Synopsis of cerebral and spinal seizures of inorganic origin and of paroxysmal form as a class; and of their pathology as involved in the structures and actions of the neck.

SYNOPSIS

OF

CEREBRAL AND SPINAL SEIZURES

OF INORGANIC ORIGIN AND OF PAROXYSMAL FORM AS

A CLASS;

AND OF

THEIR PATHOLOGY AS INVOLVED IN THE STRUCTURES AND ACTIONS OF

THE NECK;

BY

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TO THE

HONOURED MEMORY

OF

HIS DEEPLY LAMENTED FRIEND,

HENRY SMITH, Esq.

MEMBER OF THE ROYAL COLLEGE OF SURGEONS, ETC. ETC. ETC.

LATELY OF TORRINGTON SQUARE;

THIS LITTLE VOLUME IS DEDICATED

BY

THE AUTHOR.

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THE following pages contain a very brief and imperfect outline of a most momentous subject—that of the *principles* on which all *prevention* of the seizures about to be noticed depend. And, in these cases, prevention is the all-important object of the physician.

These seizures, when they have once occurred, are so apt to recur, the susceptibility to recurrence is so difficult to remove, the *effects* of attacks are so dire, whether we regard mind or limb, that *the one* object of the patient and of the physician must be to watch the dawn, as it were, of the malady, and adopt with energy and constancy every means of obviating such a calamity as a first or second seizure.

With this view, no premonitory sign should be neglected, however apparently slight. A flush, a sense of constriction about the throat, a momentary vertigo, a momentary loss of feeling or of power about the lips or the fingers,—should strike us with such terror as may, at least, awaken our utmost attention. This is the occasion for the maxim—'venienti occurrite morbo.' The best physician is he who *watches* his patient most carefully. The wisest patient is he who submits—for *the rest of his life*, it may be—to his physician's injunctions, asking, not—'how little may I do?' but—'how much can I do?'—in my perilous case.

The regulation of the ingesta and of the egesta, of the occupations and emotions of the mind, of the exercises of the body, of the sleep especially, of the posture especially during sleep, of the circulation in the head and in the hands and feet,—these and many others are topics never more to be forgotten by the threatened patient.

It is not mere *doses* of medicine, which may indeed ward off an attack for the moment, but mild, yet efficient, *courses* of medicine, to which we must trust.

The *Emotions* and the *Irritations* are so frequently associated with undue secretion of gastric acid, that I cannot sufficiently recommend the due administration of antacids. With these, stomachic aperients, alterative mercurials, frequently gentle tonics, and especially, I think, the spinal tonic, strychnia, and every plan for the improvement of the general health—the shower-bath, change of air and scene, but especially travelling —must be combined.

The physician and the patient should be prepared for the recurrence of the threatening, or of the actual seizure,—and provided with the due and energetic means and instant remedies proper for the emergency.

In a word, the strictest regimen must be enjoined, with the view of prevention, and the promptest remedies in the case of threatening or of seizure.

The *means* of prevention are suggested entirely by the *pathology*. In *all* the affections treated of in these Lectures, certain causes and principles, emotions and irritations, act *directly*, or *diastaltically*, upon the muscles of *The Neck*, inducing what I have ventured to designate *Trachelismus*. If this *spasm* can be dissolved, all its *effects* cease, more or less perfectly. How important then is this view of the subject! I think that spasm *is* frequently dissolved by an antacid emetic and antacid aperients.

In this manner we are enabled, I believe, in many instances, to prevent attacks of apoplexy, of paralysis, of epilepsy, and even of mania! Surely this is an important result.

And this result is the more interesting to myself, because it has flowed directly from a physiological principle, which has been both evolved and applied by my own labours. I would draw especial attention to the *Synoptical View* given at page 51.

The application of *Physiology* to *Pathology*, to *Diagnosis*, to the establishment of a *Class* of Diseases, and to their *Prevention* and *Treatment*, has never, I imagine, been so made before.

Man lives a life of Emotion. No moment of that life is passed in absolute tranquillity of mind. Every emotion has its influence on every muscle of his frame. It is written on the countenance, on the posture, on the very hands. The muscles of the neck do not escape; grief and anger choke; shame and indignation flush the face and neck. But what we term *expression*, as it affects the neck, is the first stage of trachelismus; and blushing and flushing are forms of phlebismus. Extremes of these become cerebral or spinal seizures!

Similar remarks may be made with regard to the Irritations. Errors in diet and deranged states of the alimentary canal, and excited conditions of the uterine system, are causes of disease to which mankind is most subject in a state of civilisation. I have explained the manner in which these and other causes of irritation act diastaltically on the neck, its nerves, its muscles, and its veins.

I beg, once for all, to state that I have excluded from the following pages, as from the Lectures themselves, all that did not bear on my argument. I propose in due time to put my subject into a more *systematic* form. The present state of the inquiry will be at once known by adding to this little work my *Synopsis of the Diastaltic Nervous System*, constituting the Croonian Lectures for 1850.

The *series* of these Lectures for the years 1850, 1851, and 1852, present, together, a tolerably complete view of the argument. The ample *Outline* requires filling up.

"In cases of SEVERE *attacks of inorganic epilepsy, I would suggest the institution of tracheotomy, to remove the* FULCRUM, *on which the* EFFORTS,—*the purple countenance,—the congestion of the nervous centres,—the convulsion,—and the danger to life,—in such attacks, depend, combined with a rigid dietary, every other appropriate remedy, and a pedestrian, equestrian, or other tour, continued for one, two, or more years."*

SYNOPSIS

OF

THE CLASS OF PAROXYSMAL DISEASES

OF

THE NERVOUS CENTRES.

SECTION I.

INTRODUCTORY SKETCHES.

I. *Theoretical Sketch.*

1. In the Croonian Lectures of MDCCCL, I had the honor of bringing before the Royal College of Physicians the subject of the *Spinal* or *Diastaltic Nervous System*, in its relation to Anatomy, Physiology, Diagnosis, Pathology, and Therapeutics, and to Obstetrics. I purpose, on the present occasion, to treat of a *branch* of that *System*, in its relation and application to the pathology of a special *Class* of the Diseases of the Nervous Centres, characterized by their Inorganic Origin and their Paroxysmal Form.

2. The chief of these diseases are Apoplexy and Epilepsy; other forms of these diseases are Paralysis, Spinal Syncope, and Mania.

3. Inorganic in their origin, and paroxysmal or recurrent in their form, these affections may appear in a slight, in a severe, or even in a fatal, degree of intensity.

4. The exciting *Causes* are principally—

1. *The Emotions or Passions*,
2. *The Irritations;*

the former being chiefly the affections, fear, or anger; the latter, gastric, enteric, hysteric.

5. The first of these act directly, the second diastaltically; and both principally on the muscular structure of *The Neck* primarily, and, in the second place, on the veins of that region. The primary seat of these actions must be viewed as *two-fold:*

1. *The Neck generally*,
2. *The Larynx specially;*

a distinction of the very utmost importance. According as the Neck only, or the Larynx, is affected, I designate the condition as—

1. *Trachelismus*, or
2. *Laryngismus.*

6. The Emotions and the Irritations act in this direct, or diastaltic, manner, inducing trachelismus or laryngismus; the former being the slighter affection; the latter, the severer: or, it may be that the former is remotely the *cause* of the latter.

7. Trachelismus, and, still more, laryngismus, leads to impeded return of venous blood in the neck, and thence in—

1. *The Cerebrum*,
2. *The Medulla oblongata;*

and with these conditions are associated respectively—

1. *Apoplexy*, and
2. *Epilepsy;*

or, in other words, psychical, or spasmodic, affections.

8. As the condition of the neck and larynx exists in two forms or degrees of intensity, so do their effects; and apoplexy and epilepsy are seen in the forms of—

1. *Apoplexia mitior*, and *gravior ;* and
2. *Epilepsia mitior*, and *gravior ;*

or, it might be, *trachelea*, and *laryngea ;* the milder forms being the effect of trachelismus, the severer, of laryngismus ;—facts of the utmost moment, both in the rationale and the treatment of these affections.

9. Associated with trachelismus, we have, as I shall endeavour to prove hereafter, the milder forms of apoplectic or epileptic affections. There may be mere vertigo, confusion, unconsciousness, nutatio, falling, transient paralysis, in the former ; similar symptoms, with spasmodic affections of the muscles of the eyes, face, neck, extremities, in the latter.

10. But, if the trachelismus pass into laryngismus, the apoplexia mitior assumes the form of apoplexia gravior ; and the epilepsia mitior, or the " petit mal" of the French authors, that of the epilepsia gravior, or the " grand mal," or " haut mal," of the same writers.

11. We have only to *observe* accurately, to perceive these facts. With the *symptoms* which I have enumerated, are associated unequivocal *appearances :* the veins are seen to be distended, the face and neck are flushed, perhaps purpurescent, perhaps tumefied.

12. If the affection do not advance beyond trachelismus, the appearances and symptoms may be subdued by venæsection.

13. If laryngismus has taken place, the symptoms and appearances are subdued by tracheotomy.

14. Trachelismus is, in reality, the link between the exciting cause of the disease, and the apoplexia, or epilepsia, mitior.

15. Laryngismus is the link between the exciting cause, and perhaps trachelismus, and the apoplexia, or epilepsia, gravior.

16. As venæsection would be the present remedy in the former case, so tracheotomy is the remedy or the preventive in the latter.

17. If tracheotomy be efficiently performed in inorganic apoplexy,

stertor—the apoplectic laryngismus—with its effects, subsides; and if this operation be performed in epilepsy, the epileptic laryngismus is rendered inoperative, and convulsion, with its train of consequences, is prevented and superseded!

18. I long ago ventured to *predict* that if tracheotomy were efficiently performed, *convulsion*, whether epileptic, puerperal, or infantile, would be prevented. This prediction has been *fulfilled* in two instances: the first, a case treated by W. H. Cane, Esq. of Uxbridge; the second by A. Anderson, Esq. of York Place, Portman Square. These cases will be given in detail hereafter. In Mr. Cane's case, there has been no return of epilepsy in any form. In Mr. Anderson's, there has been no return of the epilepsia gravior,—no return of convulsion, of 'blackness' of the face, or of bitten tongue, of a 'strong' fit, of *convulsive* falling. The 'petit mal' recurs; but the 'grand mal' is prevented!

19. As effects of recurrent apoplexia or epilepsia gravior, I must, even in this sketch, mention—

1. *Paralysis.*
2. *Mania.*
3. *Amentia.*

Paralysis is frequently seen in the paroxysmal form without apoplexy; it is frequently left by paroxysmal apoplexy; and occasionally by epilepsy. Mania and Amentia are most frequently seen after epilepsy.

20. I must here observe, although I shall have to recur to this point, that trachelismus is sometimes entirely latent, and sometimes obscure, in the apoplexia mitior, being but slightly spasmodic. In epilepsy, it is more distinctly spasmodic, and therefore always more distinct. In apoplexy, it is frequently to be *inferred* by its effects, in inducing flushing, purpurescence, intumescence, in the face and neck; and it is frequently *indicated* by sensations of 'tightness' or 'constriction' about the neck

or throat. In epilepsy, it fixes the head or induces torticollis,—effects which are obvious enough, and to which flushing and tumefaction are frequently added. In the epilepsia gravior, purple lividity, tumefaction, ecchymosis of the conjunctiva, and of the skin even, especially about the temple, are frequently superadded, and are quite unequivocal.

II. *Practical Sketch.*

21. Nothing can be more familiar to the experienced physician than the two forms of epilepsy. The two forms of paroxysmal apoplexy and paralysis are comparatively unknown. And yet no morbid affections are more common.

22. In one gentleman, sudden attacks of loss of speech, or of the power of the hand to write, took place from time to time, at varied and rather distant intervals, for ten or twelve years, leaving, at length, permanent inability to speak distinctly, or to retain the saliva perfectly, and a degree of paralytic weakness of one side. Ultimately an attack was attended by a degree of stupor and stertor; he was "quite unconscious to what was passing around him for ten or fifteen minutes, with loud snoring breathing; and then imperfectly conscious; and again, the next day, the mind seemed to wander at intervals, becoming, however, afterwards perfectly clear and composed."

23. Epilepsy itself could not be more paroxysmal.

24. Another gentleman became liable to attacks of loss of the power of articulation, so that he was compelled to *point* to the objects he required. At one time he was seized with loss of the power of writing; at another, with transient hemiplegia. At length, the inability to write occurred from the mere flurry occasioned by the loss of his spectacles at a moment when it was his duty to sign some official papers. The next day he threw up his office,—and, a day or two afterwards, he committed suicide!

25. In one most interesting case, the patient, a gentleman of athletic make, aged 55, became, after being subjected to emotion from speculation in railways, much disturbed in his sleep, with snoring, turbulent dreams, starting, shrieking, &c.

26. He also became more apt to sleep after dinner, when his face was observed to become deeply flushed, and his breathing loud, with snoring.

27. After this, he became subject to attacks of vertigo, and once fell down in the street (at Manchester).

28. At length, after about three months of these symptoms, he became affected, in the street too, with apoplexy and hemiplegia: the face and neck were 'purple' and 'much swollen,' 'especially the neck;' there were coma and stertor, but no spasm or convulsion. The coma continued four or five days.

29. The speech was inarticulate for six weeks; the hemiplegia disappeared incompletely. The patient remained affected with pain of the head.

30. It is obvious, from this case, that deep flushing, snoring, and nightmare, and attacks involving vertigo and falling, are allied to the apoplectic and hemiplegic seizures.

31. It is obvious too that a purple hue and tumefaction, both of the face and neck, and especially of the neck, are allied to actual seizure, involving stertor, coma, apoplexy, hemiplegia.

32. In one such paroxysmal case, the head would fall on the thorax for a moment. In another, the patient *sank* down on the ground, and rose almost immediately. (*Falling* is not always *epileptic*. Compare §27.)

33. The general facts are these:

34. Patients are liable to attacks of apoplexy, in its milder and in its severer forms: the first are transient; from the second, the patient

either recovers completely, or, if the case proves fatal, it *may* be that no post-mortem appearances are observed on the most careful examination.

35. Patients are liable, in the same manner, to attacks of paralysis, —of the speech, of the hand, of one side;—recover in like manner;—or present no morbid appearances on a post-mortem examination.

36. These affections are *inorganic* in their origin, and *paroxysmal* in their mode of attack. Even when they prove fatal, the morbid condition of the blood-vessels *may* be found to be evanescent. In other instances, however, the congestion may have passed into ecchymosis, or clot; and if the case has been protracted, effusion of serum, or softening of the substance of the cerebrum, *may* have taken place.

37. In cases of paroxysmal apoplexy or paralysis, I have carefully observed the *symptoms* and the *appearances* which have characterized the *threatening* malady. Some feeling of constriction about the neck is frequently experienced; vertigo, confusion, tinnitus, flashes of light; and, with these phenomena, a disposition to heavy sleep, with snoring, and a degree of loss of the power of the articulation, or of the hand, occur and recur, before any decided attack of apoplexy or of hemiplegia takes place. At length, these more formidable forms of malady seize the patient, and either yield to our remedies entirely, or, if they terminate fatally, *may* leave no trace behind them, or none except congestion, or other effects.

38. The justly celebrated works of Abercrombie and of M. Andral contain many invaluable observations and cases in point, which I purpose to quote at length in a supplement. I had repeatedly read those works without perceiving their great value, until I discovered the great truths by which they are bound and linked together. Thus Abercrombie observes—"The apoplectic attack is a sudden deprivation of sense and motion," "the face being generally flushed, and the breathing stertorous.

In further tracing the history of such an attack," he adds, " the following circumstances deserve our particular attention:—

39. " I. In many cases the patient speedily and perfectly recovers.

40. " II. In many cases the disease is speedily fatal; and we find, on inspection, extensive extravasation of blood.

41. " III. In other cases, which are fatal, usually after a long interval, we find only serous effusion, often in no great quantity.

42. " IV. In many fatal cases, no morbid appearances can be detected, after the most careful examination.

43. " Thus," he adds again, " the phenomena of the disease appear fully to establish the important fact, that there is a modification of *apoplexy*, depending upon a cause of a temporary nature, without any real injury done to the substance of the brain; that the condition upon which this attack depends, may be removed almost as speedily as it was induced; and that it may be fatal without leaving any morbid appearance in the brain*."

44. The remarks which I have made on paroxysmal apoplexy, apply in an equal degree to paroxysmal *paralysis*,—to that form of paralysis which occurs, recedes, and recurs. Here again Abercrombie observes—

44. " The attack may, under proper treatment, pass off speedily and entirely, leaving, after a very short time, no trace of its existence."

45. " Many of the cases seem to bear a close analogy to simple apoplexy; and, when they are fatal, present either no satisfactory appearance, or only serous effusion, often in small quantity."

46. " The whole phenomena of *palsy* do indeed bear evidence that certain cases of it depend upon a cause which is of a temporary nature, and capable of being speedily and entirely removed. We see hemiplegia take place in the highest degree, and yet rapidly disappear." &c.†

* Researches on Diseases of the Brain and Spinal Cord; ed. 3; 1834; p. 205.

† Ibid. pp. 247; 249.

47. But these remarks do not apply to apoplexy or to paralysis only; they are equally and specially true in regard to *epilepsy*. This dire affection, paroxysmal κατ' ἐξοχην, appears and disappears entirely; recurs to leave some wreck of mind or limb behind; or proves fatal, generally by protracted coma, leaving either no morbid appearances under the scalpel, or, as in the cases of paroxysmal apoplexy or paralysis, only such as are but *effects* of the paroxysms. Esquirol observes—" De toutes ces recherches, particulièrement de celles de Bonnet, de Morgagni, Baillie, Greding, Meckel, Wenzell, que pouvons nous conclure? Rien, sinon que ces mêmes altérations ont lieu chez des individus qui ne sont pas épileptiques, comme Wepfer et Lorry l'ont prouvé. Avouons franchement que les travaux de l'anatomie pathologique n'ont jusqu'ici répandu aucune lumière sur le siège immédiat de l'épilepsie. Cependant il ne faut pas se décourager; la nature ne sera pas toujours rebelle aux efforts de ses investigateurs*."

48. I have already observed that paroxysmal attacks frequently issue in *Mania*. Indeed, I think that this event is still more frequent than I at first supposed. And it is remarkable that this affection also may subside entirely, or present no detectible or uniform morbid appearance on a post-mortem examination. Leuret concludes—" S'il est vrai que la folie dépende d'une altération de l'encéphale, on ignore complétement en quoi consiste cette altération†."

49. Well may M. Andral exclaim—" Que le nombre d'altérations connues est petit à côté de celui des lésions qu'on ignore! Les cas où, après la mort, on trouve quelque chose d'appréciable par le scalpel sont les plus communs pour les autres organes; pour le système nerveux, c'est tout l'opposé: les cas où on rencontre des lésions sont de beaucoup les

* Des Maladies Mentales, par E. Esquirol; t. i, p. 313.

† Du Traitement Moral de la Folie, par F. Leuret; Paris, 1840; p. 7.

plus rares. Cette assertion paraîtra paradoxale à ceux qui ne connaissent des lésions nerveuses que les trois ou quatre maladies qu'on observe *dans les hôpitaux ;* mais les affections nerveuses se comptent par centaines, et pour ne parler que de ces grandes perturbations qui portent sur le mouvement, sur la sensibilité, sur l'intelligence, où est la lésion dans ces cas ? La plupart du temps on n'en trouve aucune, ou celles qu'on observe n'ont aucun rapport avec les désordres fonctionels."

50. Heberden observes—" Paralysis et apoplexia sunt tantum diversi gradus ejusdem morbi*." This is true in a certain limited sense, especially in the *paroxysmal* forms of these diseases. But, in the same sense, not only apoplexy and paralysis, but these and epilepsy, and mania, are one and the same disease, differing in degree. But whilst apoplexy affects the cerebrum, and paralysis a hemisphere,—epilepsy affects the medulla oblongata, and mania again the cerebrum. Thus—

1. *Apoplexy*,
2. *Paralysis*,
3. *Epilepsy*,
4. *Mania*,—*may each be arranged into*—

CLASS I. *The Paroxysmal*—

1. *Of Inorganic Origin ;*
2. *Of Recurrent Paroxysmal Form ;*
3. *Of short Duration, terminating in perfect recovery, or*
4. *Fatal, without post-mortem appearances, or*
5. *With such as are Effects only.*

CLASS II. *The Permanent*—

1. *Of Organic Origin ;*
2. *Of Permanent Form.*

* Heberdeni Commentarii, ed. 1807, p. 285.

