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THE

PRINCIPLES AND PRACTICE

OF

OBSTETRICY.

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THE

PRINCIPLES AND PRACTICE

OF

OBSTETRICY,

AS AT PRESENT TAUGHT

By JAMES BLUNDELL, M. D.

PROFESSOR OF OBSTETRICY AT GUY'S HOSPITAL.

In Five Parts:

I. THE ANATOMY OF THE FEMALE SYSTEM.

II. THE PHYSIOLOGY OF THE FEMALE SYSTEM.

III. THE SIGNS AND DISEASES OF PREGNANCY.

IV. THE ART OF DELIVERY.

V. THE AFTER-MANAGEMENT OF THE PUERPERAL STATE, THE DISEASES OF PUERPERAL WOMEN, AND STRICTURES ON THE DISEASES OF INFANTS.

TO WHICH ARE ADDED,

NOTES AND ILLUSTRATIONS.



By THOMAS CASTLE, M.D. F.L.S.

MEMBER OF TRINITY COLLEGE, CAMBRIDGE,
ETC. ETC.

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PREFACE.

To speak of the value of Dr. Blundell's Obstetric Instructions I deem unnecessary, his name alone is sufficient to give importance and authority to any publication; I have, therefore, only to premise that this volume is written from the Lectures which were delivered by the learned Professor, at Guy's Hospital, in 1830-31. But as the Lectures in question did not exactly accord with the plan I had myself in view, and, more especially, as Dr. Blundell has somewhat varied his later instructions, I have, in my capacity of Editor, used the text of the "Lancet," to a certain extent, as the foundation of the treatise, re-arranged and subdivided the subjects, and introduced such fresh matter as my own notes would supply. In reading this work, it may be observed, that excepting in the flooding cases, the general cast and air of the instructions given, is of the inhibitory kind; if to any persons mature in obstetrics, the principle of repression should appear to be carried too far, they are requested to recollect, that it is not to them, but to those who

are incipient in practice, that these Lectures were originally addressed. To Dr. Blundell I am indebted for correcting some of the sheets, as they were proceeding through the press; and, in particular, I may observe, the alterations connected with Transfusion. The essay on the disease which he has named Hidrosis, or Hidrotic Fever, is also new, and well deserves the attention of the practitioner.

T. C.

Trinity College, Cambridge,
March 15*th*, 1834.

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THE

PRINCIPLES AND PRACTICE

OF

OBSTETRICY.

PART I.

ANATOMY OF THE FEMALE SYSTEM.

THE

PRINCIPLES AND PRACTICE OF OBSTETRICY.

PART I.

THE ANATOMY OF THE FEMALE SYSTEM.

DESCRIBING IN GENERAL OUTLINE THE STRUCTURE OF THE FEMALE SYSTEM, AS FAR AS IS CONNECTED WITH THE THEORY AND PRACTICE OF MIDWIFERY.

To the student it is of the utmost importance, in order that he may thoroughly understand the art and science of midwifery, that he should be well acquainted with the structure of the parts connected with the subject. I shall, therefore, first enter into a general account of the pelvis; secondly, of the external organs of generation; thirdly, of the internal organs; fourthly, of the other pelvic viscera; and, finally, close the anatomical department with a general outline of the soft parts which line the pelvis. These remarks, I would have you observe, will extend so far only as will be interesting to the accoucheur.

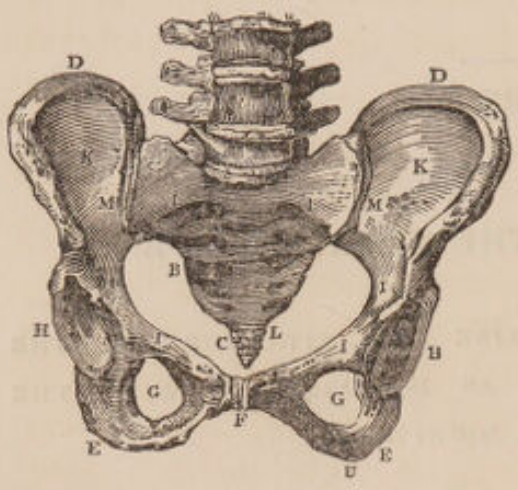
SECTION I.

OF THE STRUCTURE AND OBSTETRIC PROPERTIES OF THE PELVIS.

When the accoucheur gives his attention to the study of the pelvis, he soon discovers that there are two modes in which it can

be advantageously examined. He may consider the different *bones* and *joints* and *ligaments* of which it is formed, and he may examine likewise the *obstetric properties* which belong to the *bony case* produced by the connexion of its different parts.

BONES OF THE PELVIS.*



The pelvis is a considerable bony cavity, formed by the two *ossa innominata*, or side bones; the *sacrum*, or that large bone which is fitted in behind; and, in connection with the end of the sacrum, the *os coccygis*.

We find in the young child and fœtus, the bones of the pelvis more numerous than in the adult, being at least eight in number; the *os ilium*, the *ischium*, the *pubis*, on either side, the *sacrum*, and the *os coccygis*; but in the adult, although nominally this division exists, it is in reality wanting, the bones of the pelvis being in number four only.

Os coccygis:†—Is a small triangular bone, c, connected with the extremity of the sacrum, and from its liability to be pressed upon when the child's head is emerging, is not altogether without obstetric interest.

Though usually considered as consisting of one piece only, in reality we find that the os coccygis is made up of two or three, not unfrequently connected together by cartilage, so that the bone

---

* Pelvis:—From πελύς, *pelvis*, a basin; because it is shaped like a basin used in former days.

† Coccyx:—From κοκκυξ, *kokkux*, the cuckoo, the bill of which bird it is said to represent.

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sacrum and coccyx, we again examine the pelvis, we find that the principal bulk of it is formed by two very large bones, called the *ossa innominata.*

In the adult, the os innominatum is made up of two pieces; this the obstetrician should notice, the one forming the body, EIH, the other the wing of the bone, DK; and those two pieces are connected or consolidated to each other in such a manner as to form a salient angle, or edge, which I shall frequently have to mention under the appellation of the *brim of the pelvis,* III. In the young child and the fœtus, we find that the os innominatum is differently divided, consisting of three pieces, the *os ilium,* D,* the *ischium,* E,† and the *pubis,* F.‡

There are a few more anatomical points, which it is necessary I should slightly mention.—First then, in the os innominatum, on either side, you must observe the large *acetabulum,* H,§ which, in conjunction with the head of the femur, forms the hip-joint; secondly, in the front of the pelvis, the large *aperture,* G, called the *obturator foramen;*‖ thirdly, the *tuberosity* of the ischium, U, or the part upon which we sit; fourthly, the *spinous process* of the ischium, a pointed process of the bone projecting backwards and downwards a little; and lastly, the *hollow* of the ilium, K.

It is also necessary I should mention the vernacular terms by which the bones of the pelvis are commonly called in our maternal tongue, because *female* practitioners, with whom you must occasionally meet, use them in preference to technical names. The bone on which we sit, the ischium, nurses very properly call the *sitting bone;* the pubis the *shear bone;* the os ilium the *haunch bone;* the sacrum the *rump bone;* and the os coccygis, they call the *huckle bone.*

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* Ilium:—From *ilia,* the small intestines; because it supports those intestines.

† Ischium:—*ισχιον,* from *ισχις, ischis,* the loin; because it is near the loin.

‡ Pubis:—From *pubes,* youth; because hair growing on the parts covering these bones appears at the age of youth or puberty.

§ Acetabulum:—From *acetum,* vinegar; so called because it resembles the *acetabulum,* or old saucer, in which vinegar was held for the use of the table.

‖ Often called the *Foramen Thyroideum.*—Burn's Midwifery.

LIGAMENTS OF THE PELVIS.

Connected with the pelvis there are several ligaments, but in an obstetric view, the ligaments which alone are of importance, are the *obturatores*, and more especially the *sacro-ischiatic* ligaments.

With the ligaments of Poupart and Gimbernat the accoucheur has very little to do.

Obturator Ligaments*:—The obturator ligament† is the ligamentous sheet which closes the obturator foramen, having an *aperture* at the upper and back part, through which the obturator artery, vein, and nerve, are transmitted. To the obstetrician the vein is not of much consequence, but the artery and nerve are of considerable interest, particularly the latter, as the trunk of it is liable to be compressed and injured under the fœtal head.

Sacro-Ischiatic Ligaments:—Are a set of ligaments lying on the sides of the pelvis, and somewhat behind. They are divided into two pairs; the one lying externally, the other within, and hence the appellation of the *external* and *internal*.

The *external sacro-ischiatic ligament*,‡ arises strong and narrow from the tuberosity of the ischium, passes outwards, backwards, and upwards, becoming very broad, to be inserted into the lower part of the sacrum and the upper part of the os coccygis. The *internal ligament*§ arises narrow and strong from the ischial spine, passes upwards and backwards, to be inserted broadly into the lower part of the sacrum and the upper part of the os coccygis, laterally, much in manner like the former.

JOINTS OF THE PELVIS.

The joints of the pelvis are those of the hip, the lumbar, the sacro-schiatic, the *sacro-coccygeal*, the *sacro-iliac*, together

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* Obturator:—From *obturatus*, closed, stopped up; wherefore *obturator* signifies a stopper up, which effect the obturator muscles and ligaments have as regards the obturator foramen.

† H, Fig. 1, p. 10. ‡ M, Fig. 1, p. 10. § L, Fig. 1, p. 10.

with the *symphysis pubis;* but of these, the three last only are of obstetric importance.

This importance arises from their occasionally admitting of some separation during labour, which tends to increase the capacity of the pelvis. This relaxation of the joints is denied by many,* but others† confidently affirm, that a separation, or a disposition to separate, prevails universally at the latter part of pregnancy, or at the time of labour; on the whole, my opinion with respect to the relaxation of the ligaments of the pelvis is, that in many other genera of the *mammalia*, it occurs in a much higher degree than in women, but that even in them some slight relaxation does take place.

Sacro-Coccygeal Joint:—The sacro-coccygeal joint‡ is a moveable joint, allowing the os coccygis to recede considerably, moving on the sacrum, so as to enlarge the outlet of the pelvis posteriorly to the extent of an inch.

This joint, constituted in the same manner as the other joints of the body, has articulating surfaces, invested with cartilage, covered also with synovial membrane, the ends of the two bones being connected by a capsular ligament, which, rising all round from the extremity of the sacrum, is inserted all round into the extremity of the os coccygis, and completes the articulation.

Symphysis§ *pubis:*—Is the joint‖ which unites the ossa innominata in front, and is a joint of vast importance in midwifery, and of frequent mention.

There is nothing peculiarly interesting in the structure. It is formed of the extremities of the ossa innominata, invested by cartilage, connected together by means of a fibrous substance, and more especially by a strong capsular ligament passing across it, arising all round from the extremity of one bone, and inserted all

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* Denman, Burns, Dewees, Baudelocque, &c. † Desault, Beclard, Boyer, Chaussier, &c.

‡ L, Fig. 1, p. 2.

§ Symphysis:—From συν, *sün*, together, and φυω, *phuō*, to grow; because the two pubes unite at this part.

‖ F, Fig. 1, p. 2.

round into the extremity of the other. It is upon this ligament, the main strength of the joint depends; for if you were to take it away, the bones would have but little connection.

Sacro-iliac Synchondrosis.*—Is the joint† which unites the sacrum with the ilium on either side of the pelvis.

In its structure, the sacro-iliac synchondrosis behind very considerably resembles the symphysis pubis; it is formed by substances of the os ilium and sacrum, invested with cartilage, connected by a somewhat soft substance, and braced together by means of a large number of ligamentous fibres, inserted into the sacrum and ilium, and lying both in the front and back of these bones.

OBSTETRIC PROPERTIES OF THE PELVIS.

The most important bones, joints, and ligaments of the pelvis being spoken of, our next subject will be the consideration of the *bony case* formed by the pelvis, when the different parts are put together, and the properties of this bony case so far as they are concerned in the process of delivery.

In order that the obstetric properties, both natural and theoretic, may be fully explained, I shall illustrate them from what is usually denominated a *standard pelvis*, that is, such a pelvis as we more generally meet with in practice. In this part of the section I shall also mention the *deformed* and *different kinds of pelves*.

STANDARD PELVIS.

The pelvis is generally described as naturally divided into two parts, the *brim* of the pelvis forming the line of distinction; so much of the pelvis as lies *above* the brim is denominated the

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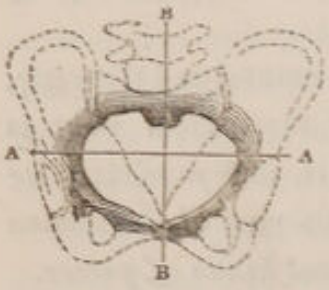
* Synchondrosis:—From συν, *sŭn*, with, and χονδρος, *chondros*, a cartilage; because it is a species of symphysis, in which one bone is united with another, by means of an intervening cartilage.

† M, M, Fig. 1, p. 2.

superior or *false pelvis;* and that part which is below the brim, the *inferior* or *true pelvis.*

The *false pelvis* is of no great importance to the obstetrician, except perhaps, I should add, that from its being perfectly open in front, it affords great facility when we are making nice examinations of the pelvic viscera, the *bladder*, the *womb*, the *ovaries*, and so on—not to mention here the *kidneys* and *intestines*. In making this examination, the woman should be recumbent, with the knees and shoulders elevated, and the abdominal muscles thoroughly relaxed.

The *inferior* or *true* pelvis, for the sake of obstetrical description is commonly divided into three parts; viz. the *brim*, the *outlet*, and the *intermediate cavity*. The superior aperture of the pelvis, into which the child descends, is denominated the *brim;* the inferior aperture, at which the child comes forth into the world, is called the *outlet;* and the space between the two has received the name of the *cavity of the pelvis.*



Brim of the Pelvis:—The *brim* or *superior aperture*, is that part of the pelvis,* which runs from a line drawn from the upper edge of the symphysis pubis, and continued backwards at each side to the sacrum.

The brim varies in its make, being in some women round, in others more oval; in some small, in others large; but in general when the pelvis is standard, it is of an elliptical form, the regularity of the oval being broken by the promontory of the sacrum. Of this oval, the *long measure* is from side to side, AA, the *short* from before backward, BB; the average width between the sacrum and the pubis is four inches; the average dimension from side to side is five inches; the oblique, or that which is stretching between the acetabula and the sacro-iliac synchondrosis, about five and one-eighth, or five and one-fourth.

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* III, Fig. 1, p. 2.

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On the concavity or *hollow of the sacrum*, the ease or difficulty with which the head of the child passeth through the pelvis, will very much depend. In some women the sacrum is straiter, and the hollow consequently small, but in a well curved sacrum the hollow is larger and there is more room, for it makes more room for the child's head, or breech, or whatever part may be descending. When the vertex presents, the face lies there; when the face, the occiput lies there; nay, even in breech presentations, you will find that the delivery is facilitated by the lodgment of a part of the buttock in the cavity of the sacrum.

Another remark I have to add, is, that the cavity is of a very *unequal depth;* which circumstance, though of no great importance, should not be overlooked. In front it is shallow, not above an inch and a half in depth; behind it is deeper, about four times as deep as in front; laterally, the depth is intermediate: so that if you examine the pelvis all round, you find its depth varies: shallow in front, deeper behind, intermediate laterally; and therefore it is in an ordinary labour, that when a child's head has got down into the pelvis, although behind and laterally it be still incarcerated among the bones, so that much difficulty may be experienced in completing its expulsion, yet in front, it lies bare and open to the finger.

The last and most important observation I have to make, is, that the cavity of the pelvis is not straight, but *incurvated.* To avoid any tedious detail respecting the *incurvation,* it will be sufficient for you to understand that the curve corresponds with the bending of the sacrum; that the incurvation is such, that at the brim the course of the axis is downward and backward toward the lower extremity of the sacrum; that at the outlet its course is downward and forward, so that a straight line passed upward would impinge against the promontory of the sacrum, and that by a sort of semicircular movement it is, that the head and other parts are transmitted.

Having considered the natural and systematic divisions of an ordinary pelvis, I shall next speak of the different kinds of pelves.

DISTORTED PELVIS.

The only forms of the pelvis, which it is necessary I should mention, as being interesting to the obstetrician, are, in addition to the *standard* already mentioned, the *distorted*, the *contracted*, the *small*, and the *large*. Other varieties of the pelvis you will also meet with in practice, but they are of so little importance that I forbear to dwell on them.

The most general causes of distortion of the pelvis, are two, the first being *rachitis*,* or a disease incidental to children in the very early part of their lives; and the second, *mollities ossium*,† or a softening of the bones, which may occur at any age.

