occasions, affected with the disorder for many years. — I have no doubt that a greater liability to it, or a greater disposition to its production on slight occasions, will thus arise, whether a particular constitution be, or be not, necessary to its original formation.

The *exciting* or *occasional* causes of epilepsy are of various kinds, and act in various ways. Some are stimulants, producing, it is supposed, an increased action or energy of the brain; others sedative, operating so as to diminish that action or energy. Of these causes, some act directly upon the brain, others produce their effects primarily upon distant parts, and secondarily upon the brain.

Among those which act primarily upon the brain, the chief are mechanical causes, such as malconformation and injuries of the cranium, tumours, depressed bone, sharp pointed spiculæ, situated on the internal surface of the skull, hydatids, con-

gestions, distending the vessels of the brain, changes in its structure, or disease in its substance, and effusions of various kinds. To these may be added, causes acting mechanically on the spinal chord or the nerves, and the morbid appearances in the pineal gland and cerebellum, discovered after epilepsy by Mons. Wenzel, which have been already particularly described.

These causes appear to act mechanically, either by stimulating or compressing various parts within the cranium. That they may thus act in producing apoplexy, I have already endeavoured to shew, and that they may, in like manner, give occasion to epilepsy, I have no doubt. That the same causes should produce diseases so different in their symptoms, may appear very extraordinary ; but M. Portal has, I think, sufficiently ascertained the fact. He has proved, by experiments, that pressure on the brain, in a great degree, will occasion apoplexy, and, in a smaller degree, convulsions ; thus apoplexy, by a diminution of the power of the exciting cause, may end in epilepsy ; and epilepsy, by an increase of it, may terminate in apoplexy ; and this

indeed we very often find to be the case. Perhaps the different symptoms of these two diseases, arising from compression within the cranium, may, in some measure, depend upon the particular parts compressed. The dissections of M. Wenzel seem to give some probability to this conjecture.

Among the causes thus acting, one of the most frequent is partial plethora. After epilepsy, the vessels of the brain are often found overloaded with blood, and in a state of great distention. * The celebrated anatomist, Meickel, declares, that in his numerous examinations of the brain, he had never seen such an *engorgement* as in that of an epileptic in the hospital at Berlin. A late writer asserts, that by far the most frequent, and most certain of the causes, occasionally giving rise to epilepsy, and which may be said to accompany and perpetuate the disease, by whatever cause

* This, however, is not a positive proof that the vessels were overloaded before, as the paroxysm itself has a tendency to produce the effect.

excited, is an increased momentum of blood in the brain. *

Dr. Prichard, in his observations on the pathology of epilepsy, remarks, that the immediate cause of an attack, or that physical change which, in a constitution prepared by natural predisposition, or by the action of morbid circumstances, is the immediate precursor and occasion of the fit, appears to be a preternatural influx of blood into the vessels of the encephalon, or an unusual fulness in some part of the vascular system of that organ; and he adduces a variety of reasons on which he founds this opinion.

As partial plethora is an immediate exciting cause, whatever tends to produce or increase it must be considered as a remote cause, such as violent exercise, great heat, intoxication, and certain passions of the mind, particularly joy and anger. Drelincurtius, a Leyden professor, relates the case of a strong plethoric young man, who, while playing at tennis soon after a

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* Mansford.

full dinner, was seized with a violent epilepsy, of which he died. On examining the head in this case, the arteries, both of the brain and its membranes, were found full of a black thick blood, a part of which had broken through the vessels. A description of the effects of these causes, and some conjectures as to their modus operandi, where partial plethora is present, has been already given in my account of apoplexy, and to that I beg leave to refer.

These appear to be the chief exciting causes of epilepsy, acting primarily on the brain mechanically, or by their stimulating power, producing an increase of its energy, to which Dr. Cullen adds chemical stimulants, such as fluids lodged in certain parts of that organ, which become acrid by stagnation or otherwise; but of the existence of such I much doubt.

There are other causes which also produce their effect primarily upon the brain, but probably by a sedative power, or by diminishing the energy of that organ, or as Dr. Cullen calls it, by collapse. These are depressing passions of the mind, fear, terror, or grief; disagreeable impressions

on the imagination and senses; the recollection of former paroxysms, or their causes; and whatever greatly weakens the action of the heart, as hæmorrhage, or other excessive evacuations.

That epilepsy is frequently excited by passions of the mind is universally admitted by pathologists. Of these some appear to act by increasing, others by diminishing the energy of the brain. The former are joy and anger, the latter are fear, terror, and violent grief, especially when sudden. Innumerable examples of the operation of these causes might be quoted from various authors, both ancient and modern. Some fall down, says Aretæus, in this disease, oppressed with sorrow; some terrified by shadowy appearances, or by the dread of a sudden attack from a wild beast. Van Swieten informs us, that a lady of a strong constitution, who had always enjoyed robust health, was, during pregnancy, so much terrified by the appearance of a dreadful fire in the neighbourhood, as to be affected by epileptic fits, which at length proved fatal.—I never saw, says an eminent French physician, a more distressing case of epi-

lepsy, than that of a female, who, on receiving a very gross insult from an insolent blockhead, was two hours afterwards seized with a violent attack of that disease, which returned three times in the following night; and although she had the best advice, the disorder increased, from which she was never free for more than a day, for many years, dragging on a most miserable existence. * A celebrated German physician informs us, that in six out of fourteen epileptic patients, under his care in the hospital of St. Mark, at Vienna, the disease had been occasioned by terror. † A monk at Rome, on suddenly receiving the news of the death of his brother, became epileptic, and suffered two or three fits daily. ‡ A man travelling by night met a large dog in a narrow path, and fancying that he was seized by the animal, he arrived at home in great terror, and the next morning had a violent fit of epilepsy, which afterwards returned a great many times. It always began with a violent cramp in the hands,

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* Tissot. † Locker. ‡ Schenck.

which, ascending by the throat, and then descending to the heart, deprived him of sense.* A young man having witnessed some of the dreadful events at Paris on the horrible 10th of August, became affected immediately with this disorder. † — We have several cases on record in which epilepsy appears to have been produced by the power of imagination. A boy, of a sound and good constitution, became epileptic immediately after drinking out of a cup from which he had seen an epileptic person drink. ‡ A robust man having dreamed that he was pursued by a bull, on awakening in great agitation and in a state of delirium, in a quarter of an hour fell down in a strong fit. § A servant maid at Leipsic, endeavouring to untie some knots, and fancying that one of them was made by a sorceress, became so terrified that she was seized with this disorder, which was followed by several others. ‖

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* Tissot.

† Maisonneuve Recherches sur l'Epilepsie.

‡ Schenck. § Tissot. ‖ Tissot.

Disagreeable and powerful impressions made on the senses have, it is said, often given occasion to this disease. Aretæus remarks, that epilepsy may be excited by disagreeable odours, as by the smell of the lapis gagates (jet); and we are informed, that the antients, in purchasing slaves, were in the habit of exposing them to the fumes which proceed from this substance when burnt, in order to discover whether or not they were subject to the disease.*

In some cases, loud and disagreeable sounds are said to have excited the complaint. Schenck mentions instances of this sort. He states that a boy became epileptic from the sudden and loud sound of trumpets, and that the disorder so produced proved fatal; and he speaks of several terrifying noises which have been found capable of giving occasion to such paroxysms. † — Objects offensive or shocking

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* Ἄλλοτε δὲ ὄσφρησις βαρεῶν ὀσμων κατέβαλε, ὥσπερ γαγατου λίθου. *Aret. de Caus. et Sign.* lib. i. c. 5.

† Incondita hominis vociferatio, aut obscœnus animantis mugitus, seu gravis cœli tonantis fragor, vel perstrepens clangentium tubarum sonitus. *Schenck, Obs.* xiii.

to the sense of seeing have also been mentioned among the exciting causes of the disease. A M. Buchner, in a dissertation on certain complaints of children, informs us, that in a child, subject to epilepsy, a paroxysm was always occasioned whenever an object of a vivid red colour was presented to his eyes. — It is well known that the sight of a person in a fit of this kind has often excited it in others. Schenck mentions a case of this kind. * It may be a question, says an eminent writer, whether this effect be imputable to the horror produced by the sight of the seemingly painful agitation of the limbs, and of the distortions in the countenance of the epileptic, or if it may be ascribed to the force of imitation only. †

The recollection of former paroxysms, or of ideas, or circumstances with which

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* Vidi pueros, quibus per jocum incussus est terror, qui deinde morbo comitiali premebantur, et alium, qui cum attente inspexisset eum qui in comitialem inciderat, subito eo malo correptus cecidit.

Schenck, *Obs.* lib. i. p. 116.

† Cullen.

they may have been associated, have, in some instances, given occasion to epilepsy. Galen, in his Consilium pro Puero Epileptico, advises that every thing should be avoided which might recall the disease to the mind of the patient. Van Swieten mentions the case of a boy who, having been terrified into epilepsy by the attack of a large dog, was always afterwards thrown into a paroxysm by the sight, or even barking, of such a dog.

The suppression of cutaneous eruptions, or of evacuations to which the body has been accustomed, has sometimes given occasion to epilepsy. Instances of this kind might be adduced from various writers. * Cartheuser observes, that the pernicious custom of repressing tinea capitis by cold lotions, renders epilepsy a common disease in Sweden. Several cases are on record, in which the sudden repression of the itch has been followed by epileptic fits. Instances of this are mentioned by Tissot, and in the Dictionnaire des Sciences Medicales.

* Tissot, p. 131. 135. Journal de Medecine, tom. xxx. p. 440. Monro, Acct. of Diseases, &c. 237.

These exciting causes act upon the brain primarily in the production of epilepsy. Other causes may be mentioned, some stimulant, some sedative, which act primarily on other parts, and secondarily on the brain. These are chiefly morbid or irregular affections of the spinal chord, or of the nerves in distant parts of the body, or in their course towards the brain ; worms or acrid substances in the stomach and intestines ; calculous concretions in the kidneys, ureters or bladder ; and some poisons, both vegetable and mineral.

That epilepsy is sometimes connected with a diseased state of the spinal marrow, appears from the dissections of Dr. Esquirol of Paris ; and that injury done to the nerves, or that a morbid state of them, has in many instances given occasion to epilepsy, appears from the writings of Forestus, Van Swieten, Tissot, and several others. In the Edinburgh Medical Essays and Observations, a case is related of a violent epilepsy which frequently occurred, which was produced by a hard cartilaginous substance, of the size of a large pea, situated upon a nerve. That this was the cause, was

evident, as the disease ceased on the extirpation of the tumour.* In the same Journal we have an account of epilepsy depending upon a calculus of an irregular figure, about the size of a nut, pressing on a branch of the sciatic nerve; and another, in which the par vagum was compressed by a concretion of a similar kind.

Among the causes producing epilepsy, by acting primarily upon other parts, and secondarily upon the brain, we may reckon whatever may occasion irritation in the stomach or intestines. That irritation of the stomach will produce epilepsy, we may easily believe, when we reflect that that viscus has a great many nerves from the par vagum and intercostale, and that it is an organ exposed to a prodigious number of irritating causes.† M. de Maisonneuve, in his observations on gastric epilepsy, gives a very curious account of the disease, as it occurred in eighteen persons, who having been shipwrecked, were

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* Edinburgh Med. Essays and Obs. vol. iv. art. 27.

† Tissot.

reduced to the necessity of drinking sea water, and eating indigestible food for several days. Of these eighteen persons, only four recovered from the disease; the paroxysms of which had been frequent and very violent.* Dr. Prout says, that epilepsy often depends on an excitation of the nerves of the viscera of the abdomen producing a disordered state of the functions of the brain: and he thinks that the direct causes of such an excitation are, acrid solids or fluids; bile; but principally worms. On opening the bodies of epileptic persons, particularly of those cut off by the disease in the fit, this writer found the arterial system strongly developed in the small intestines; while the larger intestines were seen containing a greater or less number of worms, particularly of ascarides. These worms were chiefly found in the cœcum, and the ascending portion of the colon. The mucous membranes of these bowels were more or less inflamed,

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* Recherches et Observations sur l' Epilepsie, p. 229.

according to the vigour of the patient, and the duration of the disease. Dr. Prout has adduced sufficient ground for belief, that irritations in the intestines from these causes, are capable of producing the most serious disturbances in the nervous system, which may give occasion to organic and incurable changes in parts at a great distance from them. Indeed he has proved in several instances, that such changes have actually been so produced. The dissections and observations of this ingenious physician are well worthy of attention. They are very extensive and minute, and appear to have been made independently of any particular view or hypothesis.

Almost all modern writers on epilepsy mention worms among its most common causes. — Van Swieten observes, that by creeping in the intestines and stomach, they irritate and hurt those parts, and frequently produce the disease ; and he relates the case of a boy, two years of age, of a good constitution, who died of violent and continued convulsions, in whom the duodenum was found perforated by a round worm, which

was taken alive out of the body.* Numerous accounts of epilepsy arising from this cause, may be found in Bartholinus, Stahl, Heister and Wepffer. This last author mentions the case of a girl, three years old, who for several months had been epileptic, and in constant pain, who was cured by spontaneously voiding a large tape worm; and of another, who at the age of seven became cataleptic for three years, and afterwards epileptic, with such frequent paroxysms, as to occasion a total imbecility and absolute loss of memory, who, on voiding a single worm, was restored to perfect health, and the enjoyment of all her faculties. — I have seen some cases of epilepsy, in which the disease has ceased on the discharge of worms; and others in which it appeared to have been cured by anthelmintics, although no worms could be discovered in the evacuations.

Irritation, arising from biliary concretions, and from calculi in the kidneys, or urinary bladder, have sometimes given occasion to

* Van Swieten. § 1075, a lumbrico terete.

epilepsy. M. Fabricius, a celebrated professor at Helmstadt, has given an account of the case of a woman who was subject to this disease, probably from biliary concretions, as a very great number of them were found, on dissection, in the gall bladder; and several of the ancient, and some modern physicians have attributed the complaint in many cases to acrid bile. — Tissot* has quoted from Bartholinus and other authors, a variety of instances in which epilepsy appeared to have been caused by calculous concretions in the kidneys and ureters; and particularly one from La Motte, which is very curious, and very minutely described.

We are told, that epilepsy has in many instances been caused by poisons, or by food of difficult digestion, or by acrid substances of various kinds received into the stomach. In certain cases it has been produced by mushrooms †, leeks ‡, and some kinds of fish, particularly eels §; more especially if eaten in too great a quantity.

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* Tissot. † Sennestus. ‡ Schenck. § Forestus.

— Wepffer states, that eight children out of ten, who had eaten of the root of the cicuta aquatica, became affected with epilepsy.

Certain mineral poisons, particularly lead and arsenic, have in some instances given occasion to this complaint. Sir George Baker, in his account of the deleterious effects of lead, attributes to it the power of producing not only palsy, but also epileptic fits; and Dr. Warren, in the Medical Transactions of the College of Physicians *, mentions one instance in which this poison in solution caused a fatal epilepsy. — In June 1802, Dr. Warren says, "thirty-two persons in the duke of Newcastle's family, then residing at Hanover, were seized with the colica pictonum, after having used for their common drink, a small white wine that had been adulterated with some of the calces of lead. They were all attacked in the common way, excepting one, whose first seizure was an epileptic fit. As soon as the fit was over, he complained of pain in the bowels,

* Vol. ii. p. 86.

his head was affected again, a disorder like St. Vitus's dance came on, and in less than a fortnight from the first attack he died epileptic." Mr. Marshall, an eminent surgeon, relates the cases of five persons, who became affected with epilepsy, in consequence of their having swallowed a small quantity of arsenic; and Dr. Roget, in his account of the secondary effects of that poison received into the stomach, mentions this disease. *

Epilepsy not only frequently arises from local irritation, but it is often connected with several general morbid affections, particularly those of the nervous system, and of the abdominal and pelvic viscera. It is also sometimes connected with certain exanthemata; with painful dentition; with pregnancy and parturition; and with the state of the body during sleep. — These are the epilepsies which authors have described under the denomination sympathetic.

Epilepsy very frequently alternates with apoplectic and paralytic affections. I last

* Med. Ch. Trans. vol. ii. p. 155.

year attended a gentleman of about 45 years of age, who, after a slight fit of apoplexy, became affected with compleat hemiplegia, accompanied with a total loss of the power of speech. After a few weeks, the paralysis diminished, and the power of speech was almost entirely restored, when he was seized with epileptic fits; and after a few attacks of them, he again became apoplectic, and died.

The visceral diseases connected with epilepsy are chiefly those of the intestines and stomach, the liver, and the uterus. A great many cases of these sympathetic diseases may be found in various systematic writings, and in the medical journals. M. de Maisonneuve has, at considerable length, described the epilepsies connected with a morbid state of the stomach, intestines, and uterus, to which he gives the names gastric, intestinal, and uterine epilepsy. The gastric epilepsy is distinguished by a sensation of weight or of pain in the epigastric region, affecting the head also, just before and after the fit. During the paroxysm there is a frequent disposition to vomit, and sometimes a bloody saliva is brought up.

The intestinal epilepsy is characterised by uneasiness in the bowels; sometimes with pain, a sense of heat or cold, or tension in the hypochondria, or the umbilical region, proceeding towards the head immediately before the attack. — In the hysterical epilepsy there is a sensation of pressure in the umbilical region, with a sort of suffocation, or the feeling of a ball rising to the throat. The convulsions in these cases are often violent, but not of long duration. There is sometimes a vomiting in the paroxysms, and they occur chiefly at the menstrual periods. The hysterical epilepsy is connected with a suppression, a deficiency, or an irregularity of the menses. — M. de Maisonneuve * has very particularly related several cases in illustration of these various kinds of epilepsy. Tissot treats on this subject very much at length; and to his work I refer. †

Some writers on the diseases of women, mention epilepsy as occasionally produced

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* Recherches et Observations sur l'Epilepsie, p. 216. 275.

† Tissot, p. 48.

by pregnancy. Tissot mentions several cases of this kind, two of which fell under his own observation. In one of them, the patient had, in three pregnancies, experienced an epileptic paroxysm almost every week, till the motions of the child were perceived; and, in the other, during the two first pregnancies, a fit took place in almost every month. He also mentions a curious case from La Motte, who states that a woman, having been pregnant eight times, thrice with male, and five times with female children, was frequently attacked with epilepsy during the former, but never during the latter of these gestations.

On the subject of sympathetic epilepsy, much valuable information has been communicated by Dr. Prichard, in a treatise lately published by him on nervous diseases, from which I shall make a few extracts.

Dr. Prichard is of opinion that disorders of the nervous system are, in the majority of cases, secondary and sympathetic affections; that they are often, at least, symptoms of some latent disease, particularly in the organs which are subservient to the

natural functions. Dr. Prichard very satisfactorily points out the connexion which epilepsy has with various other morbid affections — with those of the nervous system, and with those of the uterine and intestinal functions. He describes the epilepsies connected with a disordered state of the liver and other viscera, and those arising from metastasis.