51. In speaking of the subjects of this Synopsis, we may now speak, not of apoplexy, paralysis, epilepsy, mania, but of *nervous seizures*, assuming an *apoplectic*, *paralytic*, *epileptoid*, or *maniacal* form; and thus our diagnosis will be implied in one designation. Indeed, these affections pass into each other.

52. And this remark leads me to state, that it is not without just cause, nor, I think, without great advantage to the science and practice of Medicine, that I establish, in this work, a new and distinct *Class of Diseases of the Nervous Centres, Inorganic in their Origin, and Paroxysmal in their Form*, and dependent on pathological principles, viz. *Trachelismus* and *Laryngismus*, previously unrecognized.

53. But there is another form of paroxysmal affection, to which I must advert in this place—a form hitherto undetected, undistinguished. It is that of

Spinal Syncope.

54. Instead of flushing and becoming purple, the patient turns pale and ghastly, perhaps with a cold and clammy perspiration. This form of attack may occur in the same patient who had formerly experienced the more ordinary attacks of epilepsy—showing their relation to each other. It may be slight. In one case, which I shall detail hereafter, it proved suddenly fatal. It appears probable that the case of spinal syncope arises from a sudden impulse of blood on the medulla oblongata, and the influence of this on the heart.

55. Lastly, there is another event to which I must briefly advert, in this place. It is that of

Hidden Seizure,

with its various effects, unintelligible until their *origin* shall have been detected.

SECTION II.

TRACHELISMUS AND LARYNGISMUS.

I. *The Causes.*

56. The causes of paroxysmal diseases of the nervous centres are, as I have already stated, the Emotions and the Irritations, to which may be added Efforts and *Sleep*.

57. Every kind of anxiety of mind; every kind of disappointment, or of excitement; joy and sorrow, shame; surprise, alarm, and fright; anger; &c. are exciting causes of those paroxysms.

58. The excitements of the Stock Exchange; speculations in commerce; the hopes and fears involved in railway property; disappointed ambition; blighted affections; sudden losses, or even acquisition, of property; the angry passions of the Comitia of Rome, and the mingled hopes and fears of the Senate-House at Cambridge, &c. are the well-known circumstances in which paroxysmal affections of the nervous centres occur: indignation produced such an attack in the Earl of Chatham on a memorable occasion; the whirl of anxiety produced the dire event which so early deprived poetry of Henry Kirke White.

59. No cause of paroxysmal apoplexy, of paralysis, or of epilepsy, is so frequent in its operation as *gastric* irritation, from indigestible substances eaten; or a too hearty and hasty meal, even when the food taken is not in itself indigestible; undue secretion of the gastric acid is the frequent exciting cause of such attacks. My reader may remember the

event recorded in one of the pictures of Hogarth, in which one of the guests at table is represented as having fallen into apoplexy after partaking of oysters. In one patient, any deviation from the most rigid diet induced the threatening of apoplexy. In another, in whom the attacks of epilepsy always occurred *after dinner*, the patient was restored to health and preserved from seizures by making breakfast, luncheon, and dinner, all *alike*. In many patients, the apoplexia mitior and the epilepsia mitior are instantly dispelled by giving a scruple of the bi-carbonate of potass.

60. *Enteric* irritation is also a frequent exciting cause of these maladies. A loaded, distended, or irritated state of the colon is frequently attended by the threatenings of apoplexy, paralysis, or epilepsy, and followed by an actual seizure.

61. Not less marked are the effects of *uterine* irritation. Some seizures occur only and regularly at the catamenial periods. Others occur during pregnancy, or parturition.

62. Perhaps no cause of seizures is more frequent than sexual abuse or excesses. Coïtus has been described as a μικρα επιληψια in itself. It lacks the trachelismus and laryngismus.

63. Perhaps no predisposing cause of seizures is so direct and powerful as *Sleep*. Sleep is, in effect, a sort of sub-apoplexy. The heavy sleep which occurs after fatigue, dinner, and wine, frequently passes into apoplexy, paralysis, epilepsy, or delirium, in the predisposed—an event the rationale of which I shall endeavour to give shortly.

64. I need scarcely advert to the effects of *efforts*, on the face. Violent running or wrestling suffuses the countenance; violent efforts in lifting heavy weights, *in which the larynx is always closed*, induce, not suffusion only, but purpurescence and intumescence; and not these only, but actual seizures!

II. *Mode of Action.*

65. The Emotions act, in inducing seizures, directly on *The Neck*, along the *nerves* of the neck in the first place, on the *muscles* in the second place, and on the *veins* in the third.

66. It is in this manner, I believe, that shame acts in inducing *blushing*, which, from impeded flow of the venous blood, suffuses the face, the neck, and the bosom, and even the arms, with redness and some degree of purpurescence, and even intumescence.

67. In this manner, anger flushes the face, and issues in apoplexy, paralysis, epilepsy, and even mania!

68. In this manner, the susceptible person is *choked* with grief, and the violent person with anger.

69. The *Irritations* act in a diastaltic manner on the same muscles and veins.

70. Hence the flushing and the seizures arising from gastric, enteric, and uterine irritation. One patient never ate an indigestible meal without feeling a sense of constriction in the front and lateral part of the neck, and of choking. A deranged state of the intestine, and uterine erethism, produce similar effects and dangers.

71. Sleep appears to me to act negatively, by greatly withdrawing the influence of volition, and leaving the muscles of the neck to contract, like the orbicularis, by direct *spinal* action. The cheeks flush, the conjunctivæ become suffused; the sleep may become heavy and almost apoplectic, whilst the larynx is even affected by a degree of stertorous laryngismus. Every kind of seizure, from oneirodynia to apoplexy, paralysis, epilepsy, and delirium, inclusive, is the too frequent further consequence.

III. *Of Trachelismus.*

72. By trachelismus (from τραχηλον, the neck), I now mean all those conditions of the muscular and venous structures of *The Neck*, with their effects on the colour and bulk of the face and neck, observed and implied in the various seizures of which I am treating.

73. I except the conditions of *The Larynx*, to which I propose to appropriate the distinctive designation, *Laryngismus*, so important in the *Theory*, *physiology*, or *pathology* of these paroxysmal diseases. The study of both *Trachelismus* and *Laryngismus* is of vast moment to the physician, and will occupy considerable space in this *Synopsis*. I proceed to treat of the former.

74. Of Trachelismus there is absolutely no notice in medical writers. I do not think the *idea* existed in medical science. I find, indeed, the following remarkable expressions in Aretæus:

"Εν αυξη δε του κακου, και πελιδνοτης του προσωπου προσγιγνεται· ἀγγειων των ἐν τῳ αὐχενι διατασις, ὡς ἐν πνιγι· και ἡ ἀναπνοη, και ἡ πνιξ ὡς ἀπαγχομενῳ."

"Ubi morbus increscit, accedit *vultûs livor*, *vasorum*, quæ in *collo* sunt *distentio*," "sicut in strangulatione;" et "*eadem respiratio* et *suffocatio*, ac si *laqueo strangularentur*." And I find the following extraordinary observations in Heberden:

75. "Invadente *apoplexia* aut *paralysi*, continuo laxare oportet omnes istas vestium partes, quæ *collum* cingunt; *id* enim nonnunquam his morbis advenientibus adeo *tumet*, ut ab arctiore quovis vinculo strangulationis periculum instaret." And—

76. "Instante accessione *epileptica* diligenter providendum est, ut omnes illæ vestium partes, quæ *collum* cingunt, quamprimum laxentur; *hoc* enim interdum adeo *tumet*, ut strangulationis metus impendeat." And again—

77. " Plerique *capitis dolores* vacant periculo; ubi autem ad hoc accedant stupor, aut *colli universi tumor*, aut mentis alienatio, aut distentiones membrorum, res ægri nequaquam in tuto sunt; hujusmodi enim mala subsecutæ sunt *epilepsiæ*, *paralyses*, et *apoplexiæ**."

78. Nor has the subject escaped the acute observation of Abercrombie, who notices—

79. " The flushing of the face, turgidity of the features, throbbing of the external vessels, and other appearances, which have been referred to the doctrine of determination of blood to the head;" and adds " numerous writers have remarked the unusual quantity of blood which is discharged from the integuments in opening the heads of persons who have died of apoplexy. In some of Dr. Cheyne's dissections, upwards of a pound was collected in this manner." And again—" The remarkable turgidity of the features and *the neck*, which often occurs in apoplectic cases, must indeed be familiar to every one; and I think it appears to be most remarkable where the disease has proved rapidly fatal, without any means having been employed. A gentleman, whom I saw with Mr. Whyte, after some symptoms shewing an apoplectic tendency, was one morning found dead in bed, his body being scarcely cold. *His head and features were of a deep* PURPLE *colour, and* TURGID *in a most uncommon degree;* but no turgidity was observed in the vessels of the brain†."

80. But throughout the volume of Andral‡, which is one purporting to be of observation, I do not find a single allusion to this important topic of the neck; nor is there in any author, to my knowledge, any reference to the condition of its muscles; so inadequate is observation alone, without *Theory* or *physiology*, to the establishment of medical facts.

81. It will now be my object to describe the various forms of trache-

* Commentarii, pp. 299; 144; 86. † On the Brain and Spinal Cord; ed. 3; p. 303.
‡ Clinique Médicale.

lismus, and to trace them back to their *origin*, and onwards to their momentous *effects*.

82. 1. *The Trachelismus of Sleep.*—When volition is withdrawn from the muscular system, this system is left to the influence of spinal action, or *tone*. The effect is most marked in the eye-lids and the eye. During *sleep*, the eye-lids close, the eye is turned obliquely upwards and inwards; the pupil is contracted. But a similar action doubtless takes place in other muscles, and we may especially observe the *effects* of this action on the muscles of the neck, in the flushing and slight turgescence of the countenance, the suffused conjunctiva, and the greater or less degree of sub-apoplectic state of the cerebrum and medulla oblongata. It is a latent trachelismus, and frequently co-operates with other causes in inducing the apoplectic or epileptic seizure.

83. For the following interesting observation I am indebted to Dr. W. Tyler Smith:

84. "The person I observed kept falling asleep and waking every few minutes. In the course of a long ride, I had opportunities of seeing that, when he became unconscious, the external jugulars became full and strongly marked, and that these disappeared on the instant of waking from his brief sleep. There did not seem to be any change in the respiration, or in the position of his body, sufficient to account for the distension of the jugulars."

85. It would be well if some accurate index and measure of this condition of the muscles and veins of the neck could be discovered. I imagine that a little instrument like that devised by Dr. R. Quain, and termed by him the *Stethometer*, might be employed for this purpose, and that it would indicate both the trachelismus and the subsequent phlebismus. The *facts* themselves, generally speaking, are however sufficiently obvious to the observant eye.

86. The relation between sleep and the apoplectic or epileptic seizure is well known. It is scarcely less remarkable than that of emotion and irritation with these seizures.

87. On this subject Heberden observes—

88. "Somnus est imprimis necessarius ad renovandas vires animosque, labore et curis exhaustas; et tamen procul dubio hominem opportuniorem reddit omnibus illis affectibus, qui ex nervorum infirmitate oriri existimantur; in quibus quoque numeranda est *apoplexia*, quæ sæpe per quietem crescit, vel tum primum invadit. Illos itaque omnes qui in his morbis sunt, et cupiunt amoliri præsentia mala, vel futura præcavere, oportet abstinere a nimio somno: optimus ejus modus erit, qui minimus salva valetudine capi potest." And again—

89. "Somnus *distentionibus* amicus est, ut et omnibus malis quæ ex nervorum affectibus oriuntur. Itaque hæ quoque noctu præcipue molestæ sunt. Alios invadunt in somnum labentes, alios expergiscentes, multos etiam dormientes excitant*."

90. Sleep may itself become almost apoplectic, as in deep sleep with snoring and stertor; or almost epileptic, as in some forms of oneirodynia and of hidden seizure.

91. I have known patients to become, first, prone to sleep heavily and with stertor, and then to fall into apoplexy, paralysis, or epilepsy. Esquirol describes an interesting case, in which it was necessary to avoid sleep, in order to avoid epilepsy.

92. 2. *Apoplectic Trachelismus.*—This form of trachelismus exists in every form and degree. Sometimes it is so slight, apparently, as only to be inferred from appearances or symptoms. There is no sensation about the neck, no visible contraction about its muscles; but there is

* Op. cit. pp. 304; 353.

flushing of the face, and some such symptoms as vertigo, confusion, loss of consciousness, and perhaps *nutation* of the head, or *falling*. Otherwise it is *latent*.

93. In other cases, differing principally in degree, its existence is further indicated by a sense of tightness, as of a tight cravat, or a 'cord,' round the neck, or of a 'spike' in the neck, or of choking, with the various appearances and symptoms just enumerated. It may then be said to be *obscure*.

94. It is *evident*, when, with purpurescence or turgescence, or symptoms, the muscles of the neck are *seen* or *felt* to be contracted. I have thus distinctly seen or felt the platysma-myoid, the cleido-mastoid, the omo-hyoid muscles to be tonically or clonically contracted, without or or with laryngismus.

95. The following *note* was supplied by Mr. J. W. Keyworth, of Birmingham. "I have lately been struck by what seems to me a direct illustration of nervous pathology.

96. "One of the most frequent diseases here is dyspepsia; and in several cases I have observed that the first noticeable symptom is a sense of constriction in the throat, so that the individual is continually loosening his neck-cloth with his fingers. In one case, however, the phenomena were more marked and proceeded farther. A middle-aged man, of somewhat feeble health, after a too hearty meal, began to feel uneasiness in his stomach, and this soon became severe pain. Presently he felt his throat constringed, and loosened his neck-cloth, without any relief. As the constriction continued, his face (commonly pale) began to flush, his head to throb and ache. Soon he felt drowsy and fell asleep, his face continuing "swelled" and red, and his sleep consisting only of frightful dreams. This continued till I saw him, when a full dose of alkali removed all his uneasiness, and the symptoms receded in the order of their occurrence."

97. 3. *Epileptic Trachelismus.*—Still more *evident* and unequivocal is epileptic trachelismus.

98. I have seen the head become *fixed*, perhaps slightly *turned*, with flushing and unconsciousness, and with a dilated pupil and fixed eye, for a minute or two. I have then seen this condition relax and subside, and disappear.

99. But, in other cases, the torticollis is more marked, the face, becomes flushed, purple, livid, and, with the neck, turgid, with enlarged veins, especially the frontal, the temporal, the external jugular; and there are loss of consciousness; &c.

100. To this form of trachelismus, laryngismus is frequently superadded.

101. 4.—*Speciality of Trachelismus.*—There is a speciality in trachelismus which it may be difficult to explain. There may be every kind of spasmodic action without this special action. There is no trachelismus, as there is no laryngismus, in trismus and tetanus even. There is no trachelismus, although there be a sort of slight or minor laryngismus, in hysteria. Hence there is no *cerebral* affection.

102. The συνοσια has, as I have stated, been designated a μικρα επιλημψια; but in this affection there is neither trachelismus nor laryngismus. If such affection do supervene, there is real epilepsy—an event which has occurred.

103. I have two remarks to make on this topic: the first, that it is not clonic action, but *tonic* action, which is essential to trachelismus. The clonic action of the muscles may augment the flow of venous blood, the alternate relaxation and action admitting of the veins being filled and emptied in succession, even accelerating the circulation; whilst their *tonic* action *keeps* the veins compressed and emptied.

104. The second remark is—that some *special* muscles are probably

called into action in trachelismus ; and I think the omo-hyoid one of these. Let the course of this muscle be traced, and the effect of its tonic action on the internal jugular, and, when severe, on the larynx, will be obvious.

105. The effects of the action of the platysma, the cleido-mastoid, the scaleni, &c. should also be studied. I have especially heard my patients describe an action of the muscles at the back of the neck, associated with buzzing in the ears, and other symptoms.

106. 5. *Blushing and Flushing.*—I have distinctly traced the progress of blushing into epilepsy.

107. In one case, the patient was apt, on the slightest excitement in conversation, to blush, or rather to flush, deeply, not over the face, but over the *ears*. This state passed into epilepsy ; and the state of flushing frequently became the prelude of an attack.

108. The flushing of anger frequently issues in apoplexy, paralysis, or epilepsy.

109. The ' petit mal' frequently consists in flushing, a dilated pupil, fixed eyes and head, merely,—and subsides, or passes into severer epilepsy.

110. Epilepsy is frequently the beginning, and frequently the end, of mania.

111. Who can fail to see the continuity of this chain ?

112. But, in epilepsy, the trachelismus is evident enough, in *all* its forms and consequences, torticollis, laryngismus, odaxismus, livid flushing, —coma, stertor,—convulsive affections, violent and complete convulsion. —subsequent paralysis,—or mania.

113. These very same effects do take place, first, from a ligature applied to the neck ; secondly, from trachelismus or contraction of the muscles artificially induced, as in the fact of Mr. Reynolds ; thirdly, from the trachelismus implied in the sudden turning of the head, § 132; &c.

114. The difference between blushing, flushing, vertigo, tinnitus, loss of consciousness, actual falling, the apoplectic, the paralytic, the epi-

leptic, and the maniacal, states, are differences in the veins compressed, and in the degree of compression.

115. Emotion, in its different kinds, is the frequent cause of each and all of these effects; and we have familiar illustrations of the influence of gastric irritation in the affections which, combining nausea and vomiting even, with other symptoms respectively, may be designated sick-headache, sick-giddiness, sick-apoplexy, and sick-epilepsy.

116. 6. *Purpurescence and Turgescence.*—That these phenomena do or may arise from impeded return of venous blood from the head, is certain. They are observed in disease of the heart, in dyspnœa, in pertussis, in effort, with closed larynx, in which the rationale of cause and effect is obvious. They are observed both in epilepsy and in apoplexy. In epilepsy, they *do* depend on trachelismus. Can it be otherwise in apoplexy? They occur from a tight ligature round the neck, and even from a tight cravat.

117. Lastly, they have occurred from the influence of a current of an electro-magnetic machine on the muscles of the neck, as I shall mention hereafter.

118. These are *facts*. I may here put a *question* or two:—Can purpurescence or turgescence be induced by any *other* means than the impeded flow of *venous* blood?—and if not, how is the fact of impeded flow to be explained in the various cases in which purpurescence or turgescence occurs, and in which no disease of the heart or lungs, no cough, no dyspnœa, no effort, no *evident*, or even *obscure*, contraction of the muscles of the neck, occur? Must not trachelismus, then, be *inferred?*

119. The *questions* remain—How do flushing, and oblivium or vertigo, or actual falling, occur, in a moment of time? How do purpurescence and turgescence, and apoplexy or paralysis, occur and recede, leaving no symptoms behind them, or prove fatal, leaving not a trace of morbid anatomy, originate?

120. But there are still more cogent facts. Trachelismus, induced by the electro-magnetic current, *does* induce a "heightened colour" of the face, and "suffusion" of the eyes!—and—the *same* patient shall have deep flushing of the face, with *latent* trachelismus; or *evident* trachelismus, with purple lividity, on different occasions. Is it possible to doubt that these are two phases of the same affection?

121. It only remains for me to add, that, under the influence of trachelismus, the veins, the arteries, and the intermediate blood-channels, become turgid, and the tissues of the face, head, neck, and eye, are suffused, and assume, in a greater or less degree, the hue imparted by venous blood. The veins on the forehead are enlarged, the temporal arteries become tense and throbbing.

122. The degree of these appearances marks the degree of impediment to the return of venous blood.

123. In many cases, of some duration, the conjunctiva becomes of a deep venous red colour, with enlargement of its veins. To observe these, I evert the lower eye-lid and use a lens of about an inch focus. Sometimes they admit of being traced in considerable number, and are of considerable size.

124. 7. *The Veins of the Neck.*—The veins of the neck are to be regarded, not as the external and the internal jugulars, and the vertebral, only, but as every venous root and venule from which these large veins take their rise, forming a *net-work*, and permeating the tissues in every part and in every direction.

125. An idea of this distribution of the veins, and of the influence upon them of muscular action, may be obtained by carefully inspecting the circulation of the blood in the web of the frog, and by watching the effect of such action upon that circulation.

126. The effect of *emotion* on the circulation in the web of the frog

137. Spasmodic laryngismus is seen, in its slightest form, as the effect of grief, or anger. We are thus said to be choked by emotion or passion. When Howard was asked at whose expense he travelled, " he was almost choked before he could reply !"