When a pelvis thus becomes distorted, in consequence of *rachitis*, *mollities ossium*, or even from *fracture*, we find in general that all parts of it are more or less altered in shape. Thus in some cases the false and true pelvis, the brim, the cavity, and the outlet are all distorted together; while in others it will sometimes happen, even when there is a good deal of distortion and contraction of the pelvis, that these are confined principally to certain parts of the pelvis only, a fact of some little importance to us in practice.

A great variety of forms of distorted pelves might be mentioned, but I believe there are *two* leading shapes, or forms, to which these varieties may be reduced, and which may not be inaptly denominated the *angular* and the *ellipsoidal*.

Now should you meet with cases of distorted pelvis, you must carefully examine with your fingers what part of the pelvis is the

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* *Rachitis* prevents the bones from acquiring their due strength, or sufficient firmness to support the weight of the superincumbent body, consequently they bend in different directions and degrees, according to their weakness and the weight imposed upon them, and the distortion thereby occasioned is often fixed for the remainder of life.—*Dr. Denman's Midwifery.*

† *Mollities ossium* is far less frequent than rachitis, but more dreadful in its consequences, which no medicine hitherto tried has had sufficient efficacy to prevent or to cure. It consists in fact, of a morbid softness of the bones, which become preternaturally flexible or incapable of forming a natural support to the soft parts, hence serious distortions are produced.—*Dr. Denman's Midwifery.*

most contracted, and what part the most roomy, in order that you may direct your operations accordingly. In examining these two given varieties of distorted pelves, you will find the deformities varying in their nature and situation.

The *ellipsoidal distortion* sometimes takes place *at the brim*, produced by the approximation of the promontory of the sacrum towards the symphysis pubis, the length of the brim becoming increased somewhat between the sides, and between the front and back abbreviated; at other times it may occur *at the outlet*, the symphysis pubis being approximated to the lower extremity of the sacrum and the coccyx, so as to obstruct or to render impracticable the passage of the fœtus, even after its bulk has been reduced by the perforator.

The *angular distortion* may also be produced *at the brim* in consequence of the acetabula and the promontory of the sacrum being all of them pushed inward upon the axis of the pelvis; and *at the outlet*, occasioned by the approach of the tuberosities of the ischia and the incurvation or advance of the sacrum and coccyx, giving rise, as at the brim, to a formidable contraction of the passage.

In these unfortunate distortions, whether of the elliptical or angular kind, what would you advise an unimpregnated woman? or, in case of her being impregnated, what would you do to assist her? Why, if you knew a woman to have either of these formidable distortions, and though married, is yet unimpregnated, you should earnestly advise her to abstain from sexual intercourse; or, if she should distrust herself in this respect, I should recommend you to cut away a part of the fallopian tubes. On the other hand, if such a female is unfortunately pregnant, and in the end of her gestation, there are but two modes in which the delivery can be accomplished; the one is by laying open the child and reducing its bulk, the other is by performing the Cæsarian operation.

CONTRACTED PELVIS.

Contracted pelves in high degree are sometimes met with, but more frequently the lesser contracted; in both cases, the deformity occurs at different parts.

Though contraction may occur both in *false* and *true* pelves, the contractions of the true pelvis only are of much importance in the practice of midwifery.

The contractions of the *true pelvis*, which create the most frequent difficulties, and which at the bed-side, are found the most frequently to require the use of instruments, are almost invariably found at the brim of the pelvis. Whenever you suspect a pelvis contracted in such a degree, that the lever, the forceps, or the perforator, may be requisite, the brim is the part of that pelvis you should first, and most carefully examine.

In contractions of the brim it rarely happens that they lie between the *sides* of the pelvis, but almost invariably between the *front* and the back. The contraction between the front and back may be produced either by the approximation of the symphysis pubis to the promontory of the sacrum, or else by the thrusting in of the acetabula towards the promontory of the sacrum.

Another remark I would wish you to remember, is, that contractions of the pelvis are sometimes very partial; sometimes the outlet is contracted, but much more frequently the *brim*, while the outlet is capacious enough. Now in cases like these, the fœtus is sometimes very unexpectedly expelled. Let the womb act, let the child's head advance but one inch perhaps, and after some hours of labour, when the delivery is unlooked for, suddenly the head bursts into the world, while the accoucheur is engaged in washing, or refreshing, and returns to be informed, that during his absence the fœtus has been expelled.

When the pelvis is contracted, the birth is more or less obstructed, especially if the fœtus be larger than ordinary; but in these difficulties the rules of management are, I think, simple and intelligible enough.

If *no dangerous* symptoms are making their appearance, (and of these, incarceration of the head is one,) and if the woman have not been in active labour for twelve or twenty-four hours after the discharge of the waters, more especially if the labour is on the whole advancing, you ought to trust the natural efforts, abstaining as long as may be from the use of instruments, for they are great evils, and a meddlesome midwifery is bad. But if the woman have been in active labour for twelve or twenty-four hours after the discharge of the waters, more especially if the delivery is on the whole not advancing, or if dangerous symptoms, (incarceration included,) are beginning to appear, you will then, if skilful, be justified in making trial of embryospastic instruments, according to the rules and cautions hereafter prescribed, being constrained by an overbearing necessity. Further, if the embryospastics fail, though used by the most dexterous hands within reach, embryotomy, (a dreadful operation, of tremendous responsibility,) will then become justifiable, provided, observe, that it be clearly necessary to deliver immediately; and you may deem it necessary to deliver immediately, even by these means, provided dangerous symptoms be approaching, (or the head be clearly incarcerated,) or, even though these symptoms should be wanting, provided the woman have been in very active labour for four and twenty, or six and thirty hours after the discharge of the waters, the labour, on the whole, making little or no progress,—for it is a fundamental axiom of British midwifery, that we must save the mother, come what may to the child,—an axiom which is equally approved of by the head and heart.

If a woman, through contraction, should be incapable of giving birth to a living child at the full period, what course would you adopt? Should a woman, after losing several children successively, in consequence of deficient room, again become pregnant; under such circumstances an attempt might be made to facilitate her delivery, and save the fœtus, by inducing parturition at the end of seven months and a half, when the parts of the fœtus are small, and its powers sufficiently great to render its preservation probable.

SMALL PELVIS.

When the pelvis is small, the woman, fœtus, and corresponding parts are small, and parturition is effected easy; but sometimes a woman may have a very small pelvis and a very large fœtus. In such cases, should the labour be protracted, you must proceed exactly on the same plan as was just mentioned. You may be compelled to use instruments, but do not unnecessarily interfere; give a fair trial of four and twenty hours to the natural efforts, if no dangerous symptoms appear: if the natural efforts fail, or dangerous symptoms manifest themselves, make use of the lever, or forceps; if they do not succeed, and dangerous symptoms attack the patient, or if the woman have been in labour six and thirty, or eight and forty hours, lay open the head of the child by embryotomy.

LARGE PELVIS.

As a pelvis may be small in all its dimensions, so also, on the other hand, we sometimes meet with those which are unusually capacious; which over capaciousness renders them of obstetric importance.

For from an over capaciousness of the pelvis, women are very disposed to suffer considerable inconvenience, more especially from a *retroversion of the uterus*, and a *descent of the womb*, both which complaints will receive our after-consideration.

Of all the evils resulting from the largeness of the pelvis, the most important, is the unexpected and sudden manner in which the child comes into the world. Thus a woman is walking in the street; she attempts to cross to the other side, perhaps a little agitated, and the child drops from her; or again, a woman feels an irritation of her bowels,—not uncommon when parturition is about to commence,—she retires, makes an effort, and loses her child.

Now this enables us to answer a question, which may be put

occasionally in a court of justice, and to which you should always be prepared with a reply, namely, Whether it be possible that a woman may be delivered without knowing that labour is about to occur at the time? To such a question I should reply, that if the pelvis be large, and if the softer parts be relaxed, it is *not only possible* but in a manner *probable*. For to put a case, I will suppose that a woman becomes the unfortunate subject of an illegitimate pregnancy; I will suppose further, that moved by that modesty which seems to be ingenerate in the sex, she is induced, without evil design, to delay a disclosure till delivery render it inevitable. I will suppose too, that a woman thus circumstanced, with a pelvis which is capacious, with a fibre which is thoroughly relaxed, feeling bowel irritation, retires; the womb acts, the fœtus is at once precipitated; she hears no cry, she deems it lost; she has but a moment to take her determination,—she decides amiss; she has not the resolution to step forth and promulgate her shame. But circumstances create suspicion; the child is discovered; and she alas! is summoned into court. Knowing this, let me call on you, should you ever be appealed to in these affairs, not to give a rash judgment, and thus be the ignorant murderer of an innocent and misguided woman.

MEANS OF ASCERTAINING THE KINDS OF PELVES.

After what has been said, it is important you should now be informed of the means of ascertaining in the living subject, the kind of pelvis which your patient may have.

Your first and most considerable source of information must be derived from a very accurate *internal examination;* secondly, if the limbs or spine of the patient are distorted, you may *suspect* deformity, though it does not affirm such to be the case; and thirdly, you may judge by an enquiry concerning the result of *previous* labours.

With the view of ascertaining the measures and dimensions of

the pelvis, Contouli contrived an instrument called a *pelvimeter*,* it consists of two rods; the one slides along the other in a groove; upon the superior rod there is a graduated scale of inches, and, at the end of each rod, it is an upright. The pelvimeter may be used in two ways; you may either, where the soft parts are relaxed in a high degree, use it internally, or you may apply it externally. When you apply it internally, placing one upright upon the symphysis pubis, and the other against the promontory of the sacrum, you may read off by the scale the distance between the two. If the parts are too rigid to admit of your using it internally, then you must lay one upright against the projection of the promontory and the other to the pubes; and seven or eight lines must be deducted, as an allowance for the thickness of the soft and harder parts in front, when the difference will give you the clear space between the front and the back.

A common compass is sometimes employed, but for my part, the measure of the pelvis, may be very easily known, by means of the *fingers*. Thus the best method of measurement, consists in the application of all the fingers to the back part of the symphysis pubis. If there be want of room behind the pubis, you will then feel something of an angle there. If the brim be of full measure from side to side, when all the fingers are introduced and placed behind the symphysis, they will lie all of them in the same place. If you wish to measure the outlet of the pelvis, the most convenient time to accomplish this, is when the child's head is there, and certainly then the inquiry becomes most important. You may easily pass your fingers round between the bones and the head, and so ascertain whether there is a sufficiency of space. If you think it worth while, however, before the head descends, you may measure the outlet of the pelvis, from *front to back*, first by placing the fingers, so that the root of the index lies against the arch of the pubes, and the tip of it upon the coccyx, thus ascertaining the measure between the front and the back;

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* Pelvimeter:—From πελύς, *pelus*, the pelvis, and μετρεω, *metreō*, to measure.

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should define, at the outset, what is intended by that term. By the plane of the brim, then, I mean an *imaginary surface*, closing in the superior aperture of the pelvis, forming a sort of *flooring* there, to use a familiar illustration, as a piece of card-board might do.

Now when we first give our attention to the bearing of the pelvis on the spine, some of us, perhaps, get a notion that the plane of the brim and the spinal column are placed in a line with each other; while others, still more frequently, imagine, that the pelvis is so placed with respect to the vertebræ, that the plane and the spine are at right angles with each other, the sacrum lying directly backward and the symphysis pubis directly forward. In truth, however, it is in neither of these bearings that the pelvis unites with the spine, but it is placed in such manner that the plane and the spine form an obtuse angle with each other, the sacrum lying above and posteriorly, the symphysis anteriorly and below, and therefore it is, (the uterus resting on the pelvis, as its pedestal,) that in the end of gestation, when the womb acquires a large size, it is not placed in the abdomen erect; and you would err greatly, and become very embarrassed in your manual operations, were you to be deceived by this idea. In the living female, when the womb, enlarged by gestation, is resting on the brim, the mouth and neck lie inferiorly and backward, while the fundus, or upper parts, are placed anteriorly, so as to lie out beyond the ensiform cartilage. Now to recollect this is of no small importance in turning the fœtus. If, for example, the arm present—if the feet of the child are lying in the fundus uteri—if you are of consequence compelled to carry the hand into the fundus, in order that you may reach and grasp the feet—the hand must not be passed directly upon the centre of the diaphragm, but upward and anteriorly in such manner that it may project beyond the ensiform cartilage, where the fundus is placed. Observing this rule, you may turn with comparative facility, while considerable embarrassment may arise from its neglect.

By knowing the bearing on the spine, though you cannot see

the pelvis, you are further enabled, in the living female, to place this part of the skeleton in any direction necessary for your operations. It rarely happens, that we are desirous that the pelvis should lie with the sacrum above, and the symphysis pubis below—that is, with the plane vertically. Yet, now and then, the position may have its advantages, and this position the pelvis assumes when a woman inclines the body forward a little, as if making a reverence; more frequently, we are desirous to give the pelvis such a position that the plane of the brim may lie horizontally. Perhaps you wish to feel the head through the cervix uteri, or you are anxious to ascertain the weight of the uterus, by balancing it upon the finger. You will most easily make both these observations, by placing the patient in the semi-recumbent posture, with the shoulders a little elevated—in a word, half sitting, half lying. When there is a *retroversion* of the uterus, in order that the womb may fall back into the healthy position; inverting the pelvis, we sometimes place it with the fundus above. Now this position you obtain, by depressing the shoulders, and raising the hips—in other words, by placing the woman on her knees and elbows; and frequently the bladder being thoroughly evacuated, the position alone will be sufficient for the reduction of the uterus.

But to return and recapitulate. If you would place the plane of the brim vertically, let the woman bow; if horizontally, let her be semi-recumbent; if inverted, let her take a position on her knees and elbows.

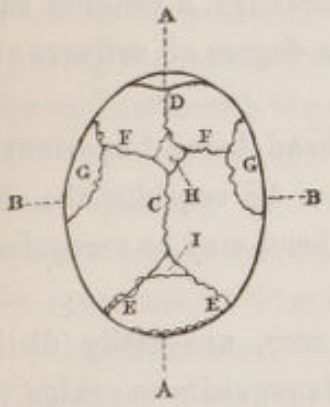
THE OBSTETRIC PROPERTIES OF THE CHILD'S HEAD.

I shall now proceed to speak of those properties of the child's head, of which the knowledge is important to the thorough comprehension of its transmission through the pelvis. Taking the child as a whole, it may be conveniently divided into the *head*, the *trunk*, the *superior* and the *inferior extremities*; but of

these parts, it is the *head* only which requires attentive study; as under the natural presentations, it is the head that constitutes the principal impediment, where a labour is obstructed. Rarely is there much difficulty in extracting the extremities; though, now and then it is true, if the shoulders are large, they may not descend with ease; besides, there are no differences between the trunk and extremities of the fœtus and of the adult, which, from their effects on parturition, require the study of the obstetric practitioner.

STANDARD HEAD.

Heads vary very materially with respect to their make, but, I conceive it necessary only to say that for the purpose of obstetric attention, they may be conveniently arranged under two sets; viz. those of a *standard shape*, and those which *deviate* from the standard make.



The standard head is a large oviform ball, the long diameter, AA, of which lies between the front and the back, and the short diameter, BB, from side to side; these measures varying in different heads. From side to side, between the tuberosities of the parietal bones, an average measure may be about three inches and a half. Between the front and the back, from chin to vertex, the average is about five inches and a quarter; and this is its greatest length. From the lower part of the occiput to the upper part of the forehead, the measure on an average is about four inches, and from the lower part of the forehead to the upper part of the occiput, about four inches and a half.

The disposition of the measures of the child's head to the pelvis, are in ordinary cases, very harmonious. Thus, the short diameter of the brim is from before backwards, measuring four inches and

better, so that the short diameter of the head, three inches and a half, being opposed to this measure, no difficulty can arise; and besides, there is so much superabundant space between the head, the pubis, and the sacrum, as to prevent all risk of injury to the bladder, urethra, and rectum. The head then passes downwards and backwards, in the direction of the axis of the brim of the pelvis; and when it arrives on the ischia, the face is turned gradually into the hollow of the sacrum, whereby the long diameter (five inches) of the head is adapted to the long diameter (five inches) of the outlet.*

The cranium of an adult is compact and unyielding, but not so the cranium of the fœtus, for this possesses a degree of flexibility and conformability fitting it for certain changes of form and diminutions of bulk, which materially facilitate its transmission through the pelvis. This conformability of the head arises from the nature of the sutures, which, instead of being compacted edge to edge, or united by serration, as in the adult, are put into connection with each other by means of cartilage, a yielding substance which communicates to the head a degree of softness and conformability.†

A knowledge of the position of the head being important to the accoucheur, it becomes necessary that he consider the characters by which the different parts of the head may be recognised, while lying within the body of the mother.

The eyes, the nose, the mouth, the ears, are easily distinguished by the eye, but a little attention is requisite to enable you to discriminate them while lying within the womb. It is com-

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* Dr. Ryan's Manual of Midwifery, p. 18, First Edit.

