the eye and around the orbit, but more especially at the temple. Various plans of treatment were had recourse to with the view of improving the state of the cornea and mitigating the pain, without, however, any resulting benefit. It now became a question, whether another hydatid might not be confined in the anterior chamber, producing, by its presence, the insuperable annoyance under which the lad laboured?—one of these “beings” had already been liberated, with relief to the symptoms; a second also, it was believed, was set free, and certainly under similar circumstances and with the like benefit. With these considerations, Mr. Guthrie made a limited vertical incision through the cornea, so as to include the opaque spot above mentioned; vitreous humour at once and alone escaped. The lid, for a minute, was lowered, and upon again gently raising it, a small quantity more of the humour flowed out. It was observed by Mr. Guthrie, that the crystalline lens was wanting. This body had, most probably, been expelled at the second operation, and mistaken for another hydatid. That the interior of the globe was wholly filled by vitreous humour was certain; for, in addition to the lens being absent, the little gush of aqueous fluid which ordinarily follows so closely upon incision through the cornea, was noticed not to take place.

The portion of cornea most opaque was seen on its section to consist of an unusual thickening of the part. A pad was placed over the eye, and the lad directed to keep his bed.

The operation has removed the pain complained of previous to its performance, and the case has required no further treatment than the subdual of a slight inflammation.

St. Martin's-lane, 1848.

ON THE THREATENINGS OF APOPLEXY AND PARALYSIS.

By MARSHALL HALL, M.D., F.R.S., &c.

I PROPOSE, in the present paper, to treat of the theory, prevention, and treatment of paroxysmal apoplexy, or of that form of apoplexy, with its too usual sequel, paralysis, which, arising from causes distinct, in the first instance, from disease within the head, appears in the form of *threatenings*—the *minæ apoplexiæ* of the classic Heberden.

A larger view of apoplexy will be taken at some future period. Such a view, however defective, has, indeed, already been attempted in the volume of papers recently published by the Medical Society of London. But my present object is a restricted one, and one of still greater interest, inasmuch as it is more under the physician's guidance and control.

I have treated, in former numbers of THE LANCET, and in a distinct little volume of “Essays,” of the *convulsive* seizures of infants and adults; it remained for me to show that apoplexy, and mania, and syncope, are also liable to assume a *paroxysmal* form; and this I purpose to attempt, on the present occasion, in regard to the first of these. Something of this kind I have already described under the title of *cerebral epilepsy*. In the present paper I propose to discuss the subject more fully, and especially to treat of that form of paroxysmal apoplexy which, if not immediately checked, will speedily issue in the organic, apoplectic, and hemiplegic seizure.

No subject in the circle of our medical studies presents an aspect more formidable. The power of the limbs, the intellect, life itself, are equally at stake; and the texture is almost as slight as the spider's web, which separates *congestion* from *laceration*, curable from incurable, apoplexy. The arterial and the venous textures have ceased, and what remains is merely that which is possessed by the *system of intermediate vessels or canals*, which, I believe, I first presented to the consideration of the profession and of physiologists, in a communication ignorantly blackballed at the Royal Society, at the instigation and under the direction of a mere biblio-physiologist, to be replaced by official error. Yet are these *intermediate vessels*, these vessels for the irrigation of the blood (in the lungs) and of the tissues, (in the other parts of the body,) in their pneumatic and systemic arrangements, the object of the entire circulation.

But to return to the “*minæ apoplexiæ*.” A patient in apparent health—one of whom Celsus not less beautifully than truly observes, “*Si plenior aliquis, et speciosior, et coloratior factus est, suspecta habere bona sua debet*”—is seized with vertigo, confusion of ideas, loss of recollection, perhaps of consciousness, with a tumid, purple flush, and the bystanders instinctively hasten, in alarm, to remove or loosen

his cravat. As Heberden observes: “*Invadente apoplexia aut paralyti, continuò 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.*”[†] The *paroxysm* is of various intensity—it passes off and is forgotten; it recurs—recurs again; at length it remains permanent, places the patient's life in jeopardy, or leaves him a cripple!

What is the *theory* of this paroxysm? In what does it consist? Is it a tendency of blood to the head and neck? or an impeded flow of blood from that region of the body? Is it augmented arterial impulse, interrupted venous return, or both? and in what degree respectively?