138. The attempt to drink a draught of cold water, by persons of susceptible throat, is attended by a transient laryngismus, and even a transient laryngismus stridulus.

139. *Effect on the Neck.*—Although I have spoken of trachelismus and of laryngismus as distinct, I must here observe that the larynx, and especially the veins about the larynx, are more or less involved in trachelismus ; and that laryngismus adds greatly to the effects on the venous circulation, induced by trachelismus. Hence, in the laryngal stertor or paralytic laryngismus of apoplexy, the veins become distended and the neck swollen—an effect removed by tracheotomy. Hence too the essential association between the tumid and purple or black face and laryngismus, in epileptic and other convulsion ; and the preventive value of the same operation.

140. In another place, I have described an experiment of Dr. Wegg : a collar placed round a dog's neck tightly, induced sleep ; an effect which was less marked when the larynx or trachea were guarded and excluded from the pressure.

SECTION III.

FACTS AND OBSERVATIONS.

141. I now proceed to adduce other practical facts and observations.

142. The physician is frequently summoned to cases in which, with or without an actual seizure, there is the *Threatening* of an attack—of Apoplexy, of Paralysis, of Epilepsy, or of Syncope, and, it may be, of Mania. It is to these *Threatenings*, to these *Minæ*, according to the expression of Heberden,—affections which equally alarm the patient, the patient's friends, and the physician,—that I beg to call the most serious attention of the profession.

143. On the occasion of excitement or emotion, or of gastric, or enteric, or uterine irritation, or in the midst of the most usual occupations, the patient is seized with vertigo, or a momentary oblivium or delirium, or various affections of the senses, or loss of muscular power, especially of the speech, of the hand, or of one side, and flushes, or turns pale, with intense alarm for fear of an apoplectic or paralytic seizure;—or the eyes and head may become suddenly fixed, the pupils dilated, the countenance flushed, with obvious loss of consciousness, and there is the threatening of epilepsy.

144. These *minæ* may last for a minute or two, and subside. But the patient is evidently in danger of a 'fit,' or seizure, and that of an apoplectic, paralytic, epileptic, or syncopal character; or such a seizure may actually take place.

145. What are the hidden springs of action which have been called into play in these various circumstances? What is the rationale, what the modes and means of prevention? Shall we still sum up our ignorance in one word, and call the attack an 'epileptic shock,' and cut the Gordian knots of prevention and treatment, and prescribe the 'sulphate of zinc,' and so avoid the imputation of *Theory?*

146. Some of these affections are of the slightest kind—"nihil aliud æger sentit præter oblivium quoddam et delirium adeo breve, ut ferè ad se redeat, priusquam ab adstantibus animadvertatur*." It is their obvious and fearful *tendency* which gives them importance.

147. I have known mere *blushing* to become intense, constantly recurrent on every slight occasion, and attended by varied mental distress, and even to pass into an epileptoid affection; just as we have all known the *flush* of anger or indignation to pass into apoplexy, or epilepsy. Mere 'sick-headache,' or what may be termed 'sick-giddiness,' sometimes passes into an affection of a far more formidable character: there are a sick-apoplexy and a sick-epilepsy.

148. One patient experienced a sense of 'tightness' about the throat, with flushing, and the dread, and danger too, of some seizure, after taking indigestible food. Another, from an indiscretion of the same kind, would become giddy, unconscious, and fall on the floor.

149. Sometimes the apoplectic, the paralytic, the epileptic, and the maniacal symptoms occur singly and distinctly. In other instances, they occur in the same patient in succession; and we observe a degree of paralysis, as an apoplectic state subsides; or, to the apoplectic state, some convulsive affection may be superadded; whilst an epileptic seizure may leave apoplectic coma, paralytic weakness, spasmo-paralysis, or a fit of mania.

* Heberdeni Commentarii, ed. 1807, p. 139.

150. These affections are, in fact, different phases, as they are different forms, of the *same* morbid actions. Daily observation compels me to adopt this conclusion. The difference probably consists in the difference of nervous centre affected, which may vary in different patients, and in different seizures in the same patient.

151. As I have already remarked (§ 50), Heberden observes—"Paralysis et apoplexia sunt tantum diversi gradus ejusdem morbi*." It would have been more correct to say that they are different *forms* or *phases* of the same disease. And this would have been particularly true of the *paroxysmal* forms of these diseases. But in the same sense, not only apoplexy and paralysis, but these and epilepsy and mania, are one and the same disease, differing only in phase, in form, and in the modes of their occurrence.

152. But there may be, in each case, a difference of *degree*. The first attack may naturally be viewed as less serious than the second, the second than the third, unless the case be subsiding under the influence of our remedies.

153. Sometimes, as I have stated, these seizures assume the distinct form of apoplexy, of paralysis, of epilepsy, or of mania; or of two or more of these in succession; and either of three events may take place:

154. 1. The patient may speedily and perfectly recover; or

155. 2. The case may prove fatal, leaving no *post-mortem* appearances on examination.

156. 3. Or, the patient may continue subject to repetitions of such attacks. The case may assume the paroxysmal form; and the recovery from these paroxysms may be complete at first, and less and less complete afterwards; and then it is to be presumed that, however *inorganic* the

* Op. cit. p. 285.

malady might be in its *origin*, it *may* induce organic changes in its course.

157. The cases of this *Class* must be most carefully distinguished from *Organic Disease of the Nervous Centres.* The *Diagnosis*, indeed, is every thing. It is our *guide* both to the *Pathology* and to the *Prevention* and the *Treatment* of these formidable diseases.

158. We are led then to see that there is a *Class* of the diseases of the nervous centres, of inorganic origin and paroxysmal form. There are *Paroxysmal* apoplectic and paralytic affections. Of epilepsy, as a paroxysmal affection, I need not now speak. But sometimes these seizures, instead of being apoplectic, or paralytic, or epileptoid, are *Syncopal* in their external form and character. With or without previous flushing, the patient may become pale and faint, and exclaim—'I am dying!' And they may issue in mania or monomania.

159. In some instances, again, these seizures take place *unobserved*, —in the night,—or in the absence of friends; and the effects and results of such *hidden* seizures are of the most puzzling character, until the occurrence of those seizures is detected, or at least suspected. These effects may be—a degree of stupor, of loss of memory, or of delirium; or actual *Mania*, or amentia!

160. One such case I shall hereafter adduce in all its deeply interesting details. Obscure, and indeed not to be understood, until the fact of hidden seizures was discovered, all was made plain when that discovery was made.

161. These then are the important subjects of the present pages:

1. The paroxysmal form of certain apoplectic, paralytic, and maniacal, as well as epileptic, seizures;

2. The various degrees of lividity and tumidity of the integuments of the face and neck in them;

3. The frequent speedy and entire recovery from them ;

4. The frequent absence of morbid appearances in the cases which prove fatal ; or,

5. The presence of such as are *effects* only.

6. The *cerebral* form of some cases of epilepsy, the *syncopal* form of others, and the possibility of such attacks being *hidden*, and their effects mysterious.

162. It is obvious that, after much consideration given to the subject, Abercrombie felt the want of some principle on which to explain the occurrence of attacks of what he designates simple apoplexy. He asks, at the close of his interesting chapter entitled "*Conjectures in regard to the Circulation in the Brain*,"—"Why is not apoplexy produced by every increase in the mass of the blood, and why is it not excited by every instance of intemperance, violent exercise, or strong mental emotion? Is there any provision by which the effects of these causes are averted in their daily occurrence, though, in a certain condition of the system, each of them may be capable of producing perfect apoplexy* ?"

163. It is to *this* great question, hitherto left unsolved, that I hope to present the answer.

164. I hope to show that, whatever the *violence* of the *arterial* circulation, there is little danger, little tendency to morbid action, as long as there is no impediment to the *return* of blood along the *veins ;*—that the idea of '*tendency*' or '*determination*' of blood *to* the head, is a fiction and a chimæra ; and that the real state of things in the condition which has been so designated, is, in fact, its IMPEDED RETURN *from* the head ;—that this impeded return of blood from the head is induced by a *spasmodic* action of the *muscles* of the neck on the *veins* of that region,—an action

* Op. cit. p. 310.

evident in a vast many instances, though *latent*, perhaps, and *to be inferred* from the similarity of its effects, in others.

165. The difference between the arterial suffusion of the countenance, as in running, and its venous suffusion, as in lifting or other efforts with closure of the larynx and expiratory efforts, must be obvious to the most cursory observer. The first is florid, and more or less permanent; the second is purplish, and as transitory as it is deep. The former is obviously a *part* of the *general* or *diffused* excitement of the circulatory system, and primarily of the heart; the latter is essentially *partial*, being limited to the face, head, and neck.

166. Augmented *arterial* action exerts little influence whilst the *venous* return is free. It is the impeded *arrière* circulation which, in this, as in other instances, exerts a baneful influence on the *intermediate* organs.

I.—*The Paroxysmal Form of this Class of Diseases.*

167. The first characteristic of the Class of diseases of which I am about to treat, is—*their Paroxysmal form.*

168. Simple apoplexy, simple paralysis, not less than epilepsy and spinal syncope, may occur, recede, and recur, promptly, repeatedly, at varied intervals. Trachelismus, with its effect on the venous circulation, is to paroxysmal apoplexy and paralysis, what laryngismus is to epilepsy. Both are equally spasmodic, and subject to the laws of spasmodic affection.

169. In the first instance, the remission or recovery from these seizures may be perfect. Afterwards, some permanent effect remains, and there may be a degree of inarticulateness of speech, a little tendency to the flow of saliva over the lip, or a little debility in the movements of an extremity; or the mental faculties, the power of attention, of apprehension, of memory, may be somewhat impaired,—and nothing more.

170. These effects are equally the result of apoplectic or of epileptic seizures, though more speedily of the former than of the latter.

171. The causes too of these two forms of disease of the nervous centres are the same—and chiefly, mental emotion and gastric irritation.

172. The difference appears to be, that in one case the cerebrum, in the other the medulla oblongata, is, principally, affected.

173. This result may depend on the different susceptibilities of these different portions of the nervous system, or on the different channels or veins through which the cause may operate, in different individuals.

174. In a third instance, that modification of action obtains, which leads to ghastly pallor and apparent syncope, frequently with sickness,—a condition not unallied to that in sea-sickness.

175. Indeed, this sickness frequently plays an important part in paroxysmal diseases, occurring, as it does, in its slightest form of 'sick-headache,' or of what may be termed 'sick-giddiness,' or in the form or in the course of an apoplectic or epileptic seizure.

II.—*The Lividity and Tumidity in Paroxysmal Affections.*

176. After their paroxysmal form, lividity of the countenance, either with flushing and turgescence of the face and neck, or with pallor, is the most characteristic phenomenon of these seizures. How is this phenomenon produced?

177. Augmented flow of arterial blood, as in violent exercise, may induce vivid, florid flushing; but how different is the hue of this flushing from the *lividity* observed in the threatening of apoplexy and epilepsy! Impeded return of venous blood, observed in the case of effort, as in lifting, induces a deeper flush, somewhat mingled with lividity, and much more nearly resembling, in its hue, the pathological flush of these diseases.

178. Nor could *tumidity* arise from undue impulse of arterial blood, unaccompanied by impediment in its ulterior course. But admit the existence of impeded return of the venous blood, and tumidity is the evident, the immediate, and the inevitable effect of the distension of the blood-channels placed immediately between the last branches of the arteries and the first roots of the veins, and of the veins themselves.

179. The lividity and tumidity of the face and neck, observed in certain diseases of the heart, and of the lungs; the livid flush of anger, of efforts, of stooping, of pertussis, are scarcely to be distinguished from the lividity and tumidity of the apoplectic or epileptic seizure. In the former cases, the lividity and tumidity are distinctly owing to impeded *arrière* or venous circulation. What is their nature in the latter?—what their cause and rationale?

180. We have all observed the livid flush of anger, and from gastric irritation. We have all known this livid flush to *pass into* the apoplectic or syncopal threatening or seizure, as we all know that the excitement of the comitia of the Roman forum was apt to give rise to the epileptic attack, whence its ancient designation of *morbus comitialis.*

181. But what is the rationale of this venous turgescence of the face and neck? How do emotion, gastric irritation, &c. act in inducing this singular effect?

182. This—this is the deeply interesting question to which I beg attention. It is the reply to this question which, I believe, presents the *Key* to all the difficulties in regard to the nature,—source and origin,—of *paroxysmal* apoplexy, paralysis, epilepsy, mania, &c.—in a word, of the diseases of the nervous centres of inorganic origin and of paroxysmal form.

III.—*Contraction of the Muscles of the Neck.*

183. I repeat that we are all familiar with the phrase—'choked with grief or with anger,' and we have all witnessed the blush of shame and the deep flush of anger; and I have already stated that I have distinctly traced mere intense blushing into epilepsy, and that the still more intense flush of anger has passed into apoplexy or epilepsy.

184. With this blush of shame and this flush of anger, there are frequently, and in proportion to their degree, a purple lividity and tumidity of the face and neck, and even of the upper part of the thorax.

185. I have *seen* the same flush of the countenance, whilst the patient has *felt* a degree of stricture of the throat, with the fear of some seizure, as the effects of an indigestible meal.

186. The emotion of disgust, and gastric irritation, frequently issue in actual sickness and vomiting, involving closure of the larynx, or laryngismus. The former of these phenomena is an instance of what has been erroneously designated reflex action of the *brain*. It is the direct effect of emotion. The latter *is* a familiar morbid reflex or diastaltic action.

187. In epilepsy, the state of the neck is obvious to the eye; the head is *fixed*, or there is torticollis; and there is the 'facies nigrescens*' of Heberden. In the threatening of apoplexy, there is the same livid or purpurescent hue of the face,—and the same paroxysmal character. Is it possible to doubt that what is evident in the former affection exists, though in a latent form, in the latter, the *effects* and the recurrent character of the affection being precisely the same?

* Op. cit. p. 139.

188. The lividity and tumidity are not to be explained by any hypothetical 'tendency' or 'determination' of blood to the head, as I have already stated, and as I shall show more at length hereafter. They can only arise from *impeded venous return*. The former might induce arterial redness; the latter alone can induce venous purpurescence. It is presupposed that there is no disease of the heart or lung to induce impeded venous circulation; and it is to be remembered that the affection recurs in paroxysms, that, in epileptoid cases, it *is* to trachelismus that the phenomena are traced, and that even in the apoplectoid, there are, in some instances, sensations about the throat, of no equivocal character.

189. History informs us that violent emotion and gastric irritation may issue in apoplexy. How is this phenomenon to be explained—for we have ceased to be satisfied with the vague and unmeaning expression of *sympathy?* I believe that trachelismus intervenes as the connecting medium between the cause and its dire effects.

190. The occasional *sensation* of strangulation, the purpurescence and turgescence of the face and neck, the loss of consciousness, &c. the sudden accessions and recessions, or the paroxysmal form, of the affection, —such then are the evidence of trachelismus.

191. This trachelismus probably occurs in the more deeply seated muscles of the neck, and, according to the *degrees* or *kind* of impeded venous circulation, may lead to further *cerebral* or *spinal* symptoms; whilst the external evidence of its operation in the condition of the face and neck, varies from similar causes.

192. I may now observe that the *first* stage of trachelismus is probably always *latent*, being *inferred* from the turgescence of the face and neck, and from *cerebral* symptoms in some cases, and from *spinal* symptoms in others.

193. The importance of this view will be seen when I come to treat

of the further pathology of paroxysmal apoplexy; but still more when I proceed to discuss the treatment. There has long been, for instance, a question as to the propriety and safety of administering emetics in apoplectic affections. It is evident to me that this question must be solved by determining the previous question as to the *Diagnosis* between paroxysmal and therefore secondary apoplexy, and apoplexy arising from organic lesion of the cerebrum. In the former, the first effect of ipecacuanha, or of nausea, is to resolve the spasm of the neck, and break the first link of the chain of disordered actions. In the latter, the expiratory efforts of vomiting might augment the lesion already sustained by the tissues within the encephalon.

194. It is an important question—how far the action of the muscles of the neck may be specific in different instances. Are the various phenomena of external blushing, or flushing, of the apoplectic or paralytic seizure, and of the epileptic attack, or of spinal syncope, the varied effect of the compression of the external and internal jugular and of the vertebral veins respectively? These questions must, I think, be answered in the affirmative. But the satisfactory *proofs* of these facts may still be wanting. The act of sickness—the effect of emotion, or of gastric irritation—is, however, perfectly specific and distinct.

195. That action of the muscles designated *expression*, takes place in the *neck* not less than in the face; and it is thus the first stage of trachelismus, as the blush of shame and the flush of anger are the first shades of congestion of the veins, and, if I may venture to say so, of paroxysmal nervous affection.

IV.—*Turgescence of the Face and Neck, of the Conjunctiva, and of the Ears.*

196. To return to the subject of turgescence, I may observe that, under the influence of trachelismus, the veins, the arteries, and the intermediate blood-channels, become turgid, and the tissues of the face, head, neck, and eye, are suffused, and assume, in a greater or less degree, the hue imparted by venous blood. The veins on the forehead are enlarged, the temporal arteries become tense and throbbing.

197. The degree of these appearances marks the degree of impediment to the return of venous blood.

198. In many cases, of some duration, the conjunctiva becomes of a deep venous red colour, with enlargement of its veins. To observe these, I evert the lower eye-lid, and use a lens of about an inch focus. Sometimes they admit of being traced in considerable number, and are of considerable size. Sometimes there is ecchymosis.

199. M. Andral no where mentions turgescence of the neck! These things were not observed formerly!

V.—*Effect of a tight Collar or Cravat.*

200. It is here, I think, that I may most appropriately introduce the question of the baneful and dangerous influence of a tight collar or cravat.

201. It was observed by Dr. Donald Monro that soldiers were liable to be carried off by apoplexy, in consequence of stricture of the veins of the neck, from being obliged to wear their cravats too tight*.

* See Cheyne on Apoplexy, p. 41.

202. Abercrombie quotes a case from Zitzilius, of "a boy who had drawn his neckcloth remarkably tight, and was whipping his top, stooping and rising alternately, when, after a short time, he fell down apoplectic. The neckcloth being unloosed, and blood being drawn from the jugular vein, he speedily recovered*."

203. The following case occurred in the person of a most intelligent member of our own profession. I give it in his own words:

204. "A few weeks ago, my shirt collar was made too tight, and felt rather uncomfortable; yet not so much so as to induce me to change or slacken it. On looking into the mouth of a patient, in such a position as to twist my neck a little, I dropped down in my surgery as if I had been shot, in a moment, as helpless as a dead man. I soon got up; but my head was giddy for some time. I changed my shirt, and lost all fear of a return of the accident. There can be no doubt that it arose from compression of the veins."

205. I saw a patient, a very short time ago, whose face and ears were purple from the influence of too tight a collar and cravat. I was consulted from the occurrence of oneirodynia and subsequent maniacal delusion. (Such a case is described by Heberden:—"Qui conflictantur cum arthridite, paralysi, aut malis hystericis, interdum expergiscuntur maxime perturbati, et quasi territi exclamant." "Pueri hoc modo experrecti interdum desipiunt horam integram priusquam ad se redeant†.") I loosened the collar, and the lividity of the complexion disappeared. I do not yet know whether the oneirodynia and its consequence also ceased.

206. The influence of a tight collar or cravat is not duly appreciated. It may be slight, in a state of repose. But on moving the head variously, the muscles of the neck expand; this expansion cannot take place *out-*

* Op. cit. p. 202. † Op. cit. p. 151.

wardly ; it therefore takes place *inwardly*, and so compresses the subjacent veins! It is on this principle, not, I think, generally acknowledged, that a moderately tight cravat may prove an unsuspected source of danger. Under the influence of such a cravat or collar, the not unusual actions of the muscles of the neck become a sort of trachelismus, perhaps more frequently than is imagined. The cravat, too, which is not tight generally, may become so under the influence of sleep, of emotion, or of gastric repletion.

VI.—*Results of Experiments.*

207. I have long projected a series of experiments with the view of illustrating the effects of the impeded return of blood from the head:

208. 1. I propose, in the first place, to ascertain the effect of a ligature, of various degrees of tightness, applied round the neck;

209. 2. I propose, in the next place, to determine the effect of a ligature round the neck, of extreme tightness, tracheotomy having been previously performed;

210. 3. In the second place, I propose, having applied a thick and soft ligature round each jugular and vertebral vein, under the influence of chloroform, to tighten these, first, one by one, then two by two, and, lastly, three by three;

211. 4. I next propose to trace the effect of a current of electro-magnetism variously across the neck, so as to induce artificial trachelismus and the distended or erectile condition of the veins and venous network of the neck.

