rative stage, both constitutional and local, it is so generally understood, that it would be quite superfluous to descant upon it.

ART. XVIII.—*An Essay on Laceration of the Uterus and Vagina, with Cases.* By J. T. INGLEBY, Member of the Royal College of Surgeons, London, Surgeon to the General Dispensary, and Lecturer on Midwifery at the Birmingham School of Medicine.

[Presented through Dr. Montgomery.]

PRELIMINARY REMARKS.

LACERATION of the uterus or vagina constitutes one of the most fatal injuries incidental to pregnancy and parturition, and in this respect the experience of Hunter, Denman, and Ramsbotham, obtains melancholy confirmation from practitioners in general. Notwithstanding this, the spirit of Dewees should ever animate us neither to regard these injuries as hopeless, nor relax our exertions towards their reparation so long as life remains, since several successful cases, which appeared most unpromising and even desperate in their character, are already on record,* and others, equally auspicious in their issue, remain to be added.

THE FREQUENCY OF THESE INJURIES.

From these injuries no class of women are exempt, but their comparative frequency, which is by no means well ascertained, varies, according to the published accounts, from one in three hundred to one in four thousand cases. I am disposed to regard their occurrence as much more frequent than is generally believed, and as corresponding with obscure and sud-

* See Professor Burn's Treatise, and Dewees' System, for reference to cases.

den instances of death. Intentional concealment of this injury is supposed to have been practised.

AT WHAT PERIOD OF PREGNANCY ARISING.

Laceration, (independently of any misplacement of the ovum,) though said to have been noticed as early as the fourth month of pregnancy, rarely occurs before the completion of the natural term. In an instance of abortion at the fifth month the violence of the pains seemed to me quite equal to produce a breach of surface—a mere exception, however, to the ordinary rule.

LACERATION UNUSUAL IN FIRST LABOURS.

On general principles it might be inferred that lacerations would arise more frequently in first than in subsequent labours; but the reverse of this is, I believe, an undeniable fact. Mr. Robertson, in particular, in his valuable paper on this subject,* has proved most satisfactorily that the accident very *rarely* happens in a first labour; and in twelve cases seen in consultation by Mr. Vickers, a most respectable and now retired practitioner of this place, the majority occurred in women who had suffered from previous severe labour; a fact confirmed by Ramsbotham, who never met with an instance of ruptured uterus in a first lying-in. An opinion has prevailed that the uterus will sustain with impunity a more powerful contraction in a first labour, than its textures are afterwards equal to, indeed that these textures become impaired by frequent child-bearing, and easily lacerate, but the deduction is unsupported by evidence. In the disease termed malacosteon let it be recollected, that the sacral promontory undergoes, during pregnancy, a sensible change in its figure, *antecedent* to any apparent softening of the pelvic bones in general, and the reason of this is familiar to all. This yielding, which is at first very slight, and is arrested after deli-

* Edinb. Med. and Surg. Journal for July, 1834, p. 49.

very, returns with a recurrence of pregnancy, and renders each act of parturition more difficult.*

THE REASON OF THIS EXPLAINED.

Thus we understand why lacerations occur more frequently in women who have borne children, than in cases of first labour; and the explanation is far more agreeable to sound physiology, than the doctrine which ascribes the injury to an attenuated state of the uterine tissues; a predisposing cause undoubtedly, but not the most frequent cause, as we shall presently endeavour to show. In confirmation of this opinion I have the satisfaction of adducing the experience of my valued and intelligent friend, Mr. J. M. Coley of Bridgnorth, who, after describing two cases of laceration which he very kindly sent for this paper, makes the following observation:—"In both cases the parietes of the uterus were unusually thick, a circumstance which leads me to doubt the truth of the opinion entertained by accoucheurs of the first rank, that this accident *generally* arises from an attenuation of the womb, occasioned by repeated pregnancies and the pressure of the projecting bones of the pelvis. In both instances, besides the remarkable firmness and thickness of the organ, the situation of the rupture would negative such an explanation of the cause of the injury. The contractions of the uterus were excessive, and in one of the cases the ergot of rye was given in very large doses, and the forceps applied during strong pains."

An open breach of surface in a very thin uterus may be connected with ulceration. It is perfectly well known that

* The commencement of malacosteon, by pain about the pelvis, and disability in moving, is liable to be confounded with rheumatic and neuralgic affections. An instance of this recently presented itself in a woman whose pelvis had become distorted to an extreme degree. We know very little of the actual state of the system which predisposes to malacosteon, but I am quite certain the opinion generally held that the bones in this disease never again acquire their natural solidity is incorrect. In confirmed cases the softening remains, but not in recent cases.

ulcers are found in the lining membrane of the organ; some of these have either followed strong injections, or could be referred to inflammation from other causes; others again have been regarded as syphilitic. Should an ulceration commencing in this structure be combined with softening and attenuation of the organ generally, the breach of surface (like an ulcer in the stomach or intestines) may pass quite through its parietes, almost inevitably so in the event of uterine contraction ensuing, the progressing process of ulceration, and the action of the uterus, each contributing to convert the simple breach into direct communication with the abdominal cavity. Suppose, for instance, (and I am informed such a case really happened,) a portion of disrupted placenta to be left firmly adherent to the greatly attenuated uterus, and ulceration to pre-exist, or to arise in consequence, what is to prevent the diseased part from giving way whilst the uterus is contracting to expel the offending substance? It scarcely need be observed that the presence of a piece of placenta, the circumference of a half crown, or even much smaller, will provoke violently expulsive efforts; to such a degree indeed did this take place in an instance to which I was called, that the os internum was forced by the strong pains absolutely through the external orifice, where it was for some time visible.