What are the *causes* of this paroxysm, and what their mode of operation? Is emotion a principal cause, and does it act directly on the spinal system, inducing abnormal muscular actions in the neck, impeding the return of blood along the jugular and vertebral veins? Or, do a certain class of irritations act in a *reflex* manner on the same muscles, and through their influence on the same vessels? Are the tissues of the head abnormally and pathologically in the condition of the erectile tissues, without the physiological structural defences of the latter? And if such be the *theory*, what are the proper and effectual remedial measures? and what promptitude in the administration of them is equal to the emergency?—that is, what ought the bystanders to do before the physician can arrive, and what is it our own office to accomplish? We have but to recal the painful case of Mr. Lockley, journeying on the railroad with the late Sir Henry Halford, and suddenly involved in an apoplectic paroxysm, to realize the difficult, responsible, and, indeed, overwhelming circumstance of such a case. In such circumstances precisely what could have been *instantly* done to save the patient?

All this can easily be understood when viewed by the light shed upon the subject by the discovery of THE SPINAL SYSTEM—a discovery rejected in its turn by the Royal Society;—a proceeding to which its Fellows and the Profession have hitherto submitted!

§ 1. The Tissues of the Head and Neck Erectile.

The whole region of the head and neck, with the encephalon, and the several organs of mind, of sense, and of motion, is doubtless made up of tissues which may be compared to the erectile.

The eye becomes erect when we look earnestly and intently. If we attempt to read whilst walking, and meeting the wind, it speedily becomes suffused with tears, no such effect being observed when, in similar circumstances, we do not urge the organ into intenseness of action. For this reason the oculist desires the patient affected with ophthalmia not to use the affected, or even the unaffected eye.

The condition of accurate adjustment of the eye is one of erection, and connected with the action of certain muscles.

Doubtless the ear is affected in a similar manner, and the difference between merely hearing and listening intently, is one of erection of the organ, dependent, like that of the eye, on the action of muscular tissue.

It would be out of place here to say more on this subject, but I cannot resist the temptation to make one remark. Many deaf persons remain deaf from the want of the *habit* of listening, by which the power itself is lost; just as such persons are found to hear when driving along in a carriage though deaf in ordinary circumstances, the act of listening being induced. The slightly deaf person should be exercised in listening—in inducing erection of the tissues of the ear.

In a similar manner, the senses of touch, smell, and taste, may be improved, as is well shown in cases of persons who use those senses to supply the want of others which are lost. All are aware of the singular effect on the tissues of the mouth, on the action of the salivary glands, and of their ducts in propelling the saliva, in the act of mastication, and even from the view, or idea, of savoury food.

So of the brain and its connected tissues. When the powers of the mind are intensely concentrated, the circulation in this region is augmented, and its vessels distended, congested. In the strife for the senior wranglership, the student sits for hours at his subject with a wet towel wound round his head, to moderate the excessive fulness of its vessels.

But great as is the effect of *attention*, that of the various emotions is infinitely greater. We have only to watch the effects of shame and of anger, the former so attractive, the latter so repulsive, both so extraordinary, as denoting the action of the muscular system of the neck, and distending

* Lib. ii. cap. i. sect. i.

† Cap. De Paralyti et Apoplexia.

the veins, and thence those vessels which, situated between the capillary branches of the arteries, and the capillary roots of these veins, may be justly denominated the *intermediate* vessels or canals of the tissues—the real vessels of those tissues, the rest being but *machinery* for the movements of the blood.

Whatever may affect any erectile tissue, may affect the circulation of the head and neck. This is doubtless principally effected through the special muscular system of this region, and especially that part of this system which influences the larynx, and that which, by compressing the veins, induces fulness, congestion of their roots, and of the vessels which, in the normal and unimpeded circulation, empty themselves into them. These muscles are in a remarkable degree under the influence of emotion and of the excitants of reflex action. Remoter causes which influence the condition of the veins of the head and neck are, affections of the heart, its dilatation and disease of its valves, and affections of the respiration. To these topics I shall have to revert in the following section, my present object being to treat of the head and neck as purely erectile organs or regions; and of the causes which, influencing the muscular and circulatory systems in such organs and regions, induce the various physiological and pathological conditions observed in them; and especially of those forms of the latter which are periodical or paroxysmal.

Of these last even apoplexy and hemiplegia, and other forms of paralysis, are examples. The threatenings of apoplexy, the transient forms of paralysis, are of this character, and constitute an object of medical study of the most intense interest, inasmuch as the *prevention* of incurable, or imperfectly curable disease, too often ageing the young, and crippling the aged, depends upon it.