212. An experiment of the second kind was performed, at my request, by my late friend, Mr. Henry Smith, and Mr. W. Martin Coates of Salisbury:

213. "On December the 17th, 1850, a full-grown greyhound was placed under the influence of chloroform, and an opening was made into the lower part of the trachea.

214. "Five hours were allowed to elapse, a double tracheotomy tube was inserted, and a cord was tightened round the upper part of the neck. After a momentary struggle, the animal became still, and the respiration slow; the eye-balls protruded, the pupils gradually dilated until the iris was a mere line, and the nearest approach of a taper induced no contraction. The diastaltic actions, as indicated by the closure of the eye-lid and retraction of the eye-ball when touched, were perfect.

215. "After the lapse of an hour and a half, the respiration had become short and feeble, the expirations being longer than the inspirations; there were occasional convulsive inspirations, and the sphincter ani was relaxed. The pulsation of the heart was audible at the distance of a yard, and induced a movement of the flame of a taper held near the orifice in the trachea. The diastaltic actions became feeble, and at length ceased. The cornea began to appear hazy and shrivelled. The tail was occasionally moved convulsively from side to side, and the anterior extremity became raised, and the posterior extended powerfully, and then relaxed as suddenly.

216. "After the lapse of another hour, the respiration and the action of the heart continued as before; the tongue hung out of the mouth.

217. "In another hour and a half, the respiration and the action of the heart ceased, amidst slight convulsive movements of the posterior extremities.

218. "On examination, about six hours after death, the membranes and substance of the brain and the pia mater of the medulla oblongata

were found gorged with blood, and *bloody serum* was found in the ventricles and at the base of the brain."

219. It is obvious, from this experiment, that impeded flow of blood along the veins is instantly followed by insensibility—apoplexy, in fact,—and afterwards by epileptoid affections. It is impossible, I think, to imagine an experiment more replete with instruction.

220. The following experiment I quote from a paper of the late Sir Astley Cooper, Bart.:

221. "In one rabbit I tied the jugular veins on each side of the neck. When it was set at liberty, it ran about, cleaned its face with its paws, and took green food.

222. "Its respiration was reduced to 68 inspirations in a minute, which is about half the natural number. After four hours, it ran about as if nothing had happened; and eventually recovered.

223. "When it was killed and injected, I found, on each side, three anastomosing veins passing from the anterior to the posterior part of the jugular vein, and conveying the blood from the head to the heart; the vertebral vein had remained whole, and become enlarged, and passed, on the fore part of the vertebræ, from the head to the space between the fourth and fifth cervical vertebræ, where it entered the vertebral canal.

224. "In a second rabbit, I tied the jugular veins on each side of the neck, as before. The animal's respiration became slow; but it ate green food, ran about, and was difficult to catch; but, for five days after, it appeared dull; its ears had dropped. On the seventh day, it was seen to be *convulsed*, and frequently rolled over. Its voluntary powers were lost, as well as its sensation, in a great degree. On this day it died. On examination, *a clot of blood* was found extravasated in the left ventricle of the brain.

225. "Hence it follows, that apoplexy will occasionally result from

an obstruction to the return of blood in the jugular veins; and this I have known to happen from enlargement of the glands in the neck of a boy*."

226. Sir Astley Cooper was also in the habit of showing an experiment in which he compressed, as he supposed, the carotids and vertebral arteries in a rabbit. It was doubtless the jugular and vertebral veins.

227. For the following most valuable fact I am indebted to J. Russell Reynolds, Esq. of University College, a gentleman of great talent and promise:

228. "A girl, nineteen years of age, was admitted into University College Hospital for aphonia; and, amongst other things in the treatment, she was ordered to have galvanism applied to the larynx daily, by the electro-magnetic machine.

229. "While using this machine, I observed the effect upon the muscles of the neck, and remarked that, when the wheel was turned slowly, and the superficial muscles were alternately contracted and relaxed, *the colour of the face was heightened*, and of a florid hue, and no unpleasant feelings (further than those arising from the shocks) were experienced; but when the wheel was turned rapidly, with a less powerful current, and the muscles were maintained, during the rapidly intermitting action, in a state of almost permanent contraction, *the face became of a deeper colour, the lips and angles of the mouth livid, the eyes suffused, and some feelings of confusion of thought, headache, and dimness of sight, alternating with flashing of light, were induced.* The latter effects remained after the cessation of the current, for a few minutes, and then disappeared."

230. In these facts we have the *Proof* that a slight degree of contraction of the muscles of the neck, induced by the electric current,

* Guy's Hospital Reports, vol. i, p. 471.

induces, in its turn, heightened colour of the face, of a florid hue; and that a greater degree of that contraction induces a deeper colour of the face, the lips and angles of the mouth being livid, and the eyes suffused, with confusion of thought, headache, dimness of sight, alternating with flashes of light; these latter remaining for a few minutes after the cessation of the current, and then disappearing. They present the *Demonstration* of *trachelismus* and its *effects*.

231. Apoplexy may depend on a first degree of the effects of compression, and convulsion or epilepsy on a second; or—apoplexy may depend upon interrupted flow of the blood along the jugular veins principally, and epilepsy, upon interrupted flow of blood along the vertebral: this at least appears to me to be probable. But experiment must determine the interesting questions. How similar to these events, the results of experiment, are the phenomena of the following cases:

232. Mr. L——, of S——, aged 50, consulted me for the following affection:—He was liable to be taken with loss of speech, and loss of power of the right hand, and, on riding in his chaise, with loss of power of the side. At these times he felt the sensation of '*strings*' drawn tightly along each side of the neck, with a '*rush of blood*' up the neck and cheeks, with dimness of vision, deafness, vertigo; &c.

233. Mr. R——, aged 50. In this gentleman the whole face was of the deepest red, the everted under eye-lid presented the appearance of a deep venous congestion, and the veins of the forehead were largely distended. He too described a sensation of occasional '*dragging*' on each side of the neck.

234. In August last, on walking across a court yard, he was seized with giddiness, and was in danger of falling. In October, he lost the power of the right hand, and did not regain it in a fortnight, nor even afterwards perfectly. Once, on awaking, he felt 'as if he was going to have a fit.'

235. By cupping, daily antacid aperients, abstinence from all stimulants, as simple diet, a raised position in bed, an alcoholic lotion to the head, and attention to preserve the feet warm and dry, Mr. R—— was effectually relieved.

236. Of this case Mr. Prescott Hewett kindly took the following note:

237. "On examining the patient, Mr. ——, whom I saw with you, I found that the whole skin of the face was minutely injected, and of a scarlet colour. The conjunctivæ of both eye-lids were also intensely injected throughout, and of a deep red colour. The right hand, the power of which had been, at times, partially lost, was weaker than the left; but the corresponding leg was not affected.

238. "The following was the history given by the patient. Frequent swimming in the head, especially when stooping; extreme heat of the face upon first lying down; headache in the recumbent posture, which frequently disappears on rising. Studying, or application of any kind, causes swimming in the head, and, on one occasion, induced sickness. At night, when in bed, the hand frequently becomes weaker than usual. At times, strange sensations on both sides of the neck, as of strings passing upwards on both sides towards the head. Last week, frequent pain down the thigh and leg, like cramp flying about, but for a very short time. Two or three days before I saw him, he had suddenly awoke in the night with the idea that he was about to have a fit. The swimming in the head was at the time very distressing, and the strings, as he called them, on the sides of the neck were very painful."

239. Whatever may be the rationale of epilepsy in other respects, the *effect* of the paroxysm is greatly seen in the condition of the integuments, in the extreme lividity of the countenance, the frequent ecchymoses, especially about the temple, the occasional blood-shot eye, and the not unfre-

quent epistaxis. The condition of the face and neck, therefore, however it may be an indication of the condition of the encephalon, is by no means a measure of that condition. There is more of lividity in epilepsy than in apoplexy; but there is a greater *degree* of stupor and of the tendency to paralysis in the latter than in the former, though these occur in both.

VII.—*Pallor, Sickness, Faintishness, &c.*

240. Instead of flushing and turgescence of the face and neck, we very frequently observe pallor, with or without sickness, and faintishness, in cases of seizure.

241. Pallor may be produced by a syncopic impression upon the heart itself alone, and directly.

242. But pallor and sickness conjoined *must* depend on a common cause, and that cause is doubtless seated in the medulla oblongata.

243. This affection may follow the opposite state of flushing, and be the effect of fear. One patient, to whose case I have already adverted as an example of paroxysmal paralysis, exclaimed—'I am dying!' He turned pale with terror.

244. In other cases there are pallor and ghastly lividity, probably as the immediate effect of trachelismus on the vertebral veins, inducing *irregularity* of circulation in the medulla oblongata. Faintishness, sickness, and vomiting, frequently ensue. The event may be compared with what is experienced by some persons from the movement of a carriage or a swing, and by almost all from that of a vessel on a rough sea. Irregular impulses of the blood on the medulla oblongata induce the effect of shock on the heart, and of irritation on the muscles of expiration combined in the act of vomiting. In the cases to which I have alluded, the cutaneous

pores are frequently relaxed, and a cold perspiration bedews the patient's surface.

245. There is frequently, in this case, as well as in that of suffusion of the countenance, loss of consciousness, and the fear of falling, or actual falling.

246. It is a case to be most carefully distinguished from ordinary syncope from sources of exhaustion, disease of the heart, &c. and I propose to characterize it by the term—*Spinal Syncope.*

247. Some seizures *begin* with pallor, which is *followed* by purple lividity. In one case the attacks sometimes assumed the form of ordinary epilepsy; at others, of spinal syncope.

VIII.—'*Tendency' of Blood to the Head; in reality, its Impeded Return.*

248. There is no physiological principle on which we can found the idea of 'tendency' or 'determination' of blood to the head.

249. If the circulation be accelerated by any cause, it is still accelerated equally or proportionally in every artery of the body. This result flows from the important experimental researches of M. Poiseuille.

250. And if there were such a principle of unequal distribution of the arterial blood, it would not explain the phenomena of *venous* turgescence and purpurescence observed in the cases of apoplectic and epileptic seizures.

251. But impeded venous return may be partial, and the cause at once of turgescence and of purpurescence; it is explained by the *fact*, frequently evident, however it may be sometimes latent, of spasmodic contraction of the muscles of the neck.

252. The most violent action of the heart and arteries can only

induce throbbing and flushing; impeded venous return induces these, with the turgescence and purpurescence to which I have adverted, and various symptoms, such as headache, vertigo, loss of consciousness, &c.—symptoms produced equally by trachelismus and by too tight a cravat.

253. I shall never forget the interesting phenomena which I witnessed in a little boy, an American, whilst his father, an intelligent physician, and myself were discussing the questions involved in his case:—Suddenly the eyes and head became fixed; the pupils dilated; the conjunctiva suffused; the cheeks deeply flushed: the little patient was obviously unconscious:—in a moment the spell was broken, the natural colour, the natural look, and consciousness, returned. The muscles which had fixed the head, had compressed the veins of the neck! In other attacks, the trachelismus would become extreme, laryngismus and expiratory efforts were added, and a fierce attack of convulsion was the consequence!

254. The doctrine of tendency or determination of blood to the head, is therefore both unfounded in fact and principle, and incapable of explaining the phenomena. Impeded venous return is both in itself the obvious effect of a familiar event, and affords the ready explanation of a subsequent series of events, hitherto unexplained.

IX.—*Congestion and Softening of the Brain.*

255. In all cases of the apoplectoid or epileptoid seizure, whether hidden or observed, the cerebrum is congested, the intervening links being trachelismus and compression of the veins of the neck.

256. If this congestion be extreme, apoplexy occurs; if it be greater in one hemisphere than the other, hemiplegic paralysis is observed.

257. If the cerebral affection be limited to *congestion*, and if this congestion disappear, the apoplexy or paralysis disappears too. It is paroxysmal and transitory.

258. But if this congestion leads to ecchymosis (as we *see* in the face), this cannot subside; *softening* may be the result; and there is a greater or less degree of permanent hemiplegia.

259. Or there may be effusion of serum into the ventricles, and its consequences—loss of memory, &c.

260. If, with the paralysis, there be spasm—if it be spasmo-paralysis,—the medulla oblongata is *irritated*, by pressure or counter-pressure from the tumefied cerebrum.

261. This series of events is of the deepest interest, and presents a new subject of investigation to the pathological anatomist. It will be necessary to trace and distinguish the different links of the chain of cause and effect: the morbid appearances are *not the disease;* they may be the *effect* of one of its symptoms, and the *cause* of others. They may be intra-vascular and evanescent during life, and therefore absent on the post-mortem examination; or they may become extra-vascular during life, and therefore detectible by the anatomist.

262. I believe this view of softening, as the result of congestion, to be at once new to the pathologist and deserving of his most serious attention. Mere morbid anatomy, unconnected with the *history* of the case, is like the caput mortuum of the alchymist; it is only of real value when traced backwards to its living cause or causes, and forwards to its effects.

263. The flow of venous blood, on opening the cranium, the condition of the veins in the extra- and intra-cranial tissues, the effusion of serum or of blood, must all be viewed in connection with the chain of morbid processes during life. It is *living* pathology which alone can serve us in relieving the sick.

SECTION IV.

CEREBRAL AND SPINAL SEIZURES.

With a Table.

264. It will be remembered that I leave out of view entirely all originally organic diseases of the encephalon or spinal marrow. My subjects are the paroxysmal diseases of the cerebral and spinal systems.

265. In the first column in this *Table*, I have enumerated the exciting *causes* of these paroxysmal affections; causes, some of which act directly, and others in a reflex or diastaltic manner, in regard to the spinal centre. Of the former class, are the *Emotions* and mental excitement principally; of the latter, the *Irritations*.

266. Why these causes should select the muscles of the neck and throat principally for the display of their influence, is a mystery; but it is not the less a fact that they do so. I have already remarked, I think, that *Expression* is as much *seen* in actions about the throat as in the countenance, whilst the effects of emotion are *felt* in that susceptible region especially.

267. The effect of *Sleep*, again, is still manifested in the same region, though less directly. Volition being removed, the muscles of the neck are delivered over, like the orbicularis, to the influence of *tone*—or spinal action, as proved by the experiment on the turtle, of withdrawing the spinal marrow and watching the effect in relaxing the sphincter. The result of this trachelismus is a *sub*-apoplexy, and the disposition to paroxysmal seizures. I have this day seen a patient who occasionally

SYNOPSIS
OF
TRACHELISMUS AND LARYNGISMUS,
AND OF
THE THEORY OF CEREBRAL AND SPINAL SEIZURES
Of Inorganic Origin and Paroxysmal Form.

TYPES—I. *Blushing, or Flushing;* II. *Sick-headache, or -giddiness;* III. *Sea-sickness.*

II. THE DIASTALTIC SPINAL SYSTEM.

I. THE CAUSES.

1. *The Centric;*

I. *The Moral*—
The Emotions—*Excitement, Anger, Fright; &c.*

II. *The Physical*—
1. *Sleep; awaking, &c.*
2. *Posture; Effort; &c.*
3. *Hyperhæmia; Anæmia; Cachæmia; &c.*

II. *The Ex-centric;*

III. *The Irritations*—
1. *Dental*—
2. *Gastric*—
3. *Intestinal*—
4. *Uterine*—
1. *Catamenial*—
2. *Puerperal*—

I. THE MODE OF ACTION.

Direct,

Diastaltic, or Reflex,

II. THE MEDIUM OF ACTION.

through

i. *Exodic Nerves, viz.*
1. *The Trifacial*—
2. *The Pneumogastric*—
3. *The Spinal*—

The Spinal Centre and

ii. *Exodic Nerves, viz.*
1. *The Descendens Facialis*—
2. *The Descendens Myoglossalis*—
3. *The Spinal Accessory*—
4. *The Spinal*—

III. THE MUSCULAR AND VENOUS SYSTEMS OF THE NECK.

I. STAMMODIC ACTION—
1. *Primary and Latent,*—
2. *Secondary and Evident,*—
of

1. *The Platysma myoid*—
2. *The Cleido-mastoid, the Omo-hyoid, &c.*—
3. *The Trapezius, the Scalens, &c.*—
4. *The Subclavian*—

II. I. COMPRESSION AND ERECTILE STATE—
of

1. *The External Jugular*—
2. *The Internal Jugular*—
3. *The Vertebral*—
4. *The Subclavian*—

and the Venous Sinuses of the Skull

Veins,

II. LARYNGISMUS.

1. *Incomplete—with Stridor; &c.*
2. *Complete—with Efforts of Expiration, and IV. 1. 6.*

III. THE BITTEN TONGUE, LIP, OR CHEEK.

1. *The Recurrent—laryngeal*—
2. *The Intercostal*—
3. *The Abdominal*—

1. *The Myo-glossal*—
2. *The Fossil*—
3. *The Par sinus Trifacialis*—

1. *The Arytænoid,*—
2. *The Intercostal,*—
3. *The Abdominal*—

1. *The Genio-hyoid*—
2. *The Orbicularis Oris*—
3. *The Masseter*—

Muscles.

IV. EFFECTS, SYMPTOMIC AND ORGANIC.

I. THE SYMPTOMIC—

1. PARALYSIS *of Speech, of the Hand, &c.*—
HEMIPLEGIA,—
APOPLEXY,—
paroxysmal, or permanent;
2. THE MILDER OR CEREBRAL EPILEPSY,—
3. HIDDEN OR LATENT SEIZURES,—
4. OPISTHOTONUS,—
5. PARTIAL SPASM, *Torticollis, &c.,*—
6. GENERAL CONVULSION,—
7. SEVERE OR SPINAL EPILEPSY,—
consecutive
SEIZURE,—
PARALYSIS,—
MANIA,—*or*
AMENTIA;
8. *Pallor, faintness, sickness, or* SPINAL SYNCOPE.

II. THE ORGANIC—

Congestion—of

1. *The Face, Eyes, Neck; suffusion, tumidity, lividity, ecchymosis, epistaxis, distended veins;*
2. *The Cerebrum; ecchymosis—red points, or clot; softening; serous effusion; lymph in the arteries;*
3. *The Medulla oblongata;*
4. *The Head; lividity, tumidity, distended veins.*

V. REACTION—

of

The Spinal Centre, with augmented Excitability and Susceptibility to Returns.

VI. PREVENTION, TREATMENT—

consisting in

1. *Avoiding the Causes.*
2. *Restoring the Secretions;*
3. *Removing Excitability;*
4. *Exciting deep Inspiration;*
5. *Substituting Vomiting;*
6. *Removing Congestion;*
7. *Venæsection.*
8. *Tracheotomy?*
9. *Specific Remedies?*

(*To face page* 31.)

experiences an attack of a suffocative character, with a sense of constriction about the throat, on falling asleep. Another patient was liable to awake in a state of confusion, and this confusion, on one occasion, lasted for many minutes. This is, in fact, one species of *Oneirodynia.*

268. The other causes enumerated in the first part of the first column, act also directly upon the medulla oblongata, and thence on the muscles of the throat and neck.

269. The Irritations act in a reflex or diastaltic manner. Sometimes there is a feeling of constriction, of a cord or a tight cravat, or of 'a spike' (for so it has been expressed) about the throat or neck; sometimes there are, sooner or later, sickness and vomiting; the latter of which involves closure of the larynx. In other instances, there are flushing, vertigo, headache, and other threatenings of apoplectic or paralytic seizure; or, perhaps, of a seizure of an epileptoid character; facts, all of which may now, I think, be adduced as proofs of the existence of trachelismus, with which laryngismus is so apt to be conjoined.

270. The irritations act through the medium of incident or *Esodic* nerves; viz. the trifacial, in the case of teething; the pneumogastric, in that of gastric irritation; and the spinal, in those of irritation of intestinal or uterine origin.

271. The irritations of these nerves are, by a mysterious agency, diastaltic through the medulla oblongata, and thence through certain *Exodic* nerves upon the muscles which they supply, and especially upon those classed in this column of my *Table;* viz. the recurrent, the intercostal, the abdominal; the descendens facialis, the descendens hypoglossalis, the spinal accessory, and the other spinal nerves.

272. The course of action along these nerves is traced in its effects on special muscles. These are arranged in *this* column. They are the

muscles of the neck, and the muscles which close the larynx,—especially the platysma myoid, the cleido-mastoid, the omo-hyoid, the trapezius, the scaleni, the sub-clavian, the arytænoid.

