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162  
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ON THE

NATURE, PATHOLOGY AND TREATMENT

OF

PUERPERAL CONVULSIONS.

BY

RICHARD HODGES, M.D., F.R.C.S.,

AUTHOR OF "AN ESSAY ON UTERINE HÆMORRHAGE"  
WHICH OBTAINED THE FOTHERGILLIAN GOLD MEDAL OF THE MEDICAL SOCIETY OF  
LONDON IN 1851.



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TO

SIR CHARLES LOCOCK, BART., M.D.,

FIRST PHYSICIAN-ACCOUCHEUR TO HER MAJESTY THE QUEEN, AND HONORARY  
PRESIDENT OF THE OBSTETRICAL SOCIETY OF LONDON,

THIS ESSAY

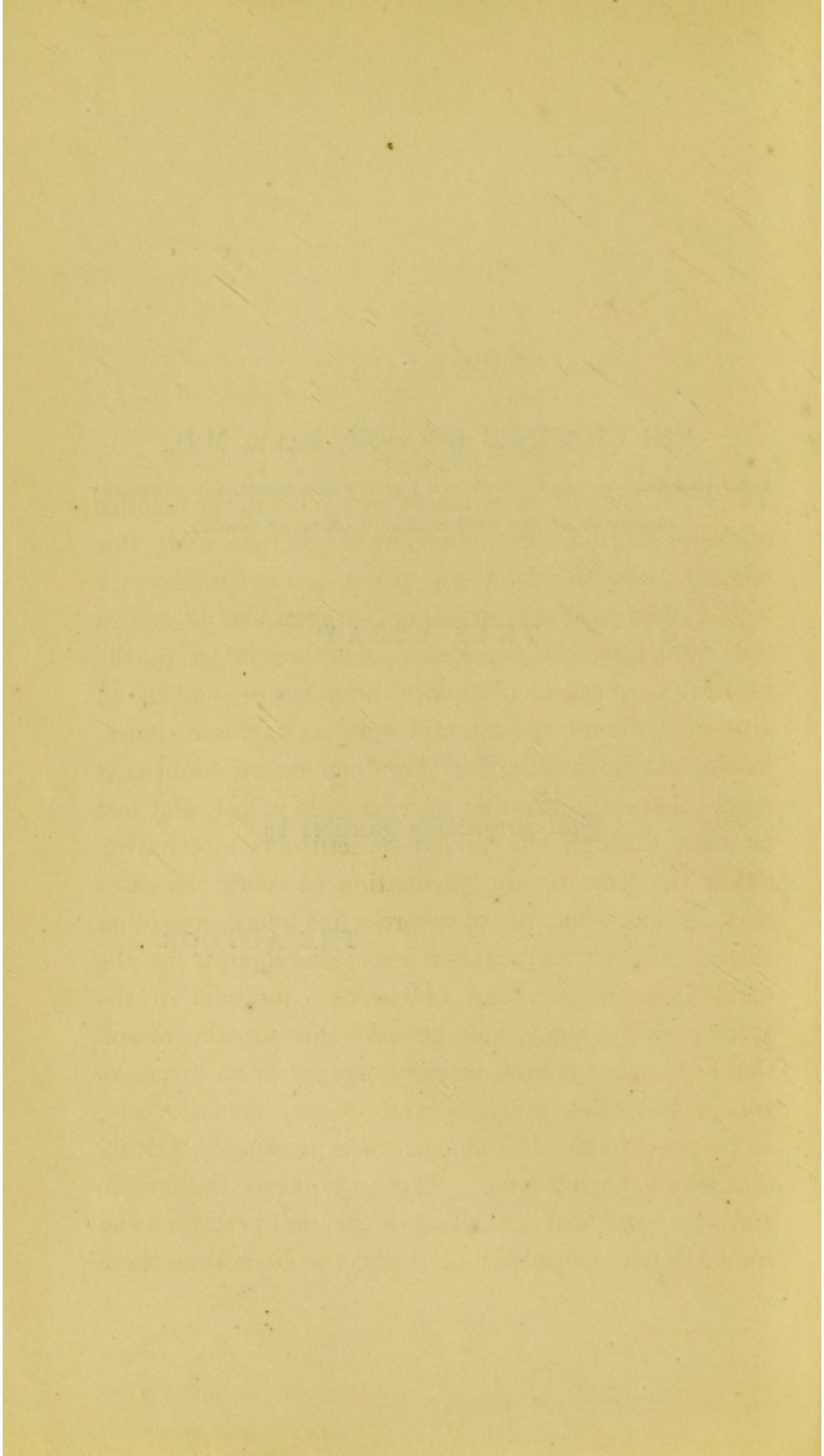
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THE AUTHOR.





## PREFACE.

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THE experience of more than twenty years in the practice of Midwifery has prompted the Author to write this memoir; and the following pages are written from a feeling that each physician or surgeon should record the results of his experience, whether it be in the medical, surgical, or obstetrical branches of the healing art—even though the attempt were, as in this instance, feeble and imperfect; for there can be no doubt that much that is interesting and valuable is lost, and lost for ever, through the private practitioner not having either the time or the inclination to relate the cases that he has seen, or to express his ideas regarding them. The writer requests every indulgence for the many imperfections and omissions contained in the accompanying essay, and he asks this for the reason that he has always been actively engaged in an extensive and wide-spread practice, and never, consequently, accustomed to the desirable art of expressing in writing that which he has seen. Those who know the fatigue and wear and tear attaching to general practice away from London, can best understand the little time there



is for reflection, and the still less time offered for writing and commenting upon the various cases that are successively, and day after day, presented to the well-employed practitioner.

This essay is the first result of the opportunity for reflection, which a greater leisure has afforded me, having exchanged my former practice for my present one ; and is only undertaken from a sense of the debt and obligation which the opportunities of practice imposed upon me.

The disease of puerperal convulsions has been selected by the writer not only from its importance, and from his having had under his care a great many of such cases, but from the success which has attended the treatment adopted.

LONDON,  
8, *Portman Square, W.*

ON  
THE NATURE, PATHOLOGY AND TREATMENT  
OF  
PUERPERAL CONVULSIONS.

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IF there be a complication attending the trial of labour calling for especial sympathy, and requiring from the physician energy and decisiveness of action, it is the fearful disorder of puerperal convulsions, a disease without exception the most afflictive that can accompany the pregnant or parturient state, and one which especially requires from the medical attendant the prompt and right application of the means at his command for its alleviation and cure. Although so formidable and distressing a malady to witness, it is, nevertheless, not so frequently fatal as many other complications of labour, when rightly treated, and it is, therefore, with the view of recording my experience of the success of the treatment by early bleeding, that I have ventured to write the following pages, with the earnest hope that the feeble effort may not be unattended with success. The necessity for fresh evidence of the utility of venæsection for the alleviation of the symptoms of



puerperal convulsions, would, *à priori*, appear altogether unnecessary, for the remedy has been advocated by the most accomplished and experienced practitioners, from time immemorial ; but the fear that it might be withheld by some—and it has been unfortunately withheld, either from inexperience of its value, or from preconceived erroneous notions of the disorder, or from adopting the false and absurd idea that because bloodletting at one time was abused, the proper use of it is to be abandoned altogether—urges me to write this memoir, with the simple desire of impressing upon those who are taught to disregard or undervalue bleeding in this disease, that there is no remedy so efficacious as that of blood-letting in this peculiarly distressing disorder. It is the chief remedy in this disease, not only from its relieving the brain—preventing mischief there by lessening the pressure occasioned by the fulness of its vessels—but from its being likewise a marked sedative of spinal action. I record for suggestive contemplation, the fact, that in every case I have had the opportunity of observing, with one exception only, whether in my own practice or in that of others, where bleeding was early and sufficiently practised, recovery took place, although the convulsive struggles were violent and frequent, and the patients were insensible between the fits, and for hours and days subsequently ; and where bleeding was omitted, or not performed until after the disease had been some hours established, death occurred ; yet in these cases the symptoms were not more severe, or more apparently likely to prove fatal, than in those



which recovered under the timely use of venæ-section.

The fatal result of the exceptional case above alluded to, was owing, I believe, to rupture of the uterus, an event which Dr. Hamilton has recorded sometimes happens when puerperal convulsions prove fatal. In this case, I remember that the fits were both numerous and peculiarly violent, with deep coma between each of them ; but, after the free use of the lancet, consciousness returned, and the convulsions ceased ; death, however, occurred upon the fourth day ; and I was led to infer that the uterus was ruptured during a strong and violent contraction at the time of the birth of the child ; the subsequent abdominal swelling, pain, and sanguineous discharge leading me to this conclusion ; so that this fatal case is to me an exceptional one, and ought not to be allowed for one moment to detract from the utility of bleeding ; indeed, it cannot, for here the convulsions were relieved, and the coma recovered from, which would hardly have been the case if bleeding had been omitted ; it evidently cured the disease, death occurring from another and different cause, from a rare and exceptional complication, that ought not in the least degree to influence the judgment against the employment of blood-letting.

In the accompanying essay, it is proposed to consider : first, the Symptoms, Diagnosis and Prognosis of Puerperal Convulsions ; secondly, the Causes which originate them ; thirdly, the Pathology ; and lastly, the Treatment of the Disease.



*The Symptoms, Diagnosis and Prognosis of Puerperal  
Convulsions.*

During my professional career, which dates from the year 1836, opportunities were afforded me of attending a great number of cases of puerperal convulsions, and, from the recollection of these cases, it is my intention to proceed at once to the description of the symptoms which characterize the disease; preferring such a course to the plan ordinarily adopted, namely, that of minutely giving or formally detailing the histories of individual cases. The physician is now and then hastily summoned to a patient in labour, and who is reported to be at the same time in strong fits, when he is consequently in some degree prepared for the scene which he is to witness; but, for the most part, this is not the way in which he first receives intelligence of the disorder; it more frequently happens that he is in attendance upon the patient,—that she and her friends are cheerful,—that the labour, if commenced, is natural,—that the pains return with regularity, increase in intensity, and afford promise of an excellent termination,—a combination of circumstances creating confidence and a belief that all is right, and calculated likewise to divert the attention of those present from the actual state of the patient, and at the same time to impress upon the bystanders the certainty that all will be well. The physician in such a case, with his confidence in the powers of Nature, looks on without anxiety for the realization of that period when the patient remembereth no more the



sorrow for joy that a man is born into the world. But how soon matters are changed ! In how short a time the pleasure and hope in the heart are exchanged for sadness and despair ! The apparently natural labour, with, frequently, no superficial symptoms of the mighty struggles brooding reaching the intellectual senses of any present ; although there are to be sometimes seen by the practised eye, signs—premonitory and unmistakeable signs—of the disease developing itself within ; yet the apparently natural labour is in a moment exchanged for the most complicated and frightful that the physician can ever witness. In the midst, then, of the apparent excellent progress, and generally before the os uteri is much dilated, and without giving any previous warning, the patient suddenly experiences a fit : if sitting or walking about the room, she falls down convulsed ; or, if lying quiet or in a sleep, the attendant is all at once alarmed by the trembling or strong agitation of the patient ; the voluntary muscles of the body and limbs are violently convulsed ; the head is jerked quickly and strongly backward, on to one side, and in two instances the trunk was arched or drawn backwards by the spasm of the muscles of the back ; the face becomes swollen and livid, and assumes a frightful appearance from the convulsive action of the muscles ; the eyes are prominent, and drawn obliquely upwards, so that little or none of the cornea can be seen ; and if there be an opportunity of looking at the eye—and there is sometimes the chance, though not always—the pupil is not necessarily either dilated or contracted, but sometimes



in the one state or the other, or even one may be dilated and the other contracted, but more frequently, in the cases under my observation, both were contracted, and this contraction especially furnishes an index to the condition of the circulation within the brain requiring the use of the lancet, for the alterations in the size of the pupil are more owing to vascular than to muscular changes in the iris, and are dependent upon the state of the minute bloodvessels of the brain, the pupil being contracted when the vessels of the iris participate in the fulness of the vessels of the brain, and dilated when they are in an opposite condition ; the tongue is alternately protruded and retracted, and often severely bitten and swelled from having been caught between the teeth by the irregular spasmodic action of the temporal and masseter muscles ; blood and frothy saliva issue from the mouth and wounded tongue, and are drawn in with a hissing noise by the convulsive inspiration ; the throat appears full and distended, the arteries of the neck beat violently, and the jugular veins are especially prominent. The pulse during the fit varies, being at first slow or oppressed, or now and then quick and full, but, as the intensity of the disease increases, becomes frequent, small, and irregular. The breathing is more or less deep, irregular, laboured, and stertorous. Such, then, are the principal symptoms observed during a fit, but in many of the cases there were various modifications in the phenomena evinced ; for example, there would be more violent grinding of the teeth observable in some of the cases than in others ; in one case, a molar



tooth of the upper jaw was broken off by the violent and sudden contraction of the muscles of the lower jaw, and now and then the convulsions would be more severe on one side of the body, instead of, as is more commonly the case, equally affecting both sides.

The duration of the fit is very various—sometimes not exceeding a few seconds or minutes, and at others extending to nearly half an hour. After the fit has ceased the patient commonly remains insensible, and apparently in a deep sleep, or she may at once become conscious—without, however, being aware of having had a convulsive attack, or, as recorded in some obstetric works, the seizure may end in fatal apoplexy ; which, however, is not likely to happen if venæsection be early practised. I speak entirely from what I myself have observed in the course of an extensive obstetric practice, extending over a period of twenty-five years, and without reference to the results recorded by others. I do not mean to imply that I undervalue the results of the experience of others, but simply to convey the idea I have of the utility of bleeding—the great success attending it, and the almost certain death of those from whom it is withheld. But to return—the fit over, and the patient in a sleep, or conscious to a certain extent, the question arises : Is the disease at an end ? The friends naturally hope that it is. The physician, however, cannot say so ; but, on the contrary, he looks for a repetition of the same scene, and he seldom fails to realize his expectations in seeing not only a second, or third, or fourth attack, but ten or a



dozen of these same fits in the same individual, and in the last case to which I was called, eighteen of these fearful convulsive paroxysms occurred.