PREGNANCY RECURRING AFTER RECOVERY FROM LACERATION.

Nothing certain can be inferred from the fact of several women (who present rare instances of recovery from rupture of the uterus) having subsequently borne children without any renewal of laceration, since very much depends upon the foetal cranium, both as respects its dimensions and structure.

LACERATION CONSIDERED UNDER TWO PRINCIPAL HEADS.

Laceration may be considered under two principal heads; in the first there is an unusual resistance, and the womb acts with extreme violence; in the second, its powers of resistance

are defective, slight causes being equal to produce a breach of surface. The first head embraces difficult parturition in general, and occurs under all circumstances of the presentation, and every stage of labour and state of the uterine orifice, from the smallest to the greatest amount of dilatation. Usually, the laceration arises after a few hours of severe pain, the os uteri being tolerably well dilated, but unattended by a corresponding descent of the presentation. When the rent speedily follows the accession of labour, before the pains have acquired severity, or the uterus has scarcely begun to dilate, its structures will probably be found diseased.

SUBDIVISION OF THE FIRST HEAD.

The first head admits of the following classification: 1st, the laceration occurring when the presentation is above the brim, and entirely within the uterus; 2dly, as arising during the entry of the presentation within, or through the brim; 3dly, as occurring when the presentation is impacted within the bones; (in the second and third subdivisions the presenting part may be partially inclosed within the uterus when the laceration happens); 4thly, as happening during the actual delivery.

UNDUE RESISTANCE, AND ITS CAUSES.

In these several states an undue resistance is offered to the expulsion of the child in connexion with an inordinate action of the uterus, rendered so in some instances by the premature exhibition of the ergot of rye. The causes of this resistance include rigidity of the soft parts in general, and the os uteri in particular, an unyielding, or greatly enlarged, and perhaps hydrocephalic cranium, transverse presentation, malposition of the head, and, lastly, a want of correspondence between the axis of the uterus and the axis of the pelvis. This last mentioned cause, though pointedly referred to by Douglas, has been but little noticed by succeeding writers. In two examples of the kind detailed in this essay, the uterus was pendulous in

a very marked degree, and in one of these (a case of malacosteon) the posture which the patient observed throughout the last weeks of gestation was exceedingly restrained. The same effect may be produced by tumours situated either above or below the brim, or whatever prevents the uterus from acting in the axis of the pelvis. "If the fundus is thrown much forward," says Douglas, "the foetus on the return of every pain will be forced against the lumbar vertebræ or anterior edge of the ossa pubis, in a direction very different from that of the axis of the pelvis."* Under these circumstances the vagina, as well as the uterus, will be very liable to rupture. But by far the most frequent of these several causes consists in an unnaturally small or projecting state of the pelvis, very generally of the sacral promontory.

Exostosis of the pubis, in connexion with uterine laceration, has been distinctly noticed both by Denman and Douglas, and Roberton has also described three cases of the same kind to which the laceration was attributable. In one of the instances mentioned by Douglas, not only was the brim contracted, but a thin, bony ridge, almost as sharp as the edge of a knife, was attached to the upper part of the ossa pubis.† Mr. Roberton's paper contains in particular two highly important facts: first,

* Essay on Rupture of the Uterus, p. 99.

† A very interesting case, illustrative of the powerful action of the womb upon the full-sized foetal head in its passage through a slightly contracted brim, has recently occurred in my practice. A midwife, in attendance upon a young woman of low stature in labour with her first child, being unable to ascertain the nature of the presentation, applied to a surgeon for the purpose, who, being equally foiled, requested my opinion. I found the vagina filled with a large soft body, connected above the brim of the pelvis with the bones of the head. The soft body was evidently the scalp extensively detached, and in an inordinately tumefied and pulpy state. Auscultation indicated the extinction of foetal life, but as no symptoms of danger had appeared, instead of resorting to instruments, I recommended a few hours delay. In eight hours a still-born child was expelled by the natural pains. On examination of the head a very deep and extensive extravasation of blood and serum covered the whole of the right parietal bone, extending to the adjacent bones. The vessels of the brain were also excessively congested, but there was no escape of

we learn that in the great majority of his cases the degree of contraction was slight, the deficiency not exceeding half an inch in the conjugate diameter of the brim, yet producing the most formidable and fatal results. I have to regret not having examined the pelvis in every instance of laceration which I have seen, with a view of ascertaining whether these minor degrees of contraction existed or not. In the last case which I examined the conjugate diameter was defective about half an inch. Within the last month an opportunity presented itself of measuring the pelvis in a woman who died very suddenly during labour, from laceration, and the conjugate diameter was found to be only three inches. The patient was attended by a midwife. And secondly, it appears that out of thirty-six cases, the laceration happened in a very large proportion of them within twelve or thirteen hours of labour, measuring the time from the first indications of labour, and not from the occurrence of actual pain.

DEFECTIVE RESISTANCE, AND ITS CAUSES.

Under the second principal head, or laceration from defective resistance, the rent may arise from attenuation, or quite independently of the parturient action, spontaneously for instance, from some unnatural state of the peritoneal tunic of the womb, from obstetrical violence, and from accident, in the strict application of the word.