273. As proofs of these actions, I must here adduce some most interesting facts:

274. For the first of these I am indebted to J. Russell Reynolds, Esq. to whose talents I have already paid a well-merited tribute of praise, at p. 43. He states, in a note addressed to me in June 1849,—"I have been watching, with great interest, during the last five days, a case of Epilepsy, in University College Hospital. The patient, a stout woman, aged twenty-six, was brought in early on the morning of June 1, in a fit. She had several attacks before I saw her, which was about half-past ten, a. m. She was then lying very restlessly, her face a little flushed, and some convulsive twitches were playing around the mouth. I placed my finger on the *omo-hyoid* muscle, which I could at times see distinctly in the 'posterior triangle' of the neck. It contracted and relaxed several times under my finger; then some of the surrounding muscles were strongly contracted, and a general, but not severe, convulsion followed. There was *total loss of consciousness*, but *not* any great *turgescence of the external veins.*

275. Two days after this, I was again watching her. She had had several severe attacks in the night; and there were now the same convulsive twitches of the muscles of the lower part of the face. I placed my finger in the direction of the omo-hyoid muscle, but could not distinguish it. As I was doing this, the *platysma myoides* contracted violently; its fasciculi stood out in full relief; it was exceedingly rigid; *the veins of the neck became much distended, the face deeply livid;* the surrounding muscles of the neck were *then* strongly contracted, the thorax was drawn towards the head, and the general convulsion which followed was one of the most violent I have ever seen."

276. For the next case I am indebted to W. J. Bryant, Esq. of Bathurst Street. I give his graphic sketch in his own words:

277. "Jane D. aged 82, has been under my care for the last fourteen years. For many years she was severely attacked with bilious headaches, of an agonizing character. The attack was always accompanied by severe bilious vomiting. This state of things continued for a year or more, when, during an attack of vomiting and headache, she was seized with a fit which particularly attacked the left arm and leg, and the left side of the face; the tongue was wounded. The fit passed off, and was succeeded by a profound sleep. I have now seen her so attacked twenty-eight times. She has diminished power of the left hand and arm after each attack.

278. "The last attack was very severe, the patient being insensible and unable to swallow. Having occasion to apply a mustard plaster to the nape of the neck, I was struck by observing the peculiar manner in which the skin of the neck was drawn, as it were, into a band. *I could distinctly observe this band arresting the flow of blood through the external jugular vein, which, with the veins of the face of the left side, was turgid*, and, in one part, dilated into a *varix*. To ascertain whether this band was influencing the circulation, I raised it up, and immediately the veins emptied themselves, and the patient was able, for the first time, to reply to a question from me. My patient being of a very spare habit, I had an excellent opportunity of witnessing the remarkable part which the muscles of the neck were playing. The genio-hyoid, the omo-hyoid, the sterno-cleido-mastoid, and the platysma, were prominently shown and rigid.

279. "The difficulty of swallowing and the insensibility were greater in this attack than usual; but they are always present, more or less, in all.

280. "I had written this, and from circumstances had been pre-

vented further detail, when I received a summons to visit my patient, who was again in convulsions. Upon my arrival, I found my patient but slightly attacked. There were twitches of the muscles of the face, side, and leg, and a slight difficulty in swallowing; the face, as usual, was suffused, the veins slightly turgid, and, to my satisfaction, I found the same band of skin raised by the contraction of the *platysma;* and it was now that I was able at once to arrest the phenomena of convulsive action, by raising the band. The paroxysm ceased almost immediately. The omo-hyoid was not so distinct; but still it was prominent. In fact, viewed as a whole, it was an admirable natural dissection of the triangle of the neck."

281. An interesting case, in which there was contraction of the omo-hyoid, was communicated to me by T. A. Henderson, Esq. of Portman Place, Edgeware Road:

282. "Miss H. aged 67 or 68, was attacked, nearly four years ago, with symptoms of commencing apoplexy, which subsided, but left the leg and arm very weak, and liable to very constant and peculiar muscular action—the great toe of that foot being painfully drawn away from the others, and the left arm being in a tremulous, twitching condition almost continually, and much weaker than the other. I must remark that all these symptoms were much better when the patient was recumbent. The head has been lately drawn downwards and to the left side, and she *feels* a *pulling* in the throat on that side. On putting the fingers along the lower part of the neck, the *omo-hyoid* can at times be felt twitching and drawing—in fact, in a kind of irregular spasmodic action; just as the tendons of the muscles of the arm can be felt at the wrist of the left arm, and indeed, lately, of the right arm also, twitching and catching in a very irregular manner. I should also add, that these symptoms are at times much less violent, varying with the state of the general health; but never entirely absent. When they are severe, I have remarked that pressure on

the omo-hyoid causes pain, and sets up the same spasmodic action and pain in other parts, as the great toe of the left foot, the back of the neck; &c. Pain is also at such times felt in the anterior portion of the trapezius muscle, which I once or twice thought I could feel in the same irregular state of action as the other muscles."

283. In a case of epileptoid seizure, I had, some time ago, an opportunity of observing the clonic contractions of the *omo-hyoid*, with my friend Mr. Martin.

284. These facts are sufficient for illustration. The subject is proposed for investigation; for it is new, and still insufficiently explored.

285. The subject of the anatomy and physiology of trachelismus, with its *varied* effects on the circulation, and on the condition of the face, neck, encephalon, and medulla oblongata, will require years of cautious observation.

286. Of the influence of compression of the veins of the neck in inducing apoplectic symptoms, we have an example in a case of Sauvages, quoted by Abercrombie* :—" A man, after execution, was recovered by three bleedings, and sat up and talked, his breathing and deglutition being natural. After a short time, the part of his neck where the cord had been applied began to swell, so as evidently to impede the circulation in the veins of the neck; he then became drowsy, his pulse and respiration slow, without dyspnœa, and in a few hours he died apoplectic."

287. In blushing and flushing, in the suffused and blood-shot eye, in ecchymosis, in epistaxis, we have the effect of impeded return of blood along the internal jugular; in epileptoid symptoms, we have the same evidence in regard to the vertebral. At least, this I believe to be true in general terms. These points must be submitted to cautious *observation and experiment.*

* Op. cit. p. 202.

288. It is important to observe, that, whilst in paroxysmal apoplexy the trachelismus is latent, in severe epilepsy it is first latent and then evident.

289. In cerebral epilepsy, the trachelismus is, as in paroxysmal apoplexy, latent. The *head* and eyes are fixed, the face flushed, and the pupils dilated, and nothing more. To this state evident trachelismus may, or may not, supervene. In the former case, it is chiefly manifested in the form of torticollis ; &c.

290. The effect of a ligature applied round the neck is, according to its degree and duration, that of the latent or that of the evident trachelismus. How fearful is the following short account of the poor girl, Jael Dennys, by the eye-witness, Elizabeth Hammond, given in *The Times* for March 8th, 1851 :—" I helped to undress her. I observed that her face was very black and swollen, that her mouth was bubbling with blood, and her tongue protruded from it and clenched very tightly by her teeth. Blood was also oozing from the nose, the eyes, and the ears. When I took off her clothes, I saw that her body, from the waist to the shoulders, was very black indeed, and her neck was quite lacerated by the cord through the skin."

291. The first effect of a cord tightened round the neck, is the same as that of trachelismus, or the apoplectic state ; and Mr. Williams well observed, in the case from which I have made the foregoing extract, that " the effect of the pressure by the first coil of the rope upon the trachea" (the neck, rather) " must have been immediate insensibility, and that it was impossible for herself to have made two other coils of the rope round the neck afterwards."

292. The epileptoid state is a subsequent effect—an effect of a severer application of the cord (which, I think, could scarcely be induced by the mere force of the hands of a suicide), or of a later stage. It is in

this manner that, to the apoplexy, convulsive phenomena, the protrusion of the tongue, and the closure of the maxillæ, are superadded.

293. In the same manner convulsion is occasionally superadded to apoplexy, and spinal supervenes on cerebral epilepsy. They are different phases or degrees of one and the same morbid affection.

294. Mania may supervene on both, or either; and amentia, if the seizures be repeated, or the induced condition be severe and long continued, may be the fatal result.

295. The transition of congestion into ecchymosis, and of this into softening, as displayed in this column of the *Table*, is also a further subject for careful investigation, equally new and important.

296. The morbid appearances found on a post-mortem examination are apt to be viewed as the disease, or as the cause of the disease. They are, in reality, its *Effects*. Fulness of the veins and of the intervening blood-channels placed between these and the arteries, red points, or points of ecchymosis, the effusion of a clot of blood, the consequent softening, the effusion of serum, the presence of fibrine in the arteries, are *all* the effects of repeated congestion,—the effects and not the causes of the original malady, though the causes, in their turn, of subsequent symptoms. Of these symptoms, I may observe that the local softening is the cause of partial paralysis, whilst the general effusion of serum is frequently the cause of general paralysis, or of amentia.

297. The effusion of serum is seen in the ventricles and under the arachnoid of the surface, and of the base of the brain. In some instances the arachnoid is raised by the serum into the form of a vesicle. In others, the plexus choroides is affected in a similar manner, and a vesicle or cyst is seen to occupy one part of it.

298. These views, in regard to the morbid anatomy of paroxysmal diseases of the cerebral and spinal systems, are of the utmost moment.

We have too long been in the habit of concluding that such morbid anatomy is the disease; and in this manner even the most positive department of medicine has led us into error. These very appearances must be *interpreted*, and that—by the *physiology*.

299. It will be interesting to ascertain whether there be any difference between the post-mortem appearances in paroxysmal apoplexy and epilepsy. I believe there is none,—a further proof of the nature and identity of the causes and rationale of these diseases.

300. In the succeeding column, another topic is noticed. It is the susceptibility or tendency, left by previous attacks, to subsequent attacks of the same character. The nature of this may be either of a nervous or vascular character, or both; that is, there may be either *nervous or vascular exhaustion and re-action*. Time, and the avoiding the exciting causes, and tonics, and especially such a tonic as will act on the spinal marrow, appear to me to be means of cure.

301. These remarks illustrate the last column of the *Table*, in which I have enumerated the principles of treatment of paroxysmal seizures.

302. To remove and avoid the causes; to avoid the obstacles to the cure, by regulating all the functions; to restore the due tone of the system; are our great objects.

303. Now there comes a question as to any specific remedy; and, in this respect, it becomes a question whether strychnia, which we know to possess the power, in large doses, of singling out and *stimulating* the centre of the spinal system, would, in minute doses, act as a *tonic* upon this organ specially—an event which, from some cautious trials, I think probable. It would present us with an example of a *Spinal Tonic*.

304. A second question is not of less interest. Might sickness and vomiting be so timeously induced, as either to anticipate or supersede the paroxysmal seizure? Such a seizure is frequently terminated by a fit of

vomiting. If there were any premonitory circumstances or symptoms, might not an emetic ward off the coming attack? Are sickness and vomiting compatible with the paroxysmal apoplectic or epileptic threatening?

305. Lastly, do the new principles which I have unfolded lead to any other modes of prevention or treatment?

306. I could give a goodly list of cases which have been brought, by dietetics, by mental and physical regimen, and by the remedies and means to which I have adverted, to a happy issue. But time, and patience, and steadiness of purpose, are required in the physician, in the patient, and in the patient's friends; and many are the disappointments in the course of the case which may yield to your efforts favorably at last. The susceptibility to attacks may be extreme; exposure to the exciting causes scarcely to be avoided.

307. The first link in this extraordinary chain of causes and of effects is a cause either of direct or catastaltic, or of reflex or diastaltic, action; this cause acts through the spinal system upon the muscles of the throat and neck, and perhaps of the larynx; these upon the veins of this region; congestion of the *intermediate* blood-channels, intermediate between the last arterial branches and the first venous roots, and congestion, and perhaps ecchymosis, of the exterior parts of the head, take place!

308. In all this chain, each link is essential and the series complete! Is it not a unique instance of a living pathology so traced, and of the practical application of a physiological discovery? And how does it call forth our knowledge of anatomy!

309. Indeed, I propose to seize the opportunity of again dissecting *the Neck*, regarded as a *Medical Region*, with peculiar care. The nerves, esodic and exodic, the muscles, the veins, the venules, must *all* be dis-

played; and their relative actions should be traced in a series of well-devised experiments and cautious observations.

I.—*The Relation of Apoplexy, Paralysis, Epilepsy, and Mania.*

310. The difference between Apoplexy and Epilepsy is the difference between trachelismus and spasmodic laryngismus, jugular and vertebral vein, cerebrum and medulla oblongata.

311. The patient affected with paroxysmal apoplexy sometimes becomes epileptic. The epileptic patient, on the other hand, sometimes experiences attacks which gradually assume the more apoplectic character. The fit of apoplexy is sometimes attended with convulsion, as observed by Abercrombie*. The fit of epilepsy usually terminates in an apoplectic stupor, and this sometimes in mania.

312. Both the apoplectic and the epileptic seizure are equally prone to issue in hemiplegic paralysis. This event is both more frequent and more apt to be permanent in the former case than in the latter; and, I believe, for this reason:—The cerebrum is more congested in apoplexy than in epilepsy, though it *is* affected in both. Epilepsy is more apt to become complicated with spasmo-paralysis than apoplexy, for a similar reason: the medulla oblongata is more affected in the former disease than in the latter.

313. The apoplectic and especially the epileptic seizure is apt to pass into stupor or mania; and, in the case of *hidden* seizure, it may be very difficult to form an accurate judgment of the nature and origin of these events.

* Op. cit. p. 203-4.

314. Heberden, whom I have so often quoted, observes—" Modo *insania* et *paralysis* eundem vicissim occupaverunt. In nonnullis *epilepsia* tam prope abest a *paralysi*, ut difficile dictu sit ad utrum morbum signa sint referenda." And—" Inter plurima autem mala, quæ secum ferunt affectus *apoplectici*, aliquid inde boni semel visum est oriri: nam *epilepticus* quidam, *attonitus* factus, deinde revixit, et veterem suum morbum nunquam postea expertus est. Contra, aliis contigit, ut ex *hemiplegia* assurgentes, tum primum cœperint cum *epilepsia* conflictari*."

315. Every fact leads to the inevitable conclusion, that the apoplectic, paralytic, epileptic, and maniacal affections are allied intimately together.

316. The same remarks relate to puerperal cases: convulsion, apoplexy, paralysis, mania, are so linked together, that they may not only occur singly, but in various succession, before, during, or after, parturition. The difference is, in reality, but the difference of vein principally compressed.

317. In one lady, the subject of repeated epileptic seizures, these assumed gradually more and more of the apoplectic character, until one terminated fatally and suddenly. On a post-mortem examination, the integuments of the face were found of " a dark blue colour," and dark blood flowed on dividing the scalp and separating the dura mater; the sinuses and the veins on the surface of the brain were gorged with dark-coloured blood; the substance of the cerebrum was healthy, but greatly congested. The vertebral arteries presented " a pouchy appearance." There was a fatty heart.

318. In a gentleman, several epileptic seizures occurred, the effect of *fear*,—the fear of cholera. After each, a hemiplegic paralysis of the

* Op. cit. pp. 287; 297.

right side took place; but this yielded completely, except that the patient could never divert his mind from the idea that the feeling of the affected side was somewhat different from that of the other. At length a further attack proved fatal; and, on a post-mortem examination, the arachnoid was found slightly opaque, the ventricles containing serum, whilst in the *left* corpus striatum there was the remnant of a small clot of blood, in a cyst slightly discoloured. The arachnoid was raised in one part by serum, resembling a vesicle, and a small cyst was attached to the plexus choroides.

319. In both these cases, the arteries at the base of the brain contained a little opaque fibrine—the *effect* of the seizures and of impeded flow of blood along their course?

320. It becomes a most interesting question—What are the precise conditions of the arteries and veins after repeated paroxysmal seizures? I imagine that the deposit of fibrine, frequently found in the arteries, is not unfrequently the *effect*, rather than the *cause*, of softening of the brain, and perhaps of other tissues, organs or limbs; and even, in some cases, of gangrene.

321. Every day brings forth some new illustrative fact. For the following sketch I am indebted to W. F. Barlow, Esq. of the Westminster Hospital:—"A woman, 38 years of age, who had been some time labouring under chronic bronchitis and a laryngeal affection, which was occasionally aggravated by spasm, was one day seized with a violent spasmodic action of the glottis, in which she appeared nearly suffocated. It relaxed, and she recovered, without ill consequence; but shortly afterwards she was attacked with another such spasm, on the subsidence of which, the left side of the face, the left arm, and the left leg, were found completely *paralysed*. The patient was going on, to all appearance, very well, when she was seized with an *apoplectic* fit, and speedily died."

II.—*Comparison of the Effects of Strangulation and Epilepsy.*

322. Abercrombie describes strangulation as being a case of simple apoplexy. This it would be, if, in both cases, the larynx or trachea were entirely excluded from injury. But in strangulation the trachea is immediately, and in deep apoplexy more remotely and partially, involved. The *first* effect of strangulation is apoplexy; insensibility is instantaneous. The second is the truest epilepsy!—the tongue is thrust out and bitten; the sphincters are relaxed, and the expulsors are excited to spasmodic action; there are violent but ineffectual efforts at expiration, and convulsion!

323. Eventually, in deep apoplexy, paralytic laryngismus occurs. But it is incomplete. And therefore there is, usually, at this stage no convulsion.

324. Finally, both strangulation and apoplexy destroy life by asphyxia; the former quickly, the latter slowly.

325. Even in their *remote* effects, there is a similarity between strangulation and epilepsy. When the patients survive, the phenomena are still the same—coma, convulsion, delirium. Is there in the former, as in the latter, ever hemiplegic paralysis?

III.—*Of Paroxysmal Diseases of the Cerebral and Spinal Systems, as a Class.*

326. In concluding this Lecture, I may observe that I am persuaded that I have stated enough of fact to effect the establishment of a *Class* of paroxysmal diseases of the nervous system, each and all of which

involve an excitant of direct or of diastaltic action, on muscles of the neck, and compression, by these, of the veins of that region, and the consequent congestion of these tissues within or without the encephalon and spinal cavity, perhaps with ecchymosis or softening, or serous effusion.

327. These events are variously translated into apoplectic, paralytic, epileptic, syncopal, or maniacal seizures, which constitute the *Class* of Cerebral and Spinal Paroxysmal Affections.

328. In some instances, the *first stage* of these seizures is *hidden ;* in others, the seizure assumes the form of *Oneirodynia;* in others again, it is mere blushing, ' sick-headache,' sick-giddiness,' &c.

329. What a momentous subject for fresh inquiry !

330. In our daily visits to the sick, our first duty is to establish an accurate *Diagnosis.* Diagnosis, in these diseases, is unfortunately not of the physical kind, as in diseases of the thorax, but the interpretation of symptoms. In this manner it is that the *physiology* of the nervous system and the *diagnosis* of its diseases meet and coalesce. And yet the physiologist is still calumniated by the ' mere practical man,' that is, the empiric, as a *theorist.* Such is still the deplorable condition of our profession !

IV.—*The Diagnosis between Paroxysmal and other Attacks of Apoplexy.*

331. There is still no medical topic of such value, and importance, and difficulty, as Diagnosis.

332. Hitherto, I think, the distinction between the different attacks of apoplectic character has only been one of *degree.* But I believe there is an essential difference between the *Threatenings* of apoplexy which

occur and recede paroxysmally, and even the slightest inroads made by organic disease, whether of the arteries, or veins, or membranes, or the substance of the encephalon. Whilst the former are repeated, at first leaving little or no ill effect behind, the latter proceed insidiously, and at last there is perhaps a crushing attack of pain, of pallor, and of apoplexy; or, of hemiplegia;—a large laceration of the substance of the brain and extravasation of blood being discovered on making a post-mortem examination.

333. It must be borne in mind that a first attack may assume the form of paroxysmal apoplexy, the patient recovering speedily and entirely; and yet the second may be of the most deplorable character. In the former case, there are generally turgescence of the face and neck—the effect of trachelismus; in the latter, there is pallor—the effect of *shock*. An interesting case of this kind was recently published by Mr. Dunn, in *The Lancet:*

334. "The subject of this communication died in a state of coma, on the 18th of last April, in the 66th year of her age. I was first called to attend her on the 6th of October, 1844, at four o'clock in the morning, in her first apoplectic seizure. Up to that time she had enjoyed excellent health; but she had retired to bed, the evening before, rather more than ordinarily fatigued, in consequence of the indisposition of one of her daughters. She slept with the invalid. A little before four o'clock in the morning, the daughter was awaked by a strange noise her mother was making, and I was immediately sent for. I found her in a state of coma, with stertorous breathing, head hot, face flushed and turgid, mouth drawn down to one side, pulse full and labouring. I bled her freely from the arm, gave five grains of calomel, and a strong cathartic draught, and applied a cold lotion to the head. At my next visit, about four hours afterwards, she had partially recovered consciousness; but I found her

hemiplegic on the right side. A blister was applied to the nape of the neck, and a grain of calomel ordered to be given every four hours, with a dose of saline mixture.