They recur with variable rapidity—five or ten minutes, or a quarter of an hour, or half an hour, or even an hour occasionally intervening between the several fits. The patient will sometimes recover consciousness between the attacks—will waken up as if from a sleep, and with no recollection of what has happened, and with no idea of the struggle she has undergone; yet very commonly, though there may be consciousness between the earlier seizures, it happens that the patient becomes comatose as time wears on—that she lies in a state resembling apoplexy, without feeling or motion, and with the breathing heavy, laboured, and stertorous: sometimes, however, there is not complete coma, but between each fit there is a partial return of consciousness—a ceaseless rolling about the bed, and a low and distressing moaning, indicative of the presence of pain, or, at the least, great uneasiness. The convulsions returning at intervals—and their return is instantly and unerringly recognised by the depression of the jaw, which invariably takes place at the commencement of each attack—increase in violence and frequency up to a certain point, and then they usually return with less and less frequency and severity, until they return no more; and the convulsions not returning, the powers of Nature, aided by art, now gradually accomplish the restoration of the loss of balance of the nervous functions. A



variable time passes away before complete consciousness is restored ; in six or seven hours, frequently, there will be a degree of consciousness, sufficient perhaps to enable the patient to recognise those about her ; but more often it has happened that there is complete insensibility for twenty-four, or thirty or forty hours, and in one instance a week passed before any approach to a state of consciousness appeared ; but in every instance the period of time intervening between the accession of the disease and restoration to a state of sensibility remained a perfect blank, and not only so, but in some instances I found that the patient could not recall to her memory any events occurring for twelve or eighteen hours prior to the manifestation of the first phenomena of the disease ; and in one case the patient could not remember anything which took place for a period of thirty-six hours before convulsions appeared, although during that time she was apparently in her usual spirits, conversing with her friends, and walking about with her husband, and as cognisant as ever of what was going on around her ; yet, notwithstanding this, she could not remember anything which happened during the thirty-six hours which preceded the first convulsive seizure : this period, like that occupied by the developed disease, being a perfect blank to her, and still remains so, although a year and upwards has passed away. The memory for some hours after restoration to consciousness is frequently absent, and only returns very gradually ; one event after another of the previous life being recalled to the mind.



The not being able to remember the slightest event for many hours prior to the beginning of puerperal convulsions, clearly points to the fact that the cause, whatever it be, is at work before the disease shows itself in all its fulness and fierceness, although the attendant, from not anticipating the accession of such a complication, may not in every instance recognise it;—the *origo mali* appearing to act first on that portion of the nervous centres which ministers to the intellectual faculties; but, now and then, there are unequivocal signs to warn us that there is a mighty struggle at hand; and what are these premonitory signs? A woman in labour is in good spirits, and bearing her pains cheerfully, when all at once she has delirium, incoherent talking, and an idea that there is a dazzling of the eyes, or a bright light in the room, or an appearance of substances floating before the eyes, or passing in rapid succession before them, or giddiness, or headache, or singing in the ears, or blindness, or inability to speak or to walk straight, or violent pain in the stomach, with sickness—some one or more or all of these may be experienced immediately before the first fit. In one case I attended, the patient became suddenly giddy, and thought there were sparks of fire of a fiery brightness in the room, when immediately a fit supervened. This patient subsequently had ten distinct attacks, remained insensible for six hours after delivery, but recovered without an untoward symptom. In another case, the patient screamed out with crampish pain in the stomach just before a severe convulsive



paroxysm manifested itself; in this instance seven severe seizures afterwards occurred at intervals, the patient remaining insensible for many hours subsequent to delivery; but she made an excellent recovery.

Having now given an account of the symptoms of puerperal convulsions, and alluded to the premonitory signs which often prevail, the time has arrived for the consideration of the question—Whether this terrific disease influences the progress of labour when that process has commenced; whether it accelerates or retards the delivery of the child?

We find in practice that uterine action is not at all suspended during convulsions, and that, although no signs of pain are perceived by the woman when lying in a state of coma, yet, nevertheless, pains often occur and accomplish delivery, and occasionally without even the knowledge either of the patient or the medical practitioner! The os uteri frequently dilates with surprising rapidity, and the child is expelled in some instances before one is aware of it. But, for the most part, the physician knows that labour is in progress, not only from having previously made a vaginal examination, but from observing a certain periodical restlessness; and in some cases, where the coma is not intensely deep, a low kind of moaning prevails, which is in itself strikingly characteristic of uterine contraction, and especially if the moaning and restlessness observe a degree of periodicity. The attendants, however, frequently fail to perceive this action of the uterus, and the event, when it happens, is to them unexpected



and sudden ; and this probably arises partly from their not having a medical eye, and partly, if not chiefly, from having had their minds diverted from the idea of labour by the occurrence of the convulsive phenomena, by which the process has been concealed, though not in any degree retarded ; the pains recurring, and accomplishing the end in view—*cito, tuto, jucunde*—yet silently and unobserved, but often more expeditiously than in an ordinary labour. In one case, where the fits were very severe, and with no return of consciousness in the intervals when, after taking away blood freely from the arm, I made an examination, the os uteri was closed, and there then appeared no disposition for delivery. The labour was a first one, and there was no reason at that time for thinking that delivery would occur for many hours ; but in a short time afterwards—say half or three-quarters of an hour, there having been in the interval a repetition of several severe fits—I was induced, from the moaning and restlessness which appeared, to examine again, when to my surprise I found the child and placenta between the thighs of my patient, both the foetus and secundines having been expelled without the friends or myself knowing anything about it.

In another case, also a first labour, the os uteri was only a little dilated, and apparently little disposed to yield, and I consequently inferred that the labour would not be over for some time, the parts being tight and rigid, and the process of parturition only commencing ; but, contrary to expectation, the child was born in a



very few minutes afterwards, without, of course, the knowledge of the patient, or attracting in the least degree the attention of the bystanders.

The termination of an attack varies greatly in different patients ; some recover consciousness in an hour or two after delivery, and are quickly out of danger ; some remain in a state of stupor more or less complete, and great exhaustion for hours or days, before a state of safety is present ; while others again, instead of gradually and slowly recovering from the disorder, pass into a state of mania, and remain so for a longer or shorter time. In two cases which occurred in my own practice mania followed ; in one case, the mental derangement lasted about a fortnight, and in the other instance five weeks before restoration to a state of health was perfectly established. In two other cases, blindness and deafness were consequences of the disease ; the blindness and deafness continuing for about a week after the cessation of the convulsions and the return of the intelligence ; yet, nevertheless, both the sight and hearing went on improving, and improving without any special means for their relief until those functions were completely restored, and they were restored within the period above named ; each day after the first week evidencing increasing strength of the general powers, and of these senses in particular. In three cases there were evidently symptoms of peritonitis present ; in one case the abdominal inflammation was very severe, in the other two it was developed in a much less degree ; but the three recovered.



*Diagnosis.*—In order to treat with clearness this division of the subject, I propose to relate two cases of hysteric convulsion, and one case of apoplectic convulsion; believing that the simple narration of these cases will go far to show the marked distinctions that exist between the several forms of convulsive disease that one meets with in actual practice.

In 1853 I was in attendance upon a patient in labour with her twelfth child; the labour was natural, and the pains returned with regularity and efficiency, and in the course of an hour the child was born; when, immediately, a convulsive fit occurred, exhibiting the following striking peculiarities—the muscles of the trunk and extremities, but the right upper extremity more than the left, became violently convulsed; the face, however, was not livid, but somewhat pale, and free from all distortion; there were no convulsive movements of the lower jaw, as in the epileptic or ordinary form, and consequently the tongue was not bitten. She was not insensible, though unable to express her feelings. The attack lasted for about five minutes, the convulsive movement of the right upper extremity being especially prominent throughout, when she began to scream and cry violently; and after more or less of sobbing, she passed a quantity of limpid urine, and the attack was at an end. This patient generally had such an attack after the birth of every child. In 1862 I was summoned to another lady about six months advanced in pregnancy; who, after feeling a tightness about the throat, became suddenly convulsed; the con-



vulsion limiting itself, however, principally to the trunk and upper extremities, scarcely, if at all, affecting the face ; the muscles of the back were violently contracted, so that the trunk was bent completely backwards in the form of an arch, and she remained immoveably fixed in this position while the fit lasted. This lady was always exceedingly nervous and irritable, and hysterical, and had usually frequent sensations of globus, palpitation of the heart, and fits of sobbing and crying. On the termination of this seizure, which lasted for a quarter of an hour, she sobbed and screamed violently, passed an immense quantity of limpid urine, and gradually recovered, without its having exercised any influence on the progress of utero-gestation. In 1851 I was requested to visit a patient hourly expecting her confinement, who was reported to be dying. On arriving, I learnt that she had not been well for a fortnight, having had something of intermittent or remittent fever ; that about an hour previously to my seeing her she became suddenly insensible, and slightly convulsed, but soon became still and motionless. There was frothing at the mouth, and the breathing was laboured, irregular, and stertorous. The pulse was feeble and irregular, and she died in about five hours from the first coming on of insensibility. She had been very weak for many days, and complained of headache, which she allowed to go on unrelieved. No attempt at labour was established in this case ; but, as the child was alive, I proposed to extract it by the Cæsarean section, but the friends would not consent.



The apoplectic form of convulsion, then, is distinguished from the other forms (epileptic and hysteric), by the complete and persistent coma, and by the absence of repeated paroxysms with their accompanying symptoms ; although now and then it must be confessed that the ordinary epileptic or puerperal form, if inefficiently or wrongly treated, merges into apoplexy, when all the symptoms peculiar to that disease are then the same as in an original attack of the malady. In hysteric convulsions there is not complete insensibility, there is usually no frothing at the mouth, nor biting of the tongue, nor stertorous breathing, and there is little or no distortion of the features, the most that I have seen being a violent agitation of both the upper eyelids, and a quivering of the lips. The patient recovers her usual state quickly, when the fit is over, whereas in the ordinary or true form she does not do so for a long time ; certainly not so speedily as in the hysteric kind. There are also frequently seen before the attack commences many manifestations of hysteria, such as sobbing, laughing, crying, the globus hystericus, and the like, and, if these have not been observed beforehand, they show themselves pretty clearly and unmistakeably at the termination of the fit. Hysterical convulsions are distinguished from the apoplectic by the fact that in the latter the patient loses at the very beginning consciousness and voluntary motion, and after a time all motion ceases ; the breathing is not stertorous in the hysterical form, and the patient soon recovers. She appears, however, during the seizure



apparently insensible, but she is in reality not so, although unable to express her feelings or wishes. The power to speak not being destroyed, but only the will to use the power temporarily suspended, and the suspension of the control of the will over the voluntary movements, accounts likewise for the irregular and extraordinary movements we so frequently see in this disease. In the ordinary puerperal convulsion there is loss of consciousness during the attack ; whereas, in hysteria there is, as already intimated, never complete insensibility. There is also lividity of the face, frothing at the mouth, distortion of the features, great muscular action, severe biting of the tongue, and a frequent recurrence of the paroxysms, in which respect it especially differs from the hysterical form, where there is usually but one attack. The hideous appearance of the countenance, occasioned by the distortion of the features, and the frequency of recurrence of the fits, are especially distinguishing marks of the true or puerperal kind, and with coma more or less complete, during the intervals of the fits, and after their cessation, a combination of symptoms is presented which cannot fail to disclose the true nature of the disease. There is an absence likewise of the sobbing, crying, weeping and screaming peculiar to the condition known as hysteria. Puerperal convulsions are quite different from epilepsy, for they recur at no future time, unless in a subsequent labour, and this is rare ; they are evidently connected with the state of gestation or parturition, and are seen at no other time. These convulsions are most frequent in



first labours, for out of twenty cases that I can recal to my recollection at this moment, one only occurred in a labour subsequent to the first, the remaining nineteen being all first cases. The puerperal convulsive attacks take place in greater number in a given time than epilepsy does ; thus clearly showing not only their connexion with the pregnant or puerperal state, but, that this state of the system peculiarly gives a character to the convulsive diseases which appear either during pregnancy, labour, or the puerperal period. "*Artuum vel musculorum plurimorum, spasmus clonicus acutus, cum sensuum obscuratione,*" is a definition well adapted for puerperal convulsion, but differs from that which would be suited for epilepsy, by the absence of the character "periodicus." Puerperal convulsion is never seen except in connexion with gestation or labour, and the complication may occur either before, during, or after that process ; whereas, epilepsy is seen at all times, and at all ages, and generally observes a marked degree of periodicity in its return.