§ 2. Force of the Heart; Effect of Impeded Venous Circulation.

The power of the heart, by which the blood is propelled to the most distant parts of the animal frame, through the intermediate system of vessels, and returned by the veins, and runs through a second circulation in the liver, must be immense.

This power is *seen*, if we watch its effect in moving the foot bodily at each systole, when the artery of the ham is laid over the knee, in sitting cross-legged.

It is also seen in the degree of resistance offered by the erectile tissues—a resistance which may be viewed as measuring, as it were, the power of heart; for the phenomenon consists in impediment to the return of venous blood merely, the power and action of the heart being normal—a fact full of physiological interest and instruction.

Experiments which I made in 1830 illustrate the same principle. Let the circulation in the web of a large and vigorous frog be displayed under the microscope, and let a ligature be applied gently round the limb; the circulation, which was a uniform flow of blood before, now becomes pulsatory, with more or less of retardation or interruption at each systole of the heart, the veins and the intermediate vessels being distended, and the circulation in them more or less stagnant according to the degree of tightness of the ligature. Eventually the intermediate blood-channels become full, distended, irregular in diameter, ruptured even—the miniature living picture of the state of the cerebral tissue in apoplexy! The limb itself becomes livid and tumid.

Beautiful is the scene when the lung of the toad is similarly placed under the microscope—it is like a flood of gold! And as it is difficult, perhaps impossible, to remove all impediment to the flow of blood, this flood is beautifully pulsatory, the entire lung being moved obviously at each systole of the heart—such is its power!

In these experiments, as in sphagiasmus or impeded venous circulation in the neck and head, we trace the powerful effect of the systole of the heart in the throb of the enlarged artery, the veins and the intermediate vessels being distended by the rush of blood impeded in the former.

The physician should contemplate this scene of living physiology and pathology. It represents the normal phenomena of the erectile tissues, and the abnormal condition in sphagiasmus and paroxysmal apoplexy.

Now let us imagine the jugular and vertebral veins of the neck compressed by the platysma myoides, the cleido-mastoid, the omo-hyoid muscles, &c. The effect of emotion, or of reflex action, impeded circulation, distension of the veins, congestion of the intermediate blood-channels, tumefaction and venous lividity of the features, and of the conjunctiva, and a similar condition of the encephalic tissues take place, with the varied cerebral, visual, and auditory symptoms—paroxysmal apoplexy. How happy if it proceed no further!

This compression of the veins of the neck is various, and

quite special in different cases. Contraction of the platysma-myoides, for example, affects the external jugular chiefly; a more gentle, but more general action of the muscles of the neck leads to more general compression of the veins, and sleep; a more specific action induces blushing, which may be limited to the cheeks, or diffused over the head, face, neck, and bosom; a fit of anger is not only a “*furor brevis*,” but it is a brief and violent sphagiasmus and cerebral action and congestion; compression more sustained and complete leads to cerebral congestion and all its formidable symptoms—loss of memory or of consciousness, drowsiness, stupor, coma, &c.

From this cause I have also observed, and most carefully observed, transient delirium, mania, spasm, paralysis, in cases which I propose to detail hereafter.

Other causes of abnormal circulation in the head and neck exist. Diseases of the heart itself, of which *one*, hypertrophy, augments the flow of the arterial blood, and of which *all* induce impeded circulation along the veins—a fact of far greater moment, have their influence in inducing the apoplectic state. But it must be remembered, that the influence of disease of the heart in inducing impeded venous circulation, is a remote effect, through the pulmonary circulation. It is a part of the subject of the *arrière circulation*, which I have elsewhere treated at some length.*

No one can have witnessed the violent efforts of the stammerer without feeling that the sphagiasmus induced must be attended with risk; and accordingly derangement of the nervous centres, but epilepsy rather than apoplexy has been traced to the influence of this cause. I was recently consulted by a medical gentleman, who traced this connexion both in himself and in a patient for whom he had, in his turn, been consulted, and in whose case he had naturally taken a deep and sympathizing interest.

A similar but more permanent influence is exerted by every kind of dyspnoea, but especially of severe asthma, in which expiration is so apt to be prolonged and difficult.