The attenuation which the uterus sometimes undergoes during the latter weeks of gestation, is both curious in itself and full of practical import; but the opinion that thinning of the cervix is owing to the foetal head having rested upon it through the last weeks of gestation; the quantity of liquor amnii being also perhaps defective, is far from conclusive. I once observed

blood within the skull. The nature of the effusion was clearly sanguineous, the pressure of which through the sutures, in connexion with the internal congestion, proving fatal to life. Forensically speaking, the case is both interesting and important. The conjugate diameter of the brim was defective half an inch.

this attenuation in a very marked degree, the whole vaginal portion of the uterus was extremely thin, resembling very thin brown paper, and when dilated to the extent of a crown piece, its structures were so closely in contact with the membranes that the line of demarcation was scarcely perceptible. Had not the child been small and premature, it is probable that laceration would have been the consequence. In one of the specimens in my possession, the parts surrounding the injury appear thinner than the textures in other parts of the organ. An attenuated state of the uterine and vaginal structures is incompatible with the ordinary contractions of the womb, and a very inconsiderable power, under such circumstances, is equal to produce a breach of surface. Thus, in a case mentioned by Dr. Denman, the laceration followed a few slight pains, the patient being in a state of weakness from the hemorrhage which attends presentation of the placenta. When deformity of the pelvis is superadded to a thin or diseased state of the uterine tissues, laceration will be almost inevitable. "Independently of disease, (says Denman,) the uterus may be worn through mechanically, in long and severe labours, by pressure and attrition between the head of the child and the projecting bones of a distorted pelvis, especially if they be drawn into points or a sharp edge."

When the natural elasticity of the peritoneum is considered, as well as the extension which it undergoes both in diseases and pregnancy, particularly when pregnancy is associated with dropsy of the amnios, it may reasonably admit of doubt whether the healthy peritoneum will give way from mere distention. That this peculiar laceration may possibly depend upon force, suddenly exerted, a preternatural tenuity, or unsoundness of the peritoneum, or something unnatural in its connexions with the fibrous tissue, I am not prepared to deny, but from the cases already on record, and a case recently published,* in which the

* In Med. Chir. Trans. vol. xix., by Mr. Partridge.

peritoneum appeared quite healthy, I am disposed to refer the laceration to an irregular contraction of the uterus, either of the active or passive kind; the active arising during labour, the passive during the shortening of the uterine fibres, and preparatory to the accession of pains. That the injury, whatever be its cause, may occur spontaneously, I am perfectly certain, for in one such instance the mischief was not preceded by any sensible contraction.

With respect to spontaneous laceration, a case is on record which possesses an unusual degree of interest,* and examples in support of the other positions will be found in this Essay. It will be seen that the laceration in one of the cases was produced by falling on a step, and as the abdominal coverings presented no appearance of injury, it may be presumed that the muscles made no resistance, and allowed the force to concentrate upon the uterus.

Laceration of other organs from external violence may be explained on the same principles; for instance, a poor man, feeble, but convalescent from fever, in taking exercise in the dusk of a summer evening, walked unexpectedly but gently against a post; abdominal pain and vomiting immediately ensued, and death within three days. The colon was found to be ruptured. A boy who received a kick from a horse on the abdomen, sustained a similar injury. A cart wheel passed over the abdomen of another boy, and the kidney was very extensively ruptured. In none of these cases were the abdominal parietes apparently injured.

LACERATION, CONNECTED WITH DISEASE OF THE UTERUS AND
IRREGULAR ACTION.

The coincidence of pregnancy with unsound states of the uterine tissues, scirrhus and cancerous ulceration in particular, has been too frequently proved to need comment. Scirrhus

* Vide Mr. Ilott's case, in vol. vii. London Medical Repository.

of the os uteri can scarcely fail to impede the first stage of labour, and one of the worst cases which I have attended arose from this cause. In softening of the uterus there will be no elasticity, and a rent will easily be produced. Admitting that an unnaturally firm or fibrous degeneration, affecting a limited part of the uterus, will contract less perfectly in the expulsion of the child than sound structures, still the uniformity of the parturient action will be intercepted in a particular spot, and an irregular contraction necessarily ensue.

It is far more probable that a breach of surface will take place when the action of the uterus is irregular than when it is uniform: thus we find Velpeau referring certain cases of laceration to the violence attending the convulsive paroxysm, and I have given an instance of this, but such instances, as well as lacerations said to be produced by the violent movements of the child, are, indeed, most unusual. An opinion has already been expressed, that lacerations confined to the peritoneum cannot be disconnected from irregular contraction.

LACERATION OF THE VAGINA.

A laceration is rarely confined to the vagina, and it is a singular fact, that the contraction of the uterus will act upon the child, even to the laceration of the vagina, without producing a breach of its own surface. More frequently the rent commences at the point of junction between these parts implicating the vagina, the uterine orifice, and a small portion of its cervix, (sometimes the bladder,)* and such an injury cannot be considered less fatal than a laceration of similar extent, but confined to the uterus. According to Professor Boer, an extensive laceration and separation of the vagina from its attachments, is also the result of a large effusion of blood within

* The diaphragm also has been known to lacerate during labour, and the contents of the abdomen to pass into the chest.

its cellular substance.* Undoubtedly the canal may lacerate, partly by its own power, of which it acquires a material increase, in common with the uterus, during the latter period of gestation ; and allowing that it performs a very subordinate part in the actual expulsion of the child, we know that its contractile power is equal to expel the extremities of the foetus, when detained within it, as well as the placenta and coagula also, of no ordinary magnitude.

The vagina may also be lacerated by unskilful obstetricism, especially in the operation of version ; thus in attempting the delivery of a woman by turning, the practitioner passed his hand through the anterior part of the vagina into the abdomen, the intestines protruded, and the patient soon expired.

NOT POSSIBLE TO PREDICT THE DEGREE OF ACTION THE UTERUS
WILL UNDERGO.