† The diameters of the fœtal head very often alter from their natural measurement during the progress of labour, from the pressure the head sustains in its passage through the pelvis; but all at the same time cannot either be diminished or increased. If the head be so strongly pressed as to diminish one diameter, it is sure to be increased in another: for instance, if the transverse diameter is diminished, the oblique is almost certain to be augmented, and when the head becomes much elongated, as it sometimes does, it is almost always in the direction of this last diameter.—*Dr. W. P. Dewees' Compendious System of Midwifery, p.* 28.

monly thought by students they can readily distinguish the mouth, but I assure you there is more difficulty in recognising the mouth of a fœtus than you may suppose, because it is generally edendate, that is, destitute of teeth. So with respect to the eyes and nose, you may not be able to distinguish them if you have not been in the habit of feeling them. After birth, and I advise you therefore in beginning practice, on every occasion when a child lies in your way, to pass your fingers over the nose, eyes, and mouth, and indeed the other parts of the body, so as to acquire a familiarity with their tangible characteristics.

To recognise the *vertex** you must be well acquainted with certain sutures, and those sutures are the sagittal,† the frontal,‡ the lambdoidal, § the coronal, ‖ and the squamous. ¶ The *frontal*, D,** is that suture which stretches from the sagittal to the root of the nose, sometimes open throughout in the full-grown fœtus—generally open at the superior part, where it meets the coronal and the sagittal. The *coronal suture* F F, is that which stretches from one side of the head to the other, from ear to ear, crossing the sagittal and frontal at right angles, and connecting the os frontis with the parietal bones. The *lambdoidal suture* E E, lies at the back of the head, uniting the occipital bone with the ossa parietalia. On the sides of the head, the *squamous sutures*, G G, are seated, and coalescing also with the os frontis, they unite the squamous portions of the temporal with the parietal bones.

When I examine the cranium further, with a view to ascertain the features by which it is characterised, I find there are two re-

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* Vertex:—From *verto*, to turn; because the hairs turn there.

† Sagittal:—*Sagittalis*, from *sagitta*, an arrow; this suture is so named, from its lying between the coronal and lambdoidal sutures, as an arrow betwixt the string and the bow.

‡ Frontal:—*Frontalis*, from *frons*, the forehead; because it belongs to the forehead.

§ Lambdoidal:—From λαμδα, *lambda*, the Greek L, and ειοδος, *eiodos*, resemblance; because it is shaped like the letter Λ.

‖ Coronal:—*Coronalis*, from *corona*, a crown; because the ancients wore their crowns transversely in the direction of this suture.

¶ Squamous:—*Squamosus*, from *squama*, a scale; because it unites the bones by a lapping over.

** Fig. 1. p. 23.

gions where the osseous matter is deficient; and these, yielding under the touch, and appearing sometimes to pulsate a little, form what are called the fontanels or moulds, small and large. The *small fontanel*, I,* situated at the point of meeting between the lambdoidal and sagittal sutures, is of triangular shape, small size, and has *three* sutures concurrent. The *large*, H,* placed at the point of union between the sagittal and frontal sutures on the one hand, and the two lateral portions of the coronal on the other; distinguished by its rhomboidal shape, broad extent, and the meeting of four sutures there.

DEVIATIONS FROM THE STANDARD HEAD.

A head unusually *small* is of little obstetric interest; but when *large* it deviates from the standard, and difficulties during the birth are the result, more especially if the cranium be too firmly ossified, and the pelvis do not exceed the ordinary dimensions. In cases of this kind, the difficulties may be easily managed according to a rule already laid down;† the natural efforts, as usual, are to be fairly tried, but if ineffective and dangerous symptoms supervene, you must first have recourse to the lever or the forceps, or if imperative, that murderous instrument, the perforator.

Sometimes, in consequence of *compression* in labour, the head changing, deviates much from the standard, and becomes an important obstetric study. Under the facial presentations, though not universally, yet frequently, the blood accumulates, the features swell, and altogether the parts are so much changed, that you have some difficulty in recognising them, even when the child is under your eye, and much more so when it lies within the pelvis. The same with respect to the vertex, for where there is a want of room, where there is a rigidity of the softer parts, and the head does not lie in a position favourable for transmission, you may

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* Fig. I. p. 23. † See p. 14, 15.

find the parts about the cranium swelled in such degree, that it resembles the breech more than the head.

A morbid affection, by no means very uncommon before delivery, is *hydrocephalus* of the child's head, known on diligent examination by its size, by puffiness of the vertex, by subobscure fluctuation there, and by a sagittal suture unusually broad—broad, for example, as the three fingers.

Where the head is hydrocephalic, you should give a fair trial to the natural efforts: the natural efforts failing, you may puncture the head, should the lever or forceps, (as generally in these cases,) have been previously tried without success. Under the natural efforts, when the pains are strong, the cranium sometimes bursts open, or the spaces between the sutures being large, the head may become compressed, and notwithstanding its extraordinary bulk, may unexpectedly emerge.

SECTION II.

ON THE EXTERNAL PARTS OF GENERATION.

THE external parts of generation in the female, are—the *mons veneris*, the *labia*, the *clitoris*, the *nymphæ*, the *meatus urinarius*, the orifice of the *vagina*, the *hymen*, and the *perinæum*.



MONS VENERIS.

Immediately over the symphysis of the pubis, and part of the insertion of the recti muscles, we find a prominence, called the *mons veneris*, which at the age of puberty, is covered with hair. It consists of an accumulation of cellular and adipose membrane, and is said to be covered with hair, to prevent injury during sexual intercourse.

LABIA PUDENDI.*

Apparently taking rise from the mons veneris, we find two bodies, B B, of similar appearance and texture, running parallel to each other, in a course downward and backward, called the *labia pudendi.* The points at which the labia are united above and below, are called the *superior,* C, and *inferior,* D, *commissures.*† Their external face is covered with the common skin, and, like the mons veneris, with hair; their internal surfaces are supplied with a beautifully fine and sensible membrane, of a florid colour in young subjects, which is abundantly supplied with glands that constantly secrete a fluid, for the especial protection of these parts against adhesion.‡

The fissure formed by the labia has received a variety of names, the most common of which may be reckoned, the *vulva, pudendal,* and *genital fissure.*

CLITORIS.§

Is a peculiar organ, H, situated between the upper parts of the labia, beyond which it seldom projects, its body rarely exceeding an inch in length, and being little more than the third part of that in thickness. It consists of a *body,* formed by the juncture of *two crura,* or corpora cavernosa,‖ contained in a ligamentous sheath, with a septum between them. The crura are upwards of twice the length of the body, and, together with the muscles belonging to them, are attached to the crura of the ossa ischii and ossa pubis. It is also provided with a *glans,* G, which is covered by a continuation of the skin of the labia, forming at

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* Pudendi:—From *pudeo,* to be ashamed.

† Commissura:—From *committo,* to join together.

‡ Dr. Dewees' Compendious System of Midwifery, p. 32.

§ Clitoris:—From κλειτορις, *kleitoris,* a secret part of the woman, from κλείω, *kleiō,* to enclose or hide, because it is hid by the labia pudendi.

‖ Cavernosus:—Full of holes or cells.

its inferior extremity a semilunar fold round the *præputium** *clitoridis*, H H. The clitoris has the power of erection, and is supposed by some physiologists to contribute to sensual gratification in the female.

Behind the glans of the clitoris, and between the nymphæ, is a triangular space, about an inch in extent, called the *vestibulum*, which does not fulfil any function of generation.†

NYMPHÆ.‡

The *nymphæ* are two small spongy bodies, F F, or doublings of the skin, rising from the extremities of the prepuce of the *clitoris*, less in size, and of a more delicate texture, but resembling in their form the *labia*.

They pass on each side of the *pudendum*, within the *labia*, to about half its length, when they are gradually diminished, till they disappear.§ The *nymphæ* are also supposed to contribute to sensual pleasure.‖

MEATUS URINARIUS.¶

Immediately below the inferior edge of the symphysis pubis, between the nymphæ, is the *meatus urinarius*, or termination of the *urethra*,** K.

The canal or urethra, of which this is the outlet, is from one inch to an inch and a half in length, and runs to the bladder, in a slightly curved†† direction, behind the symphysis pubis, to which,

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* Præputium:—From *præputio*, to cut off before; because some nations used to cut off the prepuce of the penis in circumcision.

† Dr. Ryan's Manual of Midwifery. 3rd Edit. p. 25.

‡ Nympha:—From *νυμφα*, *numpha*, a water-nymph; so called because it stands in the course of the water.

§ Dr. Denman's Introduction to Midwifery. 6th Edit. p. 26.

‖ Dr. Dewees' Compendious System of Midwifery. p. 33.

¶ Meatus Urinarius:—*Meatus*, a passage or course, from *meo*, to pass; and *urinarius*, urinary, the adjective of *urina*, urine.

** Urethra:—From *ουρεθρα*, *ourethra*, the passage for the urine; and that from *ουρον*, *ouron*, urine.

†† The Dissector's Manual, by J. F. South. p. 278.

and to the vagina, it is connected by cellular membrane. The orifice of the *meatus* is surrounded by several lacunæ* or follicles, sometimes called *Cowper's glands*, of considerable depth, secreting a viscid mucus, to defend the parts from the acrimony of the urine.

ORIFICE OF THE VAGINA.†

About a third of an inch below the orifice of the urethra, and almost immediately under the symphysis pubis, the *orifice of the vagina*, D, or *os externum uteri*, is found.

It is surrounded by a sphincter muscle, and by a conjeries of blood vessels, arranged like net work, and termed *plexus retiformis*.‡ This sphincter muscle has various degrees of power, owing either to original conformation, or the habit of exerting it, or both.

HYMEN,§ OR CIRCULUS MEMBRANOSUS.

In the virgin, the orifice of the vagina is naturally contracted by a membrane, L, called the *hymen*, or *circulus membranosus*, a membranous partition immediately within the orifice.

It appears that the hymen consists of a very delicate, vascular, and sensitive membrane, which, together with the parts contiguous, suffers a good deal when pressure is made on it; and it partially closes up the orifice of the vagina. The membrane assumes two forms, sometimes it is circular, containing a free central aperture, capable of transmitting the tip of the little finger; and in other cases it is in form like a crescent, and then always lies in the posterior and inferior part of the orifice

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* Lacuna:—From *lacus*, a channel. Little excretory ducts, or any drains, are called *lacunæ*.

† Vagina:—Signifying a sheath.

‡ Plexus retiformis:—Plexus, from *plecto*, to weave together; and retiformis, from *rete*, a net, and *forma*, a likeness, *i. e.* constructed like a net.

§ Hymen:—From ὑμην, *humēn*, a membrane, applied here in honor of *Hymen*, the god of marriage, because it was formerly supposed to be entire before marriage or copulation.

of the vagina. There are, too, other forms, which the hymen assumes, but they are rather objects of curiosity, than of practical importance, with the exception of two kinds; I mean the cribriform and the imperforate; in other words, the hymen which closes the vaginal orifice entirely, having no perforation, and the hymen which, like a cullender, contains punctured openings.

It has been often asked, what is the use of this mystic membrane, the hymen? and I am not sure that we are yet even able to give an answer to the inquiry. It has often been asserted, that it is a sort of guard of virginity, and a test of its reality, and there may be some truth in this; but, after all, I am of Matthew Prior's opinion, that you should put the padlock on the mind, and that the hymen alone is but a very poor protection to maidenhood—a frail outwork of little avail, if the citadel within is treacherous and unfaithful. That a woman may be pregnant, with the hymen unbroken, I know for certain; and two or three decided cases of this kind I have seen, though there can be no doubt that a well-formed hymen, unbroken, must prevent the entrance of the male organ into the vagina. On the other hand, there is nothing more certain than that the hymen may be broken down without the intercourse of the sexes, from what causes I deem it needless to inquire. This membrane seems to have been regarded with peculiar complacency by some illustrious personages of days gone by. The legislator of the Hebrews, who was directed to enjoin the removal of the foreskin, has, if my memory serve, taken pretty effectual measures to induce the ladies of that nation to preserve the hymen; and some wise and good and pious men have maintained, that parturition, at the full term, may take place without its disruption; there was a period, when to think otherwise, would have been no light offence; but this high and mysterious matter is no subject for profane observation, and I forbear, therefore, to tread upon sacred ground.

Besides the hymen, there lie in the orifice of the vagina, little fleshy excrescences, of the size of the pea, or thereabouts; the *carunculæ myrtiformes*,* as they are called. The origin and

* Caruncula myrtiformes:—*Caruncula*, diminutive of *caro*, flesh, and *myrtiformes*, from the resemblance of these caruncles to myrtle berries.

use of these caruncles have been much doubted,* but my own opinion is, that they are the *corpora sesamoidea*† of the orifice of the vagina. They are not always produced by the remains of the ruptured hymen; for, as before observed, the two parts may co-exist.

PERINÆUM.‡

Between the labia pudendi and the anus lies the *perinæum*, E,§ formed by the inferior and back part of the vagina within, and the common integuments without, with a few stray muscular fibres, perhaps, and a little cellular web interposed. The anterior edge of this perinæum, uniting the labia behind, is called the *commissure*, and may be distinguished from the rest of the perinæum by its greater tenuity; and immediately above is a hollow, into which the apex of the little finger may be passed, the commissure forming the floor of it, and this cavity is called the *fossa navicularis*.‖ With the birth of the first child, the commissure is generally torn through, and the fossa disappears along with it, but not always, so that the existence of these parts is no disproof of previous child-birth; and I remember myself a case in which, though I had delivered the patient, not without difficulty

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* Hamilton, Velpeau, and other modern physiologists, deny that they are the remains of the ruptured hymen: they are not exactly in the same situation, and have been seen in infants and virgins.—*Dr. Ryan's Midwifery.*

The caruncule myrtiformes are considered even now by many, to be the fragments of the hymen, but we are of opinion, that these bodies exist independently of the other, and are besides, very much too large to be the debris of the hymen.—*Dr. Dewees' Midwifery.*

Their use appears to be to hinder the urine, and even other small foreign bodies from passing into the vagina; to contribute towards the venereal organ; and to provide, in the last moments of labour, a supply of distensible materials, to diminish the risk of severe contusion, or laceration.—*Dr. Dewees' Midwifery.*

† Corpora sesamoidea:—From *corpus*, a body; and *sesamoideus*, σησαμοειδεος, *sēsamoideos*, from σησαμη, *sēsamē*, an Indian grain, and ειδος, *eidos*, a likeness; so called because of their resemblance to the Indian grain.

‡ Perinæum:—From περι, *peri*, about, and νεω, *neō*, to accumulate; because moisture from perspiration is apt to collect at this part.

§ Fig. 1, p. 27.

‖ Fossa navicularis:—Fossa, from *fodio*, to dig; meaning any cavity or hollow in the body; and navicularis, from *navicula*, a boat, from its supposed resemblance to a boat.

with the forceps, the commissure and the fossa existed afterwards in all their perfection.

The extent of the perinæum is generally about an inch and a half, though in some subjects it is not more than one, and in others is equal to three inches.

BLOODVESSELS, NERVES, AND ABSORBENTS.

The *blood vessels* and *nerves* of the external parts are from the *pudic* branches*. The *absorbents* pass partly to the *inguinal*† *glands*, and partly to those on the lumbar vertebra, or on the sides of the pelvis.

SECTION III.

ON THE INTERNAL PARTS OF GENERATION.

The internal parts of generation are, the *vagina* and the *uterus* with its *appendages*.

VAGINA.



In the middle of the pelvis, and in the course of the axis, is a considerable canal, leading from the os externum immediately to the uterus, called the *vagina*, represented as cut open by AA.

The vagina, from its curve and oblique junction with the uterus, is about three inches anteriorly, and four and a half posteriorly.

* Pudic:—From *pudicus*, the adjective of *pudor*, shame.

† Inguinal:—From *inguinalis*, the adjective of *inguin*, the groin.

It is lined by a *mucous membrane* of a greyish colour, often interspersed with livid spots. It is chiefly remarkable for the number of folds or *rugæ*,* which its surface presents, at the upper part taking various directions, but at the lower part exhibiting a regular arrangement, and becoming more distinct. The rugæ run in a transverse direction, and are disposed in an anterior and posterior column; they join together laterally, and produce a raphi at the right and left sides. The whole extent of the vagina, particularly towards its outer extremity, is furnished with *follicles*,† the orifices of which are frequently seen.

Placed in the axis of the pelvis, we find the vagina lies with its back on the rectum, its front on the bladder and the urethra, the upper portion being on the neck of the bladder, and the lower upon the urethra; so that laceration, or slough of the vagina, may lay open either the bladder or the rectum.