But none of these latter causes of impeded venous circulation is of such influence as the sphagiasmus induced by contraction of the muscles of the neck. Of this event, hitherto unrecognised in pathology, the exciting causes, as I believe I have already stated, are emotion, and especially the emotions, the hopes and fears, of the Stock-Exchange and of the sick-room, and various kinds of irritation, gastric, intestinal, uterine, &c., the sources of reflex action, especially the first. Hence the *paroxysmal* character of the apoplectic seizure, to which I now desire to draw especial attention.

§ 3. Further Observations on the Circulation in the Neck and Head.

The difference between augmented flow of blood along the arteries, and its impeded return by the veins, on the *intermediate* blood channels and organs, is extreme.

The most violent *exercise*, as in running, the respiration being free and proportionately accelerated, only suffuses the face with florid blood, freely circulating; violent *effort*, on the contrary, as in lifting, in which respiration is arrested by closure of the larynx, induces a purple tumefaction of the tissues of the face and neck, from impeded flow and stagnation of venous blood. It is the difference between *augmented* and *impeded* circulation.

There is a great difference, too, between the *degrees* of impediment to the return of venous blood—the violent muscular efforts in ordinary vomiting, fits of coughing, &c., fill the tissues of the face with venous blood; but still more violent acts of vomiting, the efforts of parturition, the convulsions of epilepsy, actually cause the thin parietes of the blood-channels of the face to yield, and induce minute *ecchymosis*, seen in the eyelids and on the temples.

Let the impediment to the reflux of the venous blood be greater still, and especially more specifically of the veins of the neck, and we cannot be surprised at the occurrence of loss of consciousness—cerebral epilepsy, if transient, apoplexy, if more permanent, with or without cerebral *ecchymosis*. A tumour, or ligature, or spasmodic action of the muscles, compressing the veins of the neck, produces this effect.

Much, too, depends on the degree of suddenness of this compression. In diseases of the heart, we observe the features tumid with venous blood without apoplexy, which may, however, occur eventually gradually. But the sudden compression of the veins of the neck, from the action of the platysma-myoid and omo-hyoid, induces the apoplectic state instantly.

This apoplectic state may consist of mere congestion, and is then transient; or of *ecchymosis* or rupture, with laceration

* See my Gulstonian Lectures.

of the brain, and is then persistent and hemiplegic; or if the attack of mere congestion be often repeated, effusion of serum may take place from the internal surfaces of the cerebrum.

A further difference may consist in the difference of the vein or veins affected: the jugular seems to be in more immediate connexion with the cerebrum; the vertebral with the medulla oblongata; at least I think this probable.

It is extremely interesting to observe the influence of impeded or arrested flow of blood in the veins upon the arteries. I have already alluded to the experiment of applying a ligature on the inferior extremity of the frog, in which this is seen under the microscope. The phenomenon deserves to be noted more particularly.

If we tie a ligature round the frog's leg, the web being spread under the microscope, we instantly see the whole circulation, which was equable, or nearly so before, become pulsatory. If we tie the ligature a little more tightly, the globules of blood are observed to oscillate even in the arteries, and to proceed and to retrograde, at each systole and diastole of the heart. The intermediate vessels, meantime, become distended with blood, and even dilated in their diameter. So, in sphagismus, the temporal and carotids *throb*, whilst the tissues of the face and neck, and even the chest, become tumid, and purple with venous blood; the patient complaining that his cravat is tight; that he is giddy, and in danger of falling; or oblivious; or incapable of mental effort or attention; or dozy, falling asleep over his book, and even over his writing.

It seems probable that the mere pressure of the veins of the neck may sometimes be partial—greater on one side of the neck, or on one vessel, than the other, or others; and that in this manner partial congestion may occur, and induce, more or less, temporary hemiplegic paralysis. One patient, the subject of epilepsy, had, in the first instance, attacks of transient hemiplegia! In like manner, the epileptic seizure frequently affects one side more than the other; and the apoplectic is frequently conjoined with more or less of partial convulsive affection—so allied are these diseases.

The influence of indigestible, and therefore irritating food, of constipation, as causing, of sleep especially, and of posture, and of repletion of the stomach or bowels, as augmenting, this venous congestion, will be obvious to every one.

As to efforts unattended by closure of the larynx, as the rapid ascent of a hill, they have no tendency to produce apoplexy, or extremely little. It is not accelerated arterial circulation, but impeded venous circulation, which is the source of danger.