But whatever may be the state of the uterine or vaginal textures, it is impossible either to predict the amount of exertion which they will bear, without involving a breach of continuity, or to determine the amount of compression which the foetal head will undergo in its transit through a contracted brim, consequently it is impracticable to determine from any circumstance of the labour, singly considered, the length of time to which a case may be safely deferred to the efforts of nature.

EXAMINATION PER VAGINAM.

At the commencement of labour an examination *per vaginam*, either with the finger or the hand, will afford a person conversant with these subjects tolerably conclusive information of the capacity of the brim, and should never be neglected. But when the descent of the head is attended with unusual difficulty, and the labour pains have squeezed a quantity of the

* *Medicina Obstetricia*.—See Merriman's Synopsis, page 3.

tumefied scalp, and also perhaps, part of the bony structure of the cranium, within and rather below the brim, unless the presentation admits of being raised in the absence of pain, it will be impracticable to acquire minute information; we may ascertain the existence of contraction, but the extent of the defect cannot be obtained with requisite precision. It becomes, therefore, of some moment to ascertain this point very early in the labour, or indeed prior to its accession, in persons who have already had difficult labours, and given birth to full grown but dead children, as the capacity of the pelvis in such persons will almost certainly be found defective. The depression which the sacral promontory leaves over either parietal bone, is sometimes very marked, &c.; but an unnatural degree of projection of the sacrum, will not even be suspected, when the part is not easily reached with the finger; but this is a delusion which I have endeavoured to expose elsewhere.

Whenever it becomes necessary to pass the hand, the importance of attending to the axis of the brim seems most obvious; and I have alluded to a case of vaginal laceration, which would not have occurred had this precaution been observed. Considering that the rent sometimes takes place during the actual expulsion of the child, it would seem desirable to examine, after every delivery at term, not only the perineum, but also such parts of the internal genitals as lie within reach of the finger.

TISSUES IMPLICATED.

Rupture of the uterus generally includes the whole of its textures, occasionally (though rarely) the mucous and fibrous substance gives way, and the peritoneum remains entire; and still more rarely, the peritoneum lacerates, exposing the fibrous structure and perhaps rents penetrating its substance.

SEAT, DIRECTION, AND EXTENT OF THE RENT.

Laceration may arise in any part of the uterus, but the cervix gives way more frequently than either the fundus or

body, tearing, as Mr. Robertson observes, "with nearly equal readiness in all parts of its circumference," indeed its whole circumference has been involved in the mischief. With a single exception, the cervix uteri has been more or less lacerated in every instance which I have seen, the rent being oblique in its direction rather than longitudinal, extending to the body and side of the organ. The transverse direction is said to occur most frequently, but of this I have only seen a single instance; the rent was confined to the fundus, and was the result of accident.*

Laceration of the vagina rarely extends to its inferior portion; the rent is usually more or less oblique, but it will tear in any direction, including, or very nearly so, its entire circumference, and thus virtually dissevering its connexion with the uterus. Laceration of the substance of the uterus, attended with pelvic deformity, commences, according to Mr. Robertson, in that portion of the uterus which is contiguous to the obstruction, or, in the words of Denman, "at that part which is opposed to the sacrum, if this be distorted; and more especially if there be a pointed bone on any part of the internal surface of the pelvis."† In whatever part it may commence usually the rent is at once complete, communicating with the abdominal cavity; but it may be incomplete at the first moment, implicating, for instance, the mucous and fibrous tissue, and leaving the peritoneum entire, and probably passing into the abdomen on the uterine action being slightly renewed. Again, the peritoneum may be largely detached, whilst the amount of the rent in the fibrous tissue is comparatively insignificant. Lacerations of trivial extent, and confined to the lining membrane at the uterine orifice, occur not unfrequently, especially in first labours; and similar injuries have been produced by the detachment of the morbidly adherent placenta. Usually they prove unim-

* See Case, No. 8.

† On Rupture of Uterus, pages 8 and 9.

portant, but I once examined the body of a woman who died suddenly in a fit of eclampsia, after an attempt had been unsuccessfully made to remove the placenta, and many parts of the lining membrane had been lacerated by the finger nails. One of the most intelligent surgeons of the present day (Mr. Evans of Belper) informs me, as the result of his own observation, that laceration of the cervix uteri is more immediately fatal than laceration of the fundus. This we can fully understand, assuming the laceration to be situated beyond that part of the organ to which the placenta had been attached. A little blood may possibly enter the abdomen, but the lochia will pass almost entirely *per vaginam*, and it is to this circumstance that the little danger which attends laceration of the vaginal part of the uterus merely may be mainly ascribed. The only instance of the injury, thus limited, which has come before me was occasioned in the following manner:—A practitioner, in a violent effort to extract the head with a long pair of forceps, permitted the blades to slip off, and such was the extent of mischief, that the whole circle of the vaginal part of the uterus sloughed away,* together with a considerable part of the posterior surface of the bladder, an incurable vaginal fistula being the result.†

Laceration which arises before labour is said to be denoted by certain precursory signs, viz. tightness of the abdomen, cramp, or an excruciating pain in a defined spot, together with a degree of tenderness on making pressure over the hypogastrium, and great restlessness: little reliance, however, is to be attached to these signs.

The presumptive signs which appear during labour are less

* In this respect the case resembles Mr. Scott's in the 11th vol. of the Med. Chir. Transactions.