With respect to the connexion of nervous disorders with each other, Dr. Prichard says, " epilepsy is a distinct disease from apoplexy and palsy, and yet its relation to both is very near; and they all frequently pass into each other. Persons who have partially recovered from a recent apoplexy, are often assailed by convulsions, which display most of the phenomena of epilepsy; and fits of the genuine epileptic character frequently occur after an attack of hemiplegia. On the other hand, persons who fall victims to repeated fits of epilepsy, perish under all the symptoms of apoplexy; and others, who recover from a severe fit, or from frequent repeated fits of epilepsy, are often found to labour under hemiplegia, or other modifi-

cation of palsy. Sometimes persons who have long suffered under epilepsy, lose this disease, and become permanently paralytic." * Dr. Prichard also thinks that " insanity is still more intimately connected with epilepsy. In very severe and inveterate cases of epilepsy, the paroxysms of this disease are often followed by attacks of maniacal delirium, which are generally of the most violent kind. These fits of madness most commonly abate in a few days after the epileptic attacks have ceased; in other instances, however, the maniacal state is of longer continuance, and epilepsy is sometimes the harbinger of a permanent and hopeless insanity." †

There is likewise a connexion between epilepsy, chorea, and hysteria. The epilepsy connected with the functions of the uterus, which Dr. Prichard denominates *uterine*, chiefly affects young females of the sanguine temperament. It makes its appearance in general about the age of puberty, or when the catamenia have taken

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* Prichard, p. 59. † Prichard, p. 62.

place naturally, and have been suppressed. "There is often nothing peculiar in the character of the fits that belong to uterine epilepsy, that distinguishes them remarkably from the fits of epilepsy arising from other causes. They sometimes commence with the aura epileptica; at others, are preceded by pain in the head, pulsation of the carotids, and vertigo: not unfrequently they take place without any premonitory sign. The character which has appeared to me," says Dr. Prichard, "to belong more particularly to the paroxysms of uterine epilepsy, is the form which I have termed leipothymia." *

Dr. Prichard is convinced, he says, that he has "seen many cases of inveterate epilepsy, which were of that description which is generally termed sympathic. The disease had its origin in a disorder of the intestinal canal, or in some other of the natural functions, and could only be cured by removing the primary complaint, and not by the exhibition of a set of medi-

* Prichard, p. 139.

cines, supposed to be possessed of certain anti-epileptic powers." *

I have already mentioned irritation in the bowels from worms, among the indirect causes of epilepsy, To this cause Dr. Prichard refers, but observes, that in some of these cases "it may be doubted, whether the fits are occasioned by the irritation of worms, or by the noxious effect arising from vitiated secretions, and from the accumulated sordes in the canal, which are co-existent with worms. It is certain, that equally severe effects often arise from this cause, when there are no worms, or at least when none can be discovered by the most careful examination." † "The convulsive attacks to which young infants are liable, generally proceed from irritation in the primæ viæ. During the period of dentition, when the constitution is generally disturbed, the bowels often fall into an irregular state; and this circumstance is sometimes the precursor of convulsive paroxysms." ‡ In such cases a variety of

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* Prichard, p. 252. † Prichard, p. 253.
‡ Prichard, p. 254.

symptoms occur, which are supposed to denote the presence of worms in the intestinal canal, though it often appears on examination that they do not exist.

Dr. Prichard also describes epileptic and other convulsive attacks by metastasis to the brain, from the healing of old ulcers, and the recession of exanthemata*, of gout and rheumatism, of the inflammation of serous membranes†, of dropsical inflammation‡, and from the removal of tumours. §

The nature of the connection betwixt epilepsy and dentition, some of the exanthemata, and the state of the brain in sleep, is very obscure; but that such a connection as above mentioned, exists, cannot, I think, be doubted. The relation of epilepsy to gestation and parturition is also obscure. On this head Dr. Prichard has made some ingenious remarks in the first section of his fifth chapter on the pathology of nervous diseases connected with the state of the

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* Prichard, p. 216.
† Ibid. p. 221.
‡ Ibid. p. 225.
§ Ibid. p. 230.

uterine functions. For a further account of Dr. Prichard's view of these subjects I must refer to his valuable work, in which he has illustrated his opinions by many useful practical observations from a great number of cases.

With respect to the proximate cause of epilepsy we do not possess any satisfactory knowledge. A variety of theories have been offered for the illustration of this subject, but they all seem in some respects objectionable.

The ancients were very generally of opinion, that the immediate cause of this disorder is a pituitous humour in the ventricles of the brain, and that the symptoms were produced by an effort of nature to relieve herself from the pressure of this humour.

Boerhaave and Van Swieten consider epilepsy as consisting in a too great action of the brain upon the nerves of motion without any upon those of sensation, taking it for granted, that the nerves of sensation and motion are distinct.

Dr. Cullen observes, " as to the proximate cause of this disease, I might say

that it is an affection of the energy of the brain, which, ordinarily under the direction of the will, is here, without any concurrence of it impelled by preternatural causes; but I could go no further. For, as to what is the mechanical condition of the brain in the ordinary exertions of the will, I have no distinct knowledge, and therefore must also be ignorant of the preternatural state of the energy of the brain under the irregular motions here produced." * He seems to have been of opinion, however, that the disease consists sometimes in a too great excitement of the brain, sometimes in collapse: but how states so opposite should give occasion to the same symptoms we cannot well conceive; and Dr. Cullen confesses that he does not attempt to form the indication of a cure from a knowledge of the proximate cause of the disease.

An ingenious modern writer † says, there is every reason to believe that the immediate cause of epileptic spasms is a temporary local turgescence of the cerebral

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* Cullen, vol. iii. p. 150. † Dr. James Johnson.

vessels, which local turgescence is determined by a temporary superexcitement in the nervous structure of the parts on the well known principle, ubi irritatio ibi fluxus.

Plethora is undoubtedly very frequently found in connexion with epilepsy as well as apoplexy and palsy; but I think it may be more properly considered as the exciting than as the proximate cause. — Plethora seems to act by pressure on the brain and other parts within the cranium, and, applied in different degrees, appears to produce different diseases. — When made generally and in a great degree, it occasions apoplexy; when partially, palsy; when in a small degree, convulsions. It is very difficult, however, to understand how the same cause should excite diseases so different in their symptoms.

Mr. Mansford, in his researches into the nature and causes of epilepsy, considers plethora, especially partial plethora, as a remote cause of the disease; the proximate cause in his opinion being of a very different nature. He thinks, that it consists in an accumulation of the electric matter

in the brain, excessive with respect to its existing capacity. Mr. Mansford thinks that the nervous and electric fluids are the same; this he infers from a variety of experiments, of which, however, he does not give an account, but chiefly from the phenomena of the torpedo. He is of opinion, that the mind or will, the primary motive power, acts through an intermediate motive power, the electric fluid, in the phenomena of motion; that different parts of a living body may retain opposite states of electricity although surrounded by conducting media; and that the brain is the organ appointed for the formation and preservation of this fluid, where, in a state of health, it is controlled by the will in opposition to its natural tendencies. He supposes that the voluntary motions of the body are the result of a subtile and mobile matter, answering in its nature and properties to the electric fluid, transmitted by an act of the will from the brain to the muscles. "In a state of health, the principle of life, he thinks, is fully competent to regulate the formation and the retention or discharge of this substance; but if it be

weakened by disease, so that it may be unable to control that portion with which the brain is already charged, or to prevent its increase, or transmit it to the distant parts, the balance between its formation and expenditure being destroyed, an accumulation must happen, which arriving at its maximum, the point beyond which the brain cannot be charged without injury to its structure or functions, or perhaps without endangering life itself — the vital principle being absolutely overwhelmed, and losing its command, the motive powers of the system become for a time obedient to those laws which would govern them in any other situation, and from the points in redundance to those in deficiency; when the vital principle, being freed from the load which threatened its existence, resumes its seat and its power." * Mr. Mansford endeavours to explain how these states may arise; for an account of which I must refer to his book. Some parts of Mr. Mansford's theory are, I think, obscure. I have, how-

* Mansford, p. 64.

ever, endeavoured to avoid misrepresentation, by giving an account of it in his own words.

Some modern physiologists are of opinion, that the immediate or proximate cause of epilepsy is a derangement of the organization of some part or parts of the brain and nerves within the cranium ; and though this hypothesis is attended with several difficulties, it is by no means the least plausible that has been offered on the subject.

In epilepsy sensation is impeded, and motion is morbidly increased, and is no longer performed in obedience to the will. Now it is not unreasonable to suppose, that this may depend upon a deranged state of the organization of certain parts within the cranium, because we can have no doubt that whatever be the nature of the sentient, willing, and first moving power, it acts, and is acted upon, through the medium of organized matter ; and, because on dissection after epilepsy, derangements of the organization of parts within the cranium have been very often actually found. — In order that the perceiving power may act perfectly, it

would seem that its instruments must be perfect. — For the perfection of vision, the organ of sight must be unimpaired. If the eye be obscured, sight will become obscure; if its transparency be restored, distinct vision will be restored. — Similar observations might be made respecting the other senses.

To the opinion of those who place the proximate cause of epilepsy in diseased structure of the parts within the cranium, it has been objected, that in many cases, on examination after death of persons who have been affected with the complaint, no marks of disorganization whatever, after the most minute and careful investigation, could be found. It does not, however, hence follow, that no such derangement of organization exists. The structure of the various parts within the cranium is so exquisite, and the particular uses or functions of them so entirely unknown to us in health, that derangements of the greatest importance may exist in them without the possibility of our being able to discover them.

To the opinion that epilepsy immediately depends upon derangements of the structure

of the brain, as above mentioned, it has also been objected, that much of that organ may be destroyed, without producing any symptoms of the disease; but this does not appear to me to be an insuperable objection, for I believe that the facts on which it depends relate only to the destruction of parts of the *cerebrum*, and it seems highly probable that the organized parts immediately connected with sensation and motion are placed in the lower region of the cranium. This opinion is confirmed by some experiments made by Sauvage, and by the observations of Wenzel, already particularly detailed. Sauvage observes, that if the denuded brain of an animal be perforated with a sharp instrument, no sensation will be occasioned; but if the instrument reach the origin of the nerves, or medulla oblongata, an epileptic paroxysm will be produced. Now the parts pointed out by M. Wenzel as the principal seats of organic derangement in epilepsy, and those by the injury of which Sauvage was able to induce the disease, very well correspond. The experiments of the last-mentioned author seem

to confirm the extraordinary observations of the first.

If, however, we could prove, that in very many or even in all cases of epilepsy, these derangements of organization had taken place, it is extremely difficult for us to understand how such derangements could produce some of the symptoms of the disease. — That sensation and motion should thus be abolished we may conceive; but how are we thus to explain the increase of motion which takes place in epilepsy? — The theory above mentioned of Boerhaave and Van Swieten, or the notion of a spasmodic increased action of the parts necessary to motion, would perhaps afford a better rationale of this phenomenon.

Notwithstanding the pains which many ingenious physiologists have taken in endeavouring to understand this subject, it still remains very obscure; and perhaps we must in candour admit the truth of what has been said by the learned author of a dissertation on epilepsy, who, speaking of its proximate cause, observes, " Est quasi terra incognita, in qua quisque pro volun-

tate sua vagatur, et viam diligit jam factam, aut facit. Auctores de hac re multas plausibiles et populares fabulas effinxerunt; hæc vero omnia novimus esse nihil." *

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* Dr. Brown, De Epilepsiâ.

CHAP. IV.

Diagnosis and Prognosis.

The diagnosis of epilepsy is very clear. We are in no danger of confounding it with any other disease, unless it be hysteria, from which it may be distinguished by the foaming at the mouth, the gnashing of the teeth, the blackness of the countenance, and the terrific symptoms above detailed in its history, together with the speedy termination of the fit in sleep, and the absence of the usual symptoms of hysteria; such as the globus hystericus, the palpitation of the heart, the involuntary laughing or weeping, and the other symptoms generally described in the histories of that disease.

With respect to *prognosis* in epilepsy, it may be observed, that in the cases where there is reason to suppose that the disease depends upon the compressing causes above, at large described, such as tumours

effusions, &c. acting mechanically and permanently on the brain, the case may be considered as almost hopeless. Boerhaave, Van Swieten, and several writers, as I before mentioned, have asserted that hereditary epilepsy is absolutely incurable. Hippocrates, however, says, that it is not less curable than other diseases if not of very long standing.

In forming the prognosis in epilepsy we must carefully consider the age, sex, constitution, and habits of life of the patient. When it happens very early in life, or a little before the time of puberty, relief is often obtained by the efforts of nature, or by medical treatment. In females this complaint often spontaneously ceases on the appearance of the menses, on marriage, or during pregnancy. Hippocrates remarks, that those who are attacked by epilepsy before the age of puberty experience a change, by which I suppose he means a favourable change, at that time. Where the disease comes on at twenty-five years of age, or later, the patients generally die. *

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* Hippocrates, sect. v. aph. 7.

Tissot, however, thinks that when epilepsy occurs after the age of puberty, it is not less curable than before. All writers seem to agree in the opinion that in proportion as the disease is of long standing the hope of relief is small; and that sympathetic epilepsy is more easily cured than the idiopathic. It is stated in a respectable work *, that when epilepsy is connate and hereditary, it is rarely cured; that the sympathetic is more easily removed than the idiopathic; that those who are attacked soon after birth are seldom cured; that those who become epileptic from three or four years up to ten, get well if the disease be attended to in time; that marriage is a cure for the genital epilepsy, but augments that arising from other causes; and that epilepsy, combined with alienation of mind, is *never cured.*

Upon the whole, the younger the subject of the disease, the less frequent and less violent the attacks, the more obvious and removable the exciting cause; as worms,

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* Dictionnaire des Sciences Medicales.

irritation of all kinds in the stomach and bowels, &c.; and the shorter the time to which the patient has been subject to the disorder, the greater the probability of its removal. On the contrary, when the disease is hereditary or of long standing, when the attacks are frequent and violent, when the strength is much diminished, and the powers of the mind have become impaired, and, above all, when the complaint appears to depend upon some cause acting mechanically upon the brain, and in proportion as these concur, the more desperate must the situation of the patient be considered.

CHAP. V.

Treatment of Epilepsy.

EPILEPSY, as I have already observed, is sometimes attended with symptoms so extraordinary as to have led to the belief of its connexion with supernatural influence; and some parts of the treatment recommended for its cure, especially in former times, as I shall take occasion to point out, have been not less wild than the notions which were entertained respecting its nature and causes.

In giving an account of the method of cure in epilepsy, I shall first speak of the treatment of the idiopathic disease, and afterwards describe the mode of proceeding in the symptomatic.

This disorder, like apoplexy, sometimes makes it attack suddenly, sometimes we are warned of its approach by certain symptoms, such as vertigo, throbbing in the vessels of the head and neck, confusion

of intellect, &c.; and when these, or any of them, have made their appearance in a strong person of a full habit, subject to epilepsy, we ought immediately to employ the means of speedy depletion. These have been already very particularly described in my account of apoplexy, and will hereafter be noticed in speaking of the treatment of plethoric epilepsy; I shall therefore content myself with a very brief mention of them here. Depletion may most quickly and most effectually be made by blood-letting and purging. Where symptoms are very urgent, especially in a vigorous constitution, in early or middle life, blood may be taken away both generally and topically, and in considerable quantity. In some instances, arteriotomy, or the opening of the jugular veins, have been recommended; but I never saw a case of impending epilepsy, in which such strong measures seemed advisable. In advanced age, or debilitated habits, evacuation of blood must be made with great caution. Under such circumstances, the application of leeches, or cupping-glasses, may be sufficient.

Depletion also by purging has been advised; and the cathartics of the most speedy operation are to be preferred. Stimulating clysters will be found useful, where marks of great determination to the head are evident. — A disposition to an epileptic fit is sometimes manifested, particularly in children, by a disordered state of the stomach and bowels; and in these cases, purgatives are more especially indicated.

With a view to prevent an epileptic fit, some practitioners have ventured to administer emetics. Aretæus in vertigo recommends this practice, and a modern writer * says, "when an attack of epilepsy can be foreseen, no medicine, under such circumstances, will be more likely to prevent a fit than an emetic, given about an hour before its approach." Notwithstanding these recommendations, I would not venture to employ this remedy, as in plethoric habits the paroxysm might, I think, rather be promoted and aggravated than obviated or retarded by it.

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* Dr. Thompson's Practice of Physic, p. 344.

Some have recommended opium under these circumstances. We are told, that "as soon as the symptoms, which generally precede the epileptic paroxysm, make their appearance, the patient, if an adult, should swallow from thirty to forty drops of laudanum, in a draught of camphorated emulsion, the common effect of which is found to be the complete prevention of the paroxysm, and the restoration of the patient to his usual health. When the medicine fails in entirely preventing the accession of the fit, its violence and duration are uniformly mitigated by it." * Of this practice I have had no experience.

In the history of epilepsy, I have described a symptom often preceding the disease, which has been called aura epileptica. When this arises from parts at a distance from the head, its progress may be sometimes stopped, and the paroxysm prevented by pressure in various ways, particularly by ligature. This fact was known to the ancients, and the practice is recom-

* Fraser on Epilepsy, p. 62.

mended by Galen as a preventive of epileptic fits, and by Aretæus, as useful in vertigo. In the case of a boy, in whom the aura arose from the leg, Galen says, the physicians who had met in consultation made a ligature upon the limb above the part attacked, by which the paroxysm, which used to come on daily, was prevented. * "If the sensation of a cold air, or if something creeping towards the head be felt, physicians have attempted, by a strong ligature immediately applied, to hinder the ascent of this blast or creeping sensation; and thus the paroxysm has been frequently obviated." † "A ligature upon the limb, above the part from which the aura arises, should always in those cases be applied, both because the prevention of a fit breaks the habit of the disease, and because the frequent compression renders the nerves less fit to propagate the aura." ‡ An instance of the efficacy of this practice is

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* Ἐν τω μεταξὺ δήσαντες τὸν χωλον ἀνωτέρω τῦ πρτοπαθοῦντος μορίου. *Galen de Loc. Aff.* lib. iii. c. ii.

† Van Swieten, § 1084. ‡ Cullen, 1318.

mentioned in the Medical and Physical Journal, in which pressure was made by the application of the tourniquet; and another by Dr. Thompson, in his Practice of Medicine, from Loeffler, a professor at Altona. In this last case, where the epileptic patient felt in the attack a sense of coldness at the sole of the foot, gradually ascending till it reached the head, a strong ligature was made above the knee of the affected limb, before the cold sensation had proceeded so high; and as often as this precaution was taken sufficiently early, the attack was prevented. Many similar cases might be adduced from authors; these may be sufficient at present, as the subject will be resumed when I treat of the radical cure of the disease, by the removal of the exciting causes. — These means may be employed with the view of preventing the epileptic fit.