UTERUS OR WOMB.‡

If we examine the uterus while yet unimpregnated, we find its bulk in different women, like that of the fœtus, various—large, however, on an average, as a small pear; and it lies in the middle of the pelvis, with its fundus forwards, its mouth backwards, its anterior surface directed somewhat downwards, and its posterior surface above.

But making our observations on the womb, in the end of pregnancy, when it becomes a most important study, we find it very bulky, as large, for example, as the adult head, or larger. When thus enlarged by gestation, the uterus occupies about two-thirds of the abdominal cavity, still placed in the same bearings as the unimpregnated womb, the mouth of it lying downwards and backwards toward the sacrum, the fundus pushing forward beyond the ensiform cartilage, the posterior surface still facing somewhat up-

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* Ruga :—From ῥυω, *ruō*, to contract or wrinkle.

† Follicle :—*Folliculus*, dim. of *follis*, a bag.

‡ Uterus :—From ὑστερα, *ustera*, the womb.

wards, the anterior surface below. The abdominal muscles are spread out before it, the intestines lodge above and behind it, and the bladder, which contracting, retires behind the symphysis pubis, when dilated becomes interposed between the abdominal coverings and this viscus, where, in labour, its form and fluctuation may sometimes be distinctly felt.

For the sake of descriptive illustration, the uterus is usually divided into the *fundus*,* the *cervix*, the *body*, and the *os tincæ*.† The broad upper part, B, is called the *fundus*; the narrow or lower part, C, the *cervix*; and the space between them is denominated the *corpus* or body, D; and the *os tincæ*, E,‡ is the opening into the womb. The uterus is about three inches in length, about two in breadth at the *fundus*, and one at the *cervix*.

The cavity of the uterus corresponds with the external form. That of the *cervix* leads from the *os uteri*, where it is very small, in a straight direction to the *fundus*, where it is expanded into a triangular form, with two of the angles opposed to the entrance into the *fallopian tubes*; and at the place of junction between the *cervix* and body of the *uterus*, the cavity is smaller than it is in any other part.§

The substance of the uterus is made up of numerous fibres, arteries, veins, lymphatics, nerves, and muscular fibres, curiously interwoven and connected together by cellular membrane. On cutting open the womb, we observe that its sides are about a quarter of an inch thick, but are rather thinner at the fundus than elsewhere, though the difference is very trifling. The *cavity* of the uterus is lined with a continuation of the inner coat of the vagina, but it has a very different appearance from that which it exhibits in the vagina. The surface of the triangular cavity is

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* Fundus, the foundation, or chief part.

† Os tincæ; from *os*, the mouth, and *tincæ*, of a tench; so called from its resemblance to the mouth of the tench.

‡ Read E instead of B, next to K, Fig. 1, p. 33.

§ Dr. Denman's Introduction to Midwifery. 6th Edit. p. 38.

smooth, and the skin which covers it is very soft and vascular. The surface at the *cervix* is rugous, and the rugæ are beautifully arranged in an arborescent form, and on this account termed *arbor vitæ* or *arbor Morgagni;* this part is by no means so vascular as the cavity above, but it contains betwixt the rugæ several lacunæ, which secrete a mucous fluid.

The *arteries* of the uterus are the two *spermatic* * and the two *hypogastric,* † which freely anastomose with each other. The *spermatic arteries* arise either high from the aorta, or from the emulgent arteries. They descend, one on each side, in a serpentine direction, behind the peritonæum, and are distributed on the ovaria, tubes, and the upper part of the uterus. ‡

The *hypogastric arteries* are on each side a considerable branch of the internal iliacs. They pass to the sides of the body of the uterus, sending off a number of smaller branches, which dip into its substance. Some branches, also, are reflected upwards to the fundus, which anastomose with the spermatic arteries, and others are reflected downwards, supplying the vagina. §

The *right spermatic vein* terminates in the vena cava, and the *left* in the emulgent vein. The *hypogastric veins* empty themselves into the external hæmorrhoidal and internal iliacs.

The *nerves* of the uterus are derived from the lower *mesocolic*‖ *plexus,*¶ and from two small flat circular ganglions, which are situated behind the rectum. These ganglions are also joined by a number of small branches, from the third and fourth sacral nerves.**

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* Spermatic:—From σπερματικος, *spermatikos*, yielding seed, and that from σπερμα, seed: these arteries are so called because the corresponding vessels in the male furnish the semen.

† Hypogastric:—From ὑπο, *hupo*, under, and γαστερ, *gaster*, the stomach; because they arise in the region of the abdomen below the stomach.

‡ Dr. Burn's Principles of Midwifery. 7th Edit. p. 45.

§ Dr. Denman's Introduction to Midwifery. 6th Edit. p. 39, 40.

‖ Mesocolic:—From *mesocolon*, the portion of the mesentery to which the colon is attached; and that from μεσος, *mesos*, the middle, and κωλον, *kōlon*, the colon.

¶ Dr. Denman's Introduction to Midwifery, 6th Edit. p. 39, 40.

** Ganglion:—From γαγγλιον *ganglion*, a knot; because a nerve in its course assumes a knot-like appearance.

The *absorbents* of the unimpregnated uterus are too small to be readily discovered. In the gravid uterus their bulk is much augmented, and they may be easily seen on the surface and in the substance of the organ. They pass into the iliac glands.

APPENDAGES OF THE UTERUS.

The appendages of the uterus, to which I shall next direct your attention, are the *fallopian tubes*, the *ovaria*, and the *broad* and *round ligaments*.

FALLOPIAN TUBES.

Are two muscular tubes, FF,* of an irregular round form, proceeding from the angles at the fundus of the uterus, and so called after Fallopius, the first correct describer of them. They are about three inches long, lined with a continuation of the internal coat of the uterus, and are covered with a peritoneal coat. They originate from the uterine cavity, by very small orifices, but terminate at the other extremity in an expanded opening, with ragged margins, which are called the *fimbriæ*† of the tube, GG. Through the fallopian tubes the communication between the uterus and ovaria is preserved. They are wrapped in duplicatures of the *peritonæum*, which duplicatures are called the *broad ligaments*, I I, of the uterus; but a portion of their extremities, thus folded, hangs loose on each side of the pelvis, and being *fimbriated*, is supposed to seize and convey the unimpregnated *ovum*, from the ovarium, into the fallopian tube.‡

OVARIA.§

The ovaria are two flattened oblong bodies, H H, situated a little below the fallopian tubes, and about an inch and a

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* Fig. 1, p. 33.

† Fimbriæ:—From *fimbria*, a fringe; because these parts are ragged or fringed.

‡ Dr. Denman's Introduction to Midwifery. 6th Edit. p. 40.

§ Ovaria:—Diminutive of *ovum*, an egg; because they are the receptacles of the *ova*, or eggs of the female.

half from the uterus. They consist of a semi-cartilaginous substance, principally composed of a number * of highly vascular *vesicles*, united by cellular structure: these are probably so many *ova*, charged with the rudimental matter of the future children.† The ovarium is covered with the peritoneum; but when the ovum is impregnated and becomes prominent, the peritoneum which covers it is absorbed, the ovum passes into the fallopian tube, and the little scar or altered texture which remains on the surface of the ovarium, is called the *corpus luteum*,‡ on account of its yellow colour.§

Physiologists very generally agree that the *ovaria* prepare whatever the female originally supplies towards the formation of the fœtus. This is proved by the operation of *spaying*, which consists in the extirpation of the *ovaria*, after which the animal not only loses the power of conceiving, but desire is for ever extinguished; thus we may conclude, the ovaria stand in the same relation to the female, as the testicles do to the male.

LIGAMENTA ROTUNDA.

The round ligaments, two in number, originate from the superior lateral parts of the uterus. They run in the doublings of the broad ligaments, and, rising to the brim of the pelvis,

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* The number of *ova* contained in the *ovaria* may vary. Haller says he never saw but fifteen in one woman; Dr. Denman speaks of twenty-two; and Dr. Ryan mentions a lady of title who had seven and twenty children, and therefore concludes there must have been at least the same number of ova. I also know a lady who has had twenty-two children, and a labouring woman, the still greater number of twenty-seven.—Editor.

† Outlines of Midwifery, by J. T. Conquest, M.D. F.L.S. 4th Edit. p. 22.

‡ Sir Edward Home has contended, that the corpora lutea exist previously to impregnation, and consequently argues, they cannot be the cicatrices of removed ova.—*Philosophical Transactions*, 1817 *and* 1819.

Dr. Seymour, on the contrary, has formed the opinion, that they are the result of the change which takes place in the ovarium by the bursting and discharge of the ovum, occurring rarely in virgin animals, because the bursting of the ovum is not a frequent, but only a possible occurrence, but always following impregnation, and diminishing as gestation proceeds.—*See his Illustration of the Principal Diseases of the Ovaria, p.* 33.

§ Dr. Burn's Principles of Midwifery. 7th Edit. p. 49.

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INTERNAL PELVIC MUSCLES.

The muscles to which I shall call your attention are the *psoæ*, the *iliacus*, the *coccygeus*, the *obturator internus*, and the *levator ani*.

The *psoas** *magnus* is a considerable muscle, placed close to the sides of the lumbar vertebræ, and extending along the brim of the pelvis. It arises from the side of the body, and from the last dorsal and all the lumbar vertebræ, by distinct slips. These unite to form a round fleshy belly, which descends before the inner part of the iliacus, then over the junction of the os pubis and ilium, and terminates by a strong tendon inserted into the trochanter minor and body of the os femoris, a little below that process.

Psoas parvus is a small muscle situated upon the last mentioned; but it is often wanting. It arises thin and fleshy from the side of the bodies of the two uppermost lumbar vertebræ, and sometimes from the last dorsal vertebra; it then extends over a part of the psoas magnus, and terminates in a thin flat tendon, which is inserted into the brim of the pelvis, at the junction of the os pubis and ilium.

Filling up the hollow of the ilium, you will find a large muscle, called the *iliacus*,† affording a soft support to the intestines and gravid uterus. The iliacus rises on either side fleshy, from the inner lip of the ilium, from most of the hollow part, and likewise from the edge of that bone, between its anterior superior spinous process, and the acetabulum. It joins with the psoas magnus, where it begins to become tendinous, and passing under the fallopian ligament, is inserted in common with that muscle.

The *coccygeus*‡ is a small muscle, situated upon the front of the sacro-ischiatic ligaments. It arises tendinous and fleshy, from

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* Psoas:—From ψοαι, *psoai*, the loins; because the psoæ muscles proceed from the loins.

† Iliacus:—The adjective of *ileum*; because it is situated in the *ilium*. More commonly called the *iliacus internus*.—Dissector's Manual. By J. F. South, F.L.S.

‡ Coccygeus:—The adjective of *coccyx*; because it is inserted into the *coccyx*.

the spinous process of the ischium, covers the sacro-sciatic ligament, upon which it spreads in its course, and passes to be inserted into the extremity of the sacrum and side of the os coccygis.

The *obturator internus* is situated on the inside of the obturator foramen, within the pelvis, and covered by the levator ani. It arises, by very short tendinous fibres, from somewhat more than the upper half of the internal circumference of the obturator foramen. It is composed of several distinct fasciculi, which terminate in a roundish tendon, surrounded by muscular fibres, then passes out of the pelvis, through the niche that is between the spine and tuberosity of the ischium, to be inserted into the cavity of the trochanter major.

The *levator* ani*, the last muscle I shall have to mention, is a strong muscle, with glossy tendinous fibres, arising from the pubis. The *levator ani* takes its origin at the upper edge of the obturator foramen, and continues to arise from the aponeurosis which covers the obturator internus, and all the back way to the spine of the ischium. Its fibres tend toward the perinæum and anus, so that the muscle closes up *partially* the outlet of the pelvis.†

BLOOD-VESSELS.

In the pelvis we meet with blood-vessels, not to be passed in total silence, consisting of the internal and external iliacs. The *external veins* and *arteries* lying upon the sides of the false pelvis, beneath the outer margin of the psoæ muscles, while the *internal iliacs*, spreading over a wider surface, are deposited on the sacro-iliac synchondrosis, in the vicinity of which their pulsations may be sometimes felt.

ABSORBENTS AND GLANDS.

Accompanying the blood-vessels, as is usual, we have lymphatics and their glands, and there are some lymphatics with their

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* Levator:—From *levo*, to lift up; hence *levatus*, lifted up; and *levator*, a lifter up; because it raises the anus.

† Burn's Principles of Midwifery. 7th Edit. p. 16.

conglobates accompanying the external iliac, and others the internal system of vessels.

Into a minute consideration of the pelvic lymphatics I am not prepared to enter, for they are not of much obstetric importance. I may observe, however, that in the loins and on the back of the vagina, glands are seated, which, swelling sometimes, may become as large as the pullet's egg, though rarely obstructing parturition.

NERVES.

In your studies, the pelvic nerves are not to be forgotten; the anterior crural, the great sciatic, and the obturator, being of capital importance.

The *anterior crural** nerve arises from the second, third, and fourth lumbar nerves. It passes through the true pelvis, under the outer edge of the psoas muscle on either side, preserved from direct uterine pressure by the interposition of this muscle. It is, however, obnoxious to compression, when the womb is large and ponderous.

Originating from the anterior fasciculi, of the second, third, and fourth lumbar, you have a trunk of the *obturator*† nerve. It is found in the sides of the true pelvis, lying as it were, on the denuded bone, perforating the upper and posterior portion of the obturator ligament, and when the head is large, the pelvis small, or instruments are used, it is susceptible of much injury.

The branches of the *great sciatic*‡ *trunk*, formed ultimately by coalition of the lower lumbar and the upper sacral nerves, are situated principally in the region of the synchondrosis.

During the passage of the cranium, when room is deficient, these origins of the nerves lying on the sacro-iliac synchondrosis, must be more or less exposed to the compression from instruments or the head.

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* Crural:—From *cruralis*, the adjective of *crus*; and here applied because the nerve passed into the thigh.

† Obturator:—So named from its passing through the obturator ligament.

‡ Sciatic:—Corrupted from *ischiatic*; pertaining to the loins.

CELLULAR WEB.

Connecting the soft parts lining the pelvis, and clothing more or less several of the viscera, we have a *cellular tissue*, important to the obstetrician, as being subject to inflammation and suppuration. The whole of the cervix vesicæ, with the front of the body, the whole of the vagina in front, with the lower portion of the uterus, a small portion of the vagina behind, and the whole corresponding portion of the rectum below, together with the whole posterior part of this organ, where it rests upon the sacrum, receives no investment from the peritoneum, these surfaces being clothed solely by the cellular tissue.

PERITONÆUM. *

This is an abdominal membrane, which, descending into the pelvis, gives a particular covering to the pelvic viscera. Thus, the peritonæum, detaching itself from the abdominal muscles below, covers the body of the urinary bladder posteriorly, lines the upper part of the uterus in front, spreads over the whole of the womb, and perhaps two-thirds of the vagina posteriorly, reflecting afterwards, so as to double upon itself, and extend over the rectum in front, and generally over the back of the pelvis.

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* Peritonæum:—From περιτεινω, *periteinō*, to extend round; because it is a membrane by which all the viscera of the abdomen are surrounded.

END OF PART I.

THE

PRINCIPLES AND PRACTICE

OF

OBSTETRICY.

PART II.

PHYSIOLOGY OF THE FEMALE SYSTEM.

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thickens, and, like treacle, becomes more or less viscous, but never coagulates * like blood; and hence we may venture to infer, that though red, and apparently sanguineous, still this fluid is not truly of the nature of blood. †

APPEARANCE OF THE MENSES.

The age at which the menses appear varies in different persons,‡ and on different accounts. In the warmer climates the discharge begins very early, because puberty is precocious. At ten years of age, or earlier, impregnation may, I am told, take place; and the great unitarian in theology and connubial pluralist—the vast, yet cunning Arabian—the desire of the East, and the detestation of the West—Mohammed, who has been so liberally besainted, bedeviled, and bepraised, according to the humour of his judges, seems not to have deemed it inconsistent with his character in the eyes of his countrymen, to marry his favourite, Ayesha, when her age did not exceed nine years. In the colder climates, the action of the uterus begins much later; and it is asserted, that in those countries which lie nearest the polar ocean, the menses do not first make their appearance till girls have reached the age of seventeen or eighteen years.§

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* Mr. Hunter imagined that the menstrual discharge, however long retained, did not coagulate, because it lost its living principle during the secretion; but Dr. Dewees contradicts this opinion, on the ground that the uterine fluid is thought to resist putrefaction longer than common blood.—Ed.

† Mr. Brande analyzed the catamenial discharge, collected from a patient, with prolapsus uteri, and which was, consequently, free from admixture of other secretions. It had the properties of a very concentrated solution of the colouring matter of the blood in a diluted serum. No globules could be discerned.—*London Practice of Midwifery.*

That it is not blood, seems sufficiently evident, from its scarcely possessing one property in common with it, not excepting colour; for even here, there is not perfect agreement, for, while the colouring matter of the catamenial discharge is permanent, that of the blood is not so.—*Ashwell on Parturition*, p. 90.