† After a time the patient became pregnant, and aborted at the fourth month. Notwithstanding the statement of the French, that parturition is particularly easy in women who have suffered excision of the cervix-uteri, the dilatation of the orifice was in this instance attended with very great difficulty and danger.

ambiguous. Thus if the cranial bones are pinched between the sacral promontory and the symphysis pubis, or only the tumid scalp is squeezed within or below the obstruction, if the os uteri remains unusually high, and one or both lips are thick and oedematous, if the waters are discharged, the pains powerful, but unattended with any material descent of the bony structure, we may presume upon the probability of the injury, and adopt measures for promoting the delivery as speedily as we consistently can. Besides the duration and progress of labour, we are to take into account the existing state of the constitution, the state of the soft parts, the result of auscultation, and the circumstances of preceding deliveries.

As it is very possible to *prevent* laceration, the skilful management of the labour becomes a matter of the highest moment. If the pelvis is contracted even in a slight degree, and the previous labours have been attended with difficulty, our suspicion should be raised, since a continuance of the symptoms just enumerated will be quite incompatible with the patient's safety. In this respect the facts adduced by Mr. Robertson ought especially to influence our practice, for delay may be inadmissible, the uterus having in many instances very unexpectedly given way. Two cases of this nature, with which I am acquainted, afford apt illustrations. In the first the pains were powerful, and the head (impacted, I believe, and) within reach of the forceps; the laceration occurred during a violent pain, which suddenly extinguished life. The second occurred in a woman who had borne several children, but who was then bedridden from malacosteon, and whilst the practitioner had walked into the adjoining street for the perforating instruments, the uterus burst, and on his return the child had passed into the abdomen. The result was speedily fatal. It would be easy to multiply similar examples; not that the use of instruments can be justified merely on account of a trifling defect of space in the antero-posterior diameter, for though hesitation in this respect may be quite unallowable in the higher kinds of contractions, it

is far otherwise where the defect does not exceed three quarters of an inch, or possibly even an inch, provided the cranium does not exceed the standard, and is tolerably yielding. With much propriety then does Ramsbotham declare this question to be one which "can only be decided by sound judgment exercised on a sight of the case."* A large sized cranium may indeed prove very yielding, and by its elongating properties admit of its safe propulsion through a contracted brim; whilst a firmly ossified cranium, even of a standard size, will, under the like circumstances, resist the most powerful uterine action. The head, however, may be too large to pass the best formed pelvis without endangering the integrity of the uterus. "It has been calculated (observes Professor Burns) that in three-fourths of the cases of rupture the child has been a male."† The superiority of the size of the head of the male child over the head of the female being considered, it will be impossible to doubt the great influence which the full sized and firmly ossified head exerts in producing laceration. Several peculiarities may endanger laceration, malposition for instance, but this admits of rectification either with the hand or forceps. States of rigidity favour laceration, but these yield to the relaxing influence of ant. tart., or what is better, ipecacuanha, as well as bleeding, and the warm bath; the unnatural inclination of the uterus forwards yields to position, the application of a firm bandage, or a support equal to maintain the organ in the axis of the brim. Douglas, indeed, recommends turning in a labour of this description, an operation which can scarcely be needful. Laceration is also endangered in very difficult transverse presentations. Mr. Radford, in a very interesting and valuable paper,‡ has proposed, in cases of turning, that one leg only shall be brought down, the other being left to aid the breech in dilating the os

* Practical Observations, vol. i. p. 385.

† Burns' Midwifery, eighth edition, p. 491.

‡ See Edinb. Med. and Surg. Journal for 1st April, 1832, p. 256.

externum, and thus expediting the delivery of the head. That the life of the child will be consulted by acting upon this proposition is quite clear ; indeed Mr. Radford's high authority is a sufficient guarantee in its favour.

Where there is found to be a moderate quantity of liquor amnii, or at least where no unusual difficulty to the delivery presents itself, the advantages of this proceeding must be freely conceded, but I doubt the propriety of extending the plan to all cases indiscriminately. If, for instance, the action of the uterus was very powerful, and the liquor amnii nearly drained away, it would be no easy matter to seize an inferior extremity ; but if the feet lay within reach, I certainly would secure them both in preference to one, under the impression that I might not only fail to alter the position by means of a single foot, but encounter a degree of resistance which might end in laceration. I have given the details of a case of this description,* and in a second and very similar instance of difficult turning, in which the head, arm, and foot, were in the vagina simultaneously, the patient died soon after her delivery. The body was not examined, but I am persuaded the uterus had ruptured. In a third instance, I succeeded in seizing a foot, after several unsuccessful attempts had been previously made, but the difficulty of completing the version was even then far greater than I could have supposed.

Notwithstanding the respect I have for Mr. Radford, and the deference which is due to his experience, I cannot but make this exception to his conclusions. In a general point of view his directions will necessarily lead to a material improvement in practice. Under a very violent action of the uterus, the tightness instantly cramping the hand, and imparting to it a sensation of fresh cut Indian rubber, it is surely better to deprive the organ of some of its resistance either by venesection, or other-

* Case 4.

wise by creating nausea, antecedent to renewing an attempt to turn. Opium, in safe doses, may be too tardy in its operation. Loss of blood produces an instant effect. Thus, in a most difficult and almost hopeless case of turning, in which I was consulted, a practitioner accidentally separated a portion of the placenta, and such was the effect of the hemorrhage, that the next attempt proved successful. The hot bath has been advocated in these cases.

SYMPTOMS WHICH ATTEND THE INJURY.