It is because they do not act by inducing sphagismus, specifically, but more generally on the venous system, that efforts, whether voluntary, as in lifting, or involuntary, as in vomiting, do not, in general, lead to the apoplectic seizure.

The paroxysm of epilepsy, on the other hand, frequently, nay, generally, issues in an apoplectic state, and, occasionally, in a more or less transient hemiplegia.

§ 4. *The Anatomy of the Neck.*

There is nothing more wonderful in physiology—all wonderful as that science is throughout—than the fact, that artery, vein, and nerve, should be imbedded in the very midst of the powerful muscles of the head and neck, and yet should remain uncrushed by their varied actions. The head is supported, raised, moved in every direction, in every position of the body, by these muscles, the large veins of the neck are surrounded by them, and yet sustain no injurious pressure: nay, this is still true, even if an enormous weight be carried upon the head. So accurately are the action and reaction of this system of muscles accomplished!

It is when the balance between their action is broken,—when their action is abnormal, irregular, inordinate, unsystematic, that the sphagismus, to which I have so frequently adverted, is produced, with all its dire consequences on the circulation of the cerebrum and of the medulla oblongata. Let the omo-hyoid and other muscles of the anterior part of the neck be suddenly and spasmodically contracted, for example, as an effort of emotion, or of reflex action, and the compression of the jugular vein will be the immediate consequence, with all the subsequent links of that chain of morbid results. The vertebral vein are, in like manner, crushed by the powerful muscles arranged along the posterior part of this important region; cerebral and spinal congestion, apoplexy, or epilepsy, ensue.

Meanwhile, the countenance is tumefied and affected with pale or purple lividity, the sign and index of the condition of the circulation within the head and neck, and of the nervous centres; the neck is swollen, too, and the condition of the larynx, pharynx, and adjacent tissues, is such as to lead to

stertor, and rattle in the breathing, and imperfect deglutition, whilst the acts of respiration themselves cease to be rhythmic and equably sustained—a fact which presents the true index to the degree of danger.

My readers will readily understand how important, in the pathology of these cases, is an accurate knowledge of the *Anatomy of the Neck*, and especially of its muscles and its veins, its arteries and its nerves. It is the most important of *medical regions*, and I purpose to dissect it most carefully.

The abnormal action of the muscles of the neck is frequently quite obvious, especially in epilepsy, in which, from the inordinate action of those muscles, the head is violently distorted and twisted, and drawn into every frightful position, the eyes glare, and their axes are diverted, whilst every feature of the face is shockingly disfigured. In apoplexy, this action of the muscles is less marked, but still obvious enough to the careful observer.

§ 5. *The Relations between the various Paroxysmal Nervous Affections.*

Nothing is so common—nothing is viewed as of such trifling import—as the seizure, termed “sick headach.” Yet I have known sick headach issue in paroxysmal attacks of a very serious nature, both apoplectic and epileptic.

Sickness, cold perspiration, pale or purple lividity, with collapse or tumidity of the features, as syncope, or the apoplectic state, may prevail, and with cerebral symptoms almost apoplectic or epileptic, constitute a *peculiar form of seizure*.

How often is the apoplectic seizure marked by sickness and vomiting!

How often have we convulsive affections in the apoplectic seizure, and how constantly is the apoplectic state left by the epileptic convulsion!

How often would the prompt use of a feather, to induce vomiting, and of a stimulant enema, ward off the apoplectic and the hemiplegic attack!

And especially how often would *due* attention to sick headach, and similar warning affections, ward off the more formidable attacks of apoplexy or of epilepsy—yes, and of mania!

How important is the whole of this topic to the physician and to the patient!

Our attention has been too much and too long engrossed with researches into the mere gross morbid anatomy, the effects of diseased action. I now make an effort to place what may be designated morbid physiology, or *living pathology*, before my professional brethren, tracing the varied links of the formidable chain.

I believe the profession has still to pursue this subject, as the public have still to learn the vital importance of a regulated state of the emotions, and of a *due* attention to the diet, the intestinal canal, and of the uterine function. Vague notions exist of the importance of these topics, yet mankind go on partaking of the most indigestible meals, neglecting a loaded and disordered intestine, and altogether reckless of the general susceptibility of the nervous system and of the local irritation and cause of morbid reflex actions during the flow of the catamenia, or at the catamenial periods, when that flow is suspended. Yet do I daily witness the apoplectic, the convulsive, the maniacal condition, if not the actual seizure, dependent on these causes, severally or combined.