In the actual paroxysm, advantage may be derived from an attention to the following directions. — The patient should, as soon as possible, be placed on a bed or sopha; the head should be somewhat raised, and such parts of the dress removed

as may press upon the vessels of the neck. The convulsive action, when violent, should be restrained; and every other precaution should be taken, to prevent injury to the patient and those around him. — It often happens, that the tongue is lacerated by the spasmodic action of the muscles of the jaws; in order to guard against this mischief, a piece of cork, or other soft wood, or a napkin or handkerchief properly rolled up, should be introduced between the teeth. * — Some persons are of opinion, that

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* Dr. Mosman of Bradford, in Yorkshire, in a letter to Dr. Duncan, gives him an account of a remarkable case, in which epileptic fits were arrested, by extending the jaws, and keeping the teeth asunder. "During the continuance of a fit," says Dr. Mosman, "the patient had bit his tongue most severely; and with a view to prevent a similar accident, I had a piece of wood prepared, to fix between his teeth on the accession of another fit. I had soon occasion to have recourse to it; but I found that the introduction of it was attended with much difficulty. I therefore, with my fingers, forcibly opened his mouth, to keep his jaws extended during the operation of the convulsions. The effect of this was instantaneous. The fit was over in a moment. I was not prepared to expect any solution of the disease from this experiment, which I soon had occasion to repeat. During the whole of the day, the fits kept recurring, and were as constantly

when the hands are powerfully clenched, the thumb and fingers should be forcibly straightened; but I see no probability of advantage from such a practice: on the contrary, if much force were to be employed, I think it might be prejudicial.

In addition to these means, some physicians, especially in former times, have recommended a variety of external applications, and internal medicines, with a view of shortening the paroxysm, and mitigating the violence of its symptoms.

Several of the ancients were of opinion, that an epileptic fit is an effort of nature to throw off peccant humours, and that this effort should be encouraged and assisted by friction, sternutatories, emetics, and stimulating applications of various kinds, made to the nose and temples, to the whole head, and to the extremities; but Celsus reprobates the employment of

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terminated by extending the jaws, and keeping the teeth asunder; a female servant having employed, when occasion required, the same certain means of prevention."

such means *, and indeed the practice appears to be not only useless, but mischievous.

Some have advised bleeding in the fit, on the supposition that the brain is overloaded with blood, and that, by lessening partial plethora, relief might be obtained. In a case of epilepsy arising from a suppression of the menses, we are told, that Hoffman produced much mitigation of symptoms by bleeding in the foot during the paroxysm; but that this treatment did not prevent a return of the fit on the following day. To say nothing, however, of the great inconvenience of the abstraction of blood under strong general convulsive muscular action, I doubt whether any mitigation of symptoms would, in general, be thus obtained; more especially as we are informed, from high authority †, that spontaneous bleeding from the nose has occurred in attacks of this kind, without apparent relief. Bleeding during the paroxysm is

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* Quidam hos quoque üsdem, quibus lethargicos excitare conantur; quod admodum supervacuum est.

† Tissot.

calculated, says an accurate observer, to lessen the strength of the patient, but not the power of the disease. *

After attention to a proper position of the body, to the removal of ligatures, and to the means of preventing injury to the patient, or others, by the involuntary convulsive muscular actions, every thing further during the fit, such as the application of acrid or volatile stimulants to the mouth or nose, frictions, &c. are, I believe, useless, if not dangerous.—In many, indeed in the generality of cases, the symptoms of this disorder are mild, and scarcely any thing need be done to mitigate them. On recovery from the fits, if the patient be disposed to sleep, it may be encouraged; and if, when he awakes, he complains of languor or faintness, mild cordials may be administered.

For the radical cure of epilepsy, we trust to means to be employed in its intervals. Before I enter on a consideration of these means, I wish to observe that, in this dis-

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* Heberden.

order, it is of consequence that the epileptic habit, if it may be so called, should be broken, by avoiding every thing associated with the complaint, or that might bring the thoughts of it to the mind of the patient. As the traces of ideas which are not from time to time renewed, says a French writer, gradually become entirely effaced, so the epileptic aptitude may be destroyed. * We find this sentiment also in Galen, in his Consilium pro Puero Epileptico, and in Cullen's Practice of Physic. "As the disease, in many cases, is continued by the power of habit only, and as, in all cases, habit has a great share in increasing mobility, and therefore in continuing the disease, so the breaking such habits, and changing the whole habits of the system, is likely to be a powerful remedy in epilepsy." †

The predisposition to epilepsy is sometimes hereditary; in which cases it is particularly difficult to cure. Indeed some authors consider the disease, under these

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* Tissot. † Cullen, p. 397.

circumstances, to be absolutely incurable. Boerhaave and Van Swieten speak very confidently upon the subject. The former says positively, that hereditary epilepsy is never cured; and the latter observes, that it has been reckoned incurable by all physicians, and that perhaps it is not more in our power to remove this latent impression, communicated by parents to their offspring, than to prevent the teeth or beard from growing. And again, hence it appears impossible for the physician to remove the morbid impression, and in this sense an hereditary epilepsy is reckoned incurable. * This doctrine, I believe, is not true; and indeed Van Swieten admits that circumstances may prevent the occasional causes from rousing the latent predisposition. At any rate, it is mischievous, inasmuch as it discourages the exertions of the physician.

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* Inde intelligitur quæ hereditaria cur ea nunquam sanabilis. *Boerh. Aphor.* 1078.

Hinc videtur impossibile esse medico, ut characterem illum morbosum; a parentibus in progeniem derivatum, auferat; et hoc sensu insanabilis dicitur epilepsia hereditaria. *Van Swieten, Comm. in Aph.*

In attempting the cure of idiopathic epilepsy, the indications are, in the intervals of the fits, to correct, if possible, the predisposition to their return, and to remove or diminish the power of the exciting causes. In endeavouring to fulfil the first of these indications, we find much difficulty, as we know not what the immediate nature of epilepsy is, or in what the predisposition to it consists. Authors have thrown very little, if any light upon this subject. Tissot says, we must endeavour to change the epileptic disposition of the brain; but he cannot, or at least he does not, inform us what that is. Dr. Cullen, as before mentioned, thinks that the predisposition to this disorder is a certain mobility of the sensorium, depending upon a plethoric state of the system, or upon debility.

It is not easy for us to understand how states so opposite should exhibit the same symptoms; yet we know that epilepsy is sometimes connected with plethora, and sometimes with debility, and that the complaint has been diminished in violence, or has even been cured, by such modes of treatment as are calculated to diminish or

to remove these opposite states. As I have already pointed out very particularly the symptoms which characterise plethora, both general and topical, and those which distinguish debility, I shall now immediately proceed to the consideration of the different means to be employed under these different circumstances.

The treatment which the most experienced physicians have recommended, with a view to diminish or remove plethora, general or partial, are depletion by blood-letting and purging; emetics, blisters, setons, and issues; the restoration of discharges that may have ceased, or been artificially stopped, and by proper diet and exercise.

The most powerful and the most speedy depletion, as I have already had occasion to observe, is produced by blood-letting and purging; and in all cases of epilepsy connected with plethora, I believe these to be the most efficient remedies. In favour of this practice, under the circumstances alluded to, the opinions of the most eminent physicians might be adduced. It is recommended by the ancients, parti-

cularly by Aretæus; and among the moderns by Boerhaave, Van Swieten, Tissot, Cullen, Fothergill, and many others.

When the disease seizes * the head, Aretæus says every thing ought to be done as in cephalæa: the veins in the elbow, and the frontal vein, are to be cut, and cupping-glasses are to be applied, but not so as to induce deliquium animi; all the arteries, both before and behind the ears, should be opened. Several of the Greek writers agree with Aretæus in recommending blood-letting, both general and topical, in epilepsy: they seem to have thought the practice useful in all epilepsies, without attending to the distinctions which have been made by the moderns.

Tissot was a most strenuous advocate for depletion by bleeding in this disorder. The disposition to plethora in epilepsy, is sometimes, he says, so strong, that in spite of the greatest temperance, and the most careful choice of aliments, too great a quantity

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* Perhaps Aretæus means to say, when the cause is in the head.

of blood is formed, the vessels become full, and the pulse often hard. In such cases we ought not to hesitate to let blood from the arm, and to repeat the evacuation as often as circumstances require. Tissot took great pains in considering the objections which have been made to blood-letting in diseases of the nerves, and he convinced himself by numerous experiments, that this evacuation is very useful in epilepsy; that we have no means more powerful in obviating the paroxysm; that the malady is often incurable without bleeding; and sometimes is removed by bleeding alone; and that even when this evacuation does not immediately prove useful, it is indispensable, in order to facilitate the effect of other remedies. In support of his doctrine upon this subject, Tissot quotes several cases from Rhodius, Riverius, Severinus, Zacutus Lusitanus, Pechlin, and others. To these many more might be added, from the later systematic writers, and from the medical journals.

In some instances, the sudden accidental loss of a large quantity of blood; in others, frequently repeated and copious bleedings,

on account of inflammatory diseases which may have accompanied epilepsy, have completely removed it. A case of the former kind is related by Dr. Hamilton of Ipswich, and of the latter by Riverius.

My friend Mr. Earle has been kind enough to favour me with the following cases, in which pressure on the carotid arteries, and very free bleeding, were found to be decidedly useful. I must remark, however, that the symptoms of the first case described by Mr. Earle, appear to me rather to indicate an apoplectic than an epileptic seizure. A young gentleman, aged sixteen, was subject to epileptic fits, accompanied with most alarming determination of blood to the head. He dated these paroxysms from a fall which he had into the hold of a ship in China, where he subsequently suffered from a bad fever. The fits usually occurred before he rose in the morning; but he was frequently liable to them during the day. At the time when I first saw him, they were increasing so much in frequency, that he was never certain of passing a day without a seizure. He was constantly afflicted with severe head-aches, was very drowsy, and his memory was very defective.

I was first called to him during one of the most severe attacks he had ever experienced. I found him perfectly insensible, with stertorous breathing, and his eyes and whole countenance evincing great determination to the head. He had passed his urine and fæces involuntarily. I immediately bled him from the arm and jugular vein; but he did not evince any signs of returning sensibility until I had taken between forty and fifty ounces of blood. He remained in a state of stupor for some time, and experienced much numbness in his right arm and leg, which did not wholly subside for several days. I recommended a strict vegetable diet, and purged him freely, which kept off the attacks for some time. During the winter I was twice called to him, in nearly the same state as I have above described; each time the fit came on early in the morning, and required the same active measures to be pursued. From observing the very powerful action of the carotid arteries, I was induced, in one of his attacks, to try the effect of compressing those vessels, which appeared much to shorten the duration of the fit. I

explained to him and his friends the exact situation of the vessels, and shewed him how to compress them, being anxious that he should make a trial of pressure, on the least threatening of a paroxysm, of the approach of which he was generally sensible from the rushing noise in his ears, and an indescribable dread which took possession of his mind. It was not long before an opportunity offered of making the experiment, and he was confident that he postponed the attack. Very frequently after this, he succeeded in arresting the approaching fits; but he was still occasionally liable to them early in the morning, on first waking.

"From observing such beneficial results from the employment of occasional pressure, I was induced to consider the propriety of applying a ligature round one or both the carotids, with a view to permanently diminish the determination of blood to the head. It appeared to me probable, as the vessels which supply the head pass through bony channels, which are not liable to vary in their calibre, that the collateral circulation would not be so liable to become increased after the application of

a ligature to one of the trunks, as it would be in any other part of the body. The interesting facts on record of the cure of aneurism from anastomosis of the orbit, by tying the common carotid, appeared to sanction such a conclusion. * — The patient and his father were so fully convinced of the temporary benefit which he derived from pressure, that they were very urgent with me to attempt a more permanent cure. The very rigid diet and active treatment, combined with the occasional application of leeches or cupping-glasses, which had been persevered in, had, however, so ameliorated the frequency and intensity of the complaint, that I hesitated in attempting so serious an operation, unless it had been more imperiously called for. By steady perseverance in the strictest antiphlogistic treatment, he gradually got the better of the disposition to plethora; and for some years he has not experienced any return, although he now inhabits a tropical climate. — I have known, however, one

* Med. Chir. Soc. vol. ii. p. 1. Hodgson on Dis. of Art. pp. 449—453.

other instance of epilepsy, in which pressure on the carotids seldom failed to arrest the fit.

"A short time since I witnessed a singular result from the local abstraction of blood, in a case of epilepsy of long standing. A lady, between thirty and forty, had been subject to fits from her infancy, for which she had been treated with strong stimulating nervous medicines, and very full diet. She generally experienced a succession of fits, to the extent of six or eight; and the attacks were always preceded and followed by severe head-aches, and much convulsive twitching. I found her just coming out of a second fit, and quite insensible; her countenance was crimson, and her eyes quite feretty. The determination to the head was so very marked, that I immediately recommended cupping from behind the ear, which was performed to the extent of sixteen ounces. She speedily became sensible, and had no return of fits; but instead of falling into a profound sleep, which was the usual consequence of an epileptic paroxysm, she became extremely talkative, and her imagination was so unusually active, that she soon be-

gan to speak as if conversing with persons who were not present. By reasoning with her, she was made sensible that she was talking incoherently; but soon relapsed again. I was called to visit her in this state, and by giving her a powerful dose of camphor and opium, she very soon became composed, and fell into a quiet sleep, from which she awoke perfectly well and free from head-ache. The effect of the sudden abstraction of blood from a surcharged brain in this case was very curious, and might lead to much speculation; but as facts are rather desired than theories, I give you the simple narrative."

"Out of five dissections I have made of the brains of epileptic patients, I found two with tumours in the cerebellum and cerebrum, and three with ossific productions from the basis cranii, which had induced chronic disease in the contiguous membrane and substance of the brain. I have just received an account of a dissection, in which part of the sphenoid and œthmoid bones were in a carious state."

Some eminent physicians, among whom we may mention Dr. Heber-

den *, positively forbid bleeding in epilepsy; and Dr. Cullen, who is an advocate for the practice, generally, thinks, that in some cases it is not advisable. "It might be supposed," he says, "that blood-letting would be the most effectual means of correcting the plethoric state of the system, — and such it certainly proves, when the plethora has become considerable, and immediately threatens morbid effects. It is, therefore, in such circumstances, proper and necessary; but as we have said above, that blood-letting is not the proper means of obviating a recurrence of the plethoric state, and, on the contrary, is often the means of favouring it, so it is not a remedy advisable in every circumstance of epilepsy. There is, however, a case of epilepsy, in which there is a periodical or occasional recurrence of the fulness and turgescence of the sanguiferous system, giving occasion to a recurrence of the disease. In such cases, when the means of preventing

* Heberden, 146. Vomitus quoque et detractio sanguinis nocent.

plethora have been neglected, or may have proved ineffectual, it is absolutely necessary for the practitioner to watch the returns of these turgescences, and to obviate their effects by the only certain means of doing it, that is, by a large blood-letting." *

The advocates for bleeding in epilepsy also very generally recommend purging, with a view of removing plethora, and of freeing the stomach and bowels from acrid substances. Hippocrates, Galen, Aretæus, and some other Greek physicians, lay great stress on aperient medicines for the cure of epilepsy. Aretæus recommends hellebore, hiera, and other drastic purgatives. Alexander Trallianus says, that he has often cured epilepsies by cathartics only. He was particularly partial to the employment of aloes, colocynth, and scammony. In the treatment of this disease the Greek physicians seem very much to have trusted to external remedies, and to the means of diminishing plethora by blood-letting and purging, aided by proper diet and exercise.

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* Cullen, vol. iii. p. 385.

Hippocrates thought that the disease might thus be removed, without the employment of expiations, incantations, or any such nonsense. * Celsus was also an advocate for purging in epilepsy. †

An experienced modern physician ‡ thinks, "that where epilepsy appears in children, as is often the case, we ought, on the first attack, arising from an uncertain cause, to set on foot the most decided and active course of purgatives, and not to allow the disease to strike root, while we are idly employed in the exhibition of inert and useless vermifuge medicines."

A late eminent practitioner, however, was of opinion, that except in cases of worms in children, or affections of the intestines from other causes, it is improper to purge in epilepsy §: and the generality

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* Ἄνεύ καθαρμῶν, και μαγευμάτων καὶ πάσης ἄλλης βαναυσίης τοιαύτης. *De Morbo. Sacro.*

† Necessarium autem est, ducere alvum, vel nigro veratro purgare vel utrumque facere, si vires patiuntur. *Celsus*, lib. iii. cap. xxiii.

‡ Hamilton, Observations, p. 60.

§ Alios epilepticos purgare alienum est. *Heberden*, p. 144.

of writers seem to think, that there is never any necessity for the employment of drastic purgatives in this disease; but that the keeping the bowels gently open will be sufficient. Perhaps in strongly marked plethoric epilepsy, powerful cathartics may be administered, not only with impunity, but with advantage; but, under other circumstances, I would not venture to employ them.

The exhibition of emetics for the cure, as well as the prevention of epilepsy, has been recommended by Aretæus, and some modern physicians; but in such cases as are at present under our consideration, I should be afraid to adopt this practice.

A discharge from the neighbourhood of the head, kept up for a considerable time, seems, in some instances, by diminishing plethora, to have prevented the return of epileptic paroxysms. Aretæus and Celsus think, that whatever is calculated to evacuate noxious humours from the head, is likely to be useful in these cases. Celsus recommends cupping-glasses, and the actual cautery to the back part of the

head.* Van Swieten highly approves of the application of blisters, issues, and setons in this view; and he relates the case of a young woman, who, in the paroxysm, having fallen into the fire and burnt her face and forehead terribly, so that a great discharge was occasioned from those parts, remained free from the disease as long as the discharge continued, but relapsed when it ceased.

A variety of cases might be quoted in favour of the practice above mentioned, from Fabricius, Willis, and others. "Considering the nature," says a practical writer, "of the matter poured out by issues, these may be supposed to be a constant means of obviating the plethoric state of the system; and it is, perhaps, therefore, that they have been so often found useful in epilepsy. Possibly, also, as an open issue may be a means of determining occasional turgescences to such places, and therefore of diverting them in some measure from their action upon the brain, so also in this

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* Ut per ea perniciosus humor evadet. *Celsus*, lib. iii. cap. xxiv.

manner, issues may be useful in epilepsy." * As these means do not seem capable of doing mischief, and as they may tend to diminish a plethoric state of the system, I venture to recommend them in the kind of epilepsy of which I am treating.