The symptoms which denote laceration will correspond with the circumstances under which it happens. When occurring during labour the injury is usually characterized by the following assemblage of symptoms. The patient may possibly be conscious of the rent, and has been known to utter a sudden shriek, the noise, according to Denman, having also been heard by the bystanders. It is more probable that she will be merely conscious that the child has suddenly risen high in the epigastrium, and its members may perhaps be traced by the hand, but this will not be the case when the breech and back are opposed to the abdomen, and the limbs directed to the spine. The pains suddenly become feeble, or cease altogether, especially when the laceration is situated at the fundus. In rare cases (as will be shewn) the pains continue with little abatement. Vomiting, first of the aliment, and then of dark-coloured secretion, speedily supervenes; the countenance becomes pallid and anxious, the pulse feeble and rapid, the surface cold, attended, perhaps, with cold perspiration, a progressive sinking of the vital powers, and quick respiration; the abdomen becomes tumid, tender to the touch, and peculiarly painful on disturbing the position of the child. The amount of hemorrhage, both *per vaginam*, and within the peritoneal sac, may either be insignificant or very considerable, for this will mainly depend upon the state of the placenta and situation of the head, which possibly may be impacted in the vagina; otherwise a sanguineous

discharge will be highly probable. If the transmission of the cranium through the superior aperture has been very difficult, and the presentation more or less impacted, it can scarcely recede. Its recession, therefore, is rather an incidental than a necessary result, and will mainly depend upon the circumstances just stated. When the rent arises at the moment of delivery, the symptoms will be more or less obscure, and the abdominal pain may be too inconsiderable to allow a suspicion of this particular injury to be raised.

In connexion with the symptoms of uterine and vaginal laceration, it will be perfectly relevant here to make a few more general observations. Notwithstanding that the pains usually disappear after the injury, no certain inference can be drawn as to the integrity of the uterus from the fact of the pains continuing, since they will be defective rather in proportion to the depression of the vital powers than to the extent of laceration. In one very remarkable example, although the pains were weakened by the laceration, they continued powerful for many hours, and created a delusion as to the actual nature of the case. In an instance of severe eclampsia, the cervix uteri lacerated in its anterior and superior position, and permitted the finger to enter the abdomen, but notwithstanding this, the child was subsequently expelled by the natural powers, and the result was successful. I mention this case on the authority of Mr. Smith, a most respectable surgeon of Lancaster, in whose practice it occurred. When the fundus uteri is not implicated in the rent, the pains will perhaps continue, and yet very powerful pains may suddenly cease at a moment when the expulsion of the head seems close at hand, although the laceration shall be confined to the vagina. It is improbable there will be any after pains properly so called; their appearance would be most salutary, as tending to bring the sides of the laceration more directly into contact. According to Burns, the pains will continue more or less as long as the child remains *in utero*.

DIAGNOSIS.

The symptoms of laceration of the vagina are said to differ in toto from the symptoms which denote laceration of the uterus, especially by Denman, who refers to Mr. Goldson's pamphlet for a correct diagnosis. Whatever difference there is must apply to the early stages of the injury, for, after a given time, the symptoms will be the same. It is not always practicable to ascertain the exact boundaries of a laceration: the peritoneum, though detached for some extent, may not be disrupted, or very disproportionately to the extent of detachment. The situation of the uterus will depend chiefly upon the state of the vagina, which, when extensively separated, may permit the uterus to attain a sudden elevation within the abdomen, and it may then be impracticable to reach the organ. Thus in very difficult turning cases, the almost entire separation of the vagina from the uterus has occurred whilst the practitioner has been engaged in changing the position of the child; the uterus instantly passing into the abdomen, and beyond his reach. I am acquainted with two such instances. From these and several others of a similar kind, which have been reported to me, it appears that a laceration of the superior portion of the vagina, including nearly its whole circumference, and the consequent recession of the uterus beyond the reach of the finger, is an occurrence by no means unfrequent. Nor is it always easy to determine whether a laceration of the cervix uteri has extended to the vagina, on account of the uterine orifice and the vagina presenting, for a short time after delivery, an apparently continuous surface.

MODE OF ASCERTAINING THE EXISTENCE OF LACERATION.

When laceration is suspected to have taken place, not a moment's time should be lost in ascertaining the fact with certainty. In the words of Dewees, "This is to be done by a careful examination of the abdomen and the uterus: the first,

by the application of the hand externally ; and the other, by the finger or hand *per vaginam*." By passing the fingers through the rent, and by feeling their extremities against the inner surface of the abdominal parietes, we obtain, in the words of Ramsbotham, " an indubitable test of the accident."

VENTRAL PREGNANCY AND ITS SYMPTOMS.

Most of the reported cases of ventral pregnancy are supposed to result from rupture or ulceration either of the uterus or one of its appendages, and the consequent escape of the fœtus in the abdominal cavity. The symptoms denoting these peculiar forms of laceration are usually these of collapse, but their obscurity is such as to defy an accurate diagnosis.

LACERATION, HOW TERMINATING.

Laceration of the uterus and vagina usually terminates in death, the patient sinking either from collapse, hemorrhage, or inflammation and its consequences. Now and then, the event is more auspicious.*

COLLAPSE.

The prostration which so frequently attends these injuries seems referrible to the suddenness of the shock, the nervous system being incapable of an efficient reaction.

HEMORRHAGE.

For some hours after the injury, the discharge may be

* The absolute separation of the whole uterus from the vagina, as the result of laceration or sloughing, would seem quite incompatible with the preservation of life, but an instance of this kind, which terminated favourably, will speedily, I believe, be placed on record. The separation is said to have taken place the second day after delivery, and the specimen, which embraces the uterus in a state of inversion, together with its ligaments and a small portion of the vagina, has just been deposited in the anatomical museum in this place. The perfect recovery of the patient constitutes the singular and interesting feature of the case.

very inconsiderable; but on reaction taking place, the lochia pass in large quantities into the abdominal cavity. I once found seventy ounces of dark-coloured blood effused in the abdominal and pelvic cavities.* In another example, the effusion, which took place within ten hours, amounted to forty ounces.