‡ A case is related in the *Transactions of the Medical and Chirurgical Society of London*, by Dr. Martin Wall, of a child aged *nine years*, having menstruated regularly from the age of *nine months*; in whom also, all the symptoms, which attend *puberty*, were present before she was two years old.

§ In Greece and other hot countries, girls begin to menstruate at eight, nine, and ten years of age; but advancing to the northern climates, there is a gradual protraction of the time till we come to Lapland, where women do not menstruate till they arrive at maturer age, and

In all climates where the constitution has acquired the age in which it is prepared for the discharge, various causes may accelerate its appearance; such as a preternatural degree of heat, powerful stimuli, inordinate exercise, exciting and even depressing* passions of the mind, amorous conversations,† atmospheric change,‡ and many more.

In this country, menstruation usually comes on about the twelfth, thirteenth, or fourteenth year, sometimes sooner,§ and sometimes later, the catamenia‖ commence; and it is about the forty-fifth year, earlier in some cases, and later in others, that the menstruation ceases. Many females continue to menstruate till they are nearly fifty;¶ in some few the action ceases before forty. I believe it holds good as a rule, though I have not ascertained this fact myself by any very exact or numerous observations, that the earlier the catamenia commence, the earlier will be their cessation.**

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then in small quantities, at long intervals, and sometimes only in summer. But if they do not menstruate according to the genius of their country, it is said they suffer equal inconvenience as in warmer climates, where the quantity discharged is much greater, and the periods shorter.—*Dr. Denman's Introduction to Midwifery, by Mr. Waller.*

* Dr. Good.

† Rousseau.

‡ Dr. Mansfield Clarke knew an instance of an European child who went to the East Indies at the age of six years, in whom menstruation took place at the ninth year, and continued to occur regularly during three months; but the child then returning to a more temperate climate, the secretion ceased, and had not returned at the age of twelve.—*Observations on the Diseases of Women*, p. 12, 1821.

§ It has occurred in this country as early as two years and a half, at eight years and a half, and between the third and fourth year.—*Dr. Ryan's Manual*, 3rd Edit. p. 41.

‖ Catamenia:—From κατα, *kata*, according to; and μην, *mēn*, a month; from these discharges being considered monthly.

¶ The late Dr. Parry made note of a patient who began to menstruate at twenty-two, and continued to do so till sixty-nine years of age.—*See Collections from his Medical Writings*, vol. ii, p. 541.

** The time of the cessation of the menses, (says Denman,) is commonly regulated by their original early or late appearance. With those who begin to menstruate at ten or twelve years of age, the discharge will sometimes cease before they arrive at forty; but if the first appearance was protracted to sixteen or eighteen years of age, independently of disease, such women may continue to menstruate till they have passed the fiftieth, or even approach the sixtieth year of their age; but, in this country, the most frequent time of the cessation of the menses is between the forty-fourth and forty-eighth year.—*Dr. Denman's Introduction, by Mr. Waller*, p. 102.

SYMPTOMS ATTENDING MENSTRUATION.

When a girl begins to menstruate, certain changes take place, denoting the age of puberty. The uterus becomes more expanded, and receives its adult form; the vagina enlarges; the mons veneris swells up, and is covered with hair; the pelvis is enlarged; the glandular substance of the breasts is unfolded, and the cellular part increased; at the same time the mental powers become stronger, and new passions begin to operate on the female heart.*

Menstruation is often preceded or attended by various symptoms of uneasiness in the head, bosom, and the centre of the body; and in some women there is, at this time, a sort of excitation of the whole system, with a disposition to hysteria, all the symptoms becoming mitigated as the discharge proceeds. Sometimes, however, these symptoms will appear and continue for two or three days, and this for a number of times, without any appearance of discharge. In this case there is an increased heat upon the skin, flushing of the countenance, fulness about the pelvis, and a quick pulse. The pain which is connected with the sense of distention increases at each recurrence.†

SOURCE OF THE MENSES.

The source of this discharge, once so much disputed,‡ seems now to be clearly ascertained; it is not from the vagina, nor from the os uteri, but from the inner membrane lining the uterus, that the flow proceeds. A woman was taken into Guy's hospital, labouring under procidentia of the uterus; when I saw the patient the womb lay forth within sight, between the limbs, and the uterine secretion being at that time proceeding, the fluid might be

* Dr. Burn's Principles of Midwifery, p. 138.

† Dr. Haighton's MS. Lectures.

‡ Columbo, Sue, Pineau, Bohn, and Desormeaux considered it to proceed from the vagina; Vesalius, from the veins; Ruysch, from arteries; Winslow and Meibomius, from arterial capillaries; Lister, from the glands; Simson, from particular small receptacles; and Astruc, from the veinous sinuses.—*Dr. Ryan's Midwifery.*

observed to issue from the os uteri, drop by drop. Many years ago a similar observation was made by the celebrated anatomist Ruysch. Dr. Clarke, too, in his excellent Treatise on Diseases of Women, tells us that he once met with a case in which the uterus was inverted, the inner membrane lying under the eye, so that when the womb was in action, he could distinctly see the catamenia oozing from the pores of the membrane; and hence we are enabled, by ocular demonstration, to set at rest the question, whether this discharge issue from the inner membrane of the uterus, or from some other part. But it has been asked further, do the veins menstruate, or the arteries? In considering this question, you ought to recollect, that arteries are vermicular, and that veins are straight in their course. Now it has happened occasionally, that women have died suddenly when in full health, and during the process of menstruation; and Hunter observes, that he once took the uterus of a woman who died in this way, under the catamenial action, and that upon laying it open and examining the inner membrane, he found it was moist. Well! Observing this, he was desirous to ascertain whether the moisture came from the veins or the arteries, and, therefore, after wiping the uterine surface, he made pressure upon the vessels, respectively distinguishing the veins from the arteries, by the vermicularity or straightness of their course. Now, when he pressed the vessels, he found the fluid was clearly oozing from orifices communicating with the arteries, whence it is to be inferred, that, as in most other parts of the body, so here, it is by capillary arteries that the secretion is formed.

PROBABLE USE OF MENSTRUATION.

Much has been written, and many points assiduously discussed, concerning the use of menstruation; but it appears most probable to me, as the discharge only flows during the child-bearing period of life, that it is associated in the way of cause and effect, with aptitude for impregnation: before puberty there is no menstrua-

tion, and after a term of some thirty years, when the powers of fecundity are lost, the menses are found to cease more or less suddenly; impregnation, however, may certainly occur, though the catamenia have never appeared.

Although during the child-bearing period of life, women menstruate, this action is entirely arrested during pregnancy and suckling, there being, however, exceptions to the general rule. Some women menstruate during the first months of gestation, nay, perhaps, in some rare instances throughout the whole process; in most cases, however, it ceases, and also ceases during suckling, though in the latter process, it is not unfrequently renewed at the end of ten or twelve months, although the suckling be continued still; and hence we must not hastily conclude that a woman is not pregnant, merely because she menstruates, for although doubts may be raised respecting the continuance of the catamenia during the whole term of gestation, yet I have repeatedly met with cases of pregnancy, in which the catamenia have continued to flow during the first two or three months; indeed, this, notwithstanding Denman's assertion to the contrary, may, I think, be looked upon as by no means very uncommon.

RELATIVE QUESTIONS.

Why, in different constitutions, menstruation observes different terms,—why it affects the hebdomadal period,—why it more frequently affects the lunar than the solar month, I am unable to explain.

CASUAL EFFECTS OF OBSTRUCTED OR PERVERTED MENSTRUATION.

When uterine menstruation is suspended, there is sometimes, vicariously, a periodical discharge from other parts; and, to omit other examples,* I may observe that, in St. Thomas's Hospital,

* When women are deprived of the common uterine discharge, they are sometimes liable to periodical emissions of blood from the nose, lungs, ears, eyes, breasts, navel, and almost every other part of the body.—*Dr. Denman's Midwifery, by Mr. Waller*, p. 102.

To constitute the menses it is not necessary, that the discharge should take place from the

there fell under my own notice a case, in which there was every three weeks, for at least three times in succession, a discharge from a sore on the hand, in place of a discharge from the uterus, observing the same period, and to which the patient had been previously accustomed. In this case it is worthy of remark that there was, some two or three hours before the commencement of the eruption, a throb in the course of the radial and ulnar arteries. Further, although I am not prepared to assert that, in menstruation of the uterus under procidentia, the organ *always* doubles its size, yet, in one instance, at least, I know that a great increase in the bulk of the uterus occurred, I think I may say, regularly, and the whole womb might be felt to throb; and hence, laying those facts together, we may, I think, venture to infer that whatever may, month by month, be the cause of the topical increase of the vascular action in the menstruating vessels, it is the determination of blood on the uterus, produced by this topical excitement of the vessels that gives rise to this discharge.

SECTION II.

ON CONCEPTION AND IMPREGNATION.*

The perpetuation of the species, and the preservation of the individual, being, apparently, with the great Designer, objects of first interest, all living beings appear to be formed mentally and bodily (if I may be allowed to use the expression) in relation to these great ends; and bearing these two principles in mind, we may comprehend much of the wherefore of a great deal which

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uterine or even genital organs, for some women have them by other passages, manifested by periodical vomiting, coughing of blood from the lungs, bleeding from the hemorrhoidal veins, nose, and so on.—*Edinburgh Medical and Physical Dictionary, Art. Menses*, vol. ii.

Baudelocque knew a woman of seven or eight and forty, who from the age of fifteen, had been regularly attacked, every month, by a vomiting and purging, which lasted three or four days. She never had the catamenia.—*Ashwell on Parturition*, p. 97.

* Conception:—From *concipio*, to conceive; and impregnation, from *imprægnor*, also to conceive.

strikes the attention in the make, the instinct, the dispositions, and other qualities of living beings. The conspicuous changes which the system undergoes, in both sexes, at the age of puberty, is a subject of common observation; and the illustrious Harvey has described the metamorphosis, which changes the girlish form into the perfection of womanly grace and beauty, with a delicacy and a classic elegance, which may well deter his successors from the attempt. When vegetables propagate, they form their blossoms, and appear like animals, in all their dignity and glory. When insects prepare for the formation of the new structures, their previous changes are truly astonishing; the unsightly and unwieldy grub becomes decorated with all the colours and the splendours of insect elegance, and the butterfly, rising on new-formed pinions, so light and airy, that the poet and the artist have winged the soul with such—with its little heart full of gaiety and gladness, frolics forth in search of its companion, to perform its last office in the economy of nature, being often destined, like other victims of passion, to perish at the shrine. I believe it is agreed on all hands, that the transformations of the larva into the winged insect, are, throughout the whole of this class, designed merely to adorn and fit them for the formation of the new structures; and nature, with something more than a quakerly attention to sobriety and decency, seems to have taken a pleasure in lavishly adorning the bridegroom and the bride.

COMMONLY TWO GENITAL STRUCTURES.

There are two grand varieties of genital structure, whereby impregnation is accomplished,—the hermaphrodite, and that in which the genitals are divided into two portions, of which either is assigned to a separate individual; whence the species becomes divided into two bodies,—the male and female. Of vegetables, most species are hermaphrodite; of animals, sexual. Yet this rule is not universal; the worm, the snail, and many of the white-blood animal class, possess, in the same individual, both the male

organs and the female; and, among vegetables, the almond, the hemp, and the tobacco, are divided into sexes; the different parts of the sexual apparatus becoming elaborated annually upon different stocks.

DIFFERENT THEORIES OF CONCEPTION.

'It has been much disputed,* (says Denman,) whether conception, is merely an assemblage of small particles already prepared, and constituent of the kind; or first a production or change of, and then a coaptation of particles designed for that purpose. But the first part of the process by which primordial existence is established, by the minuteness and complication of the objects to be described, and by the retirement of the attending circumstances, is probably involved in too much obscurity to be discovered by the human faculties. Even when the first changes have been made, the parts remain too small to admit a very accurate examination. But neither the difficulty of the investigation, nor the acknowledged uncertainty of all reasoning, without the support of facts, has deterred ingenious and speculative men, in every age, from hazarding their opinions on the subject. It is true, that little satisfaction or advantage is to be gained; but if we do not profit by the knowledge of their opinions, we may be convinced, that little has hitherto been said on this subject for our information.

'The first opinion recorded is, I believe, that of Pythagoras. He supposed, that from the brain and nerves of the male a moist vapour descended in the act of coition, from which similar parts of the embryo were formed. These were thought to be the seat of the soul, and of course the parts from which all the senses were derived. All the grosser parts, he imagined, were composed of the blood and humours contained in the uterus. He said that the embryo was formed in forty days, but that seven, nine, or ten months were required for the perfection of the fœtus, according to

* Introduction to Midwifery, Art. Conception.

the laws of harmony. He also supposed, that the same laws which guided the formation of the fœtus, influenced the conduct of the man.

'It was a custom with the Scythians, to cut the veins behind the ears, when they intended to procure impotence or sterility; and it is remarkable that this custom remains, and an opinion like that of Pythagoras is entertained among the inhabitants of some of the islands lately discovered in the South Seas. Changing the term harmony for magic, occult quality, and the like expressions, by which an imperfect idea is conveyed, or a concession that we have proceeded to the extent of our knowledge is actually made, many succeeding writers have given us their conjectures.

'Empedocles presumed that some parts of an embryo were contained in the semen of the male, and others in that of the female, and that by their mixture an embryo was formed. He likewise thought that the desire of procreation originated in the natural tendency of the separated parts to be united.

'That conception took place in the cavity of the uterus, by the mixture of due proportions of the male and female semen, in which were equally contained the organic principles of the embryo, was the opinion of Hippocrates.

'Aristotle denied the existence of semen in the female. He imagined that the material parts of the embryo were formed by the menstruous blood, and that the semen of the male furnished it, when formed, with the principle of life, by the operation of which, it was brought to perfection. It is remarkable, that a philosopher with every advantage which a superior capacity and the most extensive opportunities of acquiring knowledge could give, should attempt to explain what is common to all animals, by a circumstance peculiar to one class.

'Galen thought that the embryo was formed by the substance of the male semen, and that the humour supplied by the female served the mere purpose of nourishing it.

'Harvey employed a considerable part of his life in observing the structure of the ovum, and the progress of conception in a

variety of animals. When he had completed his discovery of the circulation of the blood, this seems to have been his favourite study, which he prosecuted with the true spirit of enquiry, and in which he made many observations, worthy of that sagacity and industry which were never exceeded. With his disposition, abilities, and advantages, it was reasonable to expect, that he would have been silent, or have said something satisfactory upon this subject. But after much previous apology for an opinion which admitted no other proof than an allusion to a circumstance of all others the most incomprehensible, he tells us, that as iron, by friction with a magnet, becomes possessed of magnetic properties, so the uterus, by the act of coition, acquires a plastic power of conceiving an embryo, in a manner similar to that by which the brain is capable of apprehending and thinking.

'The opinion of Hamme, of the credit of which he appears to have been unfairly deprived by Leuwenhoeck, was afterwards received with great applause, became the doctrine of the schools, and gave universal satisfaction, because it was supported by a fact, which, by the help of his microscopes, he presumed he was able to demonstrate. He asserted that, in the semen of all male animals, there was an infinite number of animalculæ, in each of which were contained the perfect rudiments of a future animal of the same kind; and that these required no other assistance from the female, but a proper bed for their habitation, and nutriment for their expansion.

'From him, Needham and many others dissented; and, after several other objections of less importance, they adduced the observation of a mixed generation, as in the case of a hybrid or mule; which being procreated by two animals of different species, partakes in an equal degree of the nature and likeness of the male and female parent. This seems to be a decisive and unanswerable refutation of the doctrine of animalculæ, and I believe the sentiments entertained at the present time are, that, the moving bodies, which Leuwenhoeck saw in the semen, were not animalculæ or organized parts, but parts fitted for organization.

TWO SUBSTANCES NECESSARY.

Passing over the preceding theories, I have to observe, that whether generation be sexual or hermaphrodisaic, it well deserves remark, that Nature, almost universally, makes use of two distinct substances for her purposes of organization; and, in vegetables, we have the seeds and the pollen;* in animals, the male secretions, and those which are lodged in the ova of the female. Why it is that the two forming substances should thus be formed at first apart, and afterwards mingled, in the formation of the new structures, I am unable to explain. Is there not, however, some great discovery latent here? Has galvanism, or electricity, any share in the consideration of the great Designer? Time, the discoverer of truth and falsehood, may, perhaps, solve this important question.

CONTACT OF THE TWO SUBSTANCES NECESSARY.