In this manner paroxysmal apoplexy, epilepsy, mania, is produced, emotion or local irritation inducing direct or reflex spasmodic affection, and this, in its turn, a morbid condition of the circulation through the cerebrum or medulla oblongata, through compression of the jugular or vertebral veins, and consequent cerebral or spinal irritation or congestion, and their effects. Many are at this moment paralytic, or subject to seizures of epilepsy, or are immured in an asylum for the insane, whose dire misfortune might have been prevented by *due* and timely, and *sufficient* and sufficiently sustained attention to avoid or avert the causes of their calamity, when it wore the treacherous aspect of an insignificant malady, as sick headach.

The *slightest* symptom or symptoms should be instantly and strictly attended to. One patient may be affected with a rigid temporal artery, another, with superficial veins of the neck “as large as the finger,” a third with a sense of tension of the integument of the head, a fourth with a livid flushing, a fifth with the sense as of a light cravat round the neck; others have headach, vertigo, momentary confusion or oblivion, or of sickness, or of faintishness, or of a sense of numbness, or spasmodic affection, as *warnings*, before the more formidable *paroxysm* of apoplexy, or epilepsy, or mania occurs.

Amongst the premonitory symptoms, none is more frequent than numbness in the ring and little fingers.

The physician should carefully and habitually examine the condition of the temporal artery, of the conjunctiva, and of the veins of the neck, in all these cases.

§ 6. *Extract from Dr. Abercrombie.*

We are now prepared, I believe, to understand the following remarks of Dr. Abercrombie, which, though rather long for a quotation, I must, from their importance, give entire:—

"The most simple illustration of the apoplectic state is derived from those cases in which it is distinctly traced to an external cause, and ceases when that cause is removed. A boy, mentioned by Zitzilius, 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. Strangulation, when the neck is not dislocated, appears to be simple apoplexy. A man brought after execution to Sauvages, 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 dyspnoea, and in a few hours he died apoplectic. A woman mentioned by Wepfer, recovered after execution under the same treatment. After her recovery, she was for some time affected with vertigo, which subsided gradually. To cases such as these we may add the numerous examples in which persons fall down suddenly in a state of perfect apoplexy, and very speedily recover under the appropriate treatment, without retaining any trace of so formidable a malady.

"The apoplectic attack, as it occurs in such examples as these, must be supposed to depend upon a cause which acts simply upon the circulating system of the brain, producing there a derangement which takes place speedily, and is often almost as speedily removed. What the precise nature of that derangement may be, is a point of the utmost difficulty to determine, and, perhaps, we have no data upon which it can be determined by legitimate induction. The subject leads to speculations of a very interesting kind; but it must be confessed that they are in themselves in a great measure hypothetical, and that their application to the phenomena of apoplexy is also conjectural in a very great degree. They may be worthy of some attention, but must be kept entirely distinct from our present course of inquiry, in prosecuting which I shall now take a general view of the principal varieties of symptoms which occur in the attack of apoplexy. 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:—Headach, 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 a 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.

"First.—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.

"Secondly.—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 convulsions. 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 first effects of the attack, is quite sensible, and able to walk, but continues to complain of headach; 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.

"Thirdly.—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."

Of this remarkable passage the following is, I believe, the explanation:—

The tissues of the neck, face, and head are subject to influences similar to those which affect the erectile tissues. The former, like the latter, become tumid by certain emotions, as shame, anger, &c., and collapsed by others, as fear, anxiety, &c.

Shame and anger suffuse and tumefy the countenance, the eyes, the cheeks, the forehead, the neck, and even the integuments of the thorax, distending the capillary vessels. A fit of anger, and especially of suppressed anger, has passed into an attack of apoplexy! Sphagiasmus has existed in such a degree as to over-distend, or even to induce yielding or rupture of the capillary canals.

What certain emotions effect, is effected too by a loaded condition of the stomach. The tissues of the face and neck are affected with capillary or venous congestion, and the patient—for such he is—becomes affected with a sort of sub-apoplexy—dozing, or rather sleeping, heavily, and with stertor.

As the effect of emotion in one case, and of excited reflex action in the other, the muscles of the neck are brought to contract on the veins of the neck, (and as in epilepsy it is chiefly the veins returning from the medulla oblongata, so it is in the threatening of apoplexy those which return the blood from the cerebrum and cerebellum,) and the sub-apoplectic state is induced.