*Prognosis.*—It is difficult clearly to express in writing the symptoms of this disease which imply either a favourable or unfavourable result ; for as each case is a study in itself, so is it difficult to predict or state what shall be universally applicable to every case. Observation, however, has given me the impression that the degree of danger is not always proportioned to the violence of the attack, and that, as in the infantile convulsions, slight convulsive movements often indicate a more serious affection than where violent convulsions



are present. The case of apoplexy before related, and which proved fatal, where there were slight convulsions at the beginning, prove that deep coma and stertorous breathing, without the repetition of convulsions, are far more dangerous than where the fits are both frequent and strong, and continued for many hours in succession. The intervening state influences the opinion of the probability of recovery far more than the violence of the fits themselves. If the patient be in a deep comatose state from the beginning she is in great danger, and if venæsection be not early employed, the probability is that the patient will die. Experience, however, leads me to hope and believe, that by the early employment of blood-letting, a favourable issue will occur in the majority of cases of puerperal convulsions, no matter how violent or severe the disease may be. I can recal to my mind cases of great severity, where the fits were severe, and frequently repeated, with perfect unconsciousness from the very first, and where no return of intelligence took place for days ; yet a good recovery occurred, and apparently from the free and early employment of venæsection. Indeed, I have every reason to believe, from the extreme urgency and severity of these cases, that death would have occurred but for the use of the valuable remedy referred to. I have seen such a result happen more than once from the neglect of bleeding ; and it is, indeed, no more than one would predict must, in certain cases, happen where bleeding is not had recourse to ; the congestion of the bloodvessels of the brain in such cases increasing



and distending until they rupture, causing fatal apoplexy from extravasation taking place, when, of course, no hope is then left for anticipating restoration to health. When, then, the fits continue to recur, the special symptoms which generally portend danger are the increased frequency of the fits, total insensibility, and stertorous breathing; but when the intervals between the fits increase, become longer and longer, and their severity becomes at the same time less and less, and, if the breathing be natural and not stertorous, even although insensibility remain, recovery may be hopefully anticipated. Hysterical convulsions are not dangerous, and need not, for the most part, occasion any anxiety as regards recovery, this variety very rarely requiring the use of blood-letting, unless the face be flushed, or there be great headache or suffusion of the eyes, leading one to imagine that the symptoms are likely to emerge into a state resembling the ordinary puerperal form, when, in such a case, it would be expedient to take away blood to relieve and cure the patient. Cases now and then occur in practice where hysteria does so closely imitate the phenomena of true eclampsia that it is sometimes difficult for the practitioner to distinguish between the two states so as to form at once a true prognosis of the disease, and the right means of treating it. However, the practised physician will recognise some symptom or other which will convey to his mind the correct idea regarding the state of the patient before him; it is difficult to express in words how he sees in an instant the distinguish-



ing marks between a severe hysteric attack and the true eclampsia, as the ordinary form of puerperal convulsions may be called ; but there will be generally several prominent symptoms of hysteria to guide the practitioner, and, if there be no special sign, the state of sensibility or otherwise during the convulsions will, for the most part, determine the condition ; insensibility being the great mark of distinction between the true eclampsia parturientium and hysterical affections. Again, hysterical affections occur more especially during the earlier months of pregnancy ; whereas, puerperal convulsions, ordinarily so named, take place either in the latter months or at the time of labour. The convulsions occurring in connexion with disease of the kidney, in which there are combined albuminuria, great debility, dropsy, and pregnancy are not very promising, and the physician, therefore, cannot speak with the confidence that he can in the majority of other cases of puerperal convulsions ; but this is more owing to the accidental presence of disease than to any peculiarity of the convulsive fits themselves. For it may be stated, that where organic disease of the kidney coexists with albuminuria, great debility, and dropsy, the patient will probably die, whether pregnancy, or the convulsions peculiar to pregnancy or parturition, be present or not. The convulsions attending the last act of life consequent on hæmorrhage have no relation to the disease under consideration in the present essay ; but as they occur either before, during, or after labour, and present many symptoms in common with the forms already described, I advert to them simply



for the purposes of diagnosis and prognosis : these convulsions arise from loss of blood, and portend great danger, and are frequently the harbingers of death. They are distinguished by the pale countenance, the cold surface, the imperceptible pulse, and by the absence of frothing at the mouth, and contraction of the muscles of the tongue and lower jaw, the tongue not being alternately protruded and retracted, or the lower jaw so remarkably depressed as in the true puerperal form.

*Causes.*—We now come to the consideration of the causes of puerperal convulsions ; to clearly and satisfactorily explain which will, I fear, be difficult and almost impossible from the little knowledge we have of the intimate mechanism of nervous action in general, or of the minute changes occurring in the nervous centres at such a time to effect the phenomena we observe. Still, however, we may usefully describe what is believed to be either the predisposing or exciting causes of the disease, though unable to explain how or in what manner the causes themselves originate the effects ;—we often discern a cause and witness the effect in many a morbid state ; but there ends our knowledge. As in tetanus it is difficult to understand why the fearful symptoms constituting that disease are developed in some cases and not in others to all outward appearance exactly similar ; so in puerperal convulsions it is also difficult to predict their development in any particular case—to say with any degree of truth that convulsions shall occur in this or that case, or to satisfactorily explain why one lady has convulsions and another not,



the condition of each, as regards the progress of the labour, constitutional or nervous peculiarities, being apparently the same. However, it shows there is a limit to human intellect, and that it is not wise to attempt to understand that which cannot be understood; it appears sufficient for the physician to recognise the cause of a disease, and fortunate it is for the patient if he can with the knowledge he possesses, direct his art to remove it, and to know well the effect without unnecessarily and uselessly striving to penetrate into the mysteries of the minute workings and intimate changes then occurring in the nervous centres by or through which the cause produces the effect. The physician must ever be the servant, and not the director of Nature; and if he be content with such a position he will, I know from long experience, be the most successful practitioner—if he can always ascertain the cause of a disease and remove it, he will accomplish much—and he will best guide his patient through a disease who watches and acts according to the dictates of Nature; whereas, he who ignores her, and adopts his own schemes without reference to those which she may intimate, will assuredly fail. It is a prevalent opinion that congestion of the bloodvessels of the brain, whether existing primarily, or as the result of muscular action, is the cause of puerperal convulsions; not, however, by the pressure or irritation exercised on the brain itself, but by the extension of the pressure or irritation to the medulla oblongata, or that portion of the spinal system situated within the cranium. It is important, then, to



bear in mind that convulsions cannot occur unless the pressure is sufficient to operate on the spinal portion of the nervous system within the skull; for, according to Dr. Marshall Hall, no irritation of the brain *per se* or cerebellum will occasion convulsions: cut and lacerate it in whatever way you will, no convulsive actions occur. Loss of voluntary motion may by such means be induced; but the involuntary and spinal movements—those which in excess constitute spasm and convulsion—remain unaffected, while irritation of any part of the spinal marrow, or of the medulla oblongata, or the corpora quadrigemina, or of the meninges, will cause convulsions. No irritation of the brain alone can produce convulsions—no fulness of the cerebral vessels affecting the brain alone will ever cause a single convulsive paroxysm; but convulsions, however, do occur as a consequence of fulness of the cerebral circulation the moment any counter pressure is made upon the spinal portion of the nervous system within the head, but not before the mechanical pressure, whether occasioned by simple congestion of the bloodvessels, or effusion of serum or blood, bringing about convulsion solely by the intra-cranial or counter-pressure exerted on the medulla oblongata and other parts of the spinal division of the nervous system placed within the skull. Believing that the true puerperal convulsion is occasioned by pressure and counter-pressure within the cranium—the result simply of a fulness of the vessels of the brain—let us consider more especially how this state is brought about. There is frequently present during the pregnant and



puerperal states a greater fulness of the circulation than at other times—a sort of vascular plethora, and which is especially apt to affect the head, particularly in the plethoric and robust, and in persons of the apoplectic form—in such as are of a coarse thick make, and have short thick necks. The fact of a greater quantity of fibrin and of albumen also being present in the blood of a pregnant woman, contributes, and in certain persons especially, to the general vascular fulness. The anxiety of the approach of labour, then, or the dread of the pains, or the actual pains themselves, or any other exciting cause, may, very easily, under such a condition of the circulation, create convulsions; and this morbid state is apparently brought about by the greater excitability and keener susceptibility to impressions then existing in those portions of the nervous system which are concerned in the production of convulsion. For the correct and due performance of the functions of any organ, it is essential that there be a regular, equable, and proper supply of blood to the part; if the supply be in excess, there will be an exaltation of function; if below that which is actually required for the manifestation of healthy action, then a greater or less diminution of function, according as the supply is more or less deficient, will obtain. Preternatural fulness of the cerebral vessels existing at or about the time of labour, may occasionally cause convulsions, and by the intra-cranial or counter-pressure effected on the medulla oblongata, or some other portion of the spinal division of the nervous



system within the cranium, but not, as already stated, by any pressure or irritation limited to the brain itself; the pressure in such instances being produced either by the rupture of a vessel occasioning an effusion of blood, or by the pouring out of serum, or by simple congestion of the cerebral vessels themselves. Such a state may exist primarily, but is far more frequently induced by distant sources of irritation, proceeding from the peripheral extremities of some of the spinal nerves than otherwise; by which is induced a condition similar to that above related, thus creating a difficulty whereby the physician may err in not rightly interpreting the distinction between cause and effect. Puerperal convulsions are, I believe, far more generally induced by causes acting on the peripheral extremities of the incident branches of some of the spinal nerves, than on causes primarily originating with the brain itself; and it is probable that if an opportunity for a post-mortem examination occurred, and were allowed, in cases proving fatal, the same state of brain would be seen; in the one case the congestion or the effusion being the cause, and in the other, the effect of the phenomena witnessed—no marked distinction existing at all evident to the eye between cerebral fulness primarily or naturally present, and that brought about by muscular action. There must be present a peculiar excitability or morbid augmentation of the *vis nervosa*, or a charged state of the spinal centre—either of that portion of it situated within the cranium, or that external to it, or both combined, before an exciting cause



of any description can develop the disease ; but, this attained, the slightest excitation, whether proceeding from the uterus or any other part, will cause the augmented motive power to overflow from its source to the various muscles in the form of violent fits of convulsion ; or, in other words, the irritating cause being once conveyed to the spinal nervous centre will be instantly reflected from it, as if to show resentment for any irritation daring to reach it. For any exciting cause to be instrumental in creating puerperal convulsions, it is essential that there should be present the conditions necessary for their production.

An exciting cause is not in any case of itself sufficient unless there be present the aptitude and power for the development of the disease. Wounds and surgical operations do not always occasion tetanus, but wounds and operations are now and then followed by tetanus, and yet there is no perceptible difference in the character of the wound inflicted in the case which exhibits tetanic symptoms, and in that which does not ; so in the disease of puerperal convulsions, I believe there is no special peculiarity attaching to any of the causes denominated exciting—nothing in their nature or character that would enable the physician to say that convulsion must follow this or that apparent cause ; and this, indeed, appears from the fact that the same causes which are believed to produce the disease in some cases frequently exist where no convulsions, or the slightest approach to convulsions, are ever manifested, the presence or absence of these fearful movements being



altogether dependent on the condition of those portions of the nervous centres from which emanate the source of motor power; but in what this consists, or why it obtains in some cases and not in others, it is not in my power to answer.

In puerperal convulsions, then, as in epilepsy, there is, on the application of an exciting cause, a reflex contraction of the platysma myoides, and other muscles of the neck, as a motor result of the existing augmented excitability of the spinal centre, and which acts by impeding the return of venous blood from the head, through the compression exercised upon the jugular and other veins in the neck, and so occasioning congestion of the brain and medulla oblongata. There is also a more or less complete closure of the larynx present, and which is brought about by reflex spasmodic action of the laryngeal muscles, thus interfering with the circulation, and the due oxygenation of the blood in the lungs.

Dr. Marshall Hall believed that without closure of the larynx, and the consequent congestion of the nervous centres, that there could be no general convulsion. There can be no question that these reflex cervical and laryngeal muscular contractions greatly conduce to the establishment and augmentation of the symptoms by impeding the return of blood rendered unfit for the purposes of life by imperfect oxygenation, through a more or less closure of the larynx, and by contributing to the general fulness of the circulation within the cranium, by the compression of the veins of the neck acting so as to impede the return



of blood from the nervous centres. From these spinal pathological acts, the physician sees that congestion of the brain, serous effusion, and extravasation of blood there are often the inevitable consequences of the conditions above alluded to, and named sphagiasmus and laryngismus, respectively. There are also seen other motor results of the spinal erethismus, such as the movements of the tongue, and the closure of the jaw—odaxismus; and a difficulty or inability to swallow—pharyngismus; and Dr. Tyler Smith imagines, that the muscular fibres of the right auricle of the heart may become the seat of spasm, and especially in the cases in which the fit occurs instantaneously without previous warning. I remember two cases where after each patient had been safely delivered of twins, an alarming state of faintness suddenly appeared—proving fatal, indeed, in one case, but not in the other; there was no hæmorrhage either external or internal, and the labours were, in each instance, natural and not at all prolonged—the placentæ coming away naturally. The patients had always enjoyed an average state of health, and had never exhibited any symptom of organic disease of the heart. There was no apparent cause for the alarming symptoms, and I could only explain their occurrence by supposing that the cause at work within, instead of producing loss of consciousness, or convulsions, or both, produced its effect upon the heart, and so arrested its action; and, if the nervous supply to the heart be considered, it will be readily perceived that the spinal influence can reach the



heart through the branches of the pneumogastric nerves joining the cardiac—the augmented excitability being as easily reflected to the heart as to the brain, or to the various muscles in connexion with the spinal portion of the nervous system. The medulla oblongata appears the part of the spinal system chiefly concerned in the production of the foregoing phenomena; and there seems good ground for believing that there is an undue reflex excitability of the medulla oblongata in every case of puerperal convulsions. There is probably also undue reflex excitability of the spinal cord generally, and there is likewise an undue irritability of those branches of the sympathetic nerve distributed to the cerebral arteries, and which, under the influence of any exciting cause, induce spasmodic contractions of the cerebral blood-vessels, and as a consequence more or less loss of consciousness in proportion to the extent of such contraction. There is now and then seen in practice simple loss of consciousness without convulsion, and this appears to be caused by the irritation being alone reflected to the vaso-motor nerves supplying the cerebral arteries, and so producing spasm of their muscular coats; and if, indeed, these vaso-motor nerves going to the blood-vessels of the brain be inextricably blended or indistinguishably connected with the medulla oblongata, it will not be difficult to conceive how or why excitation of this nervous centre be the first link in the chain of the causes of puerperal eclampsia—loss of consciousness through contraction of the cerebral vessels the second, and convulsive muscular actions the last link in the chain operating to produce the complete group of



phenomena constituting the disease of puerperal convulsions.