A restoration of discharges to which the habit has been accustomed, especially where the disease has followed the suppression of them, should, by all means, be attempted. Where the menstrual, or hæmorrhoidal discharges have suddenly ceased, and epilepsy has been thus produced or aggravated, it is of the greatest consequence that such evacuations should, if possible, be re-established by general or topical blood-letting, pediluvium, and other means pointed out by authors. Some French physicians with this view advise the application of leeches to the neighbourhood of the anus. M. de Maisonneuve has related several cases, in which epilepsy was produced by a suppression of the menstrual discharge, and cured by the restoration of it. In one instance,

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* Cullen, vol. iii. p. 383.

after deficient and irregular menstruation, the disease came on in consequence of a sudden fright, and the paroxysms were frequent and strong. They always ceased, however, for a short time, on the appearance of the menses, though deficient in quantity. Emmenagognes, and antispasmodic medicines were administered without advantage; but on taking away blood frequently, the catamenia became regular and abundant, and the patient was restored to perfect health. In another instance, in which the menses had been suppressed, epileptic fits supervened; and continued for a long time to return monthly, the suppression not having been removed. M. de Maisonneuve mentions one case of epilepsy, arising from the above-mentioned cause, in which the paroxysms continued to return, though the suppression had been removed.*

Where, in infants liable to epilepsy, a fetid ichor is discharged from the head, or other parts, as sometimes is the case, it

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* De Maisonneuve, page 247 — 261.

should be promoted as much as possible; or, if it have ceased, it should be again produced, by frequent washing those parts with warm water, or gently stimulating lotions. In these cases, warm plaisters, with a small quantity of cantharides, have been found useful.

In plethoric epilepsy, it is of the utmost consequence that a proper diet and regimen, in every respect, should be observed. Too great a quantity of nourishment, or too much sleep, are very prejudicial. Animal food, or whatever is calculated to make much blood, should be avoided, or taken but in small quantity.

Dr. Prichard is a strenuous advocate for the employment of purgatives in epilepsy and other nervous diseases. In the eleventh volume of the Edinburgh Medical and Surgical Journal, he gives an account of three cases of epilepsy, although unattended with symptoms of plethora, in which cathartics were administered with great advantage. — The first case was that of a boy, about fifteen years of age, of a slender make, who was seized with a fit, preceded by a convulsive motion in one

of his hands, which presently rose along the arm to his head, when he fell down senseless; all his limbs were convulsed, and he foamed at the mouth. On the following day he had another fit, in every respect similar.

For this patient a powder was prescribed, consisting of twelve grains of jalap, two of submuriate of mercury, and one drop of oil of cloves, to be taken every second day. Having taken this medicine two or three times, the quantity of jalap was increased to sixteen grains. The powder was taken for about ten days, during which time he had no fit or previous symptoms, and was well in every respect. On pursuing this plan he perfectly recovered, although he had one fit several months after he began to take the medicines. In the two other cases, powerful cathartics were administered, which probably contributed much to the cure of them; but other remedies were also prescribed.

In the case of a woman, who, in consequence of a fright, had been subject to frequent attacks of fits, in which she lost sensation and consciousness, without being

convulsed, a powder, consisting of jalap, rhubarb, and calomel, was given every second night with complete success. She continued the powder regularly for three weeks, at the end of which time she became quite well, and she afterwards had no return of the complaint. — Dr. Prichard treated a considerable number of epileptic cases on the above mentioned plan ; but he candidly acknowledges, that his success with respect to them was not complete: very few, however, occurred which were not more or less relieved by the use of evacuants, particularly by active purgatives, with local bleeding and the use of blisters. Dr. Prichard considers the introduction of the free use of evacuant remedies into the treatment of nervous diseases, as one of the greatest improvements of the medical art which has taken place of late years.

" The plethoric state of the system is to be corrected," says a celebrated author, " chiefly by a proper management of exercise and diet ; and, with respect to the latter, it is particularly to be observed here, that an abstemious course has been frequently found to be the most certain means of

curing epilepsy." * — Dr. Abercrombie is of opinion, that the only remedies of real efficacy in these cases, are purgatives and strictly vegetable diet, with total abstinence from strong liquors. When the disease has not yielded to this mode of treatment, Dr. Abercrombie informs me, that he has not found it yield to any remedies. In confirmation of his opinion on this subject, he has favoured me with an account of the case of a gentleman, who was in a state approaching to idiotism, and subject to very frequent and violent epileptic paroxysms, who, in the course of a few months recovered perfectly, and enjoyed good health for several years, simply by frequent purging, a strict adherence to a vegetable diet, and by frequent washing of the head with cold water.

In addition to a proper regimen, with a view of moderating or curing plethoric epilepsy, Tissot recommends the greatest attention to the state of perspiration, which is often irregular; the skin, he says, being

* Cullen, vol. iii. p. 383.

affected with spasm; under these circumstances, he speaks highly of the use of the warm bath. It is difficult to appreciate, he says, the beneficial power of this remedy without having tried it. It is generally ordered, he observes, only for a short time, but we ought to persevere in the employment of it for a long, nay, an unlimited time, to reap the full advantage of it. He thinks, however, that whenever there is a disposition to a too great determination of blood to the head, warm bathing ought not to be tried. — With respect to the means of preventing or diminishing plethora, especially by diet and regimen, much valuable information may be obtained from this author.*

When the predisposition to epilepsy, or the actual disease, seem to depend upon debility, a plan, in several respects different from that above mentioned, should be adopted. In these cases, depletion by free blood-letting, or drastic purging, would prove injurious. The bowels, however,

* Tissot, page 270.

should be kept gently open, and if symptoms of fulness in the vessels of the head should appear, notwithstanding the debility, topical bleeding may, in moderation, be employed.

In this kind of epilepsy, *tonics* and *antispasmodics* have been very generally recommended, of which we have a great variety. Among these may be reckoned cold, in a moderate degree, exercise in the open air, and nutritious diet; or at least these may be considered as powerful assistants to tonic medicines. The Greek physicians, as I have before mentioned, seem chiefly to have trusted to local means, and to those which are calculated to diminish plethora. Galen, however, had confidence in certain medicines, particularly theriaca Andromachi*, simple oxymel, and oxymel of squills. Aretæus had some faith in a variety of what he calls hot, dry, and attenuating remedies. He was in the habit

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* He says Ταῖς ἐπιλήψιαις δὲ αὐταῖς ἀγωνιστικῶς εἴωθε βοηθεῖν. Gal. de theriac. ad Pisonem.

of giving cinnamon, cassia, pepper, and castor, together with theriaca and mithridate, and some diuretics; but he placed his chief confidence in applications to the head, with bleeding and purging.

Some of the antients have recommended the cold bath*; and a celebrated modern physician† speaks in very high terms of its use, in this and several other nervous disorders, provided the vessels be not overloaded with blood, or the patient affected with extreme sensibility, and irritability of constitution, or of inveterate obstruction of any kind. Except in such cases, cold water is, without contradiction, he thinks, one of the remedies best calculated to give strength to the nervous system, and to correct a disposition to convulsion from slight causes.

When the predisposition to this disease is owing to a state of debility, we are, says a practical writer, to obviate and prevent its effects by recommending the patient to breathe a cool air; to make use of a ge-

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* Cœlius Aurelianus, in particular. † Tissot.

nerous nutritious diet; to take daily exercise adapted to his strength, particularly on horseback; and to go frequently into a cold bath.* Notwithstanding these opinions, I would not venture to advise the cold bath, even in epilepsy connected with debility, if any appearance of fulness of the vessels of the head were observable.

Dr. Cullen considers fear, or some degree of terror, as capable of being useful in epilepsy. He refers to a remarkable cure of the disease by Boerhaave, in the Orphan House, at Haarlem; and he states that he has himself met with several similar instances of its good effects; and in the 18th volume of the Medical and Physical Journal, we have an account of the disappearance of epilepsy on occasion of a sudden fright. A lady in the prime of life, of robust habit, was for four years afflicted with this complaint in a violent degree, the paroxysms returning three or four times a week, continuing for some hours, and leaving the patient in a state of stupor. "A

* Thompson, p. 345.

variety of medicines had been tried in vain, and the case was considered hopeless, when, on receiving a dreadful mental shock, by the circumstance of her daughter being accidentally burnt to death, the disease entirely and finally left her;" and a case is related by Haller, in which a cure of epilepsy was effected by the apprehension of the performance of the operation of trepanning, and the sight of the apparatus for that purpose. Such remedies, however, appear to me to be of doubtful use, as they are not sufficiently under our controul; and I should be afraid to employ them.

The chief *tonic medicines* recommended are vegetable astringents, and certain metallic preparations. Among the former, *bark* and *bitters* have been prescribed with peculiar advantage. De Haen speaks highly of the use of these remedies; and Dr. Home, in his clinical experiments, mentions the case of a man who, after a fright, had been for eight years subject to epileptic fits, and fatuous for near two years, who, on taking the bark for almost a month, was so much benefited, that his fits be-

came very slight, and recurred but seldom.* It has been remarked, that the bark seems best adapted to those epilepsies which recur at certain periods, and which are without plethora, when, if it be given in considerable quantity, some little time before the expected recurrence, it will be very likely to prove serviceable.† M. Tissot has employed the bark with great success in many cases, and in two of them he attributes the cure entirely to this medicine. In both, the recurrence of the paroxysm was periodically exact.‡ He thinks, however, that though very useful, under peculiar circumstances, it has no decided anti-epileptic virtue; and he supports this opinion by reference to a great number of writers. Dr. Cullen speaks somewhat favourably of the administration of bark in epilepsy, under certain circumstances. The vegetable tonic, he says, "which from its use in analogous cases, is the most promising, is the Peruvian bark;

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* Home, clinical experiments, p. 207.

† Thompson, practice, 346. ‡ Tissot, p. 336.

this, upon occasion, has been useful, but has also often failed. It is especially adapted to those epilepsies which recur at certain periods, and which are, at the same time, without a recurrence of any plethoric state, or turgescence of the blood; and in such periodical cases, if the bark is employed some time before the expected recurrence, it may be useful; but it must be given in large quantity, and as near to the time of the expected return as possible."*

Some physicians, upon the continent, seem to have entertained a very high opinion of the efficacy of the *leaves of the orange-tree* as an anti-epileptic. An empiric at the Hague is said to have given this medicine as a nostrum, with so much advantage in epilepsy, as to have induced some respectable practitioners in that town to try it, and they made so favourable a report of it, that De Haen prescribed it in the case of a girl affected with

* Cullen, p. 389, 390.

frightful convulsions, with perfect success. After this the orange leaves were given, we are informed, in the hospitals of Vienna, in powder and infusion, with evident advantage. M. Locker administered this medicine in the hospital of St. Mark to a great many epileptic persons, and found it superior, he says, to the most celebrated remedies, all of which he had tried. In some instances it moderated the violence of paroxysms; in others it increased the length of the intervals between the fits; and in some it effected a perfect cure. In Sandiforth's Collection of Theses, we find a dissertation, entitled, De puero epileptico foliis aurantiorum recentibus servato; in which the virtue of this remedy is highly extolled. But although highly spoken of by many distinguished persons, Tissot, who tried it in this and other diseases, does not seem to expect much advantage from it; and the experiments which have been made by Home, and others in this country, are not at all in its favour.

"Bark, and the leaves of the orange-tree, says a modern writer, both of which have been very strongly recommended by many

writers as powerful remedies for epilepsy, are little worth a trial."*

A Mons. Dufrenoy, some years ago, published a treatise concerning the use of what he calls the *meadow narcissus*, in a variety of nervous affections, and he relates the case of a person, aged thirty-eight, who had laboured under frequent attacks of epilepsy, who, by taking for a few months the extract of narcissus, was cured of that disease, and also of a nervous blindness, with which it was accompanied. This extract was given in the dose first of four, afterwards six, and lastly increased to forty grains, twice a day.†

Among the vegetable astringents recommended in epilepsy, the viscus quercinus, misletoe, or more properly missel-toe, has held a distinguished place. This medicine was known to the ancients, and has been employed by many modern physicians, especially on the continent; some of whom have entertained a very high opinion of its

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* Good, vol. iij. p. 545.

† Annals of Medicine, vol. iv. p. 188.

anti-epileptic power. One writer* thinks that it is as much to be depended upon, as a specific in this disease, as the bark is in intermittent fever. In the case of a lady of distinguished rank, the cure of an hereditary epilepsy was effected, as we are informed, by the viscus quercinus alone, various other remedies having been tried in vain.† Boerhaave, Van Swieten, De Haen, and many other highly respectable writers, seem to have believed that it possesses the virtues attributed to it; and Dr. Frazer, some years ago, published a pamphlet for the express purpose of stating the power of this vegetable astringent in the cure of epilepsy. He gives us a long list of names of medical men, who have tried it with success; and he assures us that he can, from his own observation, strongly recommend it. "My own experience," he says, "warrants me in declaring, that of eleven cases of epilepsy, which were treated with the viscus quercinus, under my direction, during the years 1802, 1803, and

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* Colbatch. † Tissot.

1804, nine were radically cured, one was fatal, and one received no benefit." He states the particulars of these cures at considerable length, for which I refer to his book.* Dr. Frazer prescribes the missel-toe in powder, in the dose of from two scruples to two drams, twice a day, in a draught of camphorated emulsion. The late Dr. Fothergill, Dr. Gilbert Thompson, and Dr. Willan, we are informed, gave this medicine in epilepsy with success; and "Mr. Haynes of Gloucestershire, witnessed its efficacy in three different cases of the disorder, which had baffled the skill of several eminent practitioners." Dr. Frazer believes himself correct in stating that Mr. Haynes "has never known this remedy to fail in these cases, but that its exhibition has been uniformly attended with success under his direction."†

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* Frazer on Epilepsy, p. 89.

† It is said that the viscus quercinus is not to be found in England or France, at present. De Candolle thinks it has been extirpated in these countries by the Druids, who used it so much in their religious ceremonies. De Candolle never found the viscum album of botanists on

Notwithstanding these favourable accounts of the anti-epileptic virtue of the viscus quercinus, I should not place any confidence in it alone. Tissot, Cullen, Home, and other modern physicians, have found little advantage from the employment of it, and I never saw it of use in a single instance. Dr. Cullen thinks that when given in large quantities, it may possibly be useful; but he believes it was more especially so in ancient times, when it was an object of superstition. In the few instances in which he had seen it employed, it did not prove of any effect.* The general opinion seems of late to have been unfavourable to the viscus quercinus, and it is now almost wholly neglected.

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that tree in France and its neighbourhood; and only one instance is on record of its having been found on the oak in England; but it is abundant on apple-trees and many others. On the other hand, the missel-toe of Italy, the loranthus of the botanists, is common on all the different kinds of oak in that country; particularly about Parma. It is this missel-toe that was probably used by the ancients.

* Cullen, p. 388.

Among the vegetable tonics employed for the cure of epilepsy, says Dr. Good, "the misletoe of the oak stood at one time at the head. It was regarded as a specific by Colbatch, and most warmly recommended by Haller and De Haen. It appears, however, to be of no importance from what tree it is taken, for, as a parasite, it flourishes equally on many, and preserves its own peculiarities on all; and from every tree, as far as late experiments have been made, it is equally inefficacious and futile. Dr. Good adds, it is difficult, indeed, to conceive what property could ever have recommended this plant to therapeutic notice, for its sensible qualities are few and slight, both the leaves and roots having little smell, and only a weak bitterish nauseating taste." *

Some writers assert that Pliny speaks of the power of the viscus quercinus in epilepsy; but this, I believe, is a mistake. He has described the misletoe, and has pointed out some of the superstitious notions which

* Study of Medicine, vol. iii. p. 544.

the Druids entertained respecting it; but I do not find any account in this author of its anti-epileptic virtues. *

The metallic tonics chiefly recommended in epilepsy are *silver*, *zinc*, *copper*, *lead*, *arsenic*, and *mercury*. Among these, silver, in the form of *nitrate of silver*, has been distinguished. It has lately been much prescribed, and with great advantage. The exhibition of this salt, however, is not new. Alston and Gmelin refer to Angelus Sala, a chemical physician, who wrote at the commencement of the seventeenth century; and likewise to Geoffrey, and to Boyle, as recommending its use. †

The experiments that have of late years been made with this preparation of silver, may perhaps be referred to an accident. " A gentleman, aged about forty-six, who had from his infancy been subject to epileptic fits, and who was in the habit of

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* He says, fœcunditatem eo potu dari cuicunque animali sterili arbitrantur, contraque venena omnia esse remedio. Plin. hist. nat. lib. xvi. ch. 44.

† Dr. Powell, Med. Trans. vol. iv. p. 86.

introducing a crown-piece between his teeth to prevent the tongue from being bitten, accidentally received it into the œsophagus, whence it was artificially passed into the stomach, being situated so low in the œsophagus that it could not be forced back again. The throat, after this, was inflamed, and very painful for a long time, attended with the utmost difficulty in swallowing. The patient's general health after this was much as usual, but his fits were observed to be not so violent or frequent as before. About nine months after the accident, he brought up the crown-piece with vomiting, but without pain; since which time (nearly a year) he has enjoyed a perfect state of health, and has had no return of the epileptic fits. The crown-piece appeared black, and somewhat corroded round one part of the edge and surface." *

Since the publication of this case, a great many trials have been made with the nitrate of silver in attempting the cure of epilepsy;

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* Medical Transactions, vol. iii. p. 30.

and various accounts of its efficacy have been communicated in the medical journals. — Among the first of those who of late years prescribed this medicine with success, I may mention Dr. Wilson, of Spalding, in Lincolnshire; Dr. Sims, an American physician; and Dr. Cappe, of York. Dr. Wilson, in a letter to Dr. Duncan, published in the Annals of Medicine, says, "After having tried the various means which are commonly recommended in epilepsy without producing any good effect, I have lately employed the argentum nitratum in doses of two grains and a half three times a day, with the happiest success. I am now giving it to a boy of sixteen in that dose, without producing any other sensible effect than a slight nausea. He has had no return of fits for ten days past, though they formerly occurred two or three times during the day. He took no other medicine whatever combined with the argentum, as it was formed into pills with bread-crumb." *

* Duncan's Annals, vol. ii. p. 406.

Dr. Sims speaks very highly of this medicine in epilepsy; and relates the case of a boy of six years of age, who had laboured under the complaint ever since he was eighteen months old, in whom the fits occurred frequently in the night, and generally to the number of four or five, sometimes to the number of sixteen. Various remedies had been unsuccessfully tried for this patient; but, on the exhibition of the argentum nitratum, in the dose of one grain in pills, he soon began to amend, and was quite free from the complaint for a considerable time, when he was seized with the fever of the climate, and died.

Dr. Cappe administered the nitrate of silver in several diseases with great success, and, among the rest, in epilepsy. He describes one case in particular, which is that of a man who, soon after marriage, had been attacked by the disease, and who had suffered from it for more than twenty-five years. In this instance the ordinary means proving inefficacious, the nitrate of silver was successfully administered.*

* Annals of Medicine, vol. iii. p. 456.

Many persons have been deterred from the employment of the nitrate of silver on account of its caustic power, and the physicians above mentioned gave it with very great caution, and in small doses; but experiments since made have ascertained, that it may be safely administered in considerable quantities.