INFLAMMATION.

Inflammation, although common to almost all lacerations, is more likely to arise from the presence of the child amongst the viscera, than from any other cause. It is also soon produced by the effusion of lochia within the peritoneal sac; the pain, feverishness, vomiting, and rapidity of pulse, being commensurate with the extent of effusion.

PATHOLOGY.

The post mortem appearances will correspond with the period which has intervened from the injury. When life is not immediately destroyed, more or less blood and lochia will be effused, and the intestines will present an injected and dark appearance. We find also the ordinary products of peritonitis, viz. false membrane, with serum, and in some cases the membranes of the placenta have been found adherent to the viscera by lymph. The edges of the laceration may either be perfectly healthy, or present a very dark appearance; but if the labour has been protracted the wound will most likely become gangrenous. The fact of the membranes of the placenta having been found connected to the viscera by coagulable lymph,† seems to countenance an idea of existing vitality. Douglas, in his account of a post mortem examination, observes, "It was remarkable that wherever the membranes or placenta had come into contact with the internal surface of the abdomen, they adhered with a considerable degree of firmness, and that on the

* Case No. 8.

† See Case No. 4.

coats of the intestines there were every where signs of inflammation.* J. Hunter believed that he once observed motion in the placenta after its removal from the body. In cases of laceration which have terminated in recovery the point of union is said to have been distinguished at a remote period after the injury.

PROGNOSIS.

The prognosis, it need scarcely be observed, should be unfavourable in every case of laceration which communicates with the abdomen.

TREATMENT.

In treating uterine laceration before delivery we have to consider, first, the condition of the uterine orifice; 2dly, the situation of the child; and 3dly, the state of the general system. Respecting the treatment of this injury, under its least complicated form, by immediate delivery, little need be said. By universal consent, in this country at least, it is understood that if accessible to the forceps the head should be promptly abstracted; when above the brim, provided it does not retreat when a moderate pressure is applied against it, or can be sufficiently steadied, perforation must always supersede the dangerous operation of version in the abdomen. Dr. F. H. Ramsbotham seems to think perforation scarcely applicable to these cases, but let me assure this respectable practitioner that I have resorted to the measure with admirable effect. The case was peculiarly adapted for perforation, the body of the child being in the abdomen, and the head far above the brim, and completely beyond the reach of the long forceps.† Assuming the child to have entered the abdomen, the practice of immediate delivery, by passing the hand through the rent, obtains very general sanction in this country, but with what success I am

* Douglas on Rupture of the Uterus, p. 48.

† Case 5.

unable to say. Notwithstanding every precaution, descent of the intestines will be very liable to happen, a circumstance which renders version in the abdomen so extremely hazardous. In one instance of the kind with which I am acquainted, the extraction of the child was followed by a large protrusion of the intestines and the speedy death of the patient, and the same result took place antecedent to delivery in a laceration of the vagina. The practice of version in the abdomen could not be justified in a case of materially deformed pelvis. Baudelocque advocates gastrotomy wherever the forceps are inapplicable, and limits the extraction of the child through the laceration to cases in which the feet present, or else where the injury is confined to the vagina.

Laceration of the uterus, during labour, was so generally fatal, that Dr. Denman's great experience did not afford him a single undoubted instance of recovery, and he submits this question : " What benefit can result to the patient or to society, or what credit to the profession, from an operation by which her present feelings are in some degree aggravated, and by which neither the lives of the parent or child were ever known to be preserved." Cases of recovery have unquestionably occurred since the time of Denman, and I am enabled to record two more. Modern practitioners, so far from acceding to the doctrine advocated by this truly admirable writer, enforce the propriety of immediate delivery *per vaginam* whenever the state of the os uteri and the laceration admit of it. Although the danger of forcibly dilating the uterine orifice under great resistance does not admit of question, its accomplishment, difficult as it may be, is not to be compared with the consequences likely to ensue from the child being allowed to remain in the abdominal cavity. Averse, as every rational practitioner must be, to the employment of force, I would maintain a gentle, but persevering endeavour to open the uterus, until it was evident that the resistance could not be overcome by safe means. The escape of the child within the abdominal cavity is not only highly dange-

rous, but becomes increasingly so, and surely we are warranted in incurring a trifling risk to remove a certain and great peril. Dr. Ryan* alludes very pertinently to the fact of the uterus not contracting after the rupture, and from this urges the propriety of passing of the hand with rather more than usual perseverance. The chances of success will of course be lessened when the injury is confined to the body and fundus. In two post mortem examinations the uterus was found in very different states, the rent being very little contracted in one of the cases, and very greatly so in the other. We must not be deterred from dilating the orifice by a trifling resistance, which will frequently yield to perseverance; and although violence is never allowable, I am persuaded that the dilatation may be accomplished under somewhat adverse circumstances. The earlier the operation is undertaken the better, a few minutes delay may be inadmissible. The practitioner however may not be on the spot, and collapse may have set in ere his assistance is obtained. In such a case, (desirable as a speedy delivery is,) unless the head lies within reach of the forceps or perforator, it may be necessary to wait until the patient is somewhat recruited. Unsafe as it is to act during a formidable exhaustion, delay will be inadmissible when signs of reaction appear, for by waiting we may perhaps encounter a very formidable resistance, the contraction of the rent being regulated not only by its precise situation and the period which may have intervened from the injury, but also by the state of the vital energies. That a firmly contracted uterus and an exhausted state of the system soon after delivery are perfectly compatible, is a fact with which I am most familiar; indeed the uterus has been seen to contract very sensibly even after the extinction of life. But unless the laceration is confined to the fundus or body of the organ, the degree of resistance can scarcely prevent the passage of the hand, especially when the injury extends to the vagina. Assuming, however, the impossibility of delivery *per vaginam*, either by reason of the con-