But it is, as I have stated, the agitation of speculations in commerce which most conduces to dangerous congestion of the cerebral vessels, and the danger of the apoplectic or paralytic attack, as of epilepsy, and of others of *this Class* of diseases, as mania, suicide, &c.,—so perfectly allied are these apparently dissimilar morbid affections.

The effects are various, as Dr. Abercrombie has so admirably stated. I received a letter quite recently, from which the following is an extract:—

"Mr. L—, of this neighbourhood, (Derby,) a dissenting minister, has been subject to a peculiar loss of memory, a slight unconsciousness for a few minutes, coming on at intervals more or less frequent. These attacks were denominated *epilepsy* by Sir Arnold Knight, of Sheffield, who was consulted, some years ago, by Mr. L—. I wrote to Sir A. Knight, a year ago, and he then stated that he considered the attacks *epilepsy*. But of late the attacks have put on somewhat more the appearance of apoplexy; and the last attack, about two months ago, was certainly more apoplectic than epileptic."

One patient, subject to attacks of epilepsy, was occasionally seized, whilst walking in the streets, with a transitory hemiplegia. A third patient is subject to paroxysms of mania, being sane in the intervals.

§ 7. *The THEORY, Causes, and Prevention of Paroxysmal Apoplexy.*

The slightest paroxysmal occurrence of head affection should be as a most earnest warning voice to the physician and to the patient, being carefully traced to its cause—whether this be emotion, with its direct influence, or irritation, with its reflex action, on the muscles of the neck, and its consequences on the venous circulation of the encephalon.

This warning voice unheeded, and apoplexy, hemiplegia, or more partial paralysis, and the loss of the mental faculties, are the consequence: the young become old and decrepid, the aged become infirm and crippled, in a moment of time.

All emotion should be mitigated or removed by absence and recreation—affairs should be relinquished, and diversion, and change, and active occupation, should be sought carefully. The remedy of remedies is—*travelling*.

The source and nature of the irritation should be discovered; the stomach and intestines should be kept absolutely free from all indigestible ingesta, and from excretions too long retained; uterine irritation should be as carefully allayed.

On the occurrence of the *slightest* admonitory symptom, the patient should be enjoined to take some fluid, and promptly and effectually to irritate the fauces and induce vomiting; and then to use an ample enema. He should then, if necessary, take an efficient emetic and purgative.

These remedies should be kept in readiness at all times and places.

They are equally important, whether the apoplectic, the epileptic, or the maniacal seizure be portended.

The most rigid system of diet, the strictest attention to the state of the bowels, the utmost care at catamenial periods, should become the patient's duty, and be most conscientiously performed.

In the actual attack, an effectual emetic, enema, and purgative should still be speedily administered, together with instant venesection. Afterwards, in the case of uterine irritation, fomentations, enemata of warmer water, perhaps slightly opiate, should be administered.

As preventives, early hours, a raised position in bed, the head being kept cool, and the stomach being empty; freedom from emotion; ample walking exercises in the course of the day, with a very light digestible diet, and an unloaded condition of the bowels; great attention on the catamenial periods, &c., and all these well-sustained, are the most important.

The objects throughout are,—to avoid all exciting causes, to remove these if they have been allowed to exist, and to exchange the morbid actions for others. In this last point of view, the excitement of vomiting is most important. Cold water may also be dashed on the face and neck, to excite other actions—the act of inspiration, by which the veins are emptied, especially. With the same views, the nostrils may be irritated. In a slighter attack, the patient should be instructed to make frequent, energetic, and deep inspirations voluntarily.

It is scarcely necessary to add, that the most *direct* remedy, in the case of actual seizure, is to relieve the sphagismus by opening the external jugular at once, or emptying the intermediate cutaneous vessels by cupping.

The reader is, doubtless, now convinced of the importance of a full development of the *theory* of apoplectic, of convulsive, and of maniacal affections, for all these are closely allied. The *first* step towards the comprehension of this subject was the separation of *The Spinal System*, with its excito-motor, reflex actions and functions, from the cerebral and the ganglionic; the *second* is the due appreciation of the direct and reflex muscular actions, and their varied influences, taking place in the important region of the *neck*.