On this subject we are indebted to Dr. Powell, who, in his observations on the internal use of the nitrate of silver, clearly proves "that it may be taken into the human stomach in much larger quantities than analogy would lead us to suppose, with safety, and, in many cases, with manifest and superior advantage." — When Dr. Powell first began to administer this medicine, he gave it in pills; but, as he feared to proceed further than with doses of a grain in a solid form, lest in such a concentrated state it might act as a caustic upon the stomach, he substituted a solution of it in aqua menthæ viridis, which seemed best to cover its unpleasant taste, and to afford the means of increasing its dose, and safely ascertaining its effects. Dr. Powell found that the stomach will bear, without

inconvenience, three times more of this medicine in pills than in solution. He was able, in some instances, to give the quantity of fifteen grains in the form of pill, when the stomach would not bear more than five grains in solution *.

In addition to these accounts of the employment of nitrate of silver for the cure of epilepsy, which have been published, I have to communicate some valuable information on the subject, of a later date, the result of experience, with which I have been favoured by my friends, Dr. Baillie, Dr. Richard Harrison, Dr. Roget, and Dr. James Johnson.

Dr. Baillie has a high opinion of the efficacy of the nitrate of silver in epilepsy, and has, in many cases, given it with great advantage.

He has favoured me with the following particulars respecting one case, in which this medicine was successfully prescribed by him and Dr. Roget in consultation. In this instance, a lady twenty-two years of

* Medical Transactions, vol. iv. p. 85.

age, who had for a considerable time laboured under frequent and strong epileptic fits, took small doses of nitrate of silver, which were gradually increased to six grains three times a day. After two months the paroxysms became less violent, and occurred at longer intervals, till by degrees they entirely disappeared, and the patient has remained for ten years entirely free from every symptom of the complaint.

Dr. Baillie has lately been informed by a lady, who had been for many years afflicted with a violent epilepsy, that she was completely cured by the administration of nitrate of silver for a considerable length of time.

Dr. Richard Harrison has been kind enough to favour me with an account of two cases of confirmed epilepsy, in which he prescribed the nitrate of silver with complete success. The first is that of a gentleman of an irritable nervous habit, who had for many years been afflicted with frequent attacks of the disease, and who had tried almost all the usual remedies in vain. He had been bled and purged very frequently and very freely for a whole year. The

system of depletion, during this time, had been carried as far as possible, with a view of effecting a thorough change in his constitution. Digitalis had been given, and a great variety of tonics and antispasmodics, but without the smallest relief. Under these circumstances, Dr. Harrison prescribed the nitrate of silver, three times a day, in the dose of one grain. In a short time its beneficial effects appeared, the disease gave way to the remedy, and the patient remained free from its attacks for seven months. On discontinuing the use of the medicine, the fits returned, but, on again having recourse to it, they disappeared, and he has for a long time remained in good health. — The other case which Dr. Harrison has been kind enough to communicate to me is that of a lady, of a very delicate constitution, who, upon the first appearance of the menses, became affected with frequent fits of epilepsy, to which she remained subject for fifteen years. When Dr. Harrison first saw this patient, the catamenia were irregular and deficient in quantity, and he ordered the oleum terebinthinæ as an emmenagogue. This

medicine produced the expected effect, but did not lessen the violence or frequency of the epileptic paroxysms. In this case the system of depletion by bleeding, by purging, and very low diet, had been carried to an extreme degree, in consequence of which she became affected with lowness of spirits, œdematous swellings of the legs and feet, and other marks of debility. On a change of diet, and the exhibition of the nitrate of silver, this lady's health was soon improved, she gradually continued to amend, and has now been free from the complaint for nine months.

Dr. Harrison thinks the nitrate of silver particularly well adapted to those epilepsies which arise from a too great irritability of the nervous system; in fact, where it very much approaches to hysteria, which is frequently the case; but he thinks also, that it may suspend the fits, where they arise from other causes, and have taken firm and full possession of the constitution. In support of this opinion, he adduces the case of a lady under his care, who remains free from the complaint as long as

she is under the influence of the remedy, but who again becomes affected with it on discontinuing its use.

Dr. Harrison remarks that epilepsy, especially that connected with hysteria or hypochondriasis, is a very common disorder in Italy; where, however, the anti-epileptic power of nitrate of silver was not known till he successfully administered it to Mr. More, an eminent engraver at Naples. — In consequence of Dr. Harrison's success in this instance, it was given by Sementini, professor of chemistry, with surprising advantage in very many cases which he has published.

Dr. Roget informs me, that in the case of a lady, about thirty years of age, who had laboured under this disease for six years, the nitrate of silver appeared to protract the intervals of the fits very considerably. The dose had been gradually raised to eight grains a day without producing any inconvenience; but Dr. Roget found that it could not be pushed much further with safety. After continuing the remedy for four or five months, this lady went into the country for the summer; and from an

over anxiety to be cured, persisted in taking the nitrate much longer than Dr. Roget had advised, and he suspects in greater quantity than he had prescribed. Her health suffered materially in consequence; she became emaciated, and was reduced to a state of alarming debility, from which she was several months in recovering. It was remarkable that during this period she had no epileptic attacks; but as soon as she regained her strength, they returned as usual; and Dr. Roget believes that they have since continued to recur at nearly the same intervals as before she made trial of the medicine.

Although the nitrate of silver has been successfully employed in epilepsy by some practitioners, I think it right to state, that it has been administered by others in full doses, and for a considerable length of time, without the smallest advantage. On this subject, reference may be made to Dr. M'Ginnis of Portsmouth, in particular, who has prescribed it in many cases both in the recent and chronic disease, even in doses of twelve grains, without any perceivable effect.

I do not find, however, in the writings of English physicians, or in the private communications of my medical friends, any accounts of deleterious effects produced by this remedy; but, in a book lately published upon nervous diseases by M. Georget *, a French physician, the nitrate of silver is pronounced to be a dangerous medicine. — It does not, however, appear probable from what M. Georget has said on this subject, that he has either fairly tried this preparation of silver himself, or been informed of its effects by experiments made with it by others. He seems to me, to have condemned it upon no other ground, than that of having found very great and striking marks of disease in the stomach of a woman who had died in the Salpetriere, after having taken it for eighteen months, previously to her admission into that hospital. M. Georget does not give us either a history of this case, or an account of the doses of the medicine, but contents himself with saying, that he has great difficulty in

* Phys. de Syst. Nerv. &c. vol. ii. p. 401.

conceiving how the blindest empiricism should have led any one to attempt the cure of a diseased brain by cauterizing the stomach.

I wish here to mention a very curious fact, which, however, is now pretty generally known, namely, that when the nitrate of silver has been given for a considerable time, although in small doses, it very often produces a very extraordinary discoloration of the skin.

This phenomenon has been observed by several writers. Dr. Albers of Bremen, some years since, noticed the fact; and he has described one case in particular in which the discoloration took place. A female, thirty years of age, he says, after a long continued use of the nitrate of silver, experienced this change of colour in a very striking manner. The tongue was at first bluish, and then grew gradually darker, till at last it became, as it has since continued, quite dark and almost black. This blue colour spread all over the body, yet was most intense on the face, on the forepart of the neck, as far as the middle of the bosom, and on the hands and nails.

Whenever the patient held her arms in an erect posture, the blue colour was considerably lessened, and even disappeared almost entirely. The sclerotica was likewise considerably coloured. Dr. Albers has been informed by Dr. Reinmarus of Hamburgh, that two patients of that town had exhibited a blue tinge of the skin, after the use of the nitrate of silver; he also learned the same fact from Professor Rudolphi of Berlin; and he mentions three cases communicated to him by Dr. Schleiden of Hamburgh, of similar effects from the exhibition of this medicine. Dr. Albers proposes the following questions: — "1st. As the blood in these patients is of the natural hue, can it be doubted that the blue colour must be looked for in the reticula malpighiana, in which it is produced by the nitrate of silver? 2nd. Why does this effect of the remedy occur so seldom; and why does it often not take place at all, when exhibited in very copious doses, but not long continued, as is proved by an essay lately published by Dr. Powell? 3rd. Is there any probability that this change of the cutaneous colour is produced by the

protracted application of the remedy? If this were the case, the second question would be answered. 4th. Why do the parts exposed to the light more particularly contract a blue colour? 5th. What remedies might be prescribed to cure this alteration of the skin?"

Dr. Roget* has described a case similar to that of Dr. Albers, in which a young lady began a course of argentum nitratum, in the form of pills, gradually increasing the dose from one to two grains, three times a day, and after an interval of two months, still farther increasing it, by little and little, till at last the quantity taken amounted to 18 grains in four and twenty hours. In this quantity the medicine was continued, with occasional intermissions of ten days or a fortnight, for four or five months; and then the disease becoming less violent, and at length altogether ceasing, was left off by a gradual diminution of the doses. During the whole of the period that the patient

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* Medical and Chirurgical Transactions, vol. vii. p. 290.

was taking the medicine, her general health continued to improve, and she got rid of a variety of nervous feelings to which she had before been subject. Some time after the remedy had been totally discontinued, she observed that the tongue and fauces had acquired a very dark colour, as if stained with ink; this for a time increased, and afterwards somewhat diminished; but a considerable degree of blackness in those parts has remained permanently fixed. — About a year and a half after she first began to take the nitrate of silver, and several months after she had entirely left it off, it was observed that the complexion was growing dark; this was first noticed about the eyes, but not particularly about the lips. This change has gradually proceeded without any perceptible derangement of health, affecting equally the skin over the whole body. It appears to have attained its maximum in the course of a year; and though it is now six years since she has taken any preparation of silver, it still continues with nearly equal intensity.

Dr. James Johnson, who has administered the nitrate of silver in many cases of epi-

lepsy with success, is of opinion, both from his own observations, and those of others, that this medicine is more especially efficacious in the disease when it produces a discoloration of the skin; and I think it probable that this may be the case, as the change of colour clearly shows that the remedy has affected the constitution.

I wish to remark, however, that several cases have occurred in which the colour of the skin has been changed without a cure of the disease, and others have been observed, in which the disease has been removed by the nitrate of silver, without having occasioned any such discoloration.

Dr. Roget informs me, that his experience does not lead him to support the opinion that the nitrate of silver is more likely to prove successful in the cure of the disease, when it produces a dark colour in the skin, for he has met with several instances in which this change occurred to a great extent, without the epilepsy being cured, and sometimes without its being at all mitigated.

Dr. Roget, in his account, in the Transactions of the Medical and Chirurgical

Society, of a discoloration of the skin, produced by the nitrate of silver, has mentioned a very curious circumstance, namely, that the change of colour did not appear till six months after the medicine had been discontinued; and he informs me, that he has lately had a similar case under his care, though the discoloration which took place, on relinquishing the medicine, was not in so great a degree.

Dr. Roget has lately had an opportunity of seeing the lady, whose case he has described in the Transactions of the Medical and Chirurgical Society, and he assures me, that now, after a lapse of twelve years, the discoloration of the skin remains, and that the darkness of the complexion continues to be quite as intense as ever. Dr. Roget particularly noticed the deep blue colour of the tongue, which looked as if tinged with ink.

Dr. Vetch has been kind enough to communicate to me an account of an instance of discoloration of the skin, produced by the nitrate of silver, which appears to be in some respects singular, and curious. A lady under his care, after a long conti-

nued use of this remedy, became discoloured in the upper part of the body, whilst the colour of the lower part was unaltered; and in both eyes the iris, which was naturally of a black or deep brown, was changed to a light blue.

Next to the preparations of silver those of *zinc* are by some considered as the most useful in epilepsy. They have been recommended by Gaubius, and by many others since his time, particularly by Hart, Guthrie, Fouquet, Percival, and Rush.

Dr. Hart, in his inaugural dissertation, speaks very highly of the use of the flores zinci, and adduces several instances in which it was found efficacious. Dr. Guthrie, in a letter to Dr. Duncan, mentions a most alarming case of epilepsy, in which the paroxysms returned four times in twenty-four hours, with wonderful violence, while each fit was accompanied by a most distressing tetanus. In this instance, Dr. Guthrie formed the resolution of giving the flowers of zinc, with what he calls an empiric boldness, ordering eight grains of that medicine the first day, with conserve of roses, and augmenting the dose by four grains every

fourth day, till the thirty-second from the attack, when it amounted to two scruples, which the patient took consecutively for a month, at the end of which time every vestige of the disease disappeared. Although Dr. Guthrie thought it prudent to continue this large dose of the medicine so long, no disagreeable consequences attended its exhibition, except a trifling nausea towards the beginning, which soon went off.* A celebrated surgeon of Edinburgh prescribed with advantage this medicine in a confirmed epilepsy, which had existed for ten years ; and also in another, in which the fits were preceded by an aura epileptica.

This medicine has also been recommended by Dr. Haygarth of Chester, and Dr. White of York. Dr. Cullen, however, has not found zinc useful in these cases ; nor can I, from my own experience, speak in its favour in epilepsy, although I have found it beneficial in *chorea sancti Viti*, and other nervous diseases. †

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* Duncan's Ann. Med. vol. iv. p. 479.

† Perhaps the different accounts we have of the effects of zinc in epilepsy may be understood, when we recol-

Another remedy, which has been celebrated for the cure of epilepsy, is the *cuprum ammoniatum*. Dr. William Battie speaks of the usefulness of this medicine in the highest terms. "The cuprum ammoniacale," he says, "seldom fails to cure epilepsy; never, if the disease be idiopathic, and the patient not exhausted;" and he adduces several instances in which it effected a cure in inveterate cases, which had obstinately resisted other medicines.* Though a remedy of great activity, we are told that it may be given even to very young subjects without hazard. The celebrated Michaelis prescribed the cuprum ammoniatum for fourteen persons afflicted with epilepsy, of whom four were completely cured, and ten considerably relieved. Other cases are related of the successful employment of this remedy by several physicians of great respectability.†

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lect that zinc contains cadmium in different proportions, which may be the active part of the composition.

* Ann. of Med. vol. vi. p. 377.

† Dr. Duncan, Dr. Stone of Grantham, Dr. Heysham of Carlisle.

Dr. Cullen had a favourable opinion of the cuprum ammoniatum, which he introduced at Edinburgh, where it has been a good deal employed. The power of this preparation of copper in epilepsy was evinced by a very extraordinary accident which happened some years ago. "A young woman, a patient at one of the public medical institutions of Edinburgh, rashly took for a single dose a whole box of pills containing this medicine, which had been given to her to take in gradually increasing doses. The effects were proportionally violent, and her life was despaired of; but the event was, that she not only recovered from the effects of the medicine, but never after had any return of her epilepsy."* I wish to remark, that although the cuprum ammoniatum has, in many instances, been employed with very great advantage, it has, on a fair trial, very often completely failed, as appears from experiments made with it by Dr. Home and others.† It has been

* Edinburgh Practice of Physic, p. 419.

† Dr. Hook, Dr. M'Ginnis.

given in doses of half a grain, and in some instances from two to four grains.

Certain preparations of *lead*, generally considered to be deleterious, have been prescribed in this disease with good effect. Dr. Rush of Philadelphia, in some instances, ordered the acetas plumbi in the dose of two grains three times a day, with complete success, and in others with considerable advantage. Another American physician* tried the same remedy in his own case, and was very much benefited by it. He took it at first in the dose of half a grain three times a day; afterwards he increased it to a grain, and gradually to eight grains twice a day. This last quantity was successfully continued for three or four weeks. Previously to the trial of the medicine, Dr. Spence had been under the full influence of mercury, and seems to doubt whether this circumstance might not have contributed to the cure.

Tin has been successfully given in epilepsy, particularly to children, when there

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* Dr. Spence.

was reason to suspect the presence of worms in the stomach or intestines; and Dr. Fothergill thought that much benefit had been received in several cases from the administration of it, even where there was no just reason to suppose that worms were the cause. Dr. Fothergill gave this medicine sometimes largely, and without addition, that he might be the better able to decide on its efficacy; and sometimes he joined with it other medicines, such as a decoction of misletoe, valerian, &c. He usually prescribed the filings of tin, with conserve and syrup, in form of an electuary. Dr. Cullen, for several reasons which he mentions, thinks that preparations of tin may be serviceable in epilepsy, though he has had no experience of their use.

Dr. Shearman, in his Observations on Epilepsy, published in the London Medical Repository, says, "At the present day the cure of this disease is principally confided to two medicines, both of which are reported to have been occasionally successful, though it must be confessed many failures have occurred in the employment of each of them. These are the nitrate of

silver, and the oil of turpentine; one of which acts as an evacuant, the other as a tonic, and produce occasionally the same good effects as have heretofore been produced by other evacuants, and other tonics, in those cases of symptomatic disease, which depending upon the presence of noxious matter in the intestines, or upon a want of tone in the moving powers, will speedily disappear when the respective exciting causes are removed. The medicine which in my hands," adds Dr. Shearman, " has more frequently than any other succeeded in removing epilepsy, is the *elutriated oxyd of tin*, given in the dose of from two scruples to a drachm, to an adult, night and morning, for about four days; at the end of that time giving a purgative, and again resuming the use of the medicine or not, according to its effects upon the system, or its apparent power over the disease." *

Willis appears to have had a favourable opinion of the administration of *mercury*

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* Lond. Med. Rep. vol. xviii. p. 190.

in epilepsy; and Dr. Cullen informs us that in some instances the disease has been cured by the accidental use of that medicine. M. Tissot mentions some cases of epileptic fits occurring in persons affected with lues venerea, in which both complaints were removed by the employment of mercury; and a Mons. Housset speaks very highly of its use, and pronounces it to be the most prompt, active, and certain remedy in nature for the idiopathic disease. "Mercury," says a learned modern writer, "has been tried in almost every form, and to almost every extent, sometimes, indeed, to that of salivation, in which state some practitioners pretend to have found it highly useful. As a general plan, however, this can never be advisable; and Muralt admits that in most cases, where it has seemed to answer, it has only restrained the disorder, or prolonged the interval, but not effected a radical cure."*—I have had no opportunity of judging of the use of this remedy in epilepsy; perhaps some of its

* Good, vol. iii. p. 546.

preparations, in alterative doses, might be tried without injury, and with some hope of success.

Antimony has not been much used, I believe, for the cure of this disorder. Tissot, however, has given it sometimes alone, and sometimes in combination with mercury, with advantage, especially to children; and Dr. Abercrombie informs me, that he has seen very good effects from keeping patients under the influence of tartrite of antimony, in such doses as the stomach could bear, repeated four times a day.

Arsenic, in the form of Fowler's solution, has, in a few instances, been prescribed in epilepsy. Dr. Prichard gives an account of two cases, in which he employed this medicine with supposed advantage, though he seems inclined to attribute the cure principally to purgatives, which he gave with the arsenic.*

" All these medicines seem to act by taking off the tendency to irregular nervous action, and consequently the tendency to a

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* Arsenic was given in these cases, because the return of fits was periodical.

return of the paroxysm, where a habit of recurrence has once been established; for, in many instances, such habit alone appears to be as much an adequate stimulus, as a similar habit in intermittents: and hence, whatever has a tendency to break through such a habit, must have a beneficial effect." * — Dr. Abercrombie is of opinion, that the medicines called tonics act beneficially in epilepsy by restraining vascular action.