* Manual, p. 511.

tracted state of the wound, or the firm closure of the uterine orifice, the child having escaped into the abdominal cavity, is it justifiable to open the peritoneum? if so, at what period, and in what state of the system? Several of our most eminent authors are opposed to the principle of this operation, and, with a single exception, I have never seen a case sufficiently early after the injury to allow the question of gastrotomy to be raised. The performance of the operation instantly, with a view of preserving the life of the child, presupposes a presence of mind which few practitioners possess, added to which, time will scarcely allow the consent of the patient and friends being obtained sufficiently early. The chance of the infant surviving in this unnatural situation must depend partly upon it being still inclosed within the membranes, and partly upon the placenta continuing more or less in apposition with the uterus. In an interesting example of laceration of the fallopian tube at the fifth month of pregnancy,* the movements of the foetus in the abdominal cavity were sensibly felt by the mother for several hours after the laceration had occurred, but the membranes were entire, and the placenta preserved its connexion with the tube. Douglas, who ridicules the idea of the child surviving within the abdomen, says it would be performing the Cæsarean operation with every disadvantage.† An opinion in which I cannot acquiesce, since the result of two cases of Cæsarean operation, in which I have been engaged, leads me to view the mere abdominal incision with very different feelings. The operation is not half so dangerous as the Cæsarean, whilst the celerity with which it is done, the absence of hemorrhage, and the facility with which the intestines are confined within the abdomen, all tend to divest it of much of its terror. When properly timed it would appear to be infinitely safer than the alternative of allowing the child to remain in the abdominal cavity. Several cases are recorded in which the mother has recovered, one by

* Edinb. Med. and Surg. Journal for 1st October, 1834.

† Page 106.

Frank, and another by Mr. Haden, in which both lives were preserved.

It is, indeed, a most serious affair to expose so great an extent of peritoneum, with the almost certain prospect of more or less inflammation, but under an impression that the presence of the child amongst the viscera will be more dangerous, I would not hesitate (assuming circumstances to be favourable) to recommend the abdominal incision, as affording the best chance of recovery to the patient. Unless a formidable exhaustion should supervene, delay will be inadmissible, and under any circumstances, the operation should be undertaken as early as the nervous system has overcome the immediate shock, lest reaction should rapidly pass into inflammation. Whatever treatment be adopted, most important will it be to prevent inflammation, but how is this to be accomplished? the effusion of lochia in the abdomen will be influenced partly by the site of laceration, and partly by the actual state of the wound. If the contraction of the uterus fails to detach both the placenta and its membranes, there can be no closure of the wound, and the lochia must enter the abdomen. This, it will be seen, happened in one instance,* in consequence of the membranes retaining their connexion with the uterus. Assuming that the patient can bear the fatigue, a stout infant should be put to the breast every now and then, partly to excite the secretion of milk, but mainly to provoke a sympathetic action in the uterus, and thus assist in closing the edges of the wound† In common cases, we know that the uterus contracts most sensibly for some days after delivery, whenever the child is put to the breast. The passage of the lochia *per vaginam* will be further promoted by apply-

* See Case, No. 8.

† My friend, Mr. Knowles, recently called me in consultation to a case of labour, in which it was indispensably necessary to resort to the Cæsarean operation. On the principle of producing after pains, and assisting the closure of the wound in the uterus, I recommended the infant to be frequently put to the breast, with, I think, a good effect. Both mother and child survive.

ing compresses, together with a very firm support around the abdomen, and placing the patient upon an inclined plane. To lay open the abdomen, after peritonitis has ensued, would be a most injudicious measure, and opposed to the best principles of surgery, since the product of inflammation, viz. effusion of serum, deposition of lymph, and the consequent adhesions, would be in course of formation. Inflammation, whether affecting the peritoneum generally, or the intestines in particular, will be recognized by extreme tenderness over the abdomen, greatly aggravated by moving the child, and the usual symptoms of this disease. It must be treated by warm baths, fomentations, and the repeated application of leeches to the abdomen and vulva, poultices to the vulva, glysters, tepid gruel, mild aperients, and opiates. Under such circumstances the foreign bodies must be consigned to the usual course of nature. Should the patient surmount the inflammation, she will have to contend against a long and harrassing ulcerative process, attended with great pain, purulent discharges, and constant irritation, which will greatly impair the general health, if not occasion a fatal result, for, according to Doctor Dewees, these persons ultimately perish. The child, insulated and surrounded by a membranous cyst, cretaceous incrustation or other substance, has been known to remain in the abdomen, innocuous, for an indefinite time, but such a termination we are by no means entitled to expect, and it is probable that some of the reported cases of recovery were really extra-uterine at their origin. Douglas was of this opinion, and thought death inevitable, whenever the child was allowed to remain in the abdomen. I shall now adduce a few cases, each case possessing an interest peculiar to itself, and illustrating some of the positions here enforced.*

* This communication occupies so considerable a portion of the space allotted to original Papers, that we are compelled to postpone the publication of the cases transmitted to accompany it. We have been reluctantly obliged to reserve some valuable communications for the next Number, from want of space.—Ed.