The two substances being generally necessary, in order that organization may be effected, it has often been inquired by physiologists, whether it be further requisite, in all cases, that these two substances should come into contact with each other? So large a question it is difficult to answer; indeed, we never could obtain an absolute demonstration of the affirmative, unless we were to make our observations on almost all the different species of living structure.

The ova of the frog are impregnated by the male, after they have left the body of the female, while they are yet on the verge of the vagina. And Trembley, I think it was, interposing an impervious texture,—a sort of trowser,—between the genitals of the two animals, found that, while the rest of the eggs were productive, those which issued from the female, while this veil was inter-

* It may be as well to remark, that the seeds of vegetables exist in the *germen* or *ovary* of the flower, in the same manner as the *ova* exist in the females of the animal kingdom; and like the latter, are not developed or capable of reproducing their species until they have been duly impregnated by the *pollen* or fecundating dust furnished by the *anther* or nominal male organ of the vegetable.—Ed.

jected, were incapable of producing; so that in this animal, at least, of oviparous generation, impregnation is accomplished by an obvious contact of the two substances with each other.

EXPERIMENTS PROVING CONTACT NECESSARY.

By experiments on the rabbit, I have endeavoured to prove this same principle, in respect to viviparous generation; and I found, in the results of those experiments, that in the rabbit, and, therefore, probably, in all those structures which essentially resemble that of the rabbit,—perhaps, also, in living bodies generally,—in order that a new structure may be produced, the semen and the rudiments must come into contact with each other; and to this conclusion I came, though I set out with a very different persuasion, derived from the observations made by a man to whose example I owe so much,—my relative, Dr. Haighton; so that it was entirely in consequence of experiments made, and not from any prejudices left on my mind by the opinions of my excellent and philosophical preceptor, that I came to the conclusion that, in the rabbit, at least, unless the male and female substances are actually blended together, a new structure cannot be produced. A wholesome scepticism is one of the eyes of philosophy; in the communion of science, doubt is no crime.

In order that you may comprehend these experiments made on the rabbit, it is, perhaps, necessary to remark, that, in this animal, the vagina is extraordinary, both in its length and capacity; so much so, indeed, that when the canal is full grown, the fore finger may be introduced into it, without much stretching or other injury. It should, too, be further observed, that, in connection with this vagina, she has two wombs, which are in form like the little finger, when incurvated in this manner, and perforated from one extremity to the other; the inferior opening into the vagina by a mouth distinct from that of the corresponding uterus; the superior receiving that oviduct, or fallopian tube, which stretches from the womb to the ovary, and forms the channel by which the two viscera are communicating with each other. The two wombs

therefore, are, in the main, distinct organs. Instead of the os uteri being single, there are two.

Well, now, in some of the experiments made, I opened the abdomen, above the symphysis pubis, to the extent of about an inch, taking care, by compression, to excite the contraction of the bladder, so that it might withdraw into the pelvis, and get completely out of the way. This done, by a little well-directed pressure, I urged the head of the vagina, with its wombs, through the opening, the parts then lying forth upon the downy fur of the animal; and all this, when the operation was dexterously performed, without occasioning much severe pain. The womb lying under the eye, I then divided it clean through, near its mouth, carrying the incision a little way into the mesometry; the divided portions of the womb, immediately after the separation, moving out of apposition, and afterwards healing in such a manner that, at the line of division, the canal of the uterus became shut up, though its structure, in all other particulars, remained healthy enough. After this operation some of the rabbits died with abdominal inflammation, in the way that these animals frequently do when no operation has been performed; but others, and by far the greater number, recovered completely and admitted the male; when I observed, that on the side where the uterus was not cut through, the corpora lutea made their appearance, and the womb became thicker, and the fœtuses were formed; but on the opposite side, where the uterus had been divided completely, no fœtuses were formed; but corpora lutea were generated, and not infrequently, the womb was enlarged and evolved, and became filled with water. There were clear marks of a generative effect, which proved ineffectual, because the access of the semen to the rudiments had been intercepted.

In another set of experiments, (for it seemed good to vary the circumstance of these operations,) an opening was made as before, and the wombs and the vagina were pressed through the aperture, and the parts lying within reach; instead of dividing the uterus, I made an incision through the vagina, about half an inch below

that part where it receives the two orifices of the womb. Several of the animals died from this experiment, which is a much rougher one than the former, owing to the large size of the vagina; nevertheless, many recovered, and were put to the male, the vagina being still sufficiently capacious to admit of easy intercourse; but although, in a healthy rabbit, one single union, during the heat, seldom fails to produce generation; although in some of these animals desire seemed to remain for days together, lively and insatiable; yet never in one single instance were new fœtuses formed; corpora lutea were generated—the wombs, as in extra-uterine pregnancy, were evolved—the waters, as before, collected in the uterus—the efforts of generation were powerfully made, but the mutual access of the semen and rudiments was intercepted, and formation was tried in vain.

But it may be objected, that sterility ensues, from the general injury inflicted on the genitals in these operations, and not from the intercepted access of the semen to the rudiments; this objection, however, as would be readily admitted by those who had seen the experiments, is rather specious than sound. If the experiments are dexterously conducted, much injury is not ultimately sustained; and I know from experiments not to be wantonly repeated, that wounds more severe may be inflicted on these parts, without producing sterility, provided the canal of the uterus is not interrupted. I once, in the rabbit, divided one womb in two places, the other in three, in such manner, however, that when the parts became re-united, the uterine canal was renewed, and, after the very first intercourse, the animal produced as many as nine fœtuses. Be it remembered too, that when the vagina was divided, the wombs were left totally untouched by the knife; and, moreover, that in both sets of experiments, vaginal, and uterine, the formation of the lutea, the evolution of the uterus, and the accumulation of the fluids in the womb, demonstrated clearly, that the genital system was powerfully excited, though the excitement proved abortive. Nor must we forget that, when only one uterus was divided, the other left untouched by the knife, suffered quite as much as either of the

wombs did under the second set of experiments, in which the vagina only was divided, and yet fœtuses formed in this womb, notwithstanding. Further, in two of the vaginal experiments, it so happened, that a re-union, of the divided parts was accomplished, the two portions being put into communication again by means of an aperture as large as the barrel of a crow-quill; both these animals became pregnant, and this, too, after little intercourse with the male.

To conclude, these experiments were not single, but multiplied; they were not mere repetitions, but with varying circumstance; they were not discordant, but consentaneous; and though I commenced my inquiries with a contrary prejudice, they left me under the full conviction, that in rabbits certainly and in all animals of analogous generation probably, in order that generation may be accomplished, the semen and the rudiments must come into contact with each other.*

INFERENCES TO BE DRAWN FROM THESE EXPERIMENTS.

First:—From these experiments we may infer, that in the rabbit, corpora lutea may form independently of the full excitement of the generative actions, and, therefore, that in this animal they are not the certain evidences of impregnation. By the corpora lutea, I understand those appearances, which, when impregnation is effected, seem to shew themselves invariably in that part of the ovary from which the rudiments have escaped.

Secondly:—We may also infer, that mere absorption of the semen from the vagina by means of the lymphatics, is insufficient for the purposes of formation. In one of the vaginal experiments, the access of the semen to the rudiments being intercepted, impregnation could not be accomplished, though the animal admitted the male as many as fifty times, mostly at intervals of two or three days, or more. This doe, a remarkably fine one of her age, was a

* In the Medico-Chirurgical Trans., you will find a fuller account of these experiments.

great favorite with her polygamous husband; but it appeared, after death, that notwithstanding all these attempts, no fœtuses could form—the corpora lutea were generated—the wombs were evolved —the water, as usual, collected in the uterine cavities, but this was all—the access of the semen to the rudiments was intercepted at the top of the vagina, and impregnation could not be effected. Yet it is evident that much of the male fluid must have been deposited in the vagina, and absorbed by the veins or the lymphatics.

DEATH FROM IMPREGNATION.

To some women, impregnation is death; the pelvis is so contracted, that without the Cæsarian operation, delivery cannot be effected by any artificial means. In such women, sterility might be ensured by the division of the tubes, as formerly advised; and I think I know of cases in which this operation, though an evil and a danger, might, however, have been prudently recommended and thankfully undergone. These operations, however, are neither to be rashly commended nor condemned. They require in the operator many qualities. If the fallopian tubes are divided to ensure sterility, a small piece, say of a line or two in length, ought to be removed, lest the divided portions should again fall into apposition, the canal becoming renewed.

WHERE DO THE RUDIMENTS AND FECUNDATING FLUID MEET?

It has often been asked, whether the male fluid ever rises up to the ovary, or whether the mixture takes place elsewhere? For myself, I am inclined to think that, in general, the rudiments and the fecundating fluid meet each other in the uterus; for the formation of the lutea, the development of the uterus, and the accumulation of water in the uterine cavities, as in the experiments narrated, seem all of them to show, that the rudiments may come down into the uterus, without a previous contact of the semen. It is certain, however,

that the secretions of our sex sometimes reach to the ovaries. Ruysch, who examined a woman struck dead by a knife, when in the act of adultery, found the fluid in the fallopian tube;* and granting what cannot, I conceive, be denied—I mean, that there can be no full formation of the fœtus without mixture of the two substances, it is clear that in ovarian pregnancy such deep penetration, must occur. Perhaps the overaction of the genitals, and the conveyance of the semen too far, may be the exciting cause on which extra-uterine gestation depends.

VERY LITTLE SEMEN IMPREGNATES.

Although, however, in generation, the formation of the new structure cannot, perhaps, be accomplished, without commixture of the semen with the rudiments; yet it is remarkable that in some species of animals, and our own among the rest, very minute quantities of the semen are all-sufficient for the purpose. Four impregnations, in which the hymen remained unbroken, have fallen under my notice, the diameter of the vaginal orifice not exceeding that of the smaller finger; and this, too, though the organ of the male parent was of ordinary dimension. Chambon has related the case of a French girl, who, on marrying, suffered so much pain that she was obliged, in about a fortnight afterwards, to separate from her husband, and return to the maternal roof; yet she became pregnant, notwithstanding, and produced twins. When delivery occurred, it was found that the hymen remained unbroken, there being two small apertures scarcely larger than a surgeon's probe; the urethra, however, was dilated, and readily suffered the introduction of the finger, so that the whole nature of the case was rendered intelligible enough. Now, under these circumstances, I

* Harvey contended, that the male semen never did, nor indeed could, enter even the uterus: Lewenhoeck and Hartsoeker, however, upon a more accurate anatomy of the uterus immediately after copulation, discovered, not only that the projected male semen could enter its cavity, but actually did thus enter, and in some instances, which fell within their notice, had clearly ascended into the Fallopian tubes.—*Good's Study of Medicine, by Mr. Cooper*, vol. v. p. 16.

think there can be no doubt that only a very small quantity of the semen could have entered the vagina or uterus; and the rather, because a separation took place between the parties within a fortnight after the marriage; but still she was delivered of twins within the nine months, and therefore impregnation must have taken place in the course of the first few days.

To these facts I may add those of a second class, namely, cases in which impregnation has taken place unexpectedly, and where the parties, guilty of incontinence, have been desirous of preventing it. I know of three cases in which the male organ was not suffered to enter the vagina at all, and where, nevertheless, I suppose from the mere deposition of the semen upon the vulva, impregnation took place. I have known women astonished to find themselves pregnant, being persuaded that an impregnation was impossible, until, to their sorrow, this unwelcome truth was unfolded. In a word, from several facts of this kind, too delicate for a fuller disclosure, I am satisfied that very small quantities of the semen, introduced into the lower part of the vagina, where there is an aptitude to become pregnant, will give rise to the new structure.

If you ask me how it is that impregnations are accomplished, when there is a deposition on the vulva, I reply, that it is most probably by an admixture of the male fluid with the secretions of the female—for dilution does not destroy fecundating power. If a glass, of a certain height, were filled with water, should sugar be thrown into the bottom of it, this, on solution, might soon be perceived in the upper part of the fluid, especially if agitation occurred. So the fecundating secretion may, by admixture, penetrate to the inmost recesses of the genitals, more especially if the secretion of the genital surface be copious.

Although, in human formation, it is not essentially necessary that the male material should be deposited in the upper parts of the vagina of the female, yet there seems to be little doubt that the deeper entrance of this substance conduces to impregnation.—Children are sometimes not procreated for want of sufficient penetrative power in the male organ; much, and often needless, misery

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ther ; his abdomen formed the receptacle, where, as in the nest of a bird, the formation was accomplished. Now, if a child, without impregnation of the bearer, may form within the abdomen of a boy, you will, I am persuaded, allow that it may also form in the uterus of a virgin. To me, therefore, it seems to be not physically impossible that a girl may become pregnant with her own brother or sister.

DIFFERENT DEGREES OF FECUNDITY.

Different genera of animals, and different animals of the same species, are found to possess very different degrees of fecundity. A sturgeon produces, at a single spawning, a million of eggs ; our women are usually uniparous. In the strength and prolific energy of the genital system there is, too, a good deal of variety, even in the same species, as in our own race, for example, some women being sterile, others producing two, three, four, or even five children at a birth. When women are sterile, we generally ascribe the defect to their part of the genital apparatus, and I believe with good cause ; but when they are unusually fruitful, we are willing to arrogate the merit to ourselves. This claim of ours, however, is, I believe, in general unfounded. When the sex is more prolific than ordinary, it is, I conceive, generally owing to their own powers ; nor can I, by any means, commend the corporation of one of our provincial towns, which presented a piece of plate to an old gentleman, whose age lay near eighty, in commemoration of his felicity in being blessed with four children at once. A lady, related to one of my own pupils, conceived of four children together, and this lady had three own sisters, who all produced their husbands either twins or triplets ; it is clear, therefore, that it was in the female system that the fecundity existed. Mr. Knight, in one of his excellent papers on vegetable physiology, tells us, that when a herd of cows are served by the same bull, some of the cows are noted for being more prolific than the rest.

IMPREGNATION NOT PERIODICAL.

Human generation seems to know no annual variation; but animals and vegetables, almost all of them, after puberty, propagate at certain seasons only; in spring, summer, autumn, or winter, once or twice in the year, or oftener; and the genitals undergo a periodical development for the purpose. Although, however, that the human female has periodical aptitude may certainly be denied, yet I have sometimes thought that there is something genial in the spring season, and we all know, that of the vernal months, May, perhaps, is the one which may put in the fairest claim to be the emblem of the blooming virgin.*

SEXUAL INSTINCT.

When the genital system is once prepared, by numerous expedients, Nature, never at a loss, accomplishes the mixture of the two substances. She entices,--she impels—she forces; in the instance of vegetables, she employs the ministry of intermediate agents; and a shower—or a breeze—or the busy flight of insects—accommodated perhaps, without being conscious of it, with some pretty contrivance, generated for this express purpose; these, and other accidents, are, one way or other, furnishing our wise parent with the means by which she accomplishes an object all dear to her heart—the perpetuation of her living beings.

When animals are divided into sexes, and perhaps under

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* In a memoir on the influence of the seasons, climates, periods of labour and repose, abundance or scarcity of provisions, and social habits, on the number of conceptions in women, M. Vellerme states as one of his conclusions, that the six months of the year in which there are most births, occur in the following order:—February, March, January, April, November, September. These refer the conceptions to the months of May, June, April, July, February, and March. He regards the same agent which produces marsh miasm, as amongst the greatest obstacles connected with climate (and therefore, indeed, with season) to fertility. In the year 1817, one of great scarcity of provisons in the eastern part of France, a diminution of the number of conceptions by one half of the ordinary number, was a very marked result.—*Lancet, June* 20, 1829.

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is well-known, can wheedle these animals on to their destruction. The more knowing of these fellows will, I am told, lie at length on the floor, and, with some preliminary measure or other, bring all the vermin from their haunts about them. I have been told by Mr. Hallum, of a drummer, who, when he knew the haunt of a wild animal, (as the otter, for example,) he had a certain secret, by which he could, on lying near, bring the creature forth about his person, disarmed of much of its ferocity, and suffering itself to be hauled and handled with impunity: like Daniel in the den, he seemed to possess a protection against brute violence. Now, seducing as these fellows are to animals, so seducing our own females, if we are youthful and unguarded, may become to ourselves; and it was this reflection which first led me to think, what I feel persuaded will not be, hereafter, found erroneous—I mean, that the whole of this power depends upon sexual instincts. These influences, I conceive, contain within them the principle which fascinates the serpent—which seduces the rat—which tames, for a time, and equally, the otter or the tiger, and which, among our own species, has made both old and young play the fool in all ages—*nam fuit ante Helenam mulier teterrima belli causa.* Dinah first, and Helen afterwards. In the well known Chanson, "We all love," &c., a very great physiological truth is contained. Accordingly I have learnt, respecting the man above mentioned, that he was accustomed to get and keep by him, in some mode of preparation or other, the genitals and bladders of the females of different animals, during heat, and mixing this into a sort of pulp, he formed out of this mess the delicious sop by which Cerberus was tamed. "*Chacun à ses gouts.*" A putrid carcase is, to a blue-bottle fly, a bed of roses. Housebreakers, probably, silence dogs on these principles.