From the foregoing remarks, it will be seen, then, that the brain, or that portion of it ministering to the higher functions of sensation and volition, may be alone affected without the motor functions of the spinal marrow being at all influenced; or there may be in combination with the above general convulsions, or, as already intimated, alarming and fatal syncope from spasm of the heart—pathological states showing that the causes of puerperal convulsions do not always produce convulsions, but may affect either the brain, or heart, or the muscles acting under the influence of the spinal cord separately or simultaneously. The part played by the cerebral bloodvessels in this disease is not sufficiently recognised; the unconsciousness which necessarily obtains in puerperal convulsions is the result of spasmodic contraction of the cerebral arteries preventing the due supply of blood to that part of the brain which ministers to the faculties of thought, sensation, and volition. There appears to be in every case of puerperal convulsions a loss of balance in the circulation of the blood through the brain. For the brain to perform well its functions, a regular and efficient supply of blood to it is essential, and when so supplied the power both to will and to act obtains; but if, through a deficiency of blood, the balance be destroyed—whether arising from spasm of the cerebral arteries, or from little or no blood being sent to the brain, as in cases of hæmorrhage—we observe, in proportion to such deficiency, a greater or less degree of loss of con-



sciousness, and inability to use the power that naturally exists of regulating and ordering the voluntary movements. One perceives, also, irregular and violent movements, or convulsions, as a result of the loss of the will to guide and control the natural movements; the muscles, consequently, contract violently and at random—from the loss, simply, of that power which, in a state of health, is ever present to maintain the balance between the cerebral and spinal functions. But in the ordinary puerperal attack, in common with the convulsions of infancy or epilepsy in the adult, there must be present the undue reflex excitability of the medulla oblongata or spinal cord before any exciting cause can bring into action the phenomena of convulsion, and it is also probable that there must be a greater or less degree of loss of consciousness induced before convulsion can display itself; at any rate, unconsciousness is so generally present, that it is to be regarded as a prominent feature in such cases, being, I believe, generally brought about by the constriction of the smaller cerebral arteries by spasm simultaneously with the occurrence of spasms elsewhere. And this morbid condition is the result of the irritating or exciting cause being reflected to the vaso-motor nerves supplying the cerebral arteries, and which may be either limited to those arteries whereby the brain is at once deprived of thought, sensation, or volition, or be at the same time extended to more distant parts, as manifested by the occurrence of sphagiasmus, laryngismus, &c. &c.—pathological states materially contributing to the development of convulsions. It is not improbable that this



state of unconsciousness is a wise provision, instituted with the view of preventing the patient from feeling the pain that would otherwise be keenly felt, or be altogether unbearable, unless unconsciousness were present; or it may very effectively preserve the brain, or that portion of it which is concerned with the manifestations of intellect from injury, and simply from the spasms of the minuter cerebral arteries preventing the too rapid onward movement of the blood to the distant parts of the brain.

In the convulsions consequent on hæmorrhage, it is probable that they are but final efforts on the part of the spinal nervous centre to save the system from sinking—the power naturally inherent for the preservation of life operating with redoubled vigour at a dangerous crisis to continue it; and, where it succeeds, it does so probably by the violent contractions squeezing or driving out the blood contained in the muscles into the veins towards the heart, thereby contributing to the continuance of the phenomena of life.

For the purpose of clearly expressing my idea of the pathology of puerperal convulsions, I will just recapitulate what I have for a long time believed takes place in the generality of such cases; and it is simply this—that on the application of an efficient exciting cause—the peculiar power and aptitude for the development of the disease being present—there occurs unconsciousness through constriction of the smaller cerebral arteries from the reflection of the irritation to the vaso-motor nerves supplying them, and this may take place either alone or simultaneously in combination with the states



known as sphagiasmus and laryngismus, &c.—morbid conditions favouring the development and continuance of the convulsions by not only impeding the return of blood from the brain, but by rendering the blood that circulates there impure and unfit for the purposes of life. Aretæus compares the epileptic patient to the strangled bull, or to the animal round the neck of which a cord has been tightened; and Dr. Marshall Hall thought epilepsy to be strangulation, and strangulation epilepsy; and, as in these abnormal states there are compressed veins of the neck, congestion of the brain, insensibility, protrusion, tumidity, and lividity of the tongue, and convulsions, so there are brought about in the disease under consideration similar phenomena—

- the veins of the neck being compressed, and congestion of the brain with insensibility, and convulsions induced by the combined operation of sphagiasmus, laryngismus, and the spasmodic contraction of the minuter cerebral arteries already referred to. This constriction of the cerebral bloodvessels by spasm is, I believe, an early and frequent effect of the exciting cause, whatever that may be, and appears sufficient in itself to produce the symptoms seen in puerperal convulsions, the unconsciousness that obtains being the direct result of a deficient supply of blood to the brain through spasm of the minute vessels; and the other symptoms—such as sphagiasmus, laryngismus, and general convulsions—appearing principally due to excess of action, from the probability that there is more blood circulated through the central and basic parts of the brain and medulla oblongata than before the occurrence of spasm of the



minute arteries of the cerebrum, the effect being precisely similar to that which would result were the surgeon able to place a ligature on all the vessels that are in such a case the seat of spasm—the spasm preventing for a while the onward movement of the blood ; and, as a consequence, from the heart continuing to act, much of that which would be sent on to the parts of the brain concerned in the production of sensation, thought, and volition is left for distribution to the parts of the nervous centres below the spasmodic obstruction, thus apparently increasing the functions of those parts ; and the occurrence of clonic spasms or convulsions—which are, I believe, so frequently brought about in puerperal eclampsia by the increased activity of the functions of the basic parts of the brain and medulla oblongata—the result of a greater quantity of blood circulating through them as a necessary consequence of the obstruction just alluded to, combined with the loss of volition or the power which in a state of health is ever present to guide and control the various muscular movements, seems to lead one to believe that the above idea is a true interpretation of the phenomena witnessed.

Many and various are the causes that are believed to be capable of producing puerperal convulsions ; and sometimes we have one cause, and sometimes another, as an originator of this affection ; but whether the cause in operation be acting immediately on the central organ, or on the extremities of excitor nerves, the pathological condition effected is, for the most part, the same in all. There are, then, the cerebral fulness, either primarily



existing, or brought about by the spinal pathological states already noticed: the altered state of the blood effected by agencies which interfere with the proper depuration of this fluid, when it becomes a morbid stimulant to the spinal nervous centre, and this morbid condition may be produced in many ways, and especially by insufficient secretion from the bowels, by renal disease accumulating noxious elements in the blood in consequence of diminished function, by imperfect oxygenation of the blood either by the excessive encroachment of the abdomen upon the thorax preventing the due performance of the respiratory movements, or by a partial closure of the glottis—a state often present during the severe propulsive pains of labour—as evidenced by the lividity of countenance, and the distended state of the veins of the head and neck.

*The Influence of Emotion.*—There can be no doubt that violent mental emotion, intelligence, whether of joy or sorrow, suddenly communicated, or the dread of the pains of parturition, may, either separately or combined, prove an occasional exciting cause of puerperal convulsions. In the course of my practice, I have noticed that convulsions now and then occur through the influence of fear. In the autumn of 1857, one of my patients was seized with a severe attack of puerperal convulsions—and this was indeed a severe case, where paroxysm after paroxysm succeeded each other with terrific violence, and where there was complete insensibility from the very commencement of the attack to the last convulsive struggle, and for four days subsequently, but from which, under appropriate treatment,



she recovered. Within a very limited period of the occurrence of this frightful case, two other patients, living near, were affected in the same manner when their hour of trial arrived; and as each at the time became alarmed, timid, and nervous on hearing of the case alluded to, and ever after continued anxious and nervous, and confident that they themselves would have similar symptoms when their labour came, there can be no question that fear and terror in these instances operated as powerful predisposing, and perhaps exciting causes. These cases furnish additional testimony, if such were needed, to the fact that puerperal convulsions may extend from one patient to another through the influence of mental emotion. The death of the Princess Charlotte, in 1817, from convulsions occurring after a tedious labour, depending on the arrest of the head of the fœtus in a pelvis below the average capacity, contributed powerfully to the development of the disease in many ladies, and through the powerful influence of emotion; for, within a short time of this event, many women went into labour under the influence of much fear or terror, and suffered likewise from convulsions—and puerperal convulsions were unusually prevalent at that time throughout the land, being certainly the evident result of the sad event which in that day was felt as a grief at every fireside. How grateful should we all feel at the recent safe and happy delivery of Her Royal Highness the Princess Alexandra, and that there did not arise in her case a complication so frightful—for, if there had been, unfortunately, this most fearful disease in connexion with



the event, such a trial would not have been limited to the Palace, but would have extended its influence to many a home, thousands of miles away, perhaps; and saddened many a heart through the mysterious, yet effectual, influence the mind has upon the body. The keener nervous susceptibilities of women, at or near the time of parturition, account for the readiness with which impressions are received; and it is well known that intelligence, whether of joy or sorrow, suddenly conveyed, or fright, or anger, or fear, will now and then operate with telling effect, and even occasion death; and this it does by bringing the heart to a stand-still as surely and as certainly as by more evident means. The operation of the mind upon the body is real and powerful, and at times no less disastrous in its consequences than the poison of fever, or a wound of an important organ. There is more also in the expression *suaviter in modo* than many are aware of. I believe that an abrupt, coarse, sharp manner, or an unguarded conversation—as, for instance, the mentioning any unfavourable or melancholy event abruptly and carelessly to any lady who is near the time of her confinement, is calculated to do much harm, and may even, in some instances, produce convulsions or death. And when the intimate union between the mind and body is considered, all astonishment at such a result ceases, the thoughtful and observant mind readily perceiving the relation of the cause and effect, whereby that which is obscure to the many becomes clear to him who keeps in view the mysterious connexion ever existing between the brain and the other parts of the body.



The case of the Princess Charlotte is not only deserving of record on account of the historical associations connected with it, but is especially interesting to the Physician, as, indeed, are all cases where the influence of fear can be seen to produce or bring into existence such fearful results, inasmuch as it clearly exhibits the sure, unerring, and powerful influence of the mental emotion of fear upon the physical functions of the body—and upon none are the effects more evident than on the great physical organ of motor action, as the occurrence of convulsions testifies.

I have long observed that puerperal convulsions prevail more in certain years and seasons than in others, but am unable to give any satisfactory reason why this should be the case. This disease, from the observations I have been able to make, is certainly more frequent in hot weather than in cold, and occurs more frequently towards the end of summer and in the autumn than at any other time; and this is attributed by many to some unexplained condition of the atmosphere, or to its being unduly charged with electric fluid. Dr. Ramsbotham, senr., observed that convulsions were more frequent when there was “thunder in the air” than at any other time; and Andral imagined that the electrical state of the air on the approach of a storm frequently served to bring on a convulsive fit. Out of twenty cases of puerperal convulsions I can recall to my recollection, eighteen occurred either in the months of June, July, August, or September, one in November, and one in April. I may here observe, that my experience teaches me that hysterical patients are not more



peculiarly liable to true puerperal convulsions than women not so affected, nor are the epileptic—one only out of those that came under my care having ever exhibited, either before or after the labour, clear and unmistakeable signs of the hysteric diathesis, and none of these ever had epilepsy previously. But I can remember several cases of epilepsy of some years' standing, where no convulsion was ever manifested—certainly not of the character of true puerperal eclampsia—either during pregnancy or at the time of labour. Women in their first pregnancy are most liable to convulsions, and probably because the excitor nerves of the os uteri and the vagina are more irritable and susceptible to impressions than in subsequent labours. The first commencing efforts at dilatation of the os uteri are a very frequent cause of convulsions, and so is the pressure of the head on the vagina a powerful exciting cause, and apparently from the increased excitability of the nerves of these parts at such a time.

It has been said that those women who carry more than one infant *in utero* are more liable to an attack of puerperal convulsions than those who carry but one. In my own practice, however, I have never seen the disease but once in a twin case, and I have only attended one case of puerperal convulsions in a subsequent labour to the first, and that was in a fourth pregnancy. I have never seen this disease twice in the same individual; but instances are recorded in the different obstetric works of such having occurred.

Irritation of the incident spinal nerves of the uterus and uterine passages, of the ovarian nerves, and nerves



of the rectum and bladder, of the gastric, intestinal, hepatic, or renal branches of the pneumogastric nerve, or, in fact, of any part in the economy having intimate nervous union with the spinal cord, may be an excitor of the disease if there be present the peculiar aptitude for its development. The mere presence of the fœtus in utero is said to be the cause in certain cases of puerperal convulsions, and especially so if the fœtus be dead—a dead fœtus being more strongly an excitor of reflex action than a live one. Undue distension of the uterus by a large quantity of liquor amnii may also be a cause. Irritation of the os uteri by unnecessary examination or interference—violent or long-continued uterine contractions—may likewise develop convulsions, and so may the pressure of the head of the child on the os uteri and vagina; and the frequency of convulsions in head presentations with first children may be accounted for by the excitor nerves of the os uteri and vagina being more morbidly sensitive or irritable under the process of labour in a first case than subsequently. The introduction of the hand into the uterus for the removal of a retained placenta has also developed the disease. Dr. Ingleby has related a case where, on the careful introduction of the hand for the above purpose, the patient became violently convulsed, and died in less than a minute. Dr. F. H. Ramsbotham also relates an instance, where on the moment the hand had passed completely into the uterine cavity, the patient turned upon her abdomen, and without uttering any expression of pain, went into convulsions, and died in about two hours. Dr. Murphy likewise



records a case, where on account of hæmorrhage, after the birth of the child, he thought it right to remove the placenta; but in the attempt to do so the patient was seized with convulsions, and died in a quarter of an hour. Convulsions may be originated by the efforts made during the labour pains, and they may, as already intimated, be brought into existence by the earlier uterine contractions; the blood circulating in the uterine parietes being then, as it were, driven to the rest of the system, or, at any rate, so detained elsewhere as to favour its accumulation in the nervous centres, when as a consequence of its increased accumulation there excess of action is produced, in the form of clonic spasms or convulsions. The ovaria during their seasons of activity are a source of convulsion. Epilepsy is often seen to occur at the commencement of the catamenial flow, when there is accompanying ovarian irritation; and at the time of parturition, when there is likewise ovarian irritation, convulsions may originate from the excitation of the nerves of the ovaries. Worms in the rectum, or indurated fæces there, or piles, may be other sources; retention of urine another. Indigestible articles of food in the stomach, or a loaded or morbid state of the bowels, whether brought about by having partaken too freely of a variety of dishes, or the having eaten too heartily of indigestible substances, such as veal, pork, shell-fish, or undressed vegetables, or by the pressure exercised by the gravid uterus on the intestines, inducing accumulations and constipation, and consequent irritation of the peripheral extremities



of the gastric and intestinal branches of the pneumogastric nerve, may likewise, either separately or together, prove exciting causes of convulsions. Any irritation, or congestion, or inflammation of the liver or kidney, may prove a sufficient exciting cause, and so may pressure on the kidney by the gravid uterus, or on the vessels and nerves of the kidneys, by the same means prove an occasional cause; and it has been thought by some, that the pressure of the uterus on the nerves issuing from, or passing through the foramina of the sacrum, may also develop the disease. The skin, too, as an extensive organ, and exquisitely sensitive from being so plentifully supplied with nerves, may not be now and then without its influence in acting as an exciting cause, as for example, when any part of the cutaneous surface is sore or inflamed, or greatly distended, and in some cases the abdomen is very much distended; and this inflammation or distension of the skin might sometimes be, for aught we know to the contrary, an occasional starting-point of the malady.