335. "Her recovery was quick; she regained the free and full use of the arm and leg; and in a few months her general health appeared to be perfectly re-established. One peculiarity, however, remained—the habit of using one word for another, and of not applying appropriate names to the things signified: she never afterwards called even her own daughters by their right names. She had recovered so soon, and so perfectly, that I was inclined to view the attack as one of simple or congestive apoplexy; but the peculiarity in respect to verbal language arrested my attention, and led me to fear the existence of some structural lesion of the encephalon.

336. "From this time her health continued good, and she discharged all the household and relative duties of life as usual, with pleasure to herself and family, up to the period of her second attack, which took place on the 17th of May, 1847. Her daughter found her, between eight and nine o'clock in the morning of that day, lying in a state of insensibility, on her back, upon the floor of her bed-room. She had opened the window-shutters of the bed-room, removed the bed-clothes, and whilst in the act, it was supposed, of making the bed, had fallen down in a fit on the floor. I was immediately summoned. The contrast was striking between the symptoms in this and those of the former seizure. The coma was alike profound in both; but there was little, if any, stertor in the breathing. Instead of the hot and flushed face, it was pale, and bedewed with a cold, clammy moisture; the extremities were cold, and the pulse, instead of being full and labouring, was feeble, weak, and fluttering. An opposite treatment was clearly indicated. I gave her freely ammonia and Hoffman's anodyne; applied warmth to the surface of the body, and cataplasms of mustard to the soles of the feet and nape of the neck. A tur-

pentine enema was administered. She gradually recovered her consciousness, but was speechless for the remainder of her life. In a few hours from the time of the attack, she could be roused when loudly spoken to, but immediately relapsed into insensibility.

337. " She was again, and for the remainder of her life, hemiplegic, on the right side, completely, as to motion, but some sensation remained: there was no muscular rigidity whatever. Active reflex movements were excited by tickling the foot; but none could be induced in the upper extremity."

338. " The last and fatal seizure was as sudden as the two former had been. On the 14th of April, 1850, as she was being undressed, at about ten o'clock in the evening, she fell suddenly back in a fit, in her chair, and for a short time the paralysed arm and leg shook violently. With some difficulty she was lifted into bed in a state of insensibility and utter helplessness. I was sent for. I found her, as at the second attack, in a state of great collapse, and comatose, with loud stertor, and with her left side as helpless as her right, completely paralysed, passive, and powerless. The pulse was small, weak, and fluttering; the whole surface of the body, as well as the extremities, were cold and clammy. In the *right palsied* arm and leg were noticed occasional convulsive jerks; but none in the left. Tickling the sole of the *right* foot excited active reflex movements; but the same means produced no effect on the left. The sphincter ani was relaxed. The teeth were so firmly fixed, that nothing could be got into the mouth. Warmth was applied to the surface of the body and to the feet. A turpentine enema was thrown up, and a blister applied to the nape of the neck; but, I need scarcely say, without any good effect. She gradually became weaker, and expired quietly on the 18th, the fourth day from the attack.

339. " *Post-mortem Examination, twenty-eight hours afterwards.*—

On carefully raising the calvarium, leaving the dura mater *in situ*, the sinuses were found gorged with dark, black blood, and I was struck with the want of symmetry between the hemispheres of the brain. The left, on its anterior and upper surface, was much *depressed* and *shrunken*, and, on applying the finger to the depressed portion, a distinct fluctuation was felt beneath the membrane. This was found to arise, on the removal of the dura mater, from the presence of serous effusion into the arachnoid sac, to the extent of several ounces; the other membranes were opaque and thickened. The right hemisphere presented nothing abnormal in its appearance, and on carefully slicing down its substance to the level of the corpus callosum, the structure throughout was healthy. When its lateral ventricle was laid open, a very small and recent apoplectic clot was seen upon the upper and anterior surface of the corpus striatum, surrounded on all sides by a red streaky extravasation into the broken-down tissue of the striated body. The whole of its upper half was in a state of ramollissement, and on the outer surface also of the thalamus opticus were noticed some indications of white softening. Of the left hemisphere, the upper two-thirds of the anterior lobe was a pulpy mass, *in a state of complete destruction, with colourless softening*, while the middle and posterior lobes were sound and healthy. The corpus callosum was destroyed, except at its anterior and inferior reflexion; and so also was the upper half of the corpus striatum on the left side. The optic thalamus was shrunken to less than half its natural size, its upper surface being greatly wasted. The anterior commissure and fornix were gone; but the corpora geniculata were sound and healthy. It was only the lower plane of the left anterior lobe and of the corpus striatum which maintained their integrity. There was some serous effusion into the ventricles, and at the basis of the skull."

340. And now the important question presents itself—what were the precise lesions in 1844 and 1847, and especially at the former date?

How little do the *post-mortem* appearances in 1850 teach us in regard to this point! The important *fact* is one of a symptomic kind: in 1844, the countenance was flushed, and the hemiplegia evanescent; in 1847, the countenance was pale and the hemiplegia permanent!

V.—*The Treatment of Paroxysmal Nervous Affections.*

341. I have already hinted at the difference in the treatment of paroxysmal and of organic apoplexy:

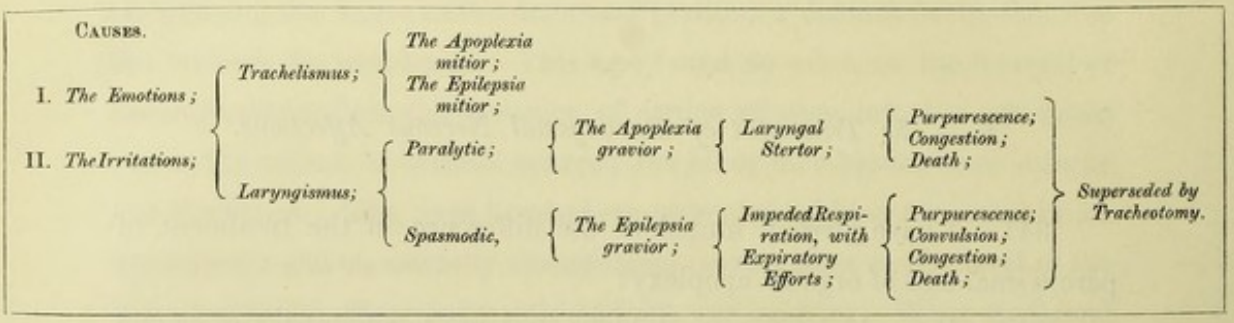
342. It would be a very dubious measure to administer an emetic in the case of organic apoplexy or paralysis. It is more than probable that greater congestion, or greater effusion of blood, would be excited by the acts of vomiting.

343. But if the case were one of paroxysmal apoplexy or paralysis, the nausea and sickness induced by a mild emetic would probably dissolve the spasm on the muscles of the neck, and so remove the consequences—the impeded return of the blood along the veins of the neck and head, and the congestion of the encephalon.

344. It is in this manner that the long-continued discussion between Fothergill and Cheyne and other physicians, is to be terminated. There are forms of the apoplectic seizure, for which a mild but effectual emetic is the appropriate remedy. There is another in which the administration of an emetic would not be unattended with the danger of aggravating the disease.

345. The principles of the treatment of the paroxysmal forms of apoplectic, paralytic, and epileptic diseases are indeed totally different from those of the similar diseases of *organic* origin.

346. I conclude this section by presenting to my reader the following *Sketch*:



347. I trust the time will arrive, though it be now far distant, when the term epilepsy, that stigma applied by physicians to their patients for so many ages, will be abolished, and replaced by those of trachelismus and laryngismus.

SECTION V.

THE DIAGNOSIS; CASES; TREATMENT.

348. In this concluding Lecture, I propose to illustrate my subject quite practically, and by the detail of a few *Cases*, with such observations as they may suggest, and with special reference to the diagnosis and treatment.

349. The basis of all scientific medicine is—the *Diagnosis*. The next steps are the physiology, the living pathology of the disease; and the next, the therapeutics.

I.—*Apoplexy and Paralysis.*

350. The great question, in regard to the diagnosis of apoplectic and paralytic seizures, is that of their Inorganic or Organic character, primary or secondary.

351. I consider that form of apoplexy or paralysis which arises from emotion, or irritation, as primarily *inorganic*. That form of these affections which arises out of disease within the encephalon, and especially from rupture of the substance of the brain, of course, as *organic* in its character.

352. The former of these is characterized by varied flushing of the countenance, and perhaps of the neck, and by various symptoms, such as

headache, vertigo, loss of consciousness; loss of the power of speech or of the hand; or more decided apoplexy or hemiplegia. Of this kind of attack there is every variety, every degree, every duration from the most transitory to the permanent, every kind of recurrence and remission. It may be slight and transitory, and recurrent during many years. It may lead to organic apoplexy or paralysis. It may prove fatal even, in any of its attacks, early or late.

353. I must now adduce another extract from Abercrombie, which I consider as amongst the most important in medical writings—a sufficient apology, I hope, for its length:

354. "The apoplectic attack is generally preceded by symptoms indicating some derangement of the circulation in the brain. The most remarkable of these are the following:—headache, giddiness, sense of weight and fulness in the head, violent pulsation of the arteries, and confused noises in the ears. These symptoms are often accompanied by *epistaxis*, which may give a partial and temporary relief; by loss of recollection, and incoherent talking, resembling slight intoxication; by affections of the sight, double vision, and temporary blindness; by drowsiness and lethargic tendency. We also frequently observe *indistinct articulation*, and other *partial paralytic* affections. These are sometimes confined to one limb, or part of a limb; sometimes affect the eyelids, producing inability either to shut the eye, or to open it; and frequently impair the muscles of the face, producing a slight distortion of the mouth. These symptoms, and others of a similar kind, mark the *tendency* to the apoplectic state, and often appear for a considerable time *before* the attack actually takes place. The attack itself occurs chiefly under three distinct forms, which it is of importance to distinguish from each other.

355. "I. In the first form of the attack, the patient falls down suddenly, deprived of sense and motion, and lies like a person in a deep

sleep; his face generally flushed, his breathing stertorous, his pulse full, and not frequent, sometimes below the natural standard. In some cases *convulsion* occurs, in others *rigid* contraction of the muscles of the extremities; and sometimes contraction of the muscles of the one side, with relaxation of the other. In this state of profound stupor, the patient may die after various intervals, from a few minutes to several days; or he may recover perfectly, without any bad consequence of the attack remaining; or he may recover from the coma, with paralysis of one side. This paralysis may disappear in a few days, or it may subside gradually, or it may be permanent. Other functions, as the speech, may be affected in the same manner, being speedily or gradually recovered, or permanently lost; and recovery from the apoplectic attack is sometimes accompanied by loss of sight.

356. "II. The second form of the disease begins with a sudden attack of pain in the head; the patient becomes pale, sick, and faint; generally vomits, and frequently, though not always, falls down in a state resembling syncope; the face pale, the body cold, and the pulse very feeble. This is sometimes accompanied by slight convulsion. In other cases, he does not fall down, the sudden attack of pain being only accompanied by slight and transient loss of recollection. In both cases, he generally recovers in a few minutes from the effects of the attack, is quite sensible and able to walk, but continues to complain of headache; after a certain interval, which may vary from a few minutes to several hours, he becomes oppressed, forgetful, and incoherent, and then sinks into coma, from which he never recovers. In some cases, paralysis of one side occurs; but in others, and I think the greater proportion of this class, no paralysis is observed.

357. "III. In the third form, the patient is suddenly deprived of the power of one side of the body, and of speech, without stupor; or

if the first attack be accompanied by a degree of stupor, this soon disappears; he seems sensible of his situation, and endeavours to express his feelings by signs. In the farther progress of this form of the disease, great variety occurs. In some cases, it passes gradually into apoplexy, perhaps after a few hours; in others, under the proper treatment, the patient *speedily* and *entirely* recovers. In many cases the recovery is gradual, and it is only at the end of several weeks or months that the complaint is removed. In another variety, the patient recovers so far as to be able to speak indistinctly, and to walk, dragging his leg by a painful effort, and after this makes no farther improvement. He may continue in this state for years, and be cut off by a fresh attack, or may die of some other disease without any recurrence of the symptoms in his head. In a fifth variety, the patient neither recovers, nor becomes apoplectic; he is confined to bed, speechless and paralytic, but in possession of his other faculties, and dies gradually exhausted, without apoplexy, several weeks or months after the attack.

358. "These three forms of disease frequently pass into one another; but they are very often met with, as they are here described, forming affections which differ remarkably from each other; and they appear very naturally to arrange themselves into the three classes which have here been referred to;—first, those which are immediately and *primarily apoplectic;* secondly, those which begin with a sudden *attack of headache*, and pass gradually into apoplexy; thirdly, those which are distinguished by *palsy*, and loss of speech, without coma*."

359. It is obvious that the form of seizure described in the *first* of these paragraphs, is the *paroxysmal*, and that it may be *apoplectic* or *paralytic*.

* Op. cit. p. 203—5.

360. It is not less obvious that the attacks described in the *second* and *third* paragraphs are alike in their *organic* origin, that of the former being *apoplectic*, that of the latter *paralytic*.

361. There ought then to have been, *not three* paragraphs, but *two* or *four;* and such is the division I would propose. Thus cerebral seizures may be divided into—

1. *The Paroxysmal*, and
2. *The Organic;*

and each of these may be subdivided into—

1. *The Apoplectic*, and
2. *The Paralytic;*

whilst each of these may present itself in the form of

1. *The slightest Threatening*, or
2. *The severest Seizure.*

362. Paroxysmal cerebral seizure is for the most part distinguished by the flushing of the countenance, the recurrent form of the seizures, the partial nature of these, &c. &c. whether they be apoplectic or paralytic, and the absence of *severe pain of the head.*

363. The organic cerebral seizure is generally denoted by pallor of the countenance, faintishness, sickness, sometimes with *severe pain of the head.* This kind of attack is generally severe, and the apoplexy and the paralysis are comparatively little under the control of remedies.

364. In the paroxysmal seizure there is little appearance of *shock;* in the organic, the shock is frequently extreme, and traced in the condition of the countenance, the general surface, the pulse, &c.

365. In the case to which I have already referred, § , published by Mr. Dunn, the first attack was of the paroxysmal kind; the second was obviously of the organic character. And thus it is obvious that the *effect* of a paroxysmal seizure to-day, may prove the *source* of an organic seizure to-morrow.

366. The great and real distinction between paroxysmal and organic apoplexy and paralysis is this:—in the former, the condition of the encephalon is first one of congestion, and afterwards of ecchymosis, rupture, softening; in the latter, the condition of the encephalon is one of organic disease, rupture, and compression;—with their respective consequences on the functions of the nervous system; apoplexy or paralysis being the effect of the congestion, or of compression, general or partial, and transitory or permanent like their cause; and paralysis, of congestion or of rupture or softening, and transitory or permanent like its cause.

367. Abercrombie speaks of paroxysmal apoplexy as "simple" or "primary," and of the organic as "not primary," and as "accompanied with exhaustion." Of the latter, he says—"They are not at first apoplectic; or, if there be at the very first attack loss of sense and motion, this state is recovered from in a few minutes, or perhaps seconds, without any remedy. The prominent symptom, at the commencement of the disease, is a sudden attack of violent headache, the patient often starting up and screaming from the violence of it. Sometimes he falls down, pale, faint, and exhausted, often with slight convulsion, but recovers from this state in a very short time. In other cases, he does not fall down, but feels a sudden and great uneasiness in his head, generally with paleness, sickness, and often vomiting. The first attack being so far recovered from that the patient is often able to walk home, the symptoms go on under various modifications. The fixed pain in the head generally continues, often referred to one side of the head; and generally there is vomiting. The patient continues for some time, perhaps an hour or two, cold and feeble, with cadaverous paleness of the countenance; his pulse weak and generally frequent. He is quite sensible, but oppressed. By degrees he recovers heat and the natural appearance of the countenance, and the pulse improves in strength. The face then becomes flushed; he is more

oppressed; he answers questions slowly and heavily; and at last sinks into coma, from which he never recovers." And—"As far as my observation extends, the cases which belong to this class are generally fatal. They form a modification of the disease, remarkably different from the simple apoplectic state; and, on inspection, we find none of those varieties and ambiguities which occur in the apoplectic cases, but uniform and extensive extravasation of blood. From the whole history of them, I think there is every reason to believe that they depend upon the immediate rupture of a considerable vessel, without any previous derangement of the circulation, the rupture probably arising from disease of the artery at the part which gives way. At the moment when the rupture occurs, there seems to be a temporary derangement of the functions of the brain; but this is soon recovered from. The circulation then goes on without interruption, until such a quantity of blood has been extravasated as is sufficient to produce coma*."

368. Cheyne observes—"I have never known a patient recover, who, in the beginning of the attack, complained of sudden pain in the head," &c. †

369. There are then paroxysmal and organic apoplexy. How essential that the *diagnosis* should be vividly impressed on our minds!

370. The following case, for which I am indebted to Mr. Coates, of Salisbury, is full of interest, as displaying some feelings and appearances of trachelismus with cephalic symptoms:

371. "A gentleman, aged about 70, of full habit, and having suffered from hæmorrhoïds, with occasional loss of blood, and from gout, sustained a severe affliction in the loss of his son. He became liable to awake in the night with a suffocative feeling in the throat, making a

* Op. cit. pp. 218; 219.

† Cases of Apoplexy and Lethargy; 1812; p. 13.

peculiar noise. In the day too he was subject to giddiness, with a slight cloudy appearance before the eyes, and a sense of tightness about the throat.

372. "He had, at the time of this report, frequent headache and giddiness, and dimness of sight; his neck was thick, the external jugulars and the temporal arteries prominent."

373. Not less interesting is the following extract from a note which I received since the former edition of these observations:

374. "I am much obliged to you for your kind enquiries about my father. He had, about two years ago, a threatening of apoplexy; the speech became affected, and the pulse intermittent. He was, for a short time, faint and rather sick. He entirely recovered the power of speech in about a week, and his pulse became regular; but there remains a very slight depression of the right angle of the mouth. These symptoms have not been attended with debility of any one of the extremities. His attack is very accurately described in your Lectures on the Threatenings of Apoplexy."

375. I extract the following important case from the useful work of Dr. Cheyne*:

376. "August 26, 1804. Mr. A——n, æt. 65. I was called to visit this gentleman, in lodgings, at Bath Street, where he was residing for the convenience of sea-bathing, which he had been advised to use for some weeks. He had dined in Edinburgh, and had afterwards walked home. On his arrival, his daughter observed only that he was exceedingly flushed and warm, and that he was perspiring very copiously about the head and face. While she was preparing some drink for him, he fell from his chair insensible. On my arrival, he was laid in bed, his head and

* Op. cit. p. 94.

shoulders supported by his wife, and my father in the act of bleeding him. The state of apoplexy was complete, and unequivocal; the respiration was deep and sonorous, and the pulse was slow and full. *His face was flushed*, or rather *livid*, for he was a big and corpulent man, with a thick short neck, and the superadded signs of a bon vivant. The blood flowed freely from a large orifice; and, as the fourth cup was nearly filled, our patient became sick, and vomited very freely the half-digested remains of a plentiful dinner. Shortly after this, our patient opened his eyes, and turned round his head; and after two hours, he seemed nearly completely recovered. His wife and daughter were much less surprised than we were, for this was the gentleman's *third* attack of apoplexy; and the former fits had also terminated by vomiting. After the first attack, the right arm continued paralytic for twelve weeks, but gradually recovered, after a a course of sea-water bathing.

"(Signed) GEORGE KELLIE, M.D."

377. In the treatment of the apoplectic and paralytic attack, the great questions relate to the administration of blood-letting and emetics.

378. In the decided paroxysmal seizure, our practice may be, and ought to be, energetic. We should promptly take away blood, and we should induce sickness and vomiting.

379. If the attack be slight and repeated, an antacid aperient draught, properly repeated, may be all that is immediately required. If it be severer, an emetic with an antacid should be first given, and then an antacid aperient. If severer still, blood-letting, by cupping or by venesection, must be premised.