In the cure of epilepsy connected with debility, antispasmodics and narcotics have, by some writers, been very strongly recommended, either alone, or with the tonics above mentioned. The principal antispasmodics are, *valerian*, *assafœtida*, *camphire*, *castor*, *musk*, and *æther*; to which some add *phosphorus*, and *oil of turpentine*. The chief narcotics are, *opium*, *hyosciamus*, *stramonium*, and *digitalis*.

Valerian was formerly much celebrated as a medicine adapted to the cure of epilepsy; indeed by some it was considered as a specific. It was chiefly employed

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* Good, vol. iii. p. 548.

on the continent, and particularly by the French, who, in the idopathic disease, seem almost wholly to have relied on it for a cure in these cases. Tissot says, that the root of valerian was described by Dioscorides, and employed by Aretæus *; that Fabius Columna, who had the misfortune to be epileptic, cured himself, and also many others with it; and that Panarolli, a celebrated physician at Rome, administered it with success to a person who had two or three fits every day; and also in other cases of the disease. Valerian, mixed with puff-balls, (*lycoperdon bovista*) formed, it is supposed, a powder, which was said to have been successfully exhibited in many cases in Germany. This powder is highly spoken of by several German writers. In the Literary Gazette of Jena it is stated, that the lycoperdon is almost a specific for epileptic fits, particularly those arising from sudden dread or terror. Tissot quotes many authorities in favour of vale-

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* Tissot says, that Aretæus employed this medicine under the name of φου. He does not however mention it, when treating of the cure of epilepsy.

rian; and concludes his account of it with saying, that fortunately it has become a remedy in which all enlightened physicians confide, and that he attributes to it the cure of a great number of complete epilepsies (*epilepsies essentielles*). M. Tissot recommends that this medicine be given in powder, or spiritous extract, these being the best forms. He is convinced, that there is no remedy to be compared to this in epilepsy, and in all diseases of the nerves which require strengthening medicines. Notwithstanding this strong recommendation, and many other testimonies in its favour, which might be brought from various writers, I am of opinion, from what Cullen, Home, Frazer, Heberden, Woodville, and many others, have said, and from what I have seen, that valerian is a medicine of very little power in this or other nervous disorders. It has often been given for a considerable time in very large doses, in substance, without any good effect. Dr. Home says, "Probably when it does service, it acts as a bitter tonic; it stimulates, and therefore must hurt in inflammatory cases. Although much used at present, it

always appeared to me a weak, and often a hurtful, medicine."* Dr. Frazer observes, that the wild valerian has been long regarded as a remedy of considerable utility in the treatment of most convulsive or nervous disorders, and particularly esteemed for its efficacy in epileptic cases, and mentions the names of many authors, who have recommended it. He observes, however, that notwithstanding the favourable reports of this medicine, it has been given in Edinburgh to the extent of two ounces daily, without any considerable effect: and that this perfectly coincides with his own experience; for, in two cases of epilepsy under his care, in which it was taken in very large doses, and continued for a considerable length of time, it proved entirely useless. †

With respect to the use of *camphire*, *assafœtida*, *castor*, *musk*, *æther*, and many other medicines of this kind, in epilepsy, I have very little to say. Tissot observes, that amongst the remedies properly

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* Home. † Frazer.

called anti-epileptic, camphire, castor, assafœtida, and rue, held a distinguished rank; and Dr. Cullen speaks in favour of musk and the oleum animale, which, in considerable doses, and in their pure state, may be, he says, and often have been found, effectual remedies.

Dr. Fothergill entertained a singular opinion respecting the use of valerian, castor, assafœtida, and other fœtid gums, in epilepsy. He thought that such disgusting medicines might act beneficially, by lessening the appetite, and allowing nature thus to recover herself, and shake off the disease which indulgence had principally produced. *

I do not find any account of trials made with these medicines, which would induce me to employ them; and I am inclined to think, from my own experience, that they have little or no power over this disease. I am willing, however, to admit that camphire and assafœtida are highly useful in several other nervous affections.

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* Fothergill's Works, vol. iii. p. 206.

The French physicians have placed much confidence in valerian for the cure of idiopathic epilepsy: some of them seem to have trusted to its efficacy alone. Indeed, generally speaking, in their treatment of epilepsy, they have employed but very few means. M. Georget, in his inquiries respecting the physiology, and the diseases of the nervous system, seems inclined to condemn, without distinction, the whole tribe of what have been called anti-epileptic medicines. The most violent poisons, he says, have been extolled, and employed for the cure of this disease; the most painful operations have been recommended, but no curative indication has ever been previously established, which might by these means be fulfilled. The practice is wholly and in the highest degree empirical. Practitioners have boasted, he says, of the efficacy of pretended antispasmodic, narcotic, antiperiodic, and sedative remedies, both mineral and vegetable; and of cauterizing the head, and of giving the nitrate of silver internally: but all these means are either useless or dangerous; and some of them may prove destructive. It does not, however,

appear that M. Georget has employed these various remedies which he so strongly and indiscriminately condemns.

The French physicians have had the best opportunities of making trials of different modes of treatment of epilepsy*, and it is is greatly to be lamented that they have given us so little practical information on the subject. Their physiological and pathological accounts of the disorder are very good, and their observations of appearances on dissection are highly instructive; but their practical remarks, and their experiments, with a view of ascertaining the anti-epileptic powers of medicines, are very few and imperfect.

In the Journal of Dr. Hufeland, professor of medicine at Jena, we have an account of the good effects of *phosphorus* in epilepsy. The use of this remedy was

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* We are informed from good authority† that in the year 1813, there were 162 epileptic patients in the Bicatre, and 289 in the Salpétrière, together amounting to a number probably ten times greater than that of the epileptics in all the hospitals of London put together.

† Dictionnaire des Sciences Medicales.

discovered by accident. A young lady, subject to violent spasms of the stomach and bowels, terminating in fainting, or an an epileptic fit, took about an ounce of water, containing two drams of phosphorus, instead of an infusion of peppermint, on the accession of certain symptoms, which by experience she knew to be the forerunners of an epileptic paroxysm. The consequence was, that the fit was completely prevented. Her physician, taking advantage of this accident, afterwards prescribed for her a mixture, containing six grains of phosphorus, half an ounce of oil of hyosciamus, and two ounces of peppermint-water. Of this mixture the patient took a table-spoonful every two hours, for two months, and became entirely free from the disease. The same physician, prescribed phosphorus in three other cases of epilepsy with success; but in some instances he found it hurtful. Dr. Hufeland considers phosphorus to be a dangerous remedy. He has known several instances, in which, having been boldly prescribed by quacks, it produced much mischief. It cannot be given, he says, in a

dose of more than two grains with safety. He found that larger doses always produced burning pains, and one grain was generally sufficient. With regard to form, he observes that it must be completely dissolved and involved, so as to prevent its stimulating the stomach too much. Well triturated with mucilage of gum Arabic, in the proportion of two grains to six ounces of water and an ounce of syrup, he obtained an active and pleasant emulsion, to which he added thirty drops of the anodyne liquor of Hoffman, and in this form he employed it without inconvenience. *

Another medicine, which has lately been a good deal employed, and often with success, in epilepsies, particularly those connected with worms, is the *oil of turpentine.*

Dr. Latham, in his work on diabetes, informs us, that he has several times relieved, and more than once cured epilepsies, by the oleum terebinthinæ.

A great many cases are related in various publications concerning the antiepileptic

* Annals of Medicine, vol. iv. p. 276.

power of this remedy.— Dr. Young, in the fifth volume of the Transactions of the College, gives two instances of the good effects of the oleum terebinthinæ rectificatum, given in a large dose. A child, about eleven years old, who had been liable to epileptic fits for some months, which had generally recurred twice a week, with considerable severity, who had formerly been supposed to have worms, but probably without foundation, took an ounce of this oil, which produced the usual violent effects, but no worms. The following week she had a slight fit, after having been much heated and fatigued, but after that time she continued free from any return of the complaint for two or three months, and was to all appearance perfectly cured. Dr. Young tried this medicine in small doses in a variety of instances, giving from ten to twenty minims three times a day, with very little encouragement; but in the case of a boy, at Lancing, who had been subject to fits about once in ten days, he prescribed it in a full dose with complete success. — The late Dr. Edward Percival of Dublin has published, at considerable

length, in the Edinburgh Medical and Surgical Journal, an account of three cases of epilepsy, in which he ordered the oil of turpentine with great advantage. In the first of these cases, in which the fits usually occurred twice or thrice daily, after having prescribed active purgatives, blue pill, opium in full doses, valerian, camphire, and ether, with blisters, without any material beneficial effect, Dr. Percival ordered that two drams of oil of turpentine should be diffused in the way of emulsion by syrup, in a pint of mint water, and that an ounce of this mixture should be taken every four hours. On visiting his patient, after a short time, he was agreeably surprised to find that no return of convulsions had been experienced after the first dose of the medicine. Several months afterwards, however, the complaint, in a slight degree, returned, and on again administering the oil of turpentine, it gradually and wholly disappeared. About seven months afterwards, this patient had three fits of epilepsy in 24 hours: the turpentine was again administered in the dose of a drachm every four hours, and she con-

tinued for a short time free from the fits, but she at length became maniacal, and they returned with as much frequency as before the administration of the turpentine. In the two other instances in which the oil of turpentine was administered, although very considerable relief was experienced for a time, the disease was not removed. For a more minute account of these cases, I refer to the Medical and Surgical Journal.

Dr. Lithgow, of Coleraine, speaking of the use of oil of turpentine in epilepsy, observes, that though it is probable that this medicine may not turn out to be altogether a specific ; yet, as affording relief in a complaint which has baffled the utmost skill of the physician, it must be considered as of the greatest importance. Dr. Percival concludes, from his experiments, that the only specific action of this medicine was emmenagogue ; and Dr. Lithgow says, that he was led to agree with Dr. Percival in opinion, and to think that " how valuable soever the discovery might be to the female, the male sex were to lose all the benefits arising from it." He was, however, induced, by the employment of it in

two cases, which he relates, to change his opinion, and to conclude, " that although its power was great as an emmenagogue, it was an unknown effect which produced the ascendancy over the epileptic attack."*

Dr. Johnson, speaking of epilepsy, and adverting to the good effects of lytta, lunar caustic, and oil of turpentine, in that disease, observes, that these stimuli produce irritation in, and (what is called) a determination of blood to, certain other organs and parts of the body, particularly the urinary apparatus and alimentary canal; and that it is during the continuance of this irritation, or determination to a distant part, that the encephalon obtains an immunity from disturbance. Dr. Johnson has administered the tinctura lyttæ, and has employed blisters along the whole course of the spine in nu merous cases of epilepsy, with very good effect. He found that when the urinary organs came under the influence of these medicines, the paroxysms were generally moderated in force, and the

* Edinburgh Medical and Surgical Journal, vol. . p. 301.

intervals lengthened in duration. He has had some patients who took as much as eighty or ninety drops twice or thrice a day, without any other inconvenience than a trifling strangury. These drops had a most exhilarating effect on the spirits. Dr. Johnson has lately found many beneficial effects result from the use of this remedy in other derangements of the nervous system.*

In diseases of irregular and excessive action, it is reasonable to suppose that sedatives would be found useful; accordingly the principal medicines of this class have been employed, such as *opium*, *hyoscyamus*, *stramonium*, and *digitalis*. In cases of epilepsy, unattended with plethora, there is no antispasmodic from which I should, *à priori*, expect greater advantage than from a proper administration of opium, especially where the disease is attended with pain, or produced by passions of the mind. This medicine has been given, but not so

* Dr. J. Johnson's Practical Treatise on Derangements of the Liver, &c., p. 105.

frequently as might have been expected, or in such a way as to ascertain its power over the disease. A case is related at considerable length, in the fourth volume of the Annals of Medicine, by Dr. Huxby of Pontefract, terminating favourably, under the use of opium; but in this instance argentum nitratum, ferrum vitriolatum, calomel and musk, were also given. Indeed Dr. Huxby seems to refer his success partly to the musk prescribed in conjunction with opiates. Dr. Darwin tells us that, in two cases of epilepsy, in which the fits occurred during sleep, a grain of opium given at bed-time for some months removed the complaint. M. Tissot says, that Ætius and Avicenna considered opium as a specific in this disease, as also some of the moderns, particularly Duchesne, who gave it with aromatics, under the name of nepenthe. De Haen relates at length the case of a boy, six years of age, dreadfully afflicted with epileptic fits, which came on during sleep, in which, by the administration of opium, at first in small doses, and afterwards considerably increas-

ed, his sleep became natural, and the disease was entirely removed.

Some cases might also be quoted from medical journals, in which this remedy was administered with advantage; but physicians seem in general to have contented themselves with speculating upon its probable effects, rather than ascertaining them by actual trial. Thus, Dr. Cullen says, "in many diseases the most powerful antispasmodic is certainly opium; but the propriety of its use in epilepsy has been disputed among physicians. When a disease depends upon a plethoric state, in which bleeding may be necessary, the employment of opium is likely to be very hurtful; but when there is no plethoric or inflammatory state present, and the disease seems to depend upon irritation, or upon increased irritability, opium is likely to prove the most certain remedy."

Dr. Home, in his clinical experiments, mentions opium among the remedies recommended in epilepsy; but he did not fairly try its power. He prescribed fifty, and afterwards eighty drops of paregoric elixir four times a day, for five days, in one

case; and in another, eight grains of pilulæ Matthæi once in the afternoon and again at bed-time; and because the patient the next morning had a fit, the medicine was discontinued. — From such trials as these, or indeed any that I find on record, nothing, I think, can be confidently concluded respecting the use of opium in this disorder.

The external application of opium has, in some instances, been found highly useful in this disease. Mr. Ward, in his treatise on opiate friction, mentions a case, in which much relief was experienced from that practice; and Lalande says, there was lately brought to M. Portal a young lady, who was every day attacked by violent epileptic fits, which began in one of her toes; which circumstance suggested to that able anatomist the idea of cutting the nerve, for the purpose of interrupting the communication: but he began by the application of opium to the nerve, and that alone proved sufficient to effect a complete cure. *

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* Med. Journal, vol. iv. p. 570.

Stramonium has been, we are told, successfully administered to patients labouring under epilepsy. This medicine was introduced, and is highly spoken of by *Storck* in all convulsive cases; and Odhelius, a Swedish physician, employed it with great advantage in this complaint. Of fourteen patients labouring under epileptic and convulsive affections to whom he gave the stramonium in the hospital at Stockholm, eight were completely cured, and five were relieved. * Other practitioners seem not to have administered this remedy with equal success, yet, in general, they speak favourably of it. †

Digitalis and *hyoscyamus* have been, in a few instances, tried, but not sufficiently often to enable us to form a judgment of their power over the disease. In the second number of the American Recorder, two cases are related, in which the complaint is said to have been cured by digitalis in small doses; and a modern writer asserts, that this

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* Odhelius, Comm. Acad. Suec. Stock. vol. xxvii. p. 277.

† Greding, Wahlbom, Wedenberg.

is one of the disorders in which the digitalis has been found serviceable. *

Digitalis is recommended in epilepsy in Salmon's Botanologia, a book published a hundred years ago. "By late experience," the author says, "it (digitalis) has been found effectual against the falling-sickness, and divers have been absolutely cured thereby."

Dr. Percival having been informed that a large dose of foxglove had been found capable of effecting a radical cure of epilepsy, directed, in a case of this kind, "that a decoction should be made of two drams of the dried leaves of that vegetable, in six ounces of water, and that one half should be given immediately, and the remaining half two hours afterwards. In this case no sensible effect of any kind followed the exhibition of the medicine. A few days afterwards the same quantity of the dried leaves of digitalis was infused in the like proportion of water, and, when cold, was administered as before. It produced

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* Thomas, Ed. Med. and Surg. Journ. vol. ix. p. 271.

no apparent effect whatever." Being desirous of giving the fullest trial of the efficacy of digitalis, in so hopeless a case, Dr. Percival directed three drams of the dried leaves to be decocted in six ounces of water, and to be given, the one half immediately, and the other after a lapse of two hours. Both of the draughts were duly administered, when some time afterwards nausea, vomiting, sweating, and at length purging, were induced to a considerable extent, and for several hours; but on the following day, the patient had two regular fits of her accustomed epilepsy.

Mr. Mansford thinks, that the digitalis is not suited to the cure of epilepsy. Whatever suddenly depresses the system, as well as whatever excites it, will, he says, aggravate the disease; and in this manner the digitalis may be expected to be hurtful. Mr. Mansford observes, "that this medicine, from its power in reducing inordinate arterial action, has been recommended in cases accompanied by that state of the system; but that his own experience has warned him from its further use, it having, in

two cases of that description, been followed by an alarming increase of the paroxysms." *

Some practitioners on the continent, and one in particular in this country, have strongly recommended galvanism for the cure of epilepsy.— Several cases have been published, in which this remedy has been tried by German physicians ;† but the result of their experiments is not much in favour of the practice. The paroxysms of the fits have been shortened, and the intervals lengthened ; but, as far as I know, no radical cures of the complaint have been effected by this power, as it has been employed abroad. —Mr. Mansford, however, who thinks that the disease consists in an accumulation of electric matter in the brain, " excessive with respect to its existing capacity," has, in conformity with his theory, employed galvanism in several cases with great advantage, as he assures us, and in some with complete success. Mr. Mansford does not approve of the application of galvanism in

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* Mansford, p. 99. † Bischoff, Marcus.

the form usually recommended. "The indication of cure is not to be attempted," he says, "by powerful means used occasionally and interruptedly, to which the laws of life seem to be inimical; but by a weaker power steadily and constantly exerted, by which the force of habit may, by slow degrees, be eventually overcome." * To accomplish his object, Mr. Mansford thought it desirable, "that a negative point should be established as near the brain as possible, and a positive one in some distant part of the body; which should preserve these opposite states, and be kept constantly in action." This could only be effected, he says, "by enclosing the body within the circle of the galvanic battery, with a power sufficiently strong to permeate the skin; or by previously denuding the surface, and using the simple galvanic circle; the metals being applied to the naked cutis." † To both these modes, he remarks, objections almost insuperable present themselves. These objections he particularly

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* Mansford, p. 81. † Ibid.

states, and then proceeds to describe his own method, for an account of which, and a description of several cases adduced in illustration and recommendation of it, I beg leave to refer to his book. *

The plan which Mr. Mansford recommends does not, he remarks, preclude the use of other appropriate remedies. The state of the constitution, and the various circumstances operating as exciting causes of the disease, must be minutely attended to, for, without subduing these, all efforts to remove the proximate cause must necessarily be unavailing. † Accordingly he endeavours to lessen partial or general plethora when they seem to act as causes. He directs that mental emotions should be studiously avoided, and that particular attention should be paid to regimen and diet. He thinks that there are some cases in which a judicious employment of the medicines termed anti-spasmodic, and the vegetable and metallic tonics, may contribute to forward our views. With respect to narcotics

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* Mansford, p. 82. † Ibid. p. 91.

and sedatives, they are to be considered, he says, as of questionable effect. In two or three instances, Mr. Mansford confined himself to the galvanic process, in order more completely to establish its power; but, in general, he did not neglect the use of other appropriate remedies. "It is by a combination of means," he observes, "that the judicious practitioner seeks to subdue an inveterate disease;" and Mr. Mansford trusts that the plan which he has adopted will be found, in many cases, a potent auxiliary, although he thinks himself obliged, in candour, to confess that it has failed in many cases to produce ultimate benefit.