Pregnant women of every kind of constitution are liable to convulsions when exposed to any of the exciting causes; but my experience leads me to believe that the robust and plethoric are far more subject than others to this alarming affection. Edema of the face and upper extremities was present in one of my patients during the last few weeks of pregnancy. At the time of labour, and before the os uteri had scarcely commenced to dilate, this patient was seized with convulsions; she, however, made an excellent recovery, but



not without experiencing seven distinct paroxysms, and remaining unconscious for about six hours after the last fit, all the treatment required being a single venæsection; the labour having come on quickly and terminated safely, without interference from art. The urine in this case contained albumen, and the renal secretion had been for some time scanty: the convulsions were, in this instance, brought about by the poisoning of the blood, through the morbid condition of albuminuria, a state of things especially seen where granular disease of the kidney exists. Whether, therefore, there be a morbid accumulation of urea, or carbonate of ammonia from its decomposition in the blood, or any other morbid agent circulating in the system that ought not to be there, but is there through diminution of the secretion of urine, the effect is the same, namely, an excessive increase of the centric irritability or polarity of the spinal nervous centre, or, in other words, the power or aptitude for the development of the disease is created; whereby any eccentric cause of irritation, whether proceeding from the stomach, the uterus, or any other organ, readily develops puerperal eclampsia; the induced state of superexcitability, already alluded to, being essential before any exciting cause can start into existence the phenomena of convulsion. The presence of albumen in the urine before the time of labour is not necessarily an index that there will be convulsions when that process sets in: for I have examined the urine of many pregnant women, and have found albumen in that secretion; but in those instances no convulsion was ever



manifested, although albumen existed in tolerable quantity. I have also had cases of puerperal convulsions, and in which no trace of albumen could be discovered, either before or after labour; a fact in itself sufficient to prove that the disease may occur independently of albuminuria. The presence of albumen in the urine, when it does occur, simply denotes that there is a greater quantity than natural in the blood, and points out to us the method adopted by Nature for relieving the system of the superabundant quantity; and, as there is usually more than the average quantity of blood circulating in the body of a pregnant woman, and a greater quantity of fibrin than at other times, so it is not unreasonable to imagine that there should be also an excess of albumen, and which, when formed more copiously than is needed, is eliminated by the kidneys: but that it ever produces convulsion from being present in greater quantity than natural in the blood, I do not believe; unless there should co-exist some organic disease of the kidney, either a greater or less amount of granular disease, or congestion, or inflammation; the result of pressure preventing the due return of blood through the emulgent veins, when the state is not then due to albuminuria simply, although it happens to exist, but probably either to irritation of the nerves of the kidney, or to the diminished secreting power of the organs by which noxious elements are retained in the circulation—and, we have already intimated, that agencies which interfere during pregnancy with the proper depuration of the



blood contribute to render it a morbid stimulant to the spinal nervous system.

Whatever, then, be the exciting cause of puerperal convulsion—whether there are in operation to give existence to the disease, centric or eccentric causes, the pathological effect is the same in all. The uterus is probably the *origo mali* in the majority of instances ; but there is reason to believe that, now and then, the irritating or exciting cause, the starting-point of the disease, is independent of that organ ; yet, nevertheless, the condition of pregnancy, by producing or creating peculiarities in the vascular and nervous systems, always exercises an influence, and gives a character to the disease, which, independently of utero-gestation, would not be developed. Thus the convulsions of pregnancy or labour have *their* peculiarities, and are readily distinguished from the convulsions of infancy, or the epilepsy of adult life.

It is possible that there are other sources than those to which I have alluded, capable of originating the disease ; but whether the starting-point be here or there, the result is substantially the same ; whether primarily in the nervous centres, or in the uterus, or in any other organ, or in any distant part of the body, it matters not ; the moment an irritation from any part of the frame is conveyed to the spinal division of the nervous system, but more especially to its upper part, the medulla oblongata, there occur, at one and the same time, if there be present the required aptitude or susceptibility in that nervous centre, two important pathological states, inseparably connected often, and necessary for



the development of convulsion, loss of consciousness, and the clonic contractions of the various muscles of the face, neck, trunk, and limbs; the former chiefly caused by the irritation being simultaneously reflected to the vaso-motor nerves supplying the cerebral arteries, and so inducing their contraction, and the latter by the reflection of the excitation to the muscles acting under the agency of the spinal marrow. It is seen, then, that it matters not whether mental emotion or fright, or irritation of the os uteri or vagina, or the labour-pains themselves, or original cerebral vascular plethora, or fulness of the vessels of the brain, or the same state brought about secondarily by the occurrence of sphagismus, or any of the other causes already mentioned, be originators of the disease, for the same pathological condition takes place in all, irrespective of the cause which brings it into existence, and experience teaches us that one or more of the causes before specified, either singly or combined, may produce puerperal convulsion. There is a loss of balance in the circulation through the brain; there is loss of consciousness and volition, through spasmodic contraction of the cerebral vessels; and there is a loss of the guiding power over the spinal functions, such as is present in the natural condition, and the cord consequently is left at liberty to reflect back with power to the muscles in connexion with it the irritation it received, and this it does in the shape of violent convulsive muscular movements. The actual state of things I conceive to be as follows:—In the first place, the supply of blood to the distant parts of the brain, to those portions of the brain which



minister to the higher faculties, is on the application of the necessary irritation suddenly interrupted by the spasmodic constriction of the smaller and distant capillaries, and by, or on account of which contraction, loss of sensation and volition is effected; and, secondly, in consequence of such interruption, more blood is circulated through the central and basic parts of the brain and upper part of the spinal cord than would otherwise be the case; that which would have passed on to the distant parts of the brain, had not spasm of the vessels been induced, being left for distribution to the parts of the nervous centres below the seat of spasm of the smaller cerebral arteries, thus exercising a powerful influence in increasing the nervous excitability or irritability of those parts.

If it were possible to tie these smaller cerebral arteries so as to prevent the onward movement of the blood, the effect would be in reality the same, for the spasm acts for the time as a ligature would act; and, if the physician would imagine that a ligature were actually placed on each smaller cerebral artery going to the extreme parts of the brain, he would not find it difficult to conceive how the blood, instead of passing on as in the natural and healthy state to the extreme parts of the cerebrum, is necessarily circulated in greater quantity than natural to the central and basic parts of the brain and medulla oblongata, and simply from the stoppage to its onward progress. The relaxation of this spasm of the smaller cerebral vessels permitting of the onward movement of the blood, and occurring simultaneously with the restoration of the cerebral functions, and the diminution of



convulsion by the basic parts of the brain being relieved of their superabundant blood in consequence of the restoration of the natural circulation, points to the probability of this being in most cases the true pathological condition. We see, at any rate, the higher faculties of mind damped or temporarily obliterated when the hemispherical ganglia are in any way deprived of their natural quantity of blood, and restored on the return of the vital fluid to them; and when the basic parts of the brain have more blood circulating through them than is natural, whether from congestion primarily existing, or the result of sphagiasmus, or from the fact that the blood is simply distributed through them because it cannot go farther on through spasm of the vessels, we have increase of function, in the form of violent, irregular, convulsive movements, and which takes place partly from the increased excitability then existing, and partly from the absence of the influence of that guiding power which in health is ever present to maintain the natural equilibrium between the cerebral and spinal functions.

The relation between puerperal convulsions and mania is often apparent—insanity now and then follows an attack of convulsion—the relation is very intimate, the one state frequently running into the other. Recovery from puerperal convulsions, instead of being followed by a restoration of the mental functions, is often prolonged by a decided derangement of the mental powers, which state is apparently kept up by the causes of convulsion being still in operation; acting, however, only on the brain, but predisposing it to congestion, inflamma-



tion, or effusion, and, as a consequence, to mental aberration. At the instant of birth, or just before it, when the muscular efforts and the disturbance of the circulation are at their height, the patient may become, and often does become, perfectly insane for a few moments—a delirium of a transitory kind being not infrequently seen at the termination of a labour, and this transitory delirium, in common with the mania which often succeeds to an attack of convulsion, may depend either on a greater or less degree of spasm of the minuter cerebral arteries, or upon the impeded return of blood from the brain, brought about by the abnormal state of the cervical muscles then existing. The causes of mania are frequently those which give rise to convulsion, sometimes the one, and sometimes the other, and now and then both mania and convulsion are the result of a common cause. In convulsion the cause, whatever it be, exerts its influence on the spinal system as well as on the brain; whereas, in mania, it appears to limit itself to the brain, and leaves the spinal system untouched.

Dr. Gooch and others have remarked how rapidly puerperal mania is sometimes relieved by the administration of an efficient purgative dose, thus proving that the prompt removal of alvine accumulations goes far to relieve the irritation of the intestines which is so frequently a starting-point in this disorder. In paroxysmal mania of the puerperal form, sphagiasmus is very frequently present, and possibly a greater or less degree of spasm of the cerebral vessels; and it is, therefore, important to detect the exciting cause which produces



these conditions; and when the physician can detect the *fons et origo mali*, he will have accomplished much towards removing the symptoms that constitute puerperal mania.

I have already alluded to the fact that mental emotion is a powerful and energetic means of inducing or bringing about various morbid conditions of the nervous system, and as illustrating the truth of the remark I need do no more than mention the occurrence of the manifold symptoms of hysteria, and particularly of hysterical delirium, which sometimes take place during the pregnant or puerperal states by the sudden operation of joy, fear, anger, fright, &c., on the mind: and not only are the symptoms limited to such which constitute hysteria, but they are frequently of the most serious kind, and now and then death is the inevitable result of the operation of fright upon the mind. I have lately been informed, upon most excellent authority, that a lady, in November last, eight months advanced in her second pregnancy, and of a very nervous, excitable temperament, sustained a severe mental shock by being suddenly and fearfully frightened, that she became partially unconscious, lost volition, or the power to use the will, and exhibited symptoms that were called hysterical convulsions, that she continued to live on for about a week in this state, and then died. There can be no question that here the fright produced spasm of the cerebral vessels, and, as a consequence of such spasm, a greater or less degree of loss of consciousness according to the extent of the constriction, and, as already explained, the irregular convulsive movements



were the combined result of the loss of the will to guide them, and the corresponding increased excitability of the basic parts of the brain and medulla oblongata from the increased quantity of blood circulating through them, a condition brought about by the spasm induced preventing the onward movement of the fluid, whereby much of that which would have passed on to the distant parts of the brain, as obtains in health, is left for distribution to the parts below, and thus serves for the development of the phenomena seen. It is more than probable that there were occasional returns of consciousness—efforts at recovery—but that the impression so suddenly stamped on the nervous centre was too deep ever to be effaced, and that on the least return to consciousness the memory of the fright renewed the symptoms, and not only renewed them, but proved more formidable by extending its influence to the heart, and so bringing it to a standstill.

The brain may be found on inspection after death, in those rare cases which end fatally, congested, or there may be effusion of serum on the surface of the brain, or into the ventricles, or there may be extravasated blood there; bony spiculi, inflammation of the meninges, and inflammation of the brain, involving the membranes, have also, according to some authors, been occasionally seen; and these are, when present, intracranial causes of puerperal convulsions of a reflex character, and an irritation may proceed from within the cranium and be conveyed to the spinal nervous centre in the same manner, and with the same results as if it proceeded from any distant part of the body. A post-



mortem examination, however, often affords but little information, and in many cases that have been examined no apparent lesion or deviation from the healthy state of the brain has been observable, the pathological state giving rise to the disease, contraction of the smaller cerebral arteries, and the increased quantity of blood circulating through the basic parts of the brain, as a consequence of such contraction, being present only during life; the pathologist is therefore unable to recognise the above state after death, and for the simple reason, that it has left no trace behind! death occurring in such instances from the severity and frequency of the fits, occasioning utter prostration or exhaustion of the living powers.