380. In the midst of these measures, the head should be raised, a cold lotion applied to the crown of the head, sinapisms behind the ears and to the nucha, and fomentations of the feet, and an enema should be administered.

381. Afterwards, the tenth part of a grain of the chloride of mercury, two grains and a half of the pilula hydrargyri, and half a grain of squill and of ipecacuanha, should be given thrice a day.

382. But, in organic apoplexy or paralysis, it may be a question whether we should take blood; but there can be no question with regard to the administration of emetics.

383. The propriety of blood-letting, and its measure, must depend upon the state of the pulse and of the patient generally. The condition of the pulse must be ascertained as the blood flows. Sometimes its strength improves, and then we venture to proceed. On having taken what is deemed the due quantity of blood from the arm, we may prescribe cupping behind the ears, or at the nucha.

384. Emetics ought, I believe, and for the reasons stated, to be avoided.

385. The other remedies are those which have been already noticed as proper in the other form of apoplexy or paralysis.

386. The cupping instrument applied to the nucha, making crossed incisions, but taking very little blood, presents us with a very efficacious mode of counter-irritation.

II.—*Epilepsy and Epileptoid Affections.*

387. The epileptoid or epileptic seizure is still more distinctly characterized by trachelismus. In some cases, the whole attack consists in a fixed state of head and eye, dilated pupil, and a deep flush. In other instances, unusual flushing of the face, with suffusion of the eye or eye-lid, is the forerunner of a decidedly epileptic seizure. Every thing tends to prove that the earliest effect, whether in apoplexy or epilepsy, is a state of trachelismus.

388. In the slighter forms of these maladies, there is, in reality, *no* difference. The threatening of apoplexy is so far spasmodic, that is, *spinal*, that it consists in trachelismus with its effects on the countenance and encephalon; the *petit mal* has even been designated *cerebral*, from its principal symptoms. The condition of the countenance and of the brain is identical. I repeat, there is no difference. The real difference between apoplexy and epilepsy is only seen in their severer forms. It is then that, whilst apoplexy is only attended by the simpler trachelismus, in epilepsy, to this simpler trachelismus is superadded another form or degree of the same affection, with all the peculiarity it induces, laryngismus, and, in its train, it may be, odaxismus, or the—trachelismus, shall I call it?—involved in the *bitten tongue*. Now it is, that, whereas the further phenomena in apoplexy are *cerebral*, those in epilepsy are *spinal*.

389. The first stage or first degree of both apoplexy and epilepsy consists then in trachelismus,—a spasmodic or spinal action, manifested in its effects on the venous circulation, of the countenance and of the encephalon. The second stage or degree of these maladies, is augmented cerebral affection in the former, and spinal affection in the latter; the difference consisting in the different forms assumed by the trachelismus, or the special muscles contracted, and of the veins compressed and obstructed. If these muscles are those which compress the jugulars, the case is apoplexy; but if they are those which compress the vertebrals, close the larynx, &c. it is epilepsy! At least, I have not been able to resist the train of thought which has forced itself upon me, and which I lay before you with the utmost frankness, trusting to you to give it your most candid consideration.

390. Both paroxysmal apoplexy and epilepsy are, then, first *spinal* or spasmodic, only in different degree and extent; both become *cerebral*, both leading to *coma*, and, it may be, to *paralysis;* both terminate, occasionally, in *mania* or *amentia*.

391. I commend these views at once to your indulgent candour and consideration. I am persuaded I have taken a real step in the pathology of these dire and Herculean affections. But if I have failed, I have failed in that which the celebrated Esquirol, after a life devoted to the subject, declared to be impossible!—" Les symptomes de l'épilepsie sont tellement *extraordinaires*, tellement *au dessus de toute explication physiologique;* les causes de cette maladie sont tellement *inconnues*, que les anciens ont cru qu'elle dépendait du courroux des dieux*." In a recent consultation (on October 19, 1851), in a case of epilepsy, one of the first authorities of this metropolis described the malady as a sort of electric shock, as one of the nature and rationale of which we are entirely ignorant, and prescribed the—sulphate of zinc!

392. The great fact is—that trachelismus, a spasmodic affection of the muscles of the neck, is the first, or rather the second, link in the chain of actions which lead to paroxysmal apoplexy or paralysis, or mania, as well as epilepsy and the epileptoid affections.

393. I need not, I think, insist further on this fact, so important in the pathology. And it is precisely the same fact which leads us into the true path of treatment.

394. May a fit of sickness and vomiting, timeously induced, be made to anticipate and supersede, and take the place, as it were, of a fit of epilepsy? How full of the deepest interest is this momentous question!

395. And then there is another question—When ought this emetic to be given?

396. There are, I believe, two periods when this is proper. The first, is when an attack is imminent, as ascertained by premonitory signs; the second, when, without premonitory signs, we may be anticipating the attacks generally.

* Les Maladies Mentales, tome i, p. 274.

397. May a deep inspiration, excited by dashing cold water suddenly and briskly on the face, or by some irritant of the nostrils, prove a preventive of the epileptic seizure?

398. Another remedy of great moment, which may or may not be combined with the emetic, is a large dose of antacid, as twenty or thirty grains of bicarbonate of potass.

399. Both emotion and gastric irritation are apt to induce excessive secretion of the hydrochloric acid in the stomach; and this, I suspect, is a frequent cause of attack. This cause is effectually removed by the antacid, which should be administered whenever any symptom, nervous or gastric, seems to call for it.

400. A rigid system of mental discipline, of diet, of gentle exercises, of attention to the alvine and the urinary secretions, and early hours, must be combined with these and any other remedies that may be deemed proper.

401. One remedy, from which I think I have seen benefit, is the acetate of strychnia. The important question to determine is—what is the *tonic* dose of this remedy? I believe it has been generally given in a dose which is *stimulant*, and therefore injurious. From many trials, I am led to propose the fiftieth part of a grain, given thrice a day, as the proper dose as a tonic, in cases of nervous exhaustion and susceptibility, and to propose the following *formula:*

℞ Strychniæ Acetatis, gr. i.
Acidi Acetosi, m. xx.
Alcoholis, f℥ii.
Aquæ distillatæ, f℥vi. Misce.

Ten minims of this solution contain the medium dose of the remedy.

402. In all cases of what may be justly designated nervous exhaustion,—the effect of mental harass, of physical fatigue, of sexual

excesses,—this remedy appears to me to be of great promise. And the susceptibility to paroxysmal seizures, at once their effect and their cause, is of this nature.

III.—*On Spasmo-Paralysis, and its Diagnosis.*

403. The *attack* of apoplexy and hemiplegia is sometimes complicated with convulsion or spasm ;

404. The attack of epilepsy or convulsion sometimes leaves paralysis.

405. These two cases of spasmo-paralysis sometimes require to be accurately distinguished from those of pure spasm and pure paralysis. The former of these is, of course, spinal ; the latter may be either purely cerebral or purely spinal; but spasmo-paralysis may be either spinal or cerebro-spinal. When the spasmo-paralysis is distinctly *hemiplegic*, I think it always involves both the cerebrum and the spinal centre.

406. When hemiplegia is complicated with convulsion or spasm, either in the attack or afterwards, the cause of the hemiplegia—generally softening or rupture of the opposite hemisphere—is either complicated with such *tumefaction* as to affect the medulla oblongata by pressure or counter-pressure, or with arachnitis, with effusion at the base of the brain, affecting the medulla oblongata. In one deeply interesting case of this kind, the hemiplegia presented an exception to the general rule of augmented irritability in the paralytic limb. Whether this fact will be found in other cases of this kind, I do not yet know. But if it should, it will at once indicate a peculiarity in the pathology ; for the paralysis must be more or less *spinal*, and suggest the diagnosis.

407. This last question applies to the case of paralysis left by the convulsive or epileptic seizure. Is it *spinal?* Is it attended by diminished irritability of the muscular fibre?

408. The attacks of paralysis which we so frequently observe in children, and refer to dental, or gastric, or enteric irritation, require special investigation in this respect.

409. The hemiplegia observed after the epileptic or convulsive seizure is sometimes entirely dissipated. In one case this event occurred after repeated seizures, the hemiplegia being rapidly evanescent in each. In another case, the hemiplegia, after severe epileptic or convulsive seizures, seemed, like those seizures themselves, of the most hopeless kind; yet it disappeared so entirely, that the patient, a seal-engraver, has recovered the perfect use of his fingers, as of the arm and leg.

410. The questions are—whether there be mere irritation, or organic change;—whether there be mere intra-vascular, or extra-vascular derangement.

411. These two forms of spasmo-paralysis are strictly connected with the subject of these Lectures—paroxysmal seizures. But there are others which belong to a more extensive view of the subject, to which I can, of course, only advert in a few words.

412. First, chronic hemiplegia is apt to become complicated with spasm, the effect of *tone*, the acts of volition being suspended. This is generally seen in the closed and rigid hand, and in the arms.

413. Secondly, spasmo-paralysis is apt to supervene in chronic cases of paralysis agitans; and, in this case, strange to say, I think it is the effect of a sustained act of volition, of which the patient is unconscious. It ceases, on certain occasions, as when the attention is drawn to another object, or subdued in sleep.

IV.—*Spinal or Epileptic Syncope.*

414. Sometimes, instead of the usual apoplectic or epileptic attack with purpurescence of the face, there is sudden livid pallor, perhaps, but not always, with sickness, faintishness, a clammy perspiration, &c.

415. This state of things may be the result of irregular circulation in the medulla oblongata, or the effect of alarm; in the latter case, with or without previous flushing.

416. I have already compared this kind of apoplectic or epileptic affection to the state of things induced by the motion of a swing or of the sea, or by a blow or fall on the head.

417. One patient, instead of being taken with trachelismus and flushed countenance, or with laryngismus and purpurescence and convulsion, is liable to be seized with ghastly pallor, and repeated noisy *blowing* between the lips. There is no sickness or perspiration; but there is a degree of mental debility.

418. The same patient may, at different epochs, be seized with each kind of epileptoid affection, variously and in turns.

419. Spinal syncope may prove suddenly fatal! Of this event the following extract from a note recently received affords an example:

420. "I have read your paper in *the Lancet* of yesterday, and having been called to a case of sudden death, on Thursday, and made the post-mortem examination carefully, I cannot help asking your opinion as to the cause of death. I must trouble you with the particulars of the case, as I think they are important. The patient was a young man, ætat. 18; he had been in my house during three months, for the benefit of his health; he was subject to epileptic fits, at intervals usually of five or six weeks. They were severe, and generally left him heavy and stupid for

two or three days afterwards. He had had two attacks during his residence with me. On Thursday last, he *ran* to the post-office, about a quarter of a mile, asked whether he was in time, looked, as the man who saw him expressed it, 'dead beat,' fell down, and was dead when I arrived, ten minutes afterwards. He was quite livid, and exactly as if in a fit; but the respiration and the action of the heart had ceased.

421. The post-mortem examination, forty-eight hours afterwards, showed a perfectly healthy state of the heart and lungs, with redness and some congestion of the larynx; the brain was not much congested; but there was a bony deposit of the size of a sixpence between the dura and pia mater, and a considerable quantity of black blood in the sinuses at the base of the brain."

422. The recumbent position and cordials are required. Otherwise, the treatment is the same as in the more ordinary apoplectic or epileptoid affections.

V.—*Hidden Seizures.*

423. This subject will be best illustrated by the following most interesting case:

424. At the close of 1848, I was summoned to see Mr. ——, of ——, aged about fifty, a merchant. I found him in a state of delusion in regard to his own affairs. The other symptoms involved a bilious tinge of the eye and complexion, and the urine loaded with lithates, which led me, at that time, to the opinion that the condition of the brain and intellect might be the effect of disarrangement or defect of the secretion of the liver and kidney. I prescribed alterative doses of the mercurial pill and mild antacid aperients, and my patient soon recovered.

425. This amendment was not destined to be of long duration. Mr. —— suddenly relapsed, and became the subject of a violent maniacal paroxysm, of considerable duration, and requiring a keeper. What was now the *precise* nature of the disease?—an anxious and difficult question in every case of mania. There was, on this occasion, no remarkable tinge of the eye or skin,—nothing very wrong in the secretions,—to account for the symptoms. Was the case arachnitis? This opinion seemed probable. It was treated with more decided mercurials and antacid aperients, with a spirit lotion applied to the head, and fomentations to the feet; whilst opium, in large doses, was given, at the suggestion of another, for the violence of the delirium, and apparently with good effect. The patient again recovered, less speedily, however, than before.

426. We were again doomed to be disappointed. The patient again suddenly relapsed; but now, instead of delirium, the principal symptom was a sort of amentia, or dulness of intellect; so that, as I had before suspected arachnitis, I now suspected effusion. We pushed our former remedies, the opium excepted, and the patient again recovered; and, indeed, so little tardily, as to compel us to relinquish the idea of effusion.

427. It was after this event—after this third attack, in which, for a time, I suspected *effusion*, but which passed off too soon for effusion—that a new idea occurred to me, involving a new question; and on reconsideration of the whole case, I asked—Had there been a seizure, or rather seizures, of an epileptoid character, unobserved, in the night, or when the patient was from home? In a word, was it a case of hidden seizures?—a question now, I believe, occurring in the practice of medicine for the first time, and of how great importance will, I think, shortly appear,—a question agitated most anxiously, not only by the physician, but by the most devoted of wives.

428. Indeed, it is to extracts from this lady's letters that I now beg your especial attention, as to an account of events, free from bias, and full of the deepest interest:

429. "The sad experience of the last two months (during which time I have witnessed several distinct convulsive attacks) has convinced me that Mr. —— has been subject to many seizures entirely *unknown* and unobserved, except in their effects. During the last week of February last, he was in a state of great mental excitement—quite distressing to those around him. On the 1st of March, about noon, a sort of stupor came over him, to me quite unaccountable. We were walking at the time, and he had remained *perfectly silent* for at least a quarter of an hour before my attention was drawn to the altered expression of his countenance. This stupor lasted only a few—perhaps three or four—hours; but it was followed by great nervous excitement or mental agitation, almost bordering on delirium. I did not *suspect*, of course, the *real* cause of this—indeed, I looked upon it as another phase of his distressing illness.

430. "On the night of Saturday, March 3, Mr. —— retired to his room in a state of the greatest mental agitation. At one o'clock, he fell into an apparently sound sleep. At about half-past seven o'clock on Sunday morning, he arose from his bed, and began, as usual, to dress himself. I was greatly surprised and alarmed to observe that a great change had come over him. His hand was feeble, his step was unsteady, his intelligent countenance had a vacant expression, and to my anxious and repeated enquiries he only answered by a movement of the head, to which I could attach no meaning. During that and the following day, he remained in a deep stupor, only occasionally giving imperfect and indistinct replies to questions put to him. On Monday morning, Dr. Marshall Hall saw him. He thought there must have been some attack of an epileptoid character; but nothing had been observed—nothing

could be told. On Tuesday morning there was decided delirium, which lasted three or four hours. The same evening, in walking to and fro in the drawing-room, his hand, in which he held mine, was nervously contracted several distinct times, and his head gradually drooped till it almost rested on the shoulder. Shortly afterwards he was seized with a sort of shudder, which I thought arose from fear—a noise having been heard, which he said was 'loud thunder.' This attack, slight as it was, enfeebled yet more the hands and feet, and increased the stupor, but no delirium followed. This was all that could be detailed then to Dr. Marshall Hall, who made most anxious and minute enquiries on the subject.

431. "About the end of the month of March, Mr. ——, while sitting in his chair, fell asleep—no very unusual occurrence. I left the room, to arrange some domestic matters, and Miss —— remained alone with him. On my return, she described what we both ignorantly believed to be the effect of a troubled dream, or an uneasy position, or both combined. Miss ——'s attention was first called to her brother by a slight gurgling in the throat. The lower lip had fallen greatly; the tongue, she said, moved 'most curiously from side to side,' and the eyeball was drawn upward; the features resumed their former expression; and all this took place without any apparent interruption to the sleep.

432. "The first week in May, we removed to ——. Within the short space of ten days after going thither, I was distressed and perplexed to observe that, on two distinct occasions, the articulation suddenly became slow and imperfect, the voice low and feeble, and on each occasion there was loss of power, mental and bodily. But I had observed no seizure, neither did I suspect any. On the 19th of May, I was standing talking with Mr. ——, and, while he was in the very act of speaking, the mouth was suddenly drawn to the right side, the tongue became paralyzed, and the right hand was drawn inward. In great alarm (for this was the first

unequivocal seizure I had ever witnessed), I took the hand and rubbed it, as I would have done for cramp, four or five minutes. While I was doing this, all appearance of a seizure passed away, only the effects remained. For several hours afterwards, the articulation continued to be slightly imperfect, the voice low, and the step feeble and unsteady.

433. " Within a week after this, just as we were finishing a game at Backgammon, Mr. —— had a similar attack, equally short in duration, but rather different in its effects. On this occasion, slight delirium followed, but the articulation was afterwards perfect.

434. " Both these seizures would have been entirely unknown, unnoticed, save in their effects, had my attention at the time been directed to any other object.

435. " In a few days after this, followed the severe and most alarming attack, which lasted four hours. Then succeeded another, and another, equally distressing, the effects after each attack varying very considerably. Thursday, July 26."

436. On one of these occasions, this lady writes—" This morning my dear husband has unhappily had another of those dreaded seizures, which, though slighter than some of the previous attacks, has taken away the power of speech; and the right side is also paralyzed." On another, she writes—

437. " I think I have, in conversation, once, or more than once, referred to the peculiar feeling, in the right arm, which Mr. —— often felt on first awaking from sleep. It is about three years since he first complained of this; observing that his right arm must either be ' paralyzed or benumbed.' Sometimes he complained of this on awaking in the morning, but I think more frequently when he awoke from the hour's sleep which he usually took every evening after dinner, when he had no guests at his table."

438. My *conjecture* must indeed have appeared extraordinary to every unbiassed mind; for it was soon—too soon, alas!—converted into *fact*, by the occurrence of seizures of no dubious or equivocal character.

439. The fourth serious attack was one of distinct epilepsy, leaving defective articulation, paralytic weakness of the hand, and imbecility of intellect, for a time, and then gradually but imperfectly receding.

440. Other seizures followed, open and unequivocal: these it is unnecessary to detail. My conjecture had become a sort of prediction fulfilled. My patient died, and a post-mortem examination was made, of which the following is the brief and imperfect detail:

441. "The arachnoid membrane presented the appearance of opacity, with effusion of lymph beneath its surface. The brain, immediately beneath the arachnoid membrane, was remarkably firm, and contained an unusual quantity of blood. Three or four tablespoonfuls of serum were found in the lateral ventricles. No other morbid change was observed in the brain. No other organ was examined. September 23, 1849."

442. It now becomes an interesting question—What are the probable effects of repeated seizures of the kind described on the delicate tissues of the brain and its membranes? May they be such as are described in this post-mortem examination?

443. The *first* effect is, doubtless, congestion. This may subside after the first and second attacks. But does it entirely subside after the third or fourth? May it leave lesion of tissue? And if so, of what kind? In the delicate tissue of the encephalon, may it have the appearance of arachnitis or of encephalitis?—effusion of serum or of lymph?—or softening or induration?

444. When, in cases of paroxysmal disease, such effects are found, who shall say, without years of special study and observation, whether, in fact, they be *causes* or *effects?*

445. But that in all such cases a most careful inquiry should be made, in regard to past ‘ hidden seizures,’ there can be no doubt.

446. Nor does this question cease here. It may become a *legal* question; and, in another and terrible sense, a question of life and death.

447. A seizure—perhaps, a hidden seizure—may take place, and leave a monomaniacal tendency to suicide or homicide. *Crime* may be committed, and no proof of previous insanity exist. Of such a case, the Law, hitherto, equally with Medicine, has taken no cognizance. This crime may be one involving loss of property, honour, life.

448. Such a case occurred recently at Greenwich. A nurse-maid rose from her bed, went into the kitchen, seized a carving knife, partially severed the head of her little charge from its body, and all this without detectible motive. She had been subject to some kind of seizure, supposed to be hysterical, but far more probably epileptic.

449. How fearful the consequences of such a state of things might be, I need not say; but certainly every means should be employed to detect such a hidden seizure in such a case; and especially the temples should be examined for ecchymosis; the tongue, for a bitten wound; the pillow, for marks of foaming at the mouth; and the linen, for the stains left by some evacuation; whilst the patient should be carefully interrogated, to detect the slightest incoherence or aberration of ideas, or confusion or defect of memory.