I have carefully examined a great number of medical journals with a view of discovering instances in which galvanism has been employed in epilepsy, but I do not find any thing on the subject worthy of notice, excepting an account which is given of a case in which Mr. Whitlam, of Nottingham, made a successful trial of this remedy, and another communicated by Dr. Duncan of Edinburgh, in which a complete cure is said to have been effected by it.

Both these cases, especially the latter

are related much in detail. For the particulars of the first of them, I must refer to the 14th volume of the Medical and Physical Journal, and of the latter to the 8th volume of the Annals of Medicine.*

By the abovementioned means we endeavour to fulfil the first indication in the cure of epilepsy, namely, to remove or to diminish the predisposition to the disease.

The second indication, which is to remove or diminish the influence of the exciting causes, equally requires our attention; for, should we fail in our attempts to correct predisposition, we may perhaps prevent excitement, by weakening the action of these causes, and thus obviate the attacks of the complaint.—The fulfilment of this indication is often exceedingly difficult, especially where the disease depends upon causes acting mechanically on the brain or its membranes; indeed so difficult, that many practitioners have con-

* For an account of some late experiments on the application of galvanism for medical purposes made in Germany, vide 10th volume of Medical and Physical Journal.

sidered such cases as wholly hopeless. — The antient physicians, however, under these circumstances, did not despair, but diligently employed active means, and often, as we are told, with success. One of the most powerful of these was the actual cautery, of the use of which they speak in very favourable terms. Aretæus, Galen, and Celsus, particularly recommended, and very boldly employed, this remedy in epilepsy; and Hippocrates, speaking generally, says, where medicine fails, steel may cure; where steel fails, fire may cure; where fire fails, the disease is incurable.* In epilepsy, says Aretæus †, the application of fire to the head is necessary, and will be found to be of great use. ‡ He directs §, that the bone should be perforated as far as the diploe, and that afterwards cerates and

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* Ὁκόσα φάρμακα οὐκ ἰῆται σίδηρος ἰῆται ὅσα σίδηρος οὐκ ἰῆται, πῦρ ἰῆται. κ.τ.λ. Hip. Aph. Sect. viii. 5.

† Χρεὼν καὶ πῦρ φέρειν ἐς την κεφαληὴ ἀνύει γαρ.

‡ Perhaps by the word πῦρ he means caustic applications, and not the heated iron.

§ Τετρῆναι δὲ χρὴ πρῶτα τὸ ὀςέον μέχρι Διπλόης ἔπειτα κηρωτῆσι καὶ επιπλάσμασι χρεεσθαι ἕς τ' ἂν ἡ μῆνιγξ των ὀςέων ἀποςῇ. Aret. de Cur. Morb. diut. lib. i. c. 4.

cataplasms should be used, till the membrane is separated from the bones. The naked bones should be trepanned till the black and thick membrane is found.* He seems to intimate, that a discharge from the parts should be kept up for some time. Celsus was a strenuous advocate for the actual cautery. After scarifying the back part of the head, and employing cupping-glasses, he directs the application of the hot iron.†

In some instances, both the cautery and trephine appear to have been employed by the antients in attempting the cure of epilepsy; but the moderns, until very lately, did not venture to try the former of these powerful remedies. The operation of trepanning was, however, recommended in some cases, by Boerhaave and others of his time.

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* Τερέτρω χρὴ περικόπτειν τὰ γυμνὰ — ἕως ὅτε μελαινά κοτε τυτεων και ἐυρεθῆ ἡ μῆνιγξ.

† Occipitium incidere, et cucurbitulos admovere, *ferro candente*, in occipitio quoque et infra quâ summa vertebra cum capite committitur, adurere duobis locis ut per ea perniciosus humor evadat. Celsus, lib. iii. c. 23.

Boerhaave seems to have adopted the antient opinion, that peccant humours sometimes cause epilepsy, and that the direct evacuation of them may remove it: and Van Swieten observes, that extravasated blood, by compressing the encephalon, has sometimes produced the disease, which has been cured by the trephine. Tissot recommends the operation of trepanning, under certain circumstances of the disorder; and we have an account, in the Memoirs of the Royal Academy of Surgery, of a case of epilepsy produced by a blow on the head, in which great relief had been obtained by this practice. After applying the trephine, the patient remained free from the paroxysm as long as the wound was open, though on the cicatrisation of it the complaint returned.

Tissot says, there is a class of epilepsies which have their seat in the head; in the cranium, the investing membranes, or in the brain itself. In cases where external mischief may be considered as a cause of the evil, we ought not to hesitate, he thinks, to divide the integuments, so as to

operate upon the bone itself; and he adduces several instances in which the operation of trepanning, which he recommends as perfectly safe, was attended with complete success. Epilepsies depending upon ossification of the membranes, or abscesses in them, or upon hydatids, schirrus, &c. he considers to be absolutely incurable. *

Of late years, the antient practice of attempting the cure of epilepsy by the actual cautery has been revived. Two pamphlets have been published at Paris, strongly recommending the above-mentioned practice, when the disease arises from causes acting mechanically on the brain or its membranes; the one by Baron Percy, the other by a M. Gondret, an eminent French physician. The work of the former is entitled, Pyrotechnie chirurgicale; that of the latter, Considerations sur l'emploi du Feu en Médecine.

In Baron Percy's work we have a very minute account of every thing relating to the use of the actual cautery in medicine and surgery; the best method of applying

* Tissot, p. 258. 266.

it, both generally and as adapted to particular local diseases, as of the eye, the ear, &c. Baron Percy very particularly describes the materials most proper for the construction of cauterizing instruments, and the form best suited to their use. He enumerates the various substances used by the antients in the manufacture of them, namely, gold, silver, copper, iron, and lead in fusion: he himself gives the preference to iron. He speaks also of the employment of the heat of the sun's rays, concentrated by means of burning glasses.

The antients, particularly Galen and Aretæus*, recommend the employment of a very great degree of heat in cauterizing; but Paulus Ægineta and Cœlius Aurelianus give the preference to that of a lower temperature. Baron Percy agrees in opinion

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* Καυτῆρα ἔμπυρον διαφανέα πυρῶσαι. These words, however, do not occur in the chapter concerning the treatment of epilepsy, but in that in which the cautery is recommended for opening abcesses of the liver, when the pus points externally. Aret. de Cur. diut. Morb. l. i. c. 13.

with Galen and Aretæus, and observes that a very hot cautery is, to one of a lower degree of heat, so far as relates to the pain of the burning, what a very sharp bistoury is to one that is blunt. He says that the cauterization of bones gives no pain. — It has been proposed by some, both in antient and modern times, first to make an incision down to the bone, where the cranium is to be operated upon, and then to apply the hot iron to the denuded part: but Baron Percy thinks that such incision would give more pain than the burning of the integuments by the cautery. The success of the application of fire, which Baron Percy has witnessed in many terrible cases of epilepsy, he refers to the simultaneous cauterization of the skin, the pericranium, and the bone, exciting in the cerebral system that specific commotion, that sensation from fire (sensation ignée) which no other agent can produce.

As the apparatus for cauterization is so terrific, Scultet has recommended a method of deceiving timid persons in the application of it; and Baron Percy informs us, that in cases of epilepsy, where the patients were

weak and obstinate, he has taken advantage of the paroxysm to employ the cautery, which he has repeatedly done with advantage. The ulceration and discharge, after cauterization, must be kept up, he says, for a considerable time, if we mean to reap the full benefit of the operation.

For a description of the various forms of instruments which have been employed for cauterization, and for an account of the method of using them in particular diseases, together with a history of cases illustrative of the benefit of this practice, and other interesting details, I must refer to Baron Percy's publication,—a work so highly esteemed in France, that the author was rewarded for it by having the most distinguished honours of the Academy of Surgery at Paris conferred upon him.

M. Gondret, influenced by the examples of the antients, and the opinions and experience of Baron Percy, has also employed with great success the actual cautery in many cases of epilepsy, supposed to depend on a diseased state of the cranium, the brain, or its membranes. M. Gondret adduces several striking instances of the

great utility of this practice, and proposes hereafter to communicate such a collection of facts relative to the pyrotechnic doctrine, as shall establish it by incontestible proof. In the mean time he adduces five cases of epilepsy, so obstinate as to have been considered hopeless, in which, under the inspection of a committee of the Royal Academy of Sciences, he employed the cautery with the most astonishing success.

The instruments used in these cases were heated to whiteness, so as to burn at once the integuments and the external surface of the bones. No incision had been previously made, but M. Gondret had followed the directions given by M. Percy in the Pyrotechnie. M. Gondret says, that after an experience of fourteen years, he had convinced himself that there are few chronic maladies, even reputed incurable, which may not at least be diminished in their intensity, if not removed, by a proper application of fire.

But although M. Gondret's experience had completely assured him of the truth of his doctrine, and the efficacy of his practice, he found very great difficulty in persuading

patients to submit to an operation so bold and frightful; he therefore directed his attention to the discovery, if possible, of a substitute for the actual cautery. His object was to find a remedy which might, without any terrific appearance, or occasioning much pain, imitate the graduated action of fire upon living parts. He at first employed cantharides, but soon found that they were inefficacious. Their action was too slow, and the absorption of them produced much inconvenience. What M. Gondret wanted was an application which might either irritate, or produce a rubefacient, or a vesicating, or an escharotic effect, according to the indications to be fulfilled. This, he says, he was fortunate enough to discover in a simple preparation, well known and much used, though for a different purpose, namely ammonia. This alkali, joined with fat or olive oil, he found would form a pommade capable of fully answering his purpose, by acting as a stimulus in different degrees; so that when slightly rubbed on the surface, it produced gentle irritation of the skin; when spread on linen and applied for six or eight minutes it acted as a rubefacient; when for

a quarter or half an hour, it occasioned vesication; and if applied for a still longer time, it proved escharotic.*

But although M. Gondret speaks in the highest terms of the efficacy of this medicine as a substitute for the actual cautery, and assures us, that he had employed it in many diseases with the greatest success, he does not mention any in particular; as, however, he offers it as a substitute for the actual cautery, we may, I think, presume that he means to include epilepsy among those complaints in which he has prescribed it with advantage. It is much to be regretted that M. Gondret has not stated explicitly the nature of the cases in which he used this remedy, nor the exact mode of its application. Until we have some further explanation on the subject, I think we may

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* The following were the formulæ prescribed by M. Gondret:

R. De suif de chandelle — six ou sept gros.
D'huile d'amandes douces — deux ou un gros.
Liquifiez at ajoutez.
Ammoniaque liquide — une once.

be permitted to doubt, whether effects more highly beneficial can be produced by the ammonial preparation above mentioned than by other powerful rubefacients with which we are well acquainted. Such for instance as the linimentum ammoniæ fortius of the London Pharmacopæia. M. Gondret's memoire was, by the French Institute, referred to the examination of a committee, consisting of Baron Percy, M. Portal, and M. Thenard, who speak of it in terms of high commendation.

In illustration of the usefulness of the application of the actual cautery, of caustics, of blisters, issues, and setons, a great many cases might be related from Montanus, Fabricius, Hildanus, Paré, Mercatus, and several others. To these authors M. Tissot refers, and from some of them he has made extracts.* M. Tissot says, that he himself has seen the cautery useful in some instances when applied to the arms. Willis mentions the case of a woman suffering from epilepsy who was always free

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* Vide Tissot, p. 387—394.

from the paroxysms as long as a discharge from a caustic was continued, but became affected with them again whenever it was dried up.* Morgagni has described the case of a child who had been subject to epilepsy for a considerable length of time, who was cured effectually by a discharge kept up for fifteen days by a blister applied to the posterior part of the sagittal suture. This child had become stupid and in a degree paralytic, but was by the above means restored to his faculties and the use of his limbs.†

These are the means most highly spoken of for the cure of epilepsy, depending upon or connected with mal-conformation of the cranium, exostosis, depressed bone, a diseased state of the investing membranes, or any cause acting mechanically upon the surface of the brain, and also in some cases depending upon other causes: and although this treatment may give occasion to much pain and inconvenience, I think the accounts we have of its success in so

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* Willis, Path. cerebr. chap. 27. † Morg. Ep. x. § 8.

many instances, will warrant a trial of it, especially as, under proper management, it is not likely to prove injurious.

Where we have reason to suppose that the disease depends upon causes acting in the substance, or the interior parts of the brain, such as abcesses, tumours of various kinds, effusions, &c., powerful rubefacients, setons, blisters, and issues, may also be tried; but the probability of a cure in such cases, whatever be the mode of treatment, must be considered as very small.

In cases of epilepsy depending upon a morbid affection of the spinal marrow, rubefacients applied along the whole course of the spine, or issues, after the manner of Mr. Pott, might perhaps be advantageously employed. Dr. Esquirol of Paris effected a cure in a case of this kind, and also in a chronic and soporose affection, complicated with epilepsy, supposed to indicate cerebral effusion, by repeated applications of moxa to the spine. Professor Halle used the actual cautery, by means of the hot iron and of moxa, in several cases, with very great success. When applied to the cervi-

cal vertebræ, he found them so efficacious, that he preferred them to all other remedies.

Baron Percy professes that he is very partial to the practice of applying the moxa, but he thinks that it is not suited to those chronic and desperate disorders which render cauterization necessary. The burning cotton, he says, produces only a superficial eschar, and does not, though repeatedly used, reach through the whole thickness of the skin. In making this remark, however, he particularly alludes to those instances in which the cure of epilepsy is attempted by the application of this remedy to the head; for he thinks that its caustic power will not be found sufficiently strong to reach the bone of the cranium, and occasion exfoliation from it; a circumstance, in his opinion, absolutely necessary to the cure of the disease.*

A case of the successful treatment of epilepsy, by establishing a drain from the back by seton, is related in the first volume of the London Medical Journal.

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* Percy, Pyrotechnie, p. 170.

When epilepsy depends upon causes acting upon the nerves, local means also may be employed, such as the cautery, blisters, issues, and incision. Van Swieten, Tissot, and others, recommend this practice; and Van Swieten gives an instance of its success. "A woman of thirty-eight had been twelve years subject to epilepsy. In the beginning of the disease she had a paroxysm every month, and afterwards it so increased that she suffered four or five strong fits every day, each of which lasted for an hour and upwards; so that being thus rendered quite dull and stupid, she was no longer able to take care of her family. All kinds of remedies were used without the least success, and the disease increased. The paroxysm was always preceded by an affection of the leg, about the lower part of the gastrocnemii muscles, which ascended to the head, when she fell down violently convulsed and foaming at the mouth. A physician, who was present during the time of one of the paroxysms, compared the leg affected with the other, and could not distinguish any difference between them. He boldly, how-

ever, thrust in a scalpel to the depth of about two inches in the part affected, and in the bottom of the wound he found a hard cartilaginous body, somewhat larger than a pea; he separated it from the muscles, and perceived that it rested upon a nerve, which he divided; he then laid hold of the heterogeneous body, and pulled it out: this was no sooner done than the patient recovered from the fit, saying, that she was very well, and afterwards lived quite free from this terrible disease, and recovered her former vigour both of mind and body.* Tissot treats much at large on this subject, and gives cases from various authors of the successful employment of these means, particularly of incision; of the advantage of which he speaks from his own experience.† A case is related at considerable length, in the Medical and Physical Journal, in which a cure of epilepsy was effected by the application of a

* Van Swieten, vol. x. p. 392.

† Tissot, 100, 101, &c.

caustic to the nerve which accompanies the vena saphæna.*

When epilepsy is preceded or accompanied by the sensation called aura epileptica, a nerve in the part from which the aura proceeds is sometimes found to be diseased. Under these circumstances ligatures have been found successful in preventing a fit; but with a view to a radical cure of the disease, something further should be attempted. The part from which the aura proceeds should be destroyed, when it can be done with safety, by cutting it out, or by the application of an actual or potential cautery. When the part cannot be safely destroyed, we should endeavour to remove the morbid affection in it by blistering, or by establishing an issue upon it. When these measures cannot be executed, or do not succeed, if the disease seems to proceed from the extremity of a particular nerve, which we can easily come at in its course,

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* Medical and Physical Journal, vol. x. p. 52.

it will be proper to divide that nerve.* Dr. Darwin says, "I once saw a child, about ten years old, who frequently fell down in convulsions, as she was running about in play. On examination, a wart was found on one ancle, which was ragged and inflamed, which was cut off, and the fits never recurred."†

By these means we attempt to cure epilepsy excited by causes which act mechanically. There are other causes, the modus operandi of many of which we do not understand, and to the removal of which the treatment just now mentioned does not apply; such as certain affections or passions of the mind; certain impressions made on the senses by disagreeable sights; disgusting odours or sounds; excessive or suppressed evacuations; metastases by retropelled eruptions, &c.; violent exercise; exposure to great heat; intoxication, and irregularity of diet.

In the former part of this treatise, I have

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* Cullen, vol. iii. p. 378.

† Darwin, Zoonomia, p. 329.

particularly pointed out the causes of epilepsy which may be termed mental, and those which arise from strong impressions made on the senses, many instances of the influence of which I have mentioned. These should as much as possible be carefully avoided, especially by persons predisposed to the disease. The sight of a patient in the epileptic paroxysm should be particularly guarded against.

When epilepsy appears to have been occasioned by excessive evacuations, they should be restrained; when by suppressed evacuations, they should, if possible, be restored. When it arises from metastasis, or retropulsion of external diseases to the brain or other internal parts, we must endeavour to propel them to the surface. This, however, excepting in cases of infectious cutaneous disorders, is always extremely difficult, and not unfrequently impossible. — Tissot remarks, that epilepsy depending upon morbid humours turned out of their usual course, is the most difficult to cure. He was many years ago, he informs us, called to a case of convulsions and delirium, attended with the most dreadful pains

in the head, occasioned by a cutaneous affection repelled by the application of Goulard's Saturnine lotion. The patient had been attended by three skilful physicians, who had directed their attention to the restoration of the humour, but in vain. In such cases, however, though the hope of a cure may be very small, we must endeavour, by all the means in our power, to restore the original affection, provided that it be an evil of less importance than the epilepsy. Where cutaneous eruptions have been driven from the surface, we are advised, by an eminent practitioner, to apply warmth and gentle stimulants, that the discharge by the skin may return. Thus, in infants, who have been rendered epileptic by suddenly drying up the discharge of ichor from the skin of the head, he says it is of service to foment that part with a lixivium of Venice soap, and afterwards cover it with an aromatic plaister. He mentions a case, in which the application of a plaister of labdanum with an eighth part of blistering ointment was found efficacious; for, after a few hours, the skin began to grow red, a troublesome itching was produced, the

flowing of the ichor was renewed, and at the same time the epileptic fits immediately ceased. It is always safest to solicit a suppressed excretion, by those parts through which it used formerly to pass.*

In these cases it is difficult to lay down general rules. Perhaps blisters and rubefacients of different degrees of power, the warm bath, and diaphoretics, are the remedies we may most safely and successfully employ. On the subject of epilepsy from metastasis, together with the mode of treatment in these cases, much valuable information may be obtained from Dr. Prichard's work.