*Treatment.*—Having minutely detailed the symptoms, the diagnosis, the prognosis, and the pathology of this disease, with the enumeration of the causes concerned in its production, it only remains to speak of the treatment I have found the best and most successful in curing this, the most frightful disorder that can afflict the human female, in the hour of her especial trial. At whatever time, then, puerperal convulsions may first occur, whether before, during, or after labour, the first remedy for immediate adoption should be that of blood-letting. Blood is to be taken away freely from the arm, and in a full stream, and the operation is to be repeated more or less frequently, according as the paroxysms continue to return with greater or less violence. At any rate, the experience of twenty years in an extensive midwifery practice has shown me the success of the plan of early and free



bleeding, and the non-success or fatal result of its omission; and, if the nature of the disease be considered, it cannot be surprising that death should follow the omission of the valuable remedy referred to—the disease under such circumstances merging into fatal apoplexy, from the vessels of the brain being allowed to go on unrelieved until they give way, and pour out their blood, or, if they do not rupture, the disease, by its continuance and severity, destroys life by thoroughly exhausting the living powers—the natural result of the omission of venæsection; but if bleeding be judiciously and early employed, recovery may, in most cases, be hoped for; for it is well known that the taking away of blood exercises a mastery over the disorder, which no other remedy yet conceived possesses. It is difficult or impossible to state on paper anything definite as regards the quantity of blood to be abstracted in any given case of puerperal convulsions; this must be left to the judgment of the practitioner in each individual case; enough, however, must be taken to produce a decided impression upon the system; the blood is to be allowed to escape freely, and in a full stream, until a sensible effect be made upon the pulse, or until signs of faintness occur, and the quantity necessary to effect this is not always the same; hence arises the difficulty or impossibility of stating definitely the quantity that ought in any given case to be taken away—sometimes a greater, sometimes a lesser quantity will produce the same result; but in convulsions, the parturient patient will bear the loss of a large amount without fainting, and therefore the physician anticipates the having to



take away a considerable quantity before an effect be made upon the pulse, or faintness induced. Enough, then, must be abstracted to produce this result, but no more : it will not do to take away thirty ounces, or fifty ounces, or seventy ounces, because it is written in some book that such quantities have been taken away : but the practitioner will carefully see in each case how much to take, and he will be guided by the effects produced, or the result attained. The necessity for the repetition of bleeding will be known not only by the violence and continuance of the paroxysms, but by the state of the circulation in the intervals of the fits. From forty to seventy ounces have, according to some writers, been taken from a patient under these circumstances ; but in my own practice I have never had occasion to take away more than from eighteen to twenty ounces at first, and then from ten to twelve ounces at a greater or less interval subsequently. On one occasion, I remember, I had recourse to a third venæsection, the combined amount of the three bleedings being about forty ounces, rather less, than over, that amount ; and, on another occasion, the bandage became loosened, whereby a further loss of blood to the extent of ten or twelve ounces over and above that taken from the two previous venæsections was the result, making together an amount of about forty ounces, that was taken by the bleedings and the accident combined. In two or three cases, only one bleeding from the arm was required, from sixteen to twenty ounces having, in those instances, been taken. In cases where there be an objection to the repetition of the bleeding, either from



venæsection having been already freely practised, or the patient's strength be such as not to warrant its repetition, and yet the coma and convulsions continue, leeches may be freely applied either to the temples, or behind the ears, or if the patient were quiet enough, the cupping-glasses might be applied; but during the continuance of the convulsions, their application had better not be attempted, for there would be a difficulty in fixing them, and a probability of their being broken even if properly applied, through the patient's great restlessness and strength. The absence of immediate relief must not deter the physician from repeating the operation of bleeding, and I will here mention that it is not always necessary to make a second puncture for that purpose; the reapplication of the tape to the arm above the puncture already made, being frequently sufficient to ensure a proper flow of blood; for the benefit is rather in the ultimate and sure recovery of the patient, than in the instant arrest of the convulsions. In puerperal convulsions, with a plethoric state of the circulation, the taking away of blood is the most powerful remedy we have at our command, and we employ this remedy not only with the intention of subduing the excitability of the spinal cord, and so relieving the spasm of the minuter cerebral arteries—for bleeding is a marked sedative of spinal action—but with the view of diminishing the quantity of blood circulating in the vessels of the brain and spinal division of the nervous system, and of preserving the nervous centres, and more particularly the extreme parts of the brain, from injury during the convulsions. The



operation of venæsection appears, then, to be both curative and preventive in its action on the brain and spinal cord. There can be no question that the judicious use of blood-letting is the most valuable remedy known for puerperal convulsions, and that to omit its employment in the generality of cases that occur, is to hazard, or perhaps destroy, the lives of those unfortunately afflicted with this fearful disease. The former abuse of a remedy has, of late years, brought about a reaction, and we now find bleeding very much neglected, or altogether ignored, and we even hear of persons whose knowledge of physiology ought to teach them better, speaking unfavourably or unkindly of the physician who attempts to bleed, or take away, as they call it, the life, or that which cannot be replaced: but this is false reasoning; for by proper management, no loss is so easily repaired. The physician can supply with one hand what he is taking away with the other, and the thoughtful practitioner will be ever careful that his patient has the wherewithal to replace that which he has been compelled from urgent disease to take away. It is more than probable, that the sad effects of the excessive venæsection of former years were due quite as much to the starvation as to the bleeding itself, for it was not uncommon to accompany the orders for bleeding with the request that the patient be utterly deprived of all food. In an inflammatory disease, like pleurisy, or pneumonia, or enteritis, a single bleeding is even invaluable and priceless, inasmuch as it saves a patient many nights of sleeplessness or pain; but if a valuable life be saved through the operation of blood-letting,



how much more priceless is the remedy that thus rescues from the grave! In deciding upon bleeding in any case—whether it be the disease under consideration, or any other, the physician has only to ask himself whether the part affected be of sufficient importance to the rest of the body, to justify the sacrifice or loss, and whether he can by any means at his command subsequently repair the injury inflicted by the loss of blood, for the immediate good obtained. No one will deny that the brain is an important part of the economy, and of sufficient importance to the other parts to justify the operation of bleeding—the lungs, the heart, the intestines, and other parts are of equally relative importance, and when attacked by urgent inflammation justify the loss of blood; and the practitioner, having taken away a sufficiency of blood for the end in view, has the means at his command for repairing any injury that might result from the loss, and the means consist in giving the patient the wherewithal to replace that which has been taken away; the loss being very easily repaired by the careful exhibition of nutritive and easily digestible food. In thus advocating the proper use of blood-letting, I must not be misunderstood. I would advise caution in its employment, and that no more be ever taken away than the urgency of a case requires. My aim is simply to impress upon the reader the great importance of having recourse to it early and freely in the true form of puerperal convulsion, believing, from long observation, that the majority of cases will do



well if venæsection be sufficiently employed, but that where it is omitted through inexperience of its value, or from prejudices imbibed, the result will be a fatal result, or, at the best, the instances of recovery would be very, very few. These remarks, of course, are intended only to apply to the disease as it occurs in young, strong, and robust women, or in those who have enjoyed tolerable health, and are free from organic disease; a modified plan of treatment being required for convulsions occurring in such as are of a weak constitution, or the subjects of organic disease, especially granular disease of the kidney. Where the patient is evidently, then, very weak, from whatever cause that may have arisen, whether from insufficiency of food, or overcrowding, or from living in ill-ventilated places, or from pre-existing disease, the energetic treatment already referred to cannot be put in force, but the application of leeches, or, at the most, a small bleeding, with the careful inhalation of chloroform, will accomplish the end in view, or at any rate, will cure, if a cure can be effected at all. In the more acute cases occurring in the young and strong, where recovery has been said to have taken place without the employment of blood-letting to the extent advocated, I have believed that the disease was in such instances of the hysteric character, which, although now and then severe, and presenting symptoms allied to the true kind, is not in itself fatal, and therefore recovery takes place without the use of blood-letting, and simply for the reason that such cases do not require it. If this feeble attempt to



enforce the adoption of a remedy at once so efficacious and powerful for good, be only instrumental in saving one life, or if only one who has been taught to disregard or neglect the employment of bleeding in this disease, be convinced of the hazard and danger to life resulting from its omission, this essay will not have been written in vain, and the writer would, moreover, be more than gratified to hear that some of the many who had hitherto been content to remain passive spectators, and see this disease struggling for the mastery over the living powers, and eventually obtaining the victory, through the non-employment of the only means likely to prevent it, were beginning to see the rationality of bleeding, and to acknowledge its superior efficacy over every other plan in every case of this fearful disease in the young and plethoric, and to believe, as the writer believes—and he wishes to circulate the truth far and wide—that there is no known remedy for puerperal convulsions at all equal to venæsection, carefully practised. These observations have no application to the hysterical forms of convulsion, for these do not generally require the loss of blood at all, unless, indeed, in those rare instances where the symptoms are extremely severe, and threaten to merge into the true form, when blood, as a matter of safety, may then be cautiously abstracted; nor are they applicable, as I have already mentioned, to such an extent in convulsions occurring in delicate, anæmic women; but even here, in some cases, a small bleeding may be useful and necessary to give relief. It is difficult to put down on paper or



particularize this or that condition which may require the abstraction of a given quantity of blood ; indeed, this cannot be done, for, in practice, some cases are found only to need the taking away of a very small quantity, say from five to seven ounces, and others, again, to require that a large quantity be abstracted before any impression be made on the system, or the mastery over the disease obtained ; thus clearly pointing out the place the physician must occupy ; he must not go forth with any preconceived ideas of his own, or prejudices imbibed from early and long training, to grapple with disease in this or that manner ; but he must employ such remedies, and in such a manner and extent, as the case before him leads him to think are required ; and by which I mean that the physician must be content to be the servant and not the director of Nature ; that he must not take away blood to a given amount, because he has been taught, or has seen in books, that such a quantity has been taken away, or is sometimes in certain cases required ; but that he must have abstracted, in any given case, only that amount which the case before him seems to justify ; each case must show the physician how much blood is to be lost ; the practitioner must be guided by the circumstances of each individual case ; in fact, he must ever act according to the dictates and teachings of Nature, and never according to his own preconceived ideas ; and I have the pleasure and happiness of knowing that he who is content to watch the operations of Nature, and to act as *she* may dictate, whether in this



disease or in any other, will be far more successful than the practitioner who ignores and tries to supersede her ; and for the simple reason, that Nature is, and must be, ever supreme, and that the physician's efforts can only be successful when applied in the manner and to the extent she may teach him.

In the convulsions consequent on hæmorrhage, bleeding is, of course, never to be thought of; a vigorous restorative treatment, with the necessary stimulants and support, being in such cases all that is essentially required. The use, and not the abuse, of venæsection it is the aim and object of these pages to enforce; bleeding is never to be pushed to excess, or persisted in to a large extent unnecessarily, for if it be, then it becomes really injurious, by increasing instead of diminishing the excitability of the spinal nervous centre, the true organ concerned in the development of puerperal convulsions.

In order to protect the patient from injury during the fit, it will be necessary to remove everything out of the way against which she might possibly strike herself; and the assistance of one or two strong persons is required to preclude the possibility of her falling off the bed, or in any other way injuring herself; and, in order to prevent injury to the tongue, it will be necessary to insert a wedge of leather, or wood, or any hard substance between the teeth, such being wrapped round with a handkerchief or small fold of linen, and to keep it there by the help of an assistant till the fit is over; and it must be retained firmly in its place, for if allowed to slip out, the jaws may be forcibly brought



together, and great injury to the tongue inflicted. It is not at all times possible to insert a wedge of any substance, on account of the lower jaw being forcibly pressed against the upper by spasmodic action, and it is only by taking advantage of its depression at the commencement of each convulsive paroxysm that we can avail ourselves of this measure of relief. The application of cold is of great importance in the treatment of this disease; and I believe that when iced water, or ice itself, is kept continuously applied to the back of the neck, great service is effected, and it can be conveniently applied either by means of an india-rubber bag containing small pieces of ice, or by means of a napkin lightly wrung out of iced water. I never omit the application of cold, and I believe, from long observation, that it is an auxiliary of no mean consideration; its continued application seems to act by lessening the excito-motor power of the upper part of the spinal cord, and at the same time by diminishing the vaso-motor power of those ganglia of the sympathetic nervous system which send vaso-motor nerves to the arteries of the brain; and by the sedative or paralysing influence thus exercised by the continued application of cold, the spasm of the cerebral arteries is relieved, and a way created for the onward movement of the blood to the extreme parts of the brain, whereby the basic parts of the cerebrum and the medulla oblongata are simultaneously relieved of the increased circulation of blood through them, the pre-existing spasmodic contraction of the smaller cerebral arteries detaining, as it were, the circulation below the seat of spasm; or, at any rate,



more is thus available for distribution there, and it is probable, perhaps, that in this way the reflex excitability of the upper part of the spinal cord, or medulla oblongata, is augmented! At all events, cold continuously applied is a powerful sedative of spinal action, and should never be omitted in this disease, the parts for its especial application being the back of the head and neck.

After having performed venæsection, and directed the continuous application of cold, and seen the disease subdued or greatly mitigated, I am generally in the habit of giving some aperient medicine to procure copious evacuations from the bowels, and to attain which object I place upon the tongue ten or twelve grains of calomel mixed with a little sugar, and give a table-spoonful of a mixture of infusion of senna, sulphate of magnesia, and jalap, every half hour until the bowels are well relieved. There is sometimes, however, difficulty in administering any medicine; but, generally, if the opportunity be watched, some may be got into the mouth and swallowed. If this cannot be accomplished, and there is an urgent necessity for the relief of the bowels, a drop or two of croton oil may be given, and repeated within a reasonable interval if it does not act, or recourse may be had to an enema of warm water only, or to a strong purgative injection, repeated until the effect be produced. The calomel and saline mixture, however, above mentioned, is generally sufficient for the purpose of relieving the alimentary canal, and I have never had occasion to have recourse to injections of any kind, or to croton oil, having always



found the calomel and sulphate of magnesia mixture to answer the end in view. It hardly appears necessary to allude to the exhibition of emetics in this disease, for they are generally uncalled for, and could only be ever sanctioned when there were clear indications, or reasons for supposing that the stomach contained a great quantity of undigested food. If a patient, for instance, had eaten freely of shellfish, or undressed vegetables, or other not easily digestible food, or had recently made too hearty a meal, and had partaken to too great an extent of a variety of dishes, then probably an emetic might be usefully prescribed; but great caution would be required to be observed in giving it, inasmuch as the action of vomiting might dangerously affect the brain, and perhaps produce death by occasioning rupture of some of the cerebral vessels; and with the view of averting this danger blood-letting should always be first practised—indeed, it is the first remedy for instant adoption in the generality of cases; but if an emetic were in any instance dreamt of, then bleeding is to be practised prior to its being administered. In the course of my practice—now, dating from the time I entered the profession, extending over a period of twenty-seven years—I never had the necessity of prescribing an emetic, having always found purgatives sufficiently secure the copious and effective clearing out of the stomach and the intestinal canal. Free and early bleeding, regulated, of course, by existing circumstances, and the application of cold to the back part of the head and neck, are the special means of cure for instant adoption; and these, indeed, appear to me to



be the chief curative means in this disease; but there are other auxiliaries which the physician will employ.

I have already alluded to the necessity that exists for using means to preserve the patient from injury, and the tongue from being bitten; and I will state here that as there is always more or less closure of the glottis, it will be desirable to excite, during the attack of convulsion, a sudden inspiratory act by the dashing of a little cold water on the face or neck. This is a simple expedient, and I have always had recourse to it, and with apparent advantage; and the benefit results from the sudden application of the water occasioning dilatation of the glottis and a full inspiration, whereby a great amount of vascular pressure is taken off from the nervous centres, and the proportion of venous blood circulating in the system materially lessened.