Rats are fond of oil of rhodium, and cats are delighted with the smell of valerian. I suspect when oils, &c. are used as irresistible baits to animals, it is because their smell resembles that of the sexes. In all this we may see a new and powerful system of means for getting a controul over the brutes, and, in a temporary way at

least, of bending them to our will. Of all baits, I think, there can be no doubt that during the heat, and for male animals especially, none would prove so alluring and intoxicating as the sexual scents, and they might be artificially compounded.

SUPERFŒTATION.

Suckling is no certain preventive of pregnancy, though, in general, in the earlier months especially, the wet nurse remains sterile, and in the second or third month, gestation dries up the milk. Genitals, pregnant already, cannot, so far as I know, be impregnated again, unless at a very short interval. At a very short interval,* a second impregnation may be accomplished.

Bitches, I am told, produce puppies engendered by different dogs; and women have produced twins begotten respectively by a white and black parent, as the characters of the offspring clearly showed. Several cases of this kind are on record.†

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* Some writers maintain that superfœtation is possible during the two first months of pregnancy; the majority hold it possible in a few days after conception, before the uterine tubes are closed by the decidua. This is the received opinion, though cases are on record which justified Zacchias and other jurists, to conclude, that superfœtation might occur until the sixtieth day, or even later. Nothing is more common than to see a full-grown infant born, and another of the second, third, fourth, fifth, or sixth month expelled immediately after.—*Dr. Ryan's Manual of Midwifery*, 3rd Edit. p. 125.

Dr. Mason published an account of a woman who was delivered of a full-grown infant, and in three calendar months afterwards of another, apparently at the full time.—*Transactions of the College of Physicians*, vol. iv.

A woman was delivered at Strasburgh, the 30th April, 1748, at ten o'clock in the morning; in a month afterwards, M. Leriche discovered a second fœtus, and on the 16th of September, at five o'clock in the morning, the woman was delivered of a healthy full-grown infant.—*Manuel Complet de Med. Leg. par Briand.*

Dr. Ryan also relates other valuable cases.—*Manual*, 3rd Edit. p. 126.

† Buffon relates the case of two impregnations produced in succession by a white person and a negro with the same woman, the result of each being a white child and a mulatto. D. Delmas has also related a case exactly similar, which fell under his observation. In his case, there was only one placenta for the two children.—*Vide Bibliotheque Medicale*, tom. xiv, p. 254; also, *Edinburgh Journal of Medical Science*, vol. iii, p. 322.

A white woman, near Philadelphia, is said by Dr. Dewees to have been delivered of twins, one of whom was perfectly white, the other black. The latter had all the characteristics of the African, whilst the former was delicate, fair skinned, light haired, and blue eyed.—*Richeraud's Elements of Physiology, by Dr. Copland*, 5th Edit. p. 711.

DOUBLE UTERUS.

I lately, in presence of my able friend, Mr. Waller, of Bartholomew Close, met with two wombs opening by separate orifices into the vagina ;* and my distinguished colleague, Mr. Key, showed one uterus with two bodies, and Mr. John F. South showed me another.† Should any of you hereafter meet with a superfœtation, pray observe whether the womb be double.

SECTION III.

STERILITY,‡ OR BARRENNESS.

Sterility depends either on malformation, or imperfect action of the organs of generation, either in the male or female. It is usually considered that the woman is at fault, in not having the

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* See Lancet, October 11, 1828.

† *Case of Double Uterus with double impregnation* :—L. B., ætat. thirty, of a robust constitution, had been in labour for two days, when Dr. Geiss, who describes the case, was sent for. He observed that the pains were confined to the right side, where the uterus reached almost to the true ribs, while, on the left side it did not rise higher than the navel. The external genitals were regularly formed; and it having been found that the shoulder presented, the operation of turning was resorted to, and a healthy female child extracted. Soon after delivery, the right side of the abdomen collapsed, the left half retaining its size. An hour after the birth of this child, the labour pains returned, and, on examination, it was found that, at the side of the os uteri, and quite distinct from it, there existed a circular opening, through which the distended membranes of another child protruded. It was a full-grown boy, and, after its birth, Dr. Geiss, having introduced his hand into the left cavity, convinced himself that it had no communication with the right half of the uterus, which had already contracted. The left uterus contracted rather slowly, and the patient lost much blood from it. Two months afterwards, both children, as well as the mother, were perfectly healthy. Two years afterwards she was again delivered, but of one child only.—*Rust's Foreign Magazine.—Lancet, January 3rd*, 1829.

In a few rare instances, the uterus and vagina are said to have been found double. Dr. Tiedemann informs us, that he has met with two instances of this monstrosity. The organs, constituting one of the cases, are preserved to this day in the Heidelberg Museum. The individual had been pregnant in one of the sets, and the uterus is here larger than that on the opposite side, which is of the ordinary size. The woman reached her full time, but died nineteen days after delivery.—*Good's Study of Medicine*, 3rd Edit. p. 10.

An interesting case of double uterus, with conception, is also described in a paper read before the Royal Society, by Dr. Purcell, of Dublin.—*Philosophical Transactions*, vol. liv, p. 474.

‡ Sterility:—From *sterilis*, barren, or not productive.

ability to conceive; but we ought, however, to remember that the male apparatus may equally be at fault.

'In some instances, in the female, the ovaria are wanting, or too small; or the Fallopian tubes are imperforated; or the uterus very small. In these cases the menses generally do not appear, the breasts are flat, the external organs are small, or they partake of the male structure, and the sexual desire is inconsiderable. In a great majority of instances, however, the organs of generation are well formed, but their action is imperfect or disordered.'*

The causes indeed of barrenness may be considered to arise either from the impotency of the male, the irregular state of the woman as to her menses, uterine or vaginal discharges, inactivity of the generative organs, some defect of conformation, organic disease, disproportion of the genital parts between the sexes, or from a difference in constitutions.

By the impotency of the man, is understood any cause which makes him incapable of the act of generation.

'The irregular flow of the menses, is one of the chief causes of barrenness. There are some women who have this discharge almost continually upon them, whose wombs are so enfeebled by it, as to be disable to retain the semen: in others it is entirely suppressed, whence they are cachectical, that secretion which should be evacuated every month, circulating with the blood.'†

'Fluor albus is the most frequent cause of sterility, as the male fluid is not retained, the retentive power of the uterus and vagina being lost thereby. Too frequent coition is the most common cause of fluor albus, or rather an increased vaginal mucous discharge; and hence we seldom observe prostitutes have offspring.'‡

'A morbid state of the uterus and ovaria, often accompanied with fluor albus, may likewise be ranked amongst the causes of sterility. Women who are very corpulent are often barren, for their corpulence depends either upon want of activity of the ovaria, or it exists as a mark of weakness of the system.'§

* Dr. Burn's Principles of Midwifery, 7th Edit. Art. Sterility.

† La Motte's Treatise on Midwifery, Art. Sterility.

‡ Dr. Ryan's Manual of Midwifery, 3rd Edit. Art. Sterility.

§ Dr. Burn's Principles of Midwifery, 7th Edit. Art. Sterility.

'Good sense alone enables us to understand that a defect of conformation is, while it lasts, an obstacle to bearing children.'*

'When sterility depends on organic disease, we have it seldom in our power to remove it; but when there is no mark of the existence of such a state, and we have ground to suppose that it is occasioned by disordered or imperfect action of the uterine system, we are to employ such means as are supposed capable of removing this, either by operating on it with the general system of the body, or more directly on the uterus itself.'†

It is requisite there should be a just proportion between the parts of both sexes; otherwise the act of generation is imperfectly performed.

Sterility appears to depend also on the difference of constitutions, many facts and curious cases of which might be adduced in confirmation of this doctrine.

SECTION IV.

ON THE GRAVID UTERUS.‡

In consequence of impregnation, the genitals undergo conspicuous changes; and when altered in this manner, they form what is denominated the *gravid uterus*, of which I now proceed to treat.

The womb, in the unimpregnated condition, varies much in its size, but, on an average, it does not exceed the bulk of a small pear flattened; when, however, it is enlarged to the full size of gestation, it forms a very bulky tumour, occupying, at least, two-thirds of the cavity of the abdomen; its diameters from mouth to fundus, from side to side, and from before backwards, being, on an average, of twelve, nine, and six inches respectively. The form

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* La Motte's Treatise on Midwifery, Art. Sterility.

† Dr. Burn's Principles of Midwifery, 7th Edit. Art. Sterility.

‡ Gravid:—From *gravidor*, to be great with child.

of the gravid uterus varies somewhat in different women; but, in the main, it resembles a large egg, more rounded in some cases, more elongated in others, something, perhaps, depending on the position of the fœtus.

This oviform uterus is placed in the cavity of the abdomen, the fundus being in front before the ensiform cartilage, and the mouth lying below and behind in apposition to the middle parts of the sacrum. When the bladder is full of urine, it takes its place between the uterus and the abdominal coverings, otherwise the womb is covered by these teguments alone in front, and the intestines, in the end of pregnancy, lie above and behind the uterus, being, by the interposition of this organ, sometimes concealed almost entirely from the view, even though the abdominal coverings have been laid open by the knife. When the womb falls too much forward, or to either side, these deviations from the healthy position are denominated the obliquities, and they are, I believe, commonly arising from one of three causes—distortion of the pelvis—projection of the lumbar vertebræ—and laxity of the abdominal muscles: the two last are the most common, and these may operate in combination. Bandages, if well constructed, may be very useful here.

When the womb is in action, the tumour which it forms becomes very hard; but, in the middle and end of pregnancy, before the full action comes on, the uterus may be so soft and yielding, that the head of the fœtus may be clearly enough distinguished, commonly in the inguinal region, whence we may the more readily distinguish the intumescence of pregnancy from that which arises from water, air, adeps, or a diseased growth of the viscera. If the womb contains the usual quantity of water, its surface is generally equable, and more or less globose; but, in some cases, perhaps, when the quantity of the liquor amnii is small, and the womb thin and lax, lies loosely on the limbs of the fœtus, a certain degree of inequality is produced, and I know of one case in which an accoucheur, of no small experience, feeling the parts of the child with extraordinary distinctness, was led erroneously to infer, that

the pregnancy was extra-uterine. All these observations are most easily made, when the abdominal coverings are thin.

When the womb is enlarged from pregnancy, in the general you do not observe any thing like fluctuation; therefore, if the bladder is duly evacuated, and if there is no dropsy of the peritoneum when you strike the abdomen, no fluctuation will be perceived. Understand, however, that under disease, the liquor amnii sometimes collects in very large abundance, to the amount of three or four gallons for example, and, in these cases, a fluctuation may be felt distinctly, as if the woman were dropsical.* This I mention to you, the rather because it is not very common, and because if you were not aware of it, and chanced to meet with one of these fluctuating wombs, you might rashly have recourse to the trocar and canula. It is by your learning from the patient that she herself believes that she is pregnant, and that the enlargement of the abdomen has very suddenly occurred, that you are first led to suspect the nature of the case; for usually, where the enlargement has very suddenly occurred, it does not arise from *ascites*, but

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* In the middle months of gestation, a woman laboured under a great swelling of the abdomen, which fluctuated distinctly. Dr. Haighton was sent for, together with a very distinguished surgeon, who, conceiving the case to be ascites, proposed calling next day to perform the operation of tapping. Dr. Haighton suggested that this abdominal swelling might, after all, be *a dropsy of the uterus*, but no particular examination of this point was instituted on that day: in the course of the night, the membranes, which contained all this water, burst of themselves, a flood of fluid was discharged, the abdomen rapidly collapsed, a fœtus issued not larger than the first joint of the finger, the woman escaped from her paracentesis, and did well. Here, then, is a case in which a surgeon of distinguished talent, in consequence of a hasty diagnosis, was on the point of puncturing the uterus; do you, therefore, be on your guard.

As to the treatment of this disease, if the swelling is not very great, you may foment the abdomen, give opium, and leech; and sometimes perhaps, without further help, the symptoms may give way, the woman ultimately reaching the full term of nine months; if, on the other hand, the quantity of water is very copious, and the pregnancy is of the earlier months, and the pains are very severe, effectual relief may be obtained by tapping the membranes at the mouth of the uterus, great care being taken not to injure the cervix. In ordinary cases, I think, I should not make a large opening, for if the opening be a mere puncture, the water may come off by little and little, and the abdomen may sink the more gradually. If the water should come away more rapidly than you expected, then put a bandage round the patient in the same manner that you would do if you were tapping in a case of ascites; and prepare for syncope. Gaitskell's bandage would answer very well.—*Dr. Blundell.*

from pregnancy; and your diagnosis is further assisted by the severe abdominal pain produced by the rapid stretching, and ultimately the spasms of the muscular substance of the womb. When you make an examination of the mouth and neck of the uterus, you may feel in the brim of the pelvis the rounded tumour, formed by the lower frustrum of the womb; and pushing the investigation still further, you distinguish the os uteri more or less dilated, with the membranous bag filled with the liquor amnii. So that by these characters—the membranous bag filled with the liquor amnii—the dilated mouth of the uterus—the uterine tumour felt in the brim of the pelvis—the abdominal pains often very alarming—and the intimation given by the patient herself that pregnancy is, in all probability the cause of all her symptoms—the disease under consideration may be easily recognised.

Although all the structures of the uterus are very much developed in gestation, yet, in reality, the pregnant uterus consists essentially in the same parts as the unimpregnated, viz. the muscular substance, and the investing membranes, with their accessories. Internally, the uterus is covered throughout by an extension of the same membrane, which lines the vagina: externally, the womb is coated by the peritoneum, which, however, does not line the lower part of the surface in front, where it lies against the bladder.

In the womb, at the end of pregnancy, we find that the nerves are very large, and the same is the case with the absorbents. The absorbents in the unimpregnated state are very small, and there is a difficulty in injecting them; but when the woman is in a state of gestation, they are very large.* It is, perhaps, in good measure, in consequence of the absorbents being large, numerous, and active, that the uterus, after delivery, shrinks so rapidly in its bulk. As soon as parturition takes place, if we examine the uterus, we

* Illustrated by preparations in Dr. Blundell's Museum, one showing the absorbents of the human uterus very numerous and large; the other proving the same, by a dried uterus of the cat, in which the absorbents remind one of the lacteals.

generally find it to be as large as the fœtal head, but in the course of a few weeks it becomes reduced to nearly its original size, such as it was when in the unimpregnated condition. Now this rapid collapse of the uterus is, I conceive, to be ascribed to the large size and great activity of the absorbents, assisted by the contraction of the blood-vessels, and the gradual expulsion of much of the blood. In the unimpregnated condition of the uterus, the blood-vessels are few and small, derived from two sources, the inferior uterine arteries, and the spermatics; but when the patient becomes pregnant, they are of very large size in the end of gestation. And this is the reason why, in the latter months of pregnancy, women are liable to such dangerous floodings, while in earlier gestation, the floodings are much less copious, and of course are attended with much less danger. The veins which correspond with the arteries are also very capacious, and, from their great capacity, they are sometimes called the sinuses of the uterus, though I may observe, by the way, that this term is applied more properly to real sinuous cavities in the substance of the uterus, which seem to be distinguished from the veins, and which remind one of the carneæ columnæ of the heart. To facilitate the return of the blood from the uterus, the veins take a direct course, but the arteries corresponding with them are vermicular, and it is supposed that this vermicular course of the arteries is designed to diminish the impetuosity of the uterine circulation, and to diminish the risk of those floodings which, nevertheless, so often take place. The arteries are as vermicular in the womb at the end of nine months, as in the unimpregnated uterus, and, therefore, the vermicular course does not appear to have been designed to facilitate the distension of the uterus, by allowing the vessels to draw out and change from the vermicular to the linear direction; for this change does not take place; besides, if this serpentine course were meant to facilitate the ready dilatation of the uterus, we should have expected that, like the arteries, the veins would have been serpentine also.