I have said that epilepsy is sometimes connected with, or sympathetic of, certain morbid affections of the viscera of the abdomen and pelvis, particularly of the intestines and the uterus. I shall endeavour to point out the means which seem best calculated to afford relief, or to effect a cure under these circumstances.

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* Van Swieten, p. 388.

This disorder may be occasioned by a deranged state of the stomach, in consequence of indigestible and irritating substances lodged there. In such cases, emetics and purgatives are indicated. In the case described by Galen, formerly mentioned, in which epilepsy was connected with the state of the stomach, the medicines found most useful, he says, were such as purge and strengthen. *

These seem to have been very generally and successfully employed also in later times. Cases illustrative of the good effects of the administration of them are mentioned by De Haen, and various other authors.

Dr. Roget informs me, that he thinks he has seen benefit result from the administration of ipecacuanha in doses not sufficient to nauseate, or at least to produce only a slight nausea, and continued for some time. This has occurred in young persons, in whom the disease had been of long standing, and was therefore likely to resist the

* Galen, De Locis Affect. l. v. c. 7.

ordinary modes of treatment. Dr. Roget usually began with one grain of this medicine, increasing the dose to two or three grains, three times a day.

A similar practice has been recommended when the disease is connected with the state of the intestines above described, under the title enteric epilepsy. In this complaint Tissot advises a repetition of purgatives, which he prescribes more or less frequently, according to the shorter or longer intervals of the fits; at the same time paying strict attention to the regimen and diet of the patient. The cathartic which he found most successful, was the pulvis cornachini, consisting of scammony, cream of tartar, and oxide of antimony. The neutral salts, senna, and jalap were likewise prescribed with advantage.

In these cases he also recommends the warm mineral-waters, which, given in small doses, fortify the stomach and intestines. In a debilitated state of the bowels he advises steel in substance, or in the waters of Spa, Pyrmont, &c. In enteric epilepsy attended with plethora, where the brain seems loaded with blood, Dr. Prichard advises

bleeding general or topical, and afterwards emetics and purgatives. If the stomach and bowels are loaded with undigested substances, as appears from the presence of flatulence, acid eructations, tension, and fulness of the abdomen, and other symptoms, immediate relief should be sought by these remedies. There are some cases in which strong vascular action in the head may render emetics dangerous; but these instances are not numerous. It is often proper to begin by prescribing five or six grains of calomel with one, two, or three of tartarized antimony. This mixture will often excite vomiting and purging at the same time. If necessary, it may be followed by a dose of ipecacuanha to promote the former action. In cases of obstinate constipation, clysters, especially of a mixture of castor-oil and oil of turpentine, have been given with success; to these may be added the warm bath. After the intestinal canal has been thoroughly evacuated, advantage may still be derived in what may be considered the chronic affection by the occasional administration of such medicines as calomel, rhubarb, and

magnesia, the compound decoction of aloes with carbonate of soda or potass, and mercurial and compound aloetic pills; and the beneficial effects of these medicines may be promoted by occasionally opening the stomach and bowels by ipecacuanha as an emetic, and by strong purgatives: small alterative doses of these medicines may be likewise given with advantage. In enteric epilepsy we sometimes find an almost invincible torpor of the intestines. In these cases cathartics are especially necessary, and mild clysters. Saline purgatives, much diluted, and oleum ricini are very useful under these circumstances.* In enteric epilepsy, attended with torpor of the bowels, Dr. Prichard strongly recommends the use of oleum terebinthinæ in doses of half a drachm, or one or two drachms with aqua carui, or cinnamomi made into an emulsion by means of honey or mucilage. He thinks, that this medicine has some specific effect in cases of fits depending upon enteric irritation. He is also of opinion that

* Prichard, p. 260.

argentum nitratum, and the medicines called nervine and anti-spasmodic, are chiefly useful in epilepsy of this kind. In enteric disorder attended with diarrhœa, he recommends absorbents, hydrargyrus cum creta, aromatic powder, and infusions of rhubarb, cloves, &c.

Among the causes of enteric irritation, giving occasion to epilepsy, we may reckon the presence of worms in the intestines: and accordingly we find that anthelmintics have, in very many cases, been found useful. Instances of the successful employment of various vermifuge medicines in this disease, might be quoted from the writings of Bartholinus, Stahl, Heister, Wepffer, and many others. I have, in some cases, found the dolichos pruriens efficacious under these circumstances.—Perhaps the use of oleum terebinthinæ in epilepsy may be attributed to its well-known power as an anthelmintic, particularly by the expulsion of the tape-worm, the irritation from which seems to be not unfrequently the cause of epileptic and other convulsive fits. When these disorders are accompanied by symptoms indicative of the presence of worms, such

as tumid abdomen, offensive breath, itching of the nose, grinding of the teeth in sleep, &c. anthelmintics should always be given.

When speaking of the causes of epilepsy, I remarked, that the disease, in some instances, has been produced by improper food, particularly certain kinds of vegetables and fish, such as mushrooms and leeks, muscles, eels, &c.; and also by acrid and poisonous substances, of various sorts, especially lead, arsenic, and other pernicious minerals. With a view to prevent or remove epilepsy or other morbid consequences of such causes, I shall content myself with saying, generally, that the chief and most powerful remedies are emetics and cathartics, especially those of speedy operation. For particular instructions on this subject I refer to Mr. Orfila's valuable treatise on poisons.

With respect to the treatment of uterine or hysteric epilepsy, as it is called by some writers, Dr. Prichard furnishes us with many useful practical observations.

Epilepsy sometimes depends on a total suppression of the catamenia, sometimes on their sudden disappearance in consequence

of exposure to cold, and other causes. In certain cases, epileptic fits come on when the catamenia having taken place, cease to recur at their regular times; in others they appear on the cessation of menstruation at the usual age. These cases are all analogous in essential particulars. "They must be considered as denoting an effort of the system to establish a natural determination, which being diverted from its proper course, gives rise to morbid congestion in the brain, and to the obvious consequences of that state. The practical rules to be observed in all these cases are similar."* The quantity of blood to be taken must be regulated by the strength of the patient, and the particular circumstances of the case. The beneficial effect of bleeding is much promoted by immersing the body, or at least the lower part of it, in a warm bath. † While the patient is in the warm bath, friction should be employed, with flannels to the back, loins, and abdomen.

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* Prichard, p. 182. † Ibid. p. 186.

The patient should remain in the bath until she begins to be fatigued and exhausted; and after she is taken out and put into bed, the effect of the bath may be promoted and maintained by fomentations to the feet, and to the lower part of the abdomen, and by encouraging a circulation through the extreme vessels, by means of moderate warmth, and by frequent draughts of warm diluent fluids.* Stimulating clysters, such as an ounce of oleum ricini, with an ounce of oleum terebinthinæ, are in these cases recommended. Blisters applied to the sacrum, and over the pubes, are thought by some to be powerful in determining to the uterine vessels; but Dr. Prichard had no experience of their efficacy. The medicines indicated in these cases are those termed emmenagogues. "Perhaps the most powerful of these," he says, "is the oil of turpentine, which is one of the most diffusible stimulants in the whole materia medica."† He has not found it very efficacious in uterine epilepsy, but he was never

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* Prichard p. 187. † Ibid.

driven wholly to depend upon it. He, however, warmly recommends a trial of it. The tinctura melampodii, and the pulvis sabinæ, possess emmenagogue powers, but are not so effectual as turpentine. "Should the efforts to restore the uterine function prove abortive, all that remains to be attempted is to bring the constitution into a state in which the defect of this function may be productive of less injury, and particularly may not give rise to epileptic fits."* With this view we must avoid a plethoric state of the system by a sparing diet, exercise, and frequent changes of air, together with care to keep the bowels in a state more relaxed than is natural in health; and we must institute artificial drains by issues or setons, which not only reduce plethora, but appear to have further efficacy in uterine epilepsy, upon a principle explained by Dr. Prichard. These disorders, it is remarked, are almost peculiar to unmarried women, and pregnancy generally removes the disorders connected with defects of the catamenia.

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* Prichard, p. 188.

In cases of epilepsy from dysmenorrhœa, moderate bleedings, and those means which produce relaxation of the system, and a determination towards the uterus, are principally to be relied upon. Dr. Prichard recommends the use of clysters, and sometimes a few doses of the oil of turpentine. For some directions, as to the mode of the abstraction of blood, and the quantity to be taken, together with many useful observations and practical directions respecting enteric and uterine epilepsy, I beg leave to refer to Dr. Prichard's valuable work.

With respect to epilepsy, when connected with a diseased state of the liver, or of the viscera of the pelvis, I find in authors very little practical information. It may be observed generally, that the means usually directed for the cure of the disorder of which the epilepsy is sympathetic, should be employed. Where epilepsy is connected with pain about the lower edge of the liver, Dr. Darwin recommends venesection, warm bathing, opium, electricity, and some other remedies.

Tissot and others have mentioned several

cases of epilepsy, connected with diseases of the pelvic viscera, but they have not given any specific directions as to the treatment of them.

These are the chief remedies recommended by the most celebrated physicians for the cure of the various kinds of epilepsy. Many others have been employed by empirics, many of which are very whimsical and absurd. They were much in fashion among the antients; yet some of the most eminent of the Greek physicians seem to have had very little, if any, confidence in them. Hippocrates, as before observed, ridiculed the notion, that epilepsy is connected with supernatural influence; and maintains, that it is not to be cured by expiations, or incantations. In the treatment of it, he trusts chiefly to a proper regimen; to a suitable diet and exercise. In this Galen agrees, and points out at considerable length, in the Consilium pro puero epileptico, the food, &c. which, in his opinion, is best adapted to epileptic persons. His list of medicines is very small; cathartics, simple oxymel, and oxy-

mel of squills, are those which he chiefly employed.—Aretæus makes mention of several of the absurd specifics of his time, but expresses himself very cautiously as to their use. He says, it has been reported, that epileptics have been cured by eating tame cats, the brain of a vulture, and the raw heart of a sea-fowl; but that he had never tried them. He adds, that he had actually seen fresh blood drunk as a medicine in these cases; but whether any cure had been thus effected no one could inform him. He had read, he observes, in a certain author, that the human liver had been prescribed; but whether any person had been thus restored, he had never heard, nor could he with certainty state. He laments that any one should be subject to such a misfortune, and be obliged to have recourse to such horrible remedies.* — Alexander Trallianus differs much in opinion from Hippocrates, Galen, and Aretæus, on this

* Λὸγος ὅτι δὲ γυπός εγκέφαλος, καὶ αἰθύης ὠμῆς κραδίη, καὶ ὁι ενοικάδιοι γαλεοὶ βρωθέντες, λυουσι την νοῦσον, — αλλη δὲ τὶς γραφὴ εφραζεν ἡπαρ ανθρωπου φαγεῖν. Aretæus, De Cur. Morb. Diut. lib. i. c. 4.

subject. He speaks with great respect of the virtues of several of the most extraordinary specifics, such as the liver of a weasel freed from bile, taken for three successive days fasting; the skull of an ass; the ashes of cloths stained with the blood of gladiators, given in wine, &c. With a view to rouse a person from an epileptic fit, he recommends an ointment to be rubbed on the spine, made by boiling a chamæleon in oil, and adding the bones of the animal; and for the same purpose, he appears to have had much faith in the efficacy of a proper application of two small pebbles, one black, the other white, which are to be found on the dissection of young swallows. If these are placed upon the patient during the fit, he will be immediately roused.* The black pebble must be fastened to the skin. This, he says, does wonders.† He observes, however, that these pebbles are not easily procured. Alexander quotes many other

* Ἤπιτιθει και ἔγείρεις ἄυτόν.

† Καὶ τουτο θαυμαζῶς ποιει.

strange and ridiculous means from various authors *, of which he appears to have had a high opinion. Of one of these, he says, it is a wonderful and excellent remedy, and must not be divulged. † It appears, that Alexander had been a great traveller, and had picked up several of his surprising specifics in Gaul, in Spain, and other countries.— Paulus Ægineta seems to have had no faith in such specifics, at least he does not mention any but the common remedies, except one from Galen, namely, the suspension of the pæony root about the neck. Celsus says, persons have been freed from epilepsy by drinking the warm blood of gladiators who had been slain. ‡ Pliny reprobates the practice of employing unnatural and disgusting medicines § for

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* Apollonius, Theodorus, Archigenes, &c.

† Θαυμαςὸν ὀυν καὶ ἐξαίρετόν εςι καὶ ἔςω σοι ἀμετάδοτον. Alex. Trall. lib. 1.

‡ Jugulati gladiatoris calido sanguine epoto. Celsus, lib. iii. c. 24.

§ Quis ista invenit, ostenta? tecum enim res erit eversor juris humani, monstrorum artifex, &c. — Quis veneficia innocentiora effecit, quam remedia? Plin. Nat. Hist. l. xxviii. c. 1.

the cure of this disease; yet among the remedies which he mentions without censure, we find some that are very strange. *

Certain eminent persons, in modern times, speak not unfavourably of anti-epileptic nostrums. Van Swieten remarks, that as, for the most part, they do not disturb the system much, and as the opinion conceived of these remedies cannot possibly be blotted out of the minds of some persons, skilful physicians have readily enough consented to the use of them. † — Morgagni, speaking of arcana for the cure of this disease, says, I have lately heard of one much esteemed, namely, a small stone, which is generated in the little animal called by the Italians limacone ignudo, or naked snail, which, however, is not recommended as a remedy for all epilepsies.

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* Comitiali morbo testes ursinos edesse prodest, &c. Plin. Nat. Hist. l. xxviii. c. 16. — Magis placet draconis cauda in pelle dorcadis adalligata cervinis nervis; vel lapilli e ventre pullorum hirundinum sinistro lacerto annexi. l. xxx. c. 10.

† Van Swieten, sect. 1085.

Morgagni seems to approve of a medicine prescribed by Albertini, whom he considers as a great master in the healing art, consisting of the human skull, rasped and beaten in a mortar, and moistened with the water distilled from black cherries. * — Among the moderns, who seem to have been credulous and superstitious on this subject, we may reckon Forestus. Being called to visit a young man afflicted with idiopathic epilepsy, he pronounced the case dangerous, both because the brain appeared to be the primary seat of the disease, and because the configuration of the stars at the patient's nativity was unfavourable. From these considerations he predicted that the complaint would be obstinate and difficult; and so indeed it proved to be; for although he administered an arcanum from Guainerus, consisting of the human cranium and the hoofs of an ass in powder, together with some other extraordinary ingredients; and although he directed that a composition of

* Morgagni, Epist. ix. art. 6.

black pepper, with the hair of a very black dog, (nigerrimi canis) together with mustard seed, and the root of peony, should be put into a little bag, and hung round the patient's neck, he gradually grew worse, and at length became idiotic. — Forestus informs us that another medicine had been mentioned by a certain physician, which he very gravely says he did not choose to try, because he thought it of a superstitious nature. * — M. Tissot, after having given a long account of various anti-epileptic specifics employed by empirics, pronounces them all to be useless, disgusting, absurd, without virtue or power, unworthy of the name of remedies, and only serving to show the littleness of man when under the influence of system, prejudice, and superstition. — Perhaps this condemnation may be considered to be too general and indiscriminate. There is no doubt that epilepsy has often been produced by causes operating upon the

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* Forestus, Quest. lib. x. obs. 60.

mind, as I have above mentioned; and I think it is by no means unreasonable to admit the possibility that it may be removed by remedies operating upon the mind. "That fear, or some degree of terror," says Dr. Cullen, "may be of use in preventing epilepsy, we have a remarkable proof in Boerhaave's cure of that which happened in the Orphan House of Haerlem." He adds, "and we have met with several other instances of the same."* He thinks that the viscus quercinus might have been useful in antient times, when it was an object of superstition.

Against the present employment of these specifics, it may be objected, that the faith necessary to their efficacy no longer exists. This, however, is not precisely true. The belief in the power of charms in the cure of epilepsy, even in the present day, is not wholly extinct, as appears from the following account, extracted from a modern medical journal. A young man, who had

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* Cullen, vol. iii. p. 387.

been afflicted with this disease for two years, after having taken a great variety of medicines without any good effect, was persuaded to try an amulet, which proved so far efficacious, that, after the experiment, he remained free from the fits, although he was accustomed to have several of them every week. For a description of this amulet, I refer to the thirty-fourth volume of the Medical and Physical Journal.

The principal objection to the trial of means for the cure of epilepsy, which are designed to operate upon the mind of the patient is, that the degree of their effect is not under our controul, and that by the employment of some of them, we may produce much mischief. A case in point is related by Tulpius.*

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* Lambertus Vitellius adolescens florentis ætatis, plurimum molestiarum perpessus, a frequentibus morbi comitialis insultibus, decrevit tandem ultima experiri, secundum illud Celsi: Quos ratio non restituit, illos adjuvat interdum temeritas, confugitque quamvis invitissimus (O durum necessitatis telum!) ad execrandum, ac detestabilem humani sanguinis usum quo tremula

In deliberating upon the propriety of the administration of such remedies as those above mentioned, we must carefully consider what sort of mental emotion is likely to be produced by them. If they be calculated to work upon the imagination without exciting terrific or depressing passions, I see no impropriety in employing them, however ridiculous they may appear to persons of strong minds.

I have now finished what I had to communicate respecting the history, causes, and method of cure, of apoplexy, palsy, and epilepsy. — In my account of these very important nervous diseases, I have endeavoured to abstract, to condense, to methodize, and to convey in clear and plain language, the best information I could collect from a great number of writers, both

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manu, aversis oculis, pallida facie, ac horrente universo corpore in obluctantes fauces violenter infuso, tantum abest ut terribilis morbus inde imminueretur ut potius plurimum incrementi sumpserit, habuerit que multo pejus, quam ante Thyesteam hanc mensam.

Tulp. Observ. Medic. lib. iv. cap. iv.

antient and modern. — I cannot flatter myself that, by the investigation which I have made of these obscure disorders, I have done much towards the illustration of their nature; but I do hope that the description I have given of the experiments, observations, opinions, and practice, of the most celebrated physicians in various ages, respecting them, will prove, in some degree, useful, both by lessening the labours of the student, and by affording practical assistance to persons who are actually engaged in the duties of the profession.

THE END.

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