It is likewise essential that there be perfect quiet—that there be no signs of excitement within the sick room; for noises, or the sight of alarmed friends, or even the anxious look of the physician, may bring on a repetition of the fit in cases where consciousness is retained between the intervals of the convulsive paroxysms. Much, therefore, can be accomplished towards preventing convulsions when threatened, and in averting their return where consciousness exists between the intervals of the fits, by the exclusion of everything that tends to create mental excitement. So intimate and powerful, however, is the influence of the physical effects of emotion upon the true organ of puerperal convulsion, that very trivial causes will renew or cause an



attack. The causes above named have done so, and may do so again ; and I therefore urge upon the practitioner to try to acquire the invaluable quality of never appearing to be timid, or ever allowing an alteration of his countenance to lead the patient or the attendant to suppose that he thinks there is danger, but ever to look calm and contented, and to show by his looks and manner that he believes the patient will recover, and she need not fear, for he has at his command all the means necessary for her restoration to health ; and by these remarks I simply mean, that it is essential for the demeanour of the physician to be such as to convey to the patient and the attendants the impression that recovery will take place, and that this idea be firmly impressed upon their minds by the knowledge that the attending practitioner is able to apply all the help that his art can give. The countenance of the physician should be such as to influence the patient and friends for good ; if it be a timid and anxious one harm arises—the friends are excited, and if the patient be conscious, she is injured also ; but if the physician's countenance be a cheerful and satisfied one, or such as to convey the conviction that all will be well, good is accomplished—the friends are soothed, and the patient probably indirectly benefited. For the physician to be calm or unexcited cannot but be indirectly consolatory or soothing ; at any rate, there would not be the excitement created in the mind of the patient or her friends that there would otherwise be if the physician exhibited an unnecessarily anxious or alarmed appearance. There



can be no question about the advantage resulting to all parties from the medical attendant possessing the power of concealing the idea he entertains of the danger and horror of this dreadful disease. By these observations I do not mean to imply that I for one moment advocate the concealing of danger when there is danger. No! Such a course would not be right. My intention is very far from this. The above remarks are simply made with the view to encourage calmness, coolness, and fortitude, and to convey the truth that the calm, cheerful look of the medical attendant, in the midst even of the fiercest struggles or the greatest danger, silently exerts a powerful influence for good, and in some instances may even make all the difference between the patient's recovering or not.

Of course, I am now supposing a case where the patient is conscious, and where, consequently, a state of coma has not appeared; and when the intimate union of mind and body is considered—the powerful influence of the one upon the other duly regarded—an unfavourable result, from the absence of the above qualities, cannot create astonishment. How important, then, for the obstetric physician to possess a calm and cheerful countenance; indeed, without it, and the three qualities usually regarded as necessary for the surgeon—namely, a lady's hand, a hawk's eye, and a lion's heart,—I do not see how he could exercise his calling with much, or any, prospect of success!

The state of the cervical region demands attention; for this is to convulsion what the pulse is to inflamma-



tory disorder. If, therefore, during labour the neck becomes swollen and turgid, and there be symptoms of threatening convulsion, the duty of the practitioner is to diminish or moderate, by all the means in his power, the reflex contractions about the neck, and this can sometimes be effected by directing the patient to withhold excessive voluntary efforts, and to cry out during the pains, whereby both the sphagiasmus and laryngismus are frequently prevented by the mere act of volition thus exercised. But if the fulness of the neck be such as to create a belief that convulsion is about to take place, and especially if there be any wandering, or partial loss of consciousness, bleeding from the arm, or, if the patient be weak or prostrated by any of the numerous influences that are ever at work in a large and overcrowded city, the application of leeches behind the ears or on the temples should be immediately prescribed, with the view of preventing the occurrence of a convulsive seizure. But I must repeat here, that the cases which will occur to give preference to local, rather than to general bleeding, will be exceedingly rare—and rare because of its inferior efficacy, and from the nicety with which the practitioner can adapt the taking away as much blood as any given case may require: if twenty ounces are wanted, he can abstract that quantity—if only six or eight, he can take that; and the latter quantity will, in certain constitutions, with rather less than the average amount of power—whether existing naturally or brought about artificially—effect the same good that a larger quantity does when taken from an



individual in robust or perfect health. It is also of great importance to find out and remove, if practicable, all sources of reflex irritation. If there be undoubted gastric irritation—if the fit has occurred after a full meal, or after indigestible food taken in abundance, as already intimated—an emetic of the sulphate of zinc should be given, but not, however, until after venæsection has been freely practised ; for emetics incautiously administered might, as I have already said, produce sudden death, the danger to the brain from the action of vomiting being always very great under such circumstances ; and at this one cannot feel surprise, when the increased quantity of blood circulating through the basic parts of the brain from spasm of the minuter vessels, and the state of venous congestion of the nervous centres brought about by the contraction of the muscles of the neck be carefully taken into consideration. It is therefore with the view of diminishing this danger to the brain that bleeding is to be first practised. But, fortunately, the cases are very rare in which it is ever necessary to prescribe an emetic ; so rare, indeed, that one might almost dismiss from the mind the idea that it is ever required in puerperal convulsion ; but the bare possibility that an overloaded stomach might be an exciting cause, the recollection of the utility of an emetic under such a condition may not be without its value.

If the intestines are loaded, then purgatives, or the injection of warm water, either alone or with the addition of castor oil or turpentine, will be required ;



and the latter especially, if there be reason to think that there are ascarides in the rectum. If there be retention of the urine, the catheter must be employed. Owing to the insensibility, however, usually present there is not the urgent pain complained of as under other circumstances, and the practitioner may consequently omit to discover retention of urine as an exciting cause. But if the lower parts of the abdomen be carefully examined, the distension of the bladder, if it exists, will be readily found ; and the catheter, where the urine is retained in large quantity, will give great relief, and the lancet, the ordinary sheet anchor, will fail to do so if the retention be not at the same time relieved. As a further aid to the treatment recommended the hair may either be taken off at the back part of the head, or considerably thinned and shortened there ; and some have advised the head to be entirely shaved. But I have found the cutting off the hair at the back part of the head over the occipital region, or simply shortening it in that situation, to sufficiently answer every useful purpose ; and this simple shortening or thinning of the hair, with the application of cold, and keeping the shoulders of the patient in an elevated position, will accomplish all that such auxiliaries can be expected to do : but I may remark in this place, that it is not really essential to shave the head, or to disfigure the patient by cutting off short every bit of hair on the head ; the most that appears to me to be ever necessary, being the thinning or shortening that over the occipital bone, in order that cold may be more



effectually applied there; and I state this from having had many fearful cases—cases of the worst description, recover as rapidly, and as well as could be desired, quite as quickly as where the hair had been all cut off, and without any subsequent headache, and yet not a single hair had ever been touched; in other words, where the head had been shaved, or the ringlets mercilessly cut off, no better or quicker recovery was in any case observed, than in those where the hair had not been touched.

Very little need be said respecting the application of blisters in the early stage of this disease, or while the convulsions last, their use being at that time most unphilosophical, for, instead of assisting in subduing or preventing convulsion, they would, in all probability, actually increase or excite it. It seems, then, unwise to supply any additional reflex source of irritation, and blisters will excite the spinal marrow through the medium of its incident nerves, and increase the convulsions; and I have seen cases where, through the too early use of a large blister to the forehead or nape of the neck, there were good reasons for believing that the convulsive fits were kept up for a longer time, and with greater severity than they would otherwise have been, had not this means of irritation been applied. After the lapse of some time, however, when convulsions have entirely ceased, and the patient remains in a state of coma, and patients will sometimes continue comatose for a period varying from a few hours to four or five days, then a blister may be permitted, or even repeated



at intervals with advantage, or sinapisms may be applied to the calves of the legs, or soles of the feet, or to the pit of the stomach ; or even without the condition of coma, if severe headache be complained of. After the cessation of convulsion a blister to the nape of the neck often gives great relief, and more especially if aided by perfect quietude, a room darkened by the hanging up of a green curtain, and an elevated position of the upper part of the trunk. It is not worth while to say much regarding the employment of opium in this disease. I should expect nothing but mischief from its administration during the continuance of the fits, and it is the general opinion that opiates are injurious in puerperal convulsions, and I have never seen the necessity for giving them ; but if there be subsequently nervous irritability, or sleeplessness, or a state at all allied to the state of delirium tremens, or mania with wakefulness, then the exhibition of half a grain or from that to a grain of the acetate of morphia at bed-time, and repeated as the occasion may require, will be productive of the best results, and where also abdominal inflammation exists after delivery, then opium in conjunction with calomel every three or four hours will be usefully given ; as in the following formula : R. Hydrarg. chlorid. gr. ij., pulv. opii gr.  $\frac{1}{4}$ , vel pulv. ipec. comp. gr. iij., M. ft. pulv. Sumatur in pulmento tertiâ vel quartâ quâque horâ ; and peritonitis will be sometimes seen to follow puerperal convulsions—although it is not to be necessarily anticipated in every case, for out of twenty cases that I can now specially recal to my recollection, three only



suffered from subsequent inflammation; but when it does occur with severity, venæsection to a greater or less extent, or the application of leeches, should the strength not permit of general blood-letting, and fomentations, and the calomel and opium just mentioned, will give the required relief, if it is to be obtained at all. But occasionally the inflammation will not be sufficiently severe to require either general or local bleeding, and will admit of relief by the calomel and opium and fomentations without the loss of any blood—thus showing in the plainest manner possible, that the physician must act as the circumstances of each case tell him—that he must be, as I have before mentioned, the servant and not the director of Nature—that he must act energetically, or sharply, or mildly, or even not at all, according as the actual condition of each case may direct him, and never according to any preconceived plan of his own! No rule, therefore, can be possibly laid down for general adoption, for it is plain that the treatment which may be proper in one case, may be not required, or be even injurious in another.

The inhalation of chloroform is another remedial agent that demands in passing some little consideration, for it has been frequently employed in puerperal convulsions both in this country, and in America, and on the continent, and it is said, with some amount of success in diminishing the frequency and severity of the symptoms. I have not, however, been in the habit of employing it myself in this disease, and therefore I



shall not give it a very prominent place among the list of remedies for its relief or cure, and simply for the obvious reason that I have ever found venæsection and the application of cold in the manner already stated sufficiently successful. I have administered chloroform in this disease, and the patient recovered—but not better or more quickly than in the cases where it was not applied—venæsection, of course, having been in this instance first performed; and this rendered it a difficult matter to attach any special curative virtue to its exhibition. Chloroform may, however, be administered in those cases of convulsions which appear to be the result of excess of pain, or mental emotion, or excitement, and it is thought to be especially useful in those cases which occur to unmarried women whose minds are depressed by the sense of shame and misery to which they are necessarily exposed; but even in these cases, or in any case, in fact—speaking generally—I should never omit to practise venæsection, or ever venture to trust to chloroform alone; being convinced that bleeding is so effectual a sedative to spinal action, and so successful a remedy in puerperal convulsions, as to render all other remedial agents only subsidiary to it. The use of chloroform, then, in any case must always be secondary to venæsection, which has for its object the general relief of the congested cerebral and spinal nervous centres, and the state of spasm of the smaller cerebral arteries already alluded to, and I think it probable that the careful administration of chloroform may materially aid in relieving this spasm, and if it so



acts, a way is opened for the onward movement of the blood, whereby the healthy balance of the circulation is restored ; and, consequently, restoration to consciousness, and cessation of convulsion effected. Its inhalation, therefore, may not be without its use in some instances after the employment of bleeding, and especially in cases where the convulsions continue after the birth of the child, and where it would not be right to resort to any further loss of blood. To repeat, I should never regard chloroform as a substitute for venæsection, but only as a possible useful agent after its employment — venæsection being the remedy, and chloroform, with all the other means already named, the accessories to it.

The last point for consideration is the question of the propriety of interfering with the progress of the labour. In the convulsions before the commencement of labour — during the period of gestation — we have nothing to do with the uterus ; we must not think of that organ, but must treat the convulsive disease as if it existed independently of pregnancy, and in cases likewise where the os uteri is beginning to dilate, and continues to go on dilating, we treat the disease, for the most part, as if pregnancy were not present, and for the reason that we believe that delivery will be safely and quickly accomplished ; but if the os uteri does not continue to dilate, and remains stationary, leading the practitioner to think that the labour will not be proceeded with, then, if the convulsions continue, and there be reason to think that the distension of the uterus is in any way



the source of the malady, it will be right and justifiable to puncture the membranes with the view of relieving not only the uterine distension, but for the purpose of ensuring the sooner or later emptying of the uterus; and this operation may be done whether the os uteri had commenced to dilate or not, if the symptoms be not relieved by the previous means employed. I do not like interference as a rule, but there can be no question that the uterus is, now and then, the *fons et origo mali*, and especially when there is over-distension from the presence of too great a quantity of liquor amnii, or when there exists excessive sensitiveness of the excitor nerves of its orifice; at any rate, the enlarged organ, with its countless nerves, influences and gives a character to the disease which does not obtain in other forms of convulsion. It may be, then, occasionally justifiable, when bleeding and some of the other means spoken of fail to relieve, to evacuate the liquor amnii, and this may be accomplished either before or after the os uteri has commenced its dilatation, the evacuation of the liquor amnii, as Dr. Tyler Smith believes, being to the uterus what the partial action of an emetic or an enema is to the stomach and intestines. This operation will not, however, be frequently required; I mention it from the bare possibility that it might be; and I will pass on with the remark that all unnecessary interference with the vagina or os uteri is to be carefully avoided, and that all operations are to be performed with the greatest care, and with the ever present conviction that the fits may be renewed with the greatest



ease. The question of artificial delivery has been much debated, some practitioners thinking that instant interference is necessary, and others that it is not. It appears to me that no general rule as regards this question of practice can be universally applicable, and that the physician must be guided here, as in most other cases, by the intentions of Nature rather than by any arbitrary line of conduct he may think fit to pursue. In the generality of cases, however, according to my experience, the practitioner will be spared the trouble of thinking what course to adopt, inasmuch as the uterus frequently expels its contents in a very rapid manner. I have observed in several instances, on first examining the os uteri to have scarcely commenced its dilatation, yet in a short time afterwards, in one case I remember not a quarter of an hour, the child has been entirely expelled—so rapidly does the uterus sometimes act under such circumstances. My plan, then, is never to interfere in any way when Nature is disposed to accomplish the delivery herself; but if the head be within reach of the forceps, and the conditions favourable for their application present, the convulsions being still formidable or unrelieved, and there really does not exist the impression that the head is advancing as rapidly as in a perfectly natural labour, I should of course apply them, and from the belief that it is a great desideratum to have the labour terminated. In four cases out of twenty I applied the forceps—in the remaining sixteen, Nature herself accomplished the delivery. In the cases in which the forceps were ap-