It must be remembered that the preceding observations relate entirely to what I beg to designate *paroxysmal* apoplexy. Of the other forms of apoplexy and hemiplegia I have already treated in a previous communication, and in the volume recently published by the London Medical Society.

Manchester-square, July, 1848.

A lady suffering from fluor albus having, by the advice of a friend, taken an ounce and a half of gum arabic, died soon after from double nephritis and suppression of urine. This result appeared rather difficult of explanation, but the family physician, undismayed by the obscurity of the case, answered the anxious queries on the circumstance, by saying that the gum had gathered into a ball, and had thus prevented micturition. *Risum teneatis amici!*

ON
INFLAMMATION AND ABSCESS
OF THE
UTERINE APPENDAGES (OVARIES, FALLOPIAN
TUBES, AND CELLULAR TISSUE) IN THE
NON-PUERPERAL CONDITION.

By J. HENRY BENNET, M.D.,
PHYSICIAN-ACCOCHEUR TO THE WESTERN GENERAL DISPENSARY, ETC.

(Read before the Medico-Chirurgical Society, January 25th, 1848.)

(Concluded from p. 62.)

SYMPTOMS, PROGRESS, AND TERMINATION.

ACUTE metritis, in the non-puerperal state, generally ends by resolution or by passing into the chronic stage; suppuration is a comparatively rare event, owing to the very small quantity of cellular tissue existing in the structure of the uterus. Inflammation in the lateral ligaments, on the contrary, generally ends in suppuration. It is, in reality, in most cases, a purely phlegmonous inflammation; and the great tendency of phlegmonous inflammation to terminate by suppuration is an axiom in pathology. Although much less liable to end in suppuration than inflammation of the cellular element, ovaritis is also more frequently followed by suppuration than acute metritis. Suppuration may, consequently, be looked for in the course of a few days from the onset of the inflammation, unless the latter has been checked by early and energetic treatment. A prepared and attentive observer may recognise suppuration having taken place by rigors and other symptoms that accompany internal suppurations, by the lull that follows in the general and local symptoms, and sometimes by a deep-seated sensation of fluctuation perceived through the vagina, or even through the abdominal parietes.

Once the pus has formed, being closely confined in the region which has been described, if it is not absorbed, as is sometimes, although rarely, the case, it endeavours to find a vent. Adhesive inflammation connects the phlegmonous tumour with the vagina, rectum, abdominal parietes, or bladder; and in the course of a variable period, but generally before the acute inflammatory symptoms have subsided, the pus finds an exit in one or more of these directions. It is almost invariably by the upper portion of the vagina, or by the rectum, that the pus escapes in the non-puerperal form of inflammation. I can scarcely recall to mind an instance in which I have seen the pus make its way through the abdominal parietes in non-puerperal inflammation, except in a case or two in which there was a serious and permanent cause of disease in the uterine appendages, such as suppurated tubercles. When, however, this is the case, it is only after the inflammatory action has lasted for weeks or even months, that the pus reaches and perforates the abdominal integuments; and nearly always, long before the external perforation takes place, it has found its way out of the pelvis through the vagina or rectum. The emptying of the abscess into the bladder is of still less frequent occurrence, and is, likewise, generally preceded by the formation of a vaginal or rectal opening. Sometimes the abscess will open into all these directions successively. In some instances the pus appears to escape from the neck of the uterus, as if the abscess had emptied itself into the cavity of that organ. I think, however, that when this is the case, the real explanation is, that the phlegmonous tumour of the uterine appendages is complicated with metritis; and that an abscess, formed in the walls of the uterus, has thus opened into the cavity of the organ. An abscess primitively formed in the lateral ligament would be scarcely likely to work its way through the thick, unyielding wall of the uterus; at least not unless the uterus participated in the inflammatory action.

Generally speaking, as I have stated, the abscess opens into the vagina or rectum, or into both. That such should be the case is at once accounted for, when we consider the position of the phlegmonous tumour with reference to these organs, with which it is in immediate contact. The perforation mostly occurs during some exertion, such as a fit of coughing, or the act of defecation, and in so latent a manner that it is not perceived nor mentioned by the patient, unless her attention is previously directed to the point by her medical attendant. This, however, is seldom the case in non-puerperal abscesses, as he is not himself aware of the nature of the disease, and believes his patient to be merely labouring under metritis. The passage of even a considerable quantity of pus from the vagina is generally thought by the patient to be only an increased flow of the whites; and the escape of pus along