450. Under all circumstances of sudden crime, the possibility of the occurrence of a seizure should be present to the mind; how much more, if the patient have been epileptic, or if the case be *puerperal!*

451. But, to return to the medical view of this subject, and the case before us: let us bear in mind that the diagnosis is every thing in the practice of medicine; and that we have, in diseases of the head, sometimes to trace the affection to deranged function of remote viscera; sometimes

to detect an original organic disease of the encephalon; and sometimes to trace the symptoms to a previous, but unobserved, and therefore hidden, paroxysmal seizure.

452. The observant Heberden remarks: "Qui semel occupatus est gravi paralysi, sæpe experitur leviores morbi accessiones, quæ, cum noctu, vel per quietem invadant, facile *latent* eos, qui ægrotis famulantur. Harum vero justissima erit suspicio, ubi ea mala, quæ secuta sunt accessiones priores, denuo intra paucas horas plurimum ingravescunt*." This remark applies still more forcibly to epilepsy.

453. I may now add, that I think the case of Charles the Second, given in such an interesting manner by Mr. Macaulay, of this character:

454. "The death of King Charles the Second took the nation by surprise. His frame was naturally strong, and did not appear to have suffered from excess. He had always been mindful of his health even in his pleasures; and his habits were such as promise a long life and a robust old age."

455. "At length, towards the close of the year 1684, he was prevented, by a slight attack of what was supposed to be *gout*, from rambling as usual. He now spent his mornings in his laboratory, where he amused himself with experiments on the properties of mercury. His temper seemed to have suffered from confinement."—"A trifle now sufficed to depress those elastic spirits which had borne up against defeat, exile, and penury. His irritation frequently showed itself by looks and words such as could hardly have been expected from a man so eminently distinguished by good humour and good breeding. It was not supposed, however, that his constitution was seriously impaired."

456. "His palace had seldom presented a gayer or a more scandalous appearance than on the evening of Sunday the first of February,

* Op. cit. p. 296.

1685. Some grave persons who had gone thither, after the fashion of that age, to pay their duty to their sovereign, and who had expected that, on such a day, his court would wear a decent aspect, were struck with astonishment and horror. The great gallery of Whitehall, an admirable relic of the magnificence of the Tudors, was crowded with revellers and gamblers. The king sat there chatting and toying with three women, whose charms were the boast, and whose vices were the disgrace, of three nations."

457. "A party of twenty courtiers were seated at cards round a large table on which gold was heaped in mountains. Even then the king had complained that he did not feel quite well. He had no appetite for his supper: his rest that night was broken; but on the following morning he rose, as usual, early."

458. "Scarcely had Charles risen from his bed when his attendants perceived that his utterance was indistinct, and that his thoughts seemed to be wandering*. Several men of rank had, as usual, assembled to see their sovereign shaved and dressed. He made an effort to converse with them in his usual gay style; but his *ghastly* look surprised and alarmed them. Soon his face grew *black;* his *eyes turned* in his head; he uttered a *cry*, staggered, and *fell* into the arms of Thomas Lord Bruce, eldest son of the Earl of Ailesbury. A physician who had charge of the royal retorts and crucibles happened to be present. He had no lancet; but he opened a vein with a penknife. The blood flowed freely; but the king was still insensible."

459. "All the medical men of note in London were summoned. So high did political animosities run, that the presence of some Whig physicians was regarded as an extraordinary circumstance. One Roman

* Compare §§ 430, 432, 434; 449; &c.

Catholic, whose skill was then widely renowned, Doctor Thomas Short, was in attendance. Several of the prescriptions have been preserved. One of them is signed by fourteen doctors. The patient was bled largely. Hot iron was applied to his head. A loathsome volatile salt, extracted from human skulls, was forced into his mouth. He *recovered his senses ;* but he was evidently in a situation of extreme danger."

460. " On the morning of Thursday the fifth of February, the London Gazette announced that his majesty was going on well, and was thought by the physicians to be out of danger. The bells of all the churches rang merrily; and preparations for bonfires were made in the streets. But in the evening it was known that a *relapse* had taken place, and that the medical attendants had given up all hope."

461. " The fourteen doctors who deliberated on the king's case contradicted each other and themselves. Some of them thought that his fit was epileptic, and that he should be suffered to have his *doze* out. The majority pronounced him apoplectic, and tortured him during some hours like an Indian at a stake*."

462. " *His Majesty's tongue had swelled to the size of a neat's tongue.*" !

463. " The morning light began to peep through the windows of Whitehall; and Charles desired the attendants to pull aside the curtains, that he might have one more look at the day."—" Soon after dawn the speech of the dying man failed. Before ten his senses were gone."—" At noon on Friday, the sixth of February, he passed away without a struggle†."

* The learned historian is rather severe on the physicians. He forgets that the patient was in a state of epileptic or apoplectic coma, and therefore insensible even to this pretended torture.

† The History of England, by Thomas Babington Macaulay; vol. i, pp. 428—442.

464. It was doubtless a case of *hidden epileptic seizure* in which the tongue had been bitten, followed by epileptic coma. Apoplexy would probably have afforded no such lucid interval, and have been followed by no such paroxysmal repetition as is recorded in § 460.

465. A short time ago, I received a letter from which the following is an extract:

466. "Mrs. ——, æt. 52, witnessed an accident, which so alarmed her as to bring on hæmoptysis; soon afterwards she had *a transient attack of apoplexy*. She recovered, and remained in tolerably firm health for two years, when dyspepsia with some fever set in, and soon afterwards bronchitis. On the tenth day, *the tongue swelled* to such a size as to impede deglutition, and was accompanied by dyspnœa. Bleeding, leeches, blisters, scarifying the tongue, &c. On the 3rd day from the swelling of the tongue, and twelfth from the beginning of the complaint, she died. What was the cause of the tongue so swelling? Was that the proximate cause of death? I did not discover the fauces swollen, nor the submaxillary glands."

467. It will be admitted that there is little in this account on which to found a diagnosis. Yet I ventured to suggest that there had been a *hidden seizure*. The first exciting cause—*emotion;* the nature of the first attack, "*transient apoplexy;*" and the condition of the *tongue* in the second attack,—leading me to this *conjecture*.

468. It is to this condition of the tongue, lip, and cheek, and to appearances on the pillow of *foam*, which may have issued from the mouth, and to the remark of Heberden, quoted § 452, that I would especially direct the attention of the physician, in his search for *evidence* of hidden seizure.

VI.—*Paroxysmal Mania.*

469. I have known a maniacal paroxysm to follow an epileptic attack. I have just described a case in which a violent maniacal paroxysm followed what afterwards appeared to have been a *hidden seizure;* § 425. I have had occasion to watch a case in which a paroxysm of mania came on at uncertain intervals, after a prolonged and perfect 'lucid interval,' and was superseded by the well-timed periodical administration of emetics.

470. May we not infer, from these facts, that mania is frequently a paroxysmal disease, holding the place, in regard to other cases of mania, which paroxysmal apoplexy does to organic apoplexy? And does not this view suggest the propriety of the repeated but cautious administration of emetics?

471. The paroxysm may be excited, like that of paroxysmal apoplexy and inorganic epilepsy, by emotion or gastric irritation. Some source of exasperation may have occurred, or some improper article or quantity of food may have been taken, or gradual load of the stomach or bowels may have occurred—may have proved the source of trachelismus, and this of a hidden seizure, and this, in its turn, of mania. The mind must be kept tranquil, the diet must be of the most digestible kind, and the bowels must be kept well moved daily; in addition to which, an emetic should be given at stated intervals, or on the occurrence of any symptoms threatening an attack.

472. Some cases of mania assume the decidedly paroxysmal form, subsiding entirely into 'lucid intervals.' Others continue without absolute intermission, but experience paroxysmal exacerbations.

473. In some cases, these paroxysms have been distinctly traced to intemperance in diet. In the case to which I have alluded, § 469, the attack,

which had usually returned after the space of four or six weeks, was warded off by weekly emetics for sixteen weeks! These emetics consisted of two grains of the tartrate of antimony, mingled with the patient's tea, unknown to him, statedly, or when he had been observed to commit an error in his diet.

474. It will be remembered that mania is apt to follow an apoplectic, paralytic, epileptic, or convulsive affection; and I need scarcely again advert to the case of hidden seizure just detailed. Mania forms one of the *Class* of paroxysmal cerebral and spinal diseases. It may arise from mere vascular distension, the effect of such a seizure.

475. In paroxysmal mania, as in paroxysmal epilepsy, I am persuaded that there is the same pathology in trachelismus, and the same hope of successful treatment from emetics,—or from emetics, antacid aperients, and mild alterative mercurials, combined.

476. I am persuaded, too, that this form of mania, at least, admits of remedy more frequently than is supposed; and we have still to discover the rationale of other forms of insanity.

477. These cursory remarks must be viewed as merely suggestive. The subject must be carefully investigated. But I have long meditated the institution of an Asylum appropriated to cases of short duration, the stay within its walls being duly limited. Each of these limited periods might be *one year*.

VII.—*Puerperal Convulsion, Mania; &c.*

478. I think I may justly *compare* the *efforts* of parturition with those of a seizure; and the *effects* are sometimes the *same*—convulsion, apoplexy, paralysis, mania! One of these may, indeed (as in the case of pertussis), pass into the other.

479. The influence of emotion, and of indigestible food, and of a loaded state of the intestines, is equally remarkable in both cases. The late Dr. John Clarke published a paper on the baneful influence of *oysters* in the puerperal state, in the Transactions of the Royal College of Physicians, which is invaluable, and to which I beg to refer my reader.

480. A volume might be written on this extensive and momentous subject. Each 'pain' frequently produces a convulsion—an event which could not be complete, if *tracheotomy* were performed! With a *free* exit to the air during the expiratory effort, epileptic blackness of the face and congestion of the brain are impossible; that which would be convulsion remains spasm; and apoplexy, paralysis, mania, death perhaps, are prevented!

VIII.—*The Treatment.*

481. I now proceed to make a few brief remarks on the treatment of this *Class* of diseases; and I will first ask—Why, seeing that they are rather phases of one and the same disease, than distinct diseases, diseases of which the very principles are distinct, should one be treated *rationally*, and the other be delivered over to unmitigated *empiricism?* Who would dream of treating apoplexy, in any form, with the nitrate of silver, the sulphate of zinc, the cotyledon umbilicus, &c.? Why should we trust the patient afflicted with epilepsy to such mere empiricism? And why should we not consider what remedies are *reasonably* likely to accomplish some good for our patient so afflicted?

482. The real reason of all this is—that we have regarded apoplexy as, in some degree, intelligible, and epilepsy as unintelligible. I trust I have removed this reproach from our science.

483. I believe the treatment of paroxysmal apoplexy, and of epilepsy, should be identical, or, at least, based on the same principles.

484. The first preventive remedies consist in mercurial and antacid eccoprotic aperients; three grains of the pilula hydrargyri and a scruple of rhubarb, of the bi-carbonate of potass, and of the carbonate of magnesia, with or without a dram or two of the compound decoction of aloes, may be given every night. By this means the liver is excited, gastric and enteric acidity is corrected, and the intestinal tube is unloaded.

485. And, as I am persuaded that gastric acid is a very frequent cause of paroxysmal attacks of the nervous centres, I advise a draught with a scruple of the bi-carbonate of potass and half a dram of the spiritus ammoniæ aromaticus, with two ounces of distilled water, to be kept in readiness to be taken on the occurrence of any *threatening* symptom. That symptom is frequently dissipated by this remedy as by a charm! One patient called it her 'magic' draught.

486. The great object of these remedies is the removal of gastric and enteric irritation. In like manner, remedies against hysteric irritation, during the catamenial periods especially, should be rigidly adopted: warmth, fomentations, sinapisms, &c. and especially the genial warmth of bed, are most important.

487. Every emotion, every kind of excitement, every irritation, should be most carefully avoided. This is not more or less necessary for those who are liable to threatenings or attacks of apoplexy, than to those who are liable to epilepsy.

488. The diet should be of the lightest, mildest, most digestible, and most nutritious kind, taken in small quantities at a time,—breakfast, luncheon, and dinner being made nearly equal. Supper and stimulants must be avoided entirely and absolutely.

489. The stimulus of alcohol must, in all cases, except those involving lowness, be interdicted; nay, the stimulus of a hearty meal, as dinner, and even of animal food, must in some cases be prohibited.

490. Supper being taken, three things conduce to a fit during sleep: the loaded stomach, the recumbent position, and the natural trachelismus of sleep.

491. Next to avoiding supper, the assumption of a more or less elevated position during the night is most important. I advise an inclined plane to be placed under the mattress, so as to raise the trunk of the body to an angle of 45°, and a bolster to be placed, under the sheet, under the upper part of the thighs, so as to prevent slipping down towards the lower part of the bed—as most important.

492. Whilst we thus avoid the irritations and heavy sleep with its trachelismus, it is also important to shun every source of emotion and excitement, even the pleasureable. Joy has its dangers as well as sorrow; but indignation, anxiety, and corroding cares, are amongst the most baneful causes of affection of the nervous centres.

493. In the seizure itself, trachelismus and laryngismus are the conditions calling for instant remedy: the effects of the former are subdued, when the measure is deemed proper, by venæsection; those of the latter, under similar limitations, by tracheotomy By venæsection, not only are the effects of trachelismus, but laryngismus itself, may be prevented, as in a case, published elsewhere*, of Mr. Martin Coates. By tracheotomy, not only are the effects of laryngismus, paralytic or spasmodic, removed or prevented, but the congested condition of the face, the neck, and the nervous centres, is averted, as in the cases of Mr. Sampson and of Mr. Cane*.

494. To revert to the question of *emetics*—these may sometimes be appropriately given. The subdued state of the action of the heart induced by *nausea* is most advantageous. The effect of the act of *vomiting*, with

* See the Croonian Lectures for MDCCCLII.

its laryngismus, its expiratory effort, and its congestion of the vessels of the neck and head, are the circumstances which contraindicate their use. I imagine that they are safe in the diseases of inorganic, but dangerous in those of organic origin.

495. I have no suggestion to make in regard to the *local* application of cupping, or leeches, or blisters, or scarifications, or lotions, to the temples, the nucha, the head. And my object, at the present moment, is only to state principles which I think to possess some degree of novelty as well as importance.

496. The remoter *effects* of the apoplectic or epileptic seizure,—of the congested and distended state of the venous system involved in them,—are best subdued, I think, by a sustained course of pills containing the pilula hydrargyri, ipecacuanha, and squill. I have often witnessed, with satisfaction, the mitigation of paralysis, and especially of spasmo-paralysis,—of mania, and even of amentia, under the influence of the powerful combination of remedies; and I have more than once been mortified to have my proposition to adopt such remedies, in their full degree of efficacy, frustrated by the opinions of those who have thought and observed very little in this matter.

497. Indeed, I think it impossible to overrate the value, not only of light mercurials, but of a decided ptyalism from the pilula hydrargyri, sustained for a considerable length of time. The *effects* of seizures,—spasm, spasmo-paralysis, paralysis, mania, loss of mental power;—the consequent susceptibility to returns,—are all best and most effectually subdued by this measure. The most complete recovery from the direst epilepsy, which I ever remember to have seen, occurred under the influence of a sustained and decided mercurial ptyalism.

498. In one case, that of a letter-carrier, after epileptic seizures, the patient was incapable of finding his way along the street. He was

put through an energetic and sustained course of mercury. He is now a letter-carrier again!

499. The following was an extreme case—in regard alike to malady, remedy, and recovery. It was one of epileptic seizures and their consequences. It is given in the words of the patient's wife:

500. "Dear Sir,—For three long years Mr. G—— was quite incapable of attending to any sort of business, or even of taking care of himself; he had, to the best of my recollection, twenty fits during the first nine months of his illness, and, for three months, he was maniacal, and paralytic on one side. His mouth was sore for two years and a half; but he continued under the influence of mercury for four years.

501. "For the last five years he has been able to write and attend to business as well as ever!"

502. I have next to say one word on the susceptibility to *returns* of paroxysmal affections of the nervous centres. This susceptibility is, I think, best obviated, as I have already stated, by minute doses of the acetate of strychnia, to which cinchona and the carbonas ferri cum saccharo may be added, in cases of shattered system and pallor.

503. For the cachectic state into which the patient is frequently observed to have fallen, fresh vegetable acids have appeared to me to be the most advantageous remedy.

504. Every thing in the way of cheerful occupation, gentle exercises, especially in the open air, and change, should be adopted. The system should be kept in a state of equilibrium as to powers and health—repletion and inanition, stimulus and debility, being equally avoided. The head should be kept cool, the feet warm and dry. Tone should be infused into the nervous system, the blood should be freely circulated and aërated by muscular motion. Of all remedies, perhaps a pedestrian or equestrian tour is the most beneficial.

505. In cases of SEVERE attacks of inorganic epilepsy, I would suggest the institution of tracheotomy, to remove the FULCRUM, on which the EFFORTS,—the purple countenance,—the congestion of the nervous centres,—the convulsion,—and the danger to life,—in such attacks, depend, combined with a rigid dietary, every other appropriate remedy, and a pedestrian, equestrian, or other tour, continued for one, two, or more years.

CONCLUSION.

506. Whatever may be the exciting cause or causes of paroxysmal cerebral and spinal seizures and their mode of operation, the following events must be involved in them:

1. They must be capable of inducing and explaining flushing of the countenance, ecchymosis, epistaxis, &c.

2. They must be capable of inducing and explaining the *venous hue and turgidity* both of the *face* and of the *neck;*

3. They must be capable of inducing and explaining both *cerebral* and *spinal* symptoms;

4. They must be such especially as will explain the ready transition of the *cerebral* into the *spinal* epileptic seizure; *see especially* § 388;

5. They must admit of accession and recession in a moment of time;

6. They must admit of assimilating the latent with the evident spasmodic conditions of the muscles of the neck, with their ulterior effects on the nervous centres;

7. They must involve the cause and influence of *Sleep*, the influence of the *Emotions*, of the *Irritations; &c.;*

8. They must admit of inducing and explaining the presence or the

absence of morbid anatomy, and especially the transition of mere cerebral congestion into effusion, rupture, softening; &c. *See* § 319.

507. It is no unusual occurrence to meet with cases in which the slighter attack, with cerebral symptoms only, and the severer attack with spinal symptoms, take place variously in the same patient, the former sometimes passing into the latter,—torticollis, laryngismus, foam, convulsion, and the bitten tongue, being superadded to unconsciousness, with a flushed countenance, dilated pupils, &c. These are obviously different degrees and phases of the *same* affection. But in the severer case, the trachelismus is *obvious*. Can it be doubted that it exists equally in the milder, although *latent?*

508. But, in other cases, the milder form of threatening or seizure consists in giddiness, loss of consciousness, the fear of falling, or a momentary loss of power of the articulation or of the hand; whilst the severer seizure is decidedly apoplectic and hemiplegic.

509. In a third class of cases, the epileptic seizures themselves gradually assume more and more of the apoplectic and hemiplegic forms.

510. All tend to impair the memory or intellect; the first attacks may be followed by mania; and repeated attacks, by amentia and general paralysis, in various degrees.

511. A momentary trachelismus and phlebismus, with *congestion*, explain the transitory and milder seizure; a severer congestion, with greater intra-vascular distension, explains the severer seizure, from which recovery still takes place speedily and without any permanent effects, or which, if fatal, leaves no lesion, except congestion, detectible on a post-mortem examination; and when, to intra-vascular congestion, ecchymosis, or extravasation of blood, or the effusion of serum, or softening, supervenes, we witness the sad and permanent effects of the same trachelismus and phlebismus, either partial or general.

512. Thus the chain of cause and effect, or effects, appears to me to be complete.

513. All this, and much more, is accomplished in the doctrine of *Trachelismus*. I think, therefore, I am justified in bringing it before you, and commending it to your notice.

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514. I beg that these Lectures may be regarded—

1. As establishing *a Class* of seizures of the nervous centres, of inorganic origin and of paroxysmal form, not distinguished before from that of diseases of these centres originally organic;

2. As displaying the pathology of this Class of seizures in the structures and actions of *the Neck;*

3. As a first application of our knowledge of *the Diastaltic Nervous System* to pathology and practice.

POSTSCRIPT.

I have recently met with several cases in which violent exercise, as cricket and foot-ball, in youth, and 'romps,' in childhood, have led to attacks of epilepsy—a fact which I think it important to record*.

I have also been particularly struck with the condition of the larynx, and of the secretions, *before* and *after* an attack of epilepsy.

* Hounds that are epileptic are apt to be affected in the chase.

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