plied, the os uteri was, of course, completely dilated, and the membranes broken, and the head of the fœtus either in the pelvic cavity, or low down resting on the perineum. Of the operation of turning I have nothing to say, except that the effort to introduce the hand into the uterus has in some instances brought about a repetition of the convulsion and instant death; it seems, therefore, a hazardous proceeding; and it will be well for the physician never for a moment to lose sight of the reflex connexion of the uterus with the spinal cord when he contemplates performing any operation during the presence of this fearful convulsive disorder; and he will not do so, if he bear in mind the extensive nervous communications which exist between the enlarged womb and the spinal nervous centre, and by means of which any irritation, whether it be that resulting from the presence of the hand of the accoucheur in the vagina or uterus, or even the unnecessary pressure of a finger against the os uteri, or the blade of a pair of forceps in the uterine passages, can be conveyed with the rapidity of lightning to the nervous centre, and as quickly reflected to the various muscles in connexion with it, the result being a kind of retaliation for the harm inflicted or attempted in the form of violent convulsive movements. The operation of turning, then, during the height of the disease seems inadmissible and highly dangerous, and one which had better not be attempted unless there be other and more urgent reasons for its performance—such as the complication of a transverse presentation, or a presentation



of a shoulder and arm—when the case must then be managed according to the principles usually adopted for such states without regard to the presence of convulsions; but the combination of a transverse presentation, or any presentation requiring turning with puerperal convulsions, is exceedingly rare, and may not occur in the practice of any one man, however lengthened that may be. Where, however, in any case, the patient is evidently dying, and the only indication left is to preserve the life of the child, the operation of turning may be in such an instance performed; provided that a careful examination with the stethoscope proves that the child's heart continues to beat; or, in the event of not being able to hear these cardiac sounds, there be other proof that the child is alive; and this operation of version or turning may either be performed in the ordinary way, or according to the plan recommended by Dr. Hamilton, or that so recently brought before the Obstetrical Society of London by Dr. Braxton Hicks.

The necessity for the use of the perforator rarely exists, and could only in any case be thought of where the head is impacted in the brim; but even here the practitioner must pause, for the labour may, if left for a while to Nature, terminate successfully without his efforts. If the child were known to be dead, then delivery by the perforator and crotchet might be earlier employed, and especially if the convulsions continued so formidable as to require the speedy emptying of the uterus. The use of the perforator is not to be sanc-



tioned because there is convulsion, but only on account of other and potent reasons existing. I have in the course of my experience known a perforator thrust into the head of a child while yet alive, simply because there were ordinary convulsions, and where, I have no doubt, if time had been allowed, a child would have been born by the unaided natural efforts; for there was, in that instance, no pelvic contraction, or any reason for thinking that the infant could not have been naturally born. It seems, then, important to consider well before having recourse to any operative interference in this disease; but far more important is it that the practitioner should possess the power of rightly applying the various means at his command—to have the inestimable instinctive faculty of applying the right remedy in the right place, and at the right time. This ends what I have to say respecting the treatment of the ordinary form of puerperal convulsions, or puerperal eclampsia; but before concluding I will make a few remarks on the treatment of the other forms.

In the hysterical form of convulsions it will be rarely necessary to have recourse to venæsection, or even to the application of leeches; the latter, however, may be applied if there be a quick pulse, or severe headache; but usually a brisk purgative, with the frequent exhibition of the compound tincture of valerian, or chloric æther, or the aromatic spirits of ammonia, and the dashing of a little cold water upon the face, will answer the end in view. When the paroxysm is



at an end, a dose of opium is to be given, and after a good sleep, the patient will usually find herself not the worse for the attack. If there be flatulency, or pain in the stomach, in addition to the above means, stimulating liniments or sinapisms may be usefully applied to the stomach, and an assafoetida injection has sometimes been prescribed with benefit; but the symptoms will generally disappear with the employment of the above simple means, and they will often disappear even without them. The treatment of the apoplectic form of convulsion does not vary from that which I have hitherto considered as applicable to the true or epileptic kind, and which consists in free bleeding, and, if this gives no relief, the case may be regarded as hopeless—for venæsection soon finds out whether the symptoms are from congestion, or the result of effusion; but, if there be a little benefit obtained, then the hair should be cut short, and cold water or ice applied, as already advised, and a brisk cathartic given. If apoplexy occur during labour, and death be really approaching, delivery ought to be effected either by turning, in either of the ways alluded to, or by the use of the long or short forceps as the case may be, in order to save, if possible, the child; and if an apoplectic fit occur in the end of pregnancy, or at any time during the last few weeks of gestation, and there is reason to think that the mother is fast sinking, and that the child within her is yet alive, the Cæsarean operation should be performed either directly after death, or just before that event, with the like view of preserving the life of the infant; but in all



other respects, the subsequent treatment is precisely that which would be followed under other circumstances where pregnancy does not exist. The principle of treatment in cases of convulsions occurring simultaneously with albuminuria, the result of disorganization of the kidneys, is the same as at any other period; but owing to the debility existing from the previous presence of disease, and that disease being most probably of a fatal character, the bleeding so strongly advised in the ordinary cases which are free from any organic disease, and which occur likewise to individuals in the midst of the strongest and best of health, cannot here be so practised; but a smaller quantity of blood can be taken away than that ordinarily recommended; or, if the debility in any given case be too great to admit of that, leeches can be applied in the place of general bleeding; and their application, with the continued use of cold, and attention to the rules as regards the propriety or otherwise of interfering with the progress of the labour, already sufficiently dwelt upon, and the careful administration of chloroform by inhalation, will subdue the disease, if it is to be effected at all. In all such cases there is brought about a morbid state of the blood from the diminished urinary secretion present, there being either an undue accumulation of urea or carbonate of ammonia from its decomposition in the blood, and which, with other unascertainable matters circulating throughout the system, increases the centric irritability of the spinal nervous centre, and to such an extent that



slight eccentric causes of irritation, whether proceeding from the stomach, the intestines, the uterus, or any more distant part, readily induce convulsion, and it is this form which appears capable of being subdued by the inhalation of chloroform, chloroform possessing the power of restraining and arresting puerperal convulsions, and, as it is thought by some, in virtue of its preventing the decomposition of urea into carbonate of ammonia. Whether this be the case or not I cannot say; but certain it is, that in these cases there is a pathological state of the blood induced, and which is frequently associated with convulsions; and if the various acts of secretion, nutrition, and depuration, so increased and altered by gestation, be considered, it cannot be surprising that pregnancy should strongly predispose to a morbid state of the blood, and particularly so if there be at the same time any disease of the kidneys materially interfering with their eliminating power. What the exact substance is which thus acts on the spinal nervous centre, I am not able to state; it may be urea, or carbonate of ammonia, or some other substance, or several operating in union; but whether it be this or that, it signifies little, for the means already advised and the careful administration of chloroform will prove, for the most part, effectual in reducing the excessive irritability of the spinal nervous centre, and in subduing the convulsions which are the necessary consequence of such excitability.

From the foregoing remarks it will be inferred that I sanction the inhalation of chloroform chiefly, if not



entirely, in those cases which are associated with debility, and, as a consequence, do not require the free use of the lancet, and that the chloroform inhalation is to be regarded in such instances as the main substitute for venæsection, operating, like it, in being a sedative to spinal nervous action, in subduing convulsions, and in relieving the spasm of the smaller cerebral arteries, whereby a way is opened, as in the cases treated by bleeding, for the onward movement of the blood, in virtue of which the central and basic parts of the brain and medulla oblongata are relieved of the superabundant quantity of blood circulating through them, and the more distant parts, or those which minister to thought and volition, are at the same time restored to a more natural state by receiving a more adequate supply of their accustomed and necessary stimulus; the results being diminution of excess of action, or cessation of convulsion, and restoration to consciousness.

But in by far the greater number of cases, according to my experience, it will not be wise or safe to trust to any remedy at the beginning of the disease but bleeding, and for the reason that the disease is chiefly seen in those who can bear depletion well—namely, in the young, and strong, and robust; and as bleeding in such instances is so effectual, and nearly always successful in curing the disease, if early and sufficiently practised, there can be no valid reason for attempting to employ any other remedy, which, at the best, can only be at any time an imperfect substitute, and in the majority of cases worse than no substitute at all—by preventing



or superseding the employment of the only rational remedy calculated to relieve, and, in the cases which threaten to merge into apoplexy, to avert a fatal issue.

These remarks are, of course, intended to apply only to that form of puerperal convulsion which is seen in the young and strong, or to cases—and in practice they will be found to preponderate—which admit of blood-letting; and the observations have, consequently, no reference to such exceptional cases that might once upon a time be presented to the practitioner, and where, on account of co-existing disease or debility, the propriety of abstracting blood is not so evident.

The success of the plan of treatment I have invariably adopted in the cases which have presented themselves to me in the course of my professional career is my apology for having urged so strongly and repeatedly the operation of venæsection as a remedy for puerperal convulsions; and I have done so from no *à priori* reasoning or prejudice, but from an honest and conscientious belief, derived from long observation and experience, that there is no one remedy at all equivalent to it. It has so happened, that I have had the opportunity of observing and testing the utility of bleeding in puerperal eclampsia on a great many occasions—of seeing many frightful forms of the disease recovered from where bleeding had been early and sufficiently resorted to, and I have had, on the contrary, on two or three occasions, the pain and disappointment of seeing a fatal termination as a result of the non-employment of bleeding, or from its not having been had recourse to



sufficiently early ; in other words, where the bleeding was *withheld* or *delayed* the patients died ; but where venæsection was *early performed*, they recovered ; and I think it of great moment to perform the operation as early as possible—the instant convulsion shows itself, if the case admits of bleeding being performed at all, it should be done, or even before this—if the premonitory signs are perceived which unmistakeably foretell the struggle that is to follow. Of the twenty cases alluded to in the foregoing pages—and which I can well and vividly remember from their frightful severity—seventeen recovered, and in all of these bleeding was early and efficiently practised—not wantonly, or carelessly, or unnecessarily profusely, but promptly and cautiously, according to the requirements of each case—bleeding never being withheld in any case really requiring it, to suit the morbid fancies or opinions of late years, so prevalent respecting the value of this important and useful remedy. In the remaining three, death occurred. The first case was one of apoplexy, with slight convulsion at the onset of the attack, occurring in the latter end of pregnancy, and in a patient who had been ill previously with obscure remittent and intermittent fever : in this instance venæsection was not performed. The second case was one of ordinary puerperal convulsions, occurring in a young plethoric female, with every sign of being likely to have an apoplectic attack—being stout and of full habit, and having a short, thick neck—here the convulsions had been present, and of fearful violence, for hours before I had the oppor-



tunity of visiting her ; and, from venæsection not having been performed, the disorder passed into apoplexy, speedily proving fatal. The third case, in which death occurred, was one of common puerperal eclampsia, in a young, robust woman, with a full and powerful circulation. She died ; not from the convulsions, which were subdued and cured by the venæsections employed, but from subsequent peritonitis, and, as I suspected at the time, from the uterus having been ruptured by the strong and sudden contractions of its muscular fibres at the time of labour.

The success which it has been my pleasure to obtain in the cases of puerperal convulsion coming under my care has been very great, and I naturally attribute that result to the simple operation of early bleeding, and I therefore feel I cannot too strongly impress this fact upon the mind, or too urgently recommend its adoption to those who may read these pages, believing that had bleeding not been resorted to in the cases above mentioned there would have been a result the reverse of that already named ; and one is justified in coming to such a conclusion from the recollection of the severity of the symptoms as manifested in the violence of the fits, and in the deep and prolonged coma, and all this occurring to young and plethoric women in whom there existed a powerful circulation, and a capability for bearing the loss of blood, not only with impunity, but with positive benefit. If, therefore, this essay be only instrumental in dissuading one who might be inclined to omit venæsection in this disease, whether such omission



were the result of prejudice, or inexperience, or educational training, or, shall I say, from a love of acting in opposition to those who have preceded him, it will not have been written in vain, and for the reason that in all probability a few lives will be saved.

It is far from my intention to convey to the reader the impression that I advocate the practice of bleeding indiscriminately in this or in any other disease. I simply desire to convey the truth that it is a most valuable and saving remedy when rightly applied, not only in the disease under consideration, but in a great many others also; but it is only to be employed when required; and that I only have recourse to it when so required, or as an occasion may now and then present itself, will be apparent when I state that, during the last ten or fifteen years of my practice, I have not bled on an average more than five or six persons yearly; whereas, before that time, I was called upon to take away blood frequently, indeed almost daily, and when inflammatory disease became at any time unusually prevalent, several times daily; and this alteration of practice has not arisen from any better knowledge of disease, or of the remedies used in curing disease that I now have, but simply and solely from disease being now of a different character or type; most diseases—including the various forms of febrile disorder, eruptive or otherwise—having been of late usually accompanied by such prostration of the vital powers as to render blood-letting not only unnecessary, but, if adopted, injurious; and thus it is evident that the phy-



sician must ever act as Nature tells him, and that he must be content to occupy the position—and it is not an inglorious one—of acting in obedience to her commands. I would not speak disparagingly of efforts made to promote the progress of the science of Medicine, or still less would I think unfavourably of those who devote their energies to allay suffering and preserve life; but, on the contrary, would accord to them the highest consideration and regard, provided those efforts were made in obedience to the laws of nature, or were based upon or regulated by those forces which are ever at work within the living organism to preserve and maintain its integrity. The physician must be, therefore, the minister and interpreter of Nature; and just in proportion as he understands her secrets, so will his mission be more or less successful. It is always most gratifying to relieve pain under any circumstances, or to have the consciousness that a fellow-creature has been rescued from the grave through the employment of any means the medical art affords; but especially is it gratifying to relieve and rescue from the grave the human female labouring under puerperal convulsion; for she ever, but especially then, in such an hour of trial, ought to have the chief claim upon our interest, our sympathies, and our affections.

THE END.