The substance of the uterus, I conceive to be made up of a

structure essentially muscular, an opinion in which many*, I believe, acquiesce, though by Blumenbach, and others it is denied. That the womb is really muscular, I am persuaded; first, because in the mammiferous animals generally, we find that it is so indisputably: thus in the rabbit, for example, the muscularity of the womb is far more conspicuous than that of the intestines; you may see the fibres coarse and large, and you may observe their motion, provided you examine them immediately after the rabbit is killed. It seems, then, that in the mammiferous animals generally, muscular fibres have been given to the uterus for the purpose of expelling the fœtus, and if the muscular fibres be given in the case of animals, why should they not be given to the human uterus also? Why in the human uterus alone should a fibre be formed, *sui generis*, expressly for this purpose, when, as appears from animals, the muscular structure is itself sufficient for the purposes of parturition. This argument, I know, is not decisive, but the presumption is strong, for if the uterus of animals is composed of muscular fibres, why should we not suppose that the human uterus is so also? *Frustra per pleura.* Again, that the human uterus is muscular, appears when it is developed from pregnancy; and this is so clear, that if you take a portion of the uterus when thus developed, and shew it to any anatomist or demonstrator, asking him, at the same time, what it is, he will reply, without hesitation, that it is *muscular*. This experiment I once made myself; taking a portion of the

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* Vesalius, Malpighi, Ruysch, Noorthwick, Wrisberg, Meckel, Lobstein, Hunter, C. Bell, Velpeau, Rosenberger, Duges, and a host of modern anatomists maintain the muscularity of the uterus; while Blumenbach, Bochmer, and a few others, deny it.—*Dr. Ryan's Manual of Midwifery*, 3rd edit. p. 29.

Dr. Blundell has three or four specimens in proof of the muscularity of the uterus. The first a very well marked case; the second, an uterus inverted, the inner membrane having been removed, the better to display the muscular appearance; the third a still finer preparation of the same kind; and the fourth a specimen of the muscularity of the womb of the rabbit.

Burns, Dewees, and other English authors, besides those just mentioned, are of the opinion that it is *muscular*; but considerable difference has been maintained respecting the course and direction of the fibres, though, as far as practical utility is concerned, it is sufficient for us to know that they exist, and that through the influence of gestation they become longer and more lax until the uterus itself is no longer capable of bearing further distention.—*Ed.*

impregnated uterus, I showed it to Mr. Green and Mr. Key, excellent judges on this point, and, without making mention of the womb, I asked them to tell me what was the structure, when they immediately declared it to be muscular. If, therefore, we are to judge of the structure of the human uterus from the appearance to the eye, independently of other circumstances, we need not hesitate to decide that it is muscular. But there is yet a third proof of the uterine muscularity, very decisive to my mind, which is, it contracts itself like a muscle under the excitement of a stimulus. Like the womb of animals, indeed, it is true that, during the period of gestation, the human uterus lies quiet; yet this is not always the case, for it may act prematurely, as in the case of miscarriage; but when, at the end of nine months, the womb begins to wake up, as it were, from its long lethargy, we then find that, like other muscles, it becomes irritable, and contracts itself under the excitement of a stimulus; the ovum entire, first excites its contraction, then the fœtus, then the placenta, then an accumulation of clotted blood; or the fibres may be brought into action when the womb is empty, by the introduction of the hand of the accoucheur. Like the heart, therefore, the uterus is muscular; it is, like the heart, stimulated by distention, nor is it by distention only, but like the heart, moreover, it is stimulated by other incitements, for other stimuli, when taken into the stomach, would act upon it, more especially the *ergot*. Well then, if the womb in all other animals is muscular—if, again, the muscularity of the human womb is developed to the eye, when pregnancy occurs—and, moreover, if we find that the womb, like muscle, contracts under the incitement of a stimulus—I think we have proof enough to bear us out in the assertion, that the uterus is muscular. This muscularity is of no small importance; by means of it, not only does the womb expel the child and the placenta, but it moreover contracts itself so as to become secure against the risk of inversion, or the larger discharges of blood; for, it is by the contraction of the muscular fibres of the womb, that the mouths of the blood vessels are closed up, so as to prevent the too large discharges of blood in ordinary cases. The womb being muscular,

is, of course, obnoxious to the same diseases as the other muscles of the body, and may, perhaps, be relieved by the same remedies.

The thickness of the womb varies in different women; an average being from a quarter to a third of an inch;* and it is worth your observation that it is as thick when enlarged from gestation,† as when in the unimpregnated state, which is a proof that the thinness of the womb does not arise, like that of the human bladder, from mere distention. Certain parts of the uterus you will sometimes find to be unusually thick; sometimes, on the other hand, it is unusually thin, not thicker than brown paper for example. From the unusual thickness, no inconvenience arises; but if it is unusually thin, lacerations may take place, and hence you ought never to carry your hand into the uterus, unless there be need for it. About the mouth and neck of the uterus, you will find a large number of mucous follicles,‡ which, in pregnancy are very apt to form a great deal of mucus, and which close up its mouth; it is this apparatus which forms the *glandulæ Nabothi*,§ and I suspect that in carcinoma, it is this apparatus that is the original source of the malignant ulceration. The opinion is deserving of attention; because if it really be so, it is not unreasonable to hope, that in some cases of genuine malignant ulceration, if we can but pare away this diseased structure, we may entirely remove a disease, which would otherwise go on and destroy the patient.‖

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* Illustrated from Dr. B.'s Museum. First, by a preparation, showing the ordinary thickness of the uterus, which is from a quarter to a third of an inch. Secondly, by a preparation of the womb unusually thick throughout, nearly an inch in its measure from surface to surface. Thirdly, by a preparation of the uterus unusually thin, some parts of it not more than a line in thickness. And lastly, by another preparation, where the womb is not thicker than a piece of brown paper. Recollect the two last whenever you are introducing your hand into the uterus, an admonition of the highest importance.

† Opinions were formerly much divided with respect to the state of the uterus during pregnancy; but it was generally imagined to become thinner in proportion to its distention. Later observations, however, have proved, that, if healthy, it retains its thickness through the whole period, to whatever degree it may be distended."—*Dr. Denman.*

‡ Illustrated by a preparation in the Museum.

§ Also sometimes called the *Ova Nabothi.*

‖ An operation in principle of this kind, has been performed, I believe, not without its success, by Oziander, Duputyren, and Lisfranc, and the operation, hereafter more fully considered, I strongly recommend to your consideration.—*Dr. Blundell.*

OF THE UTERUS DURING THE PROGRESS OF PREGNANCY.

I need scarcely observe to you, that, as pregnancy advances, the bulk of the womb enlarges: at the end of the third month, it is about the size of a full-grown fœtal head; at the end of the fifth, of the bulk of the fœtus without the head; towards the close of the seventh month, as large as a full-grown fœtus; and, at the close of the ninth month, bulky as in the casts which you may see in my museum. Now, this great increase of the bulk of the uterus proceeds more slowly at the earlier, and more rapidly in the latter months, as a very short reflection may satisfy you. At the end of four months and a fortnight, that is, at the end of the first half of the period of gestation, you find the womb is not much bigger than the fœtal head, while, during the remaining period of gestation, the other four months and a fortnight, the womb becomes as bulky as you observe it to be in those casts. It is evident, therefore, that there is a much more rapid growth in the latter period of gestation than in the earlier.

The increase of the bulk of the uterus is to be ascribed to two causes principally; one, the mere growth of the ovum within the uterus, which dilates it, much in the same manner as the urine does the bladder; the other, not less interesting, the actual addition of solid substance to the uterus; there being a growth of all its structures, which become enlarged and developed. It was imagined by the older practitioners, that the enlargement of the uterus arose merely from distention, like the enlargement of the urinary bladder, or rectum; but that there really is an addition to the substance of the womb, is proved, first, by our finding it as thick, and sometimes thicker at the end than at the beginning of pregnancy; and, secondly, by our observing when the womb is thoroughly emptied, that it still remains eight or ten times as bulky as it is in the unimpregnated state.

When the womb is growing, in the progress of pregnancy, the growth does not equally affect all its parts during the first five months; the growth, whether from distention or developed struc-

ture, is confined principally to the body of the uterus, while the neck below enlarges but little, and remains attached to the body in the way of a sort of appendage. It is, therefore, principally during the last months that the growth of the neck proceeds; and this goes on in such a manner, that at the end of pregnancy, this neck is forming a part of the general receptacle for the ovum, and, at this part, the head of the child generally lodges.

Now, in a practical way, it is important to remember, that a sort of relation has been traced between the length of the neck of the uterus, and the end of the pregnancy, insomuch that, to ascertain what is the length of the neck, and how far it is or is not dilated, we may form a notion of the progress gestation has made. During the first five months of pregnancy, the neck, I have said, remains undilated, being of ordinary length—an inch and a half, I mean, which is its original dimension: but at the end of the sixth month, it will be found that the neck has lost about one-third of this length, or half an inch; at the termination of the seventh month, another third, or another half an inch; while, at the close of the other two months, it loses also the remaining third; so that in the commencement of the delivery, if you make an examination, you find the os uteri immediately opening into the cavity of the womb, the canal of the neck having disappeared altogether.

In two ways, in obstetric practice, those who have the skill, and a perfect use of their fingers, may learn the length of the neck of the womb. Sometimes—but, on the whole, I do not recommend this mode, for fear of disturbing the ovum—the finger may be slipped conveniently enough along the canal, so that you just touch the membranes, and, of course, at the same time, take the measure from the mouth to the cavity; but for general use, the best way is to place the woman in the ordinary posture of delivery, on her left side, and then to pass up the two fore-fingers of the left hand, as if you were going to make the common examination, ultimately planting those fingers between the symphysis pubis and the mouth of the womb. This done, you carry those fingers upward and forward, so as to touch the body of the uterus, frequently to be

felt; and if the vagina be relaxed, and if this be accomplished, the distance between the body and the mouth of the uterus will give the measure of the neck.

The situation of the uterus is found to vary according to its growth and the age of gestation. During the first four months, or the first four months and a fortnight, when, as observed before, the womb, even at largest, is scarcely bigger than the head of a full-grown fœtus, we find it is lodging in the cavity of the pelvis, principally in the lower part, especially if a woman has a large pelvis.—Now, when it is thus lodging in the lower half below the brim of the pelvis, sometimes the intestines are compressed, and those who are disposed to hæmorrhoidal affections, and to irritation of the bladder and bowels, may suffer a good deal of inconvenience about this time from tenesmus, and a frequent desire to pass the water. But of all the symptoms arising from this descent, the one not the least troublesome is the feeling of bearing down, the womb frequently descending a little, and, in some cases, even protruding beyond the external parts; though, happily, extreme descent is rare. These symptoms are apt to occur, more especially in the first months, being produced by the cause I have mentioned—the descent of the womb, more or less, into the cavity of the pelvis; but during the last months of pregnancy, when the womb becomes bulky, and gets its resting place entirely above the brim of the pelvis, of course, the sensation of bearing down is relieved. In this situation, however, further inconveniences may arise; for the bladder, when full, being interposed between the surface of the hard uterus, on the one hand, and the abdominal coverings on the other, whenever the patient laughs heartily, or has any sudden abdominal movement, there is a forcible pressure on the bladder, and the urine is made to gush out; so that she has a sort of incontinence produced. Moreover, a change of the situation of the uterus gives it a bearing on the liver, and more or less directly, it may press on the biliary ducts, and give rise to *jaundice*, apt to occur about the sixth or seventh month, sometimes not terminating till after the delivery, when the pressure has been removed, and sometimes ceasing in the ninth

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womb is below the brim of the pelvis; and that in the latter months it is lying entirely above. It is clear, therefore, that there must be a certain period at which an ascent takes place, and this seems to be somewhere about the fourth month; for at this time it is that the womb becomes too large to sink readily below the brim. Now, in some very rare cases, this ascent of the womb does not take place in the fourth month as it ought to do, and it continues to grow rapidly in the pelvis; and the consequence of this is, obstruction of the rectum, obstruction of the bladder, and a great deal of pain felt in the uterus itself, and in the hips, thighs, back, and all the parts usually the seat of uterine suffering. Now this case may be wholly misunderstood; you may, perhaps, mistake it for a retroversion of the uterus, though it is easily made out by examination; for, on making your examination, you discover a large tumour filling the pelvis, with the os uteri so low down, that it may be perceived at first touch. To reduce the uterus may not be difficult, when the bladder has been thoroughly evacuated previously, and the urine generally accumulates largely in these cases. While the bladder remains over distended, the return of the womb is rendered both difficult and dangerous; for if the uterus were forced above the brim, disrupture of the bladder might occur. Beware, therefore, of these rash attempts at reduction; the safer practice seems to be that of taking a very small and flattened catheter, to be cautiously insinuated into the bladder, after which the water may be drawn away easily enough, and then the womb may be replaced above the brim of the pelvis, and to prevent a reiterated descent, the woman may be confined for a few days to the horizontal posture, till the uterus is become too large to come down. In the general, however, in the fourth month, the uterus does not, in this way, remain in the pelvis, but rises imperceptibly above the brim, probably at night, when the woman is in bed, and the ascent may take place in a manner so gradual, that the woman may not have felt any change. There is, however, a peculiar sensation perceived about the fourth month, and which is denominated the *quickening*, accompanied with sickness of the stomach, a certain perturbation of mind, and a feel-

ing of emotion in the pelvis below; this is usually ascribed to the first movement of the child observed by the mother; but I think it is reasonably enough suggested by Burns, that it may be produced by the sudden rising of the uterus from the true to the false pelvis.

As pregnancy advances, and as the womb rises in the abdominal cavity, of course the fundus of it gets higher and higher, and there is a certain relation of height between the fundus uteri and the age of gestation, with which it may not be amiss that you should acquaint yourselves. Now we find, that during the first three months the womb lies very much within the brim and cavity of the pelvis, where the fundus may be felt, and it is not till the end of the fourth month that the fundus is found to be risen fairly above the brim of the pelvis. At the end of the fifth month, the fundus is a little higher; at the termination of the sixth month it lies a little below the umbilicus; at the end of the seventh month, a little above; at the end of the eighth month, it takes its place half way between the umbilicus and the scrobiculus cordis, and in the close of gestation it lies in the scrobiculus cordis itself, unless, indeed, that contraction has taken place, which sometimes occurs some two or three days before the expulsion of the fœtus.*

SECTION V.

CONTENTS OF THE WOMB.

The human ovum,† as we find on examination, is composed of two principal portions, the *appendages* and the *fœtus*‡ itself.

* Some of these points, Dr. Blundell demonstrates by very excellent preparations from his valuable collection. He thereby gives the student an opportunity of seeing the uterus of the size of *four* months, of *five* months, of *seven* months, and of *nine* months. The student has also the opportunity of seeing the neck of the uterus, which, as before stated, appears in the fifth month to be connected with the body as a sort of appendage; likewise in an *eight* month uterus, he can observe the neck somewhat dilated, and more so in the preparation approaching to nine months. At the full period of gestation, as the Doctor illustrates, the dilatation is thoroughly completed, the canal being destroyed altogether, so that when the head sinks down, the parts below it rest upon the mouth of the womb.

† The whole contents of the gravid uterus, viz. the fœtus with its appendages, the membranes, placenta, funis umbilicalis, and waters, are comprised under the general term *ovum*.

‡ Fœtus:—From *feo*, to bring forth. The young of all viviparous animals whilst in the womb.

PECULIARITIES OF THE FŒTUS.

In the essentials of its structure, the fœtus very exactly resembles the adult, and yet there are some *peculiarities* in its structure and functions, which are worth a little observation.

In the fœtal cranium, and that of young children, the cranial bones are more numerous than those of the adult; and those bones are not united by harmony, nor by serrated suture, but by means of intervening cartilage, the false sutures, as they are called, from their softness, allowing of that change in the form of the head, which, in cases of coarctation, prepares it for transmission through the pelvis. In the fœtus, when it is under the age of seven months, we find in the eye a peculiar membrane—the *membrana pupillaris*, thin, vascular, arising in a circle from the margin of the pupil, and dividing the aqueous fluid into two portions, the posterior, and that which lies before the iris. The use of this membrane has not been properly ascertained; by Blumenbach it has, I think, been suggested, that it may be designed, as the eye grows, to keep the iris on the stretch; but, to my mind, this is by no means a satisfactory explanation. In the child at birth, and for a length of time afterwards, we find the nervous system bears a larger proportion to the rest of the body, than in the adult; that is, if you weigh the body, and afterwards the brain and spinal marrow, you will find the spinal marrow, and the brain, weigh together more, in proportion to the rest of the body, than the same parts in the adult.

In the fœtus, the lungs are compact, the cells being wholly undilated, not containing a single particle of air, though the whole structure expands itself under the act of inspiration, as soon as the child enters the world. There is a popular notion, that if the child has been born dead, the lungs will not float in water, and that they will be buoyed up by this fluid, if the child has been born alive. Now, it certainly is very possible for the lungs to float in water, although the child has not been born alive; and more especially, although it has not been born with that vigorous vitality which would have enabled it to survive, unless violence had been used to destroy it; first, because if a child is begun to putrefy, gas may, in this way, become formed in the lungs—thus, the other day, on examining a body within twenty-four hours after death, I found in

the lungs, and other parts, air which had been evolved by early putrefaction, and why might not the same accident happen to children? So if a child were still-born, and efforts were made by the mother to inflate the lungs by the mouth, if much force were used in the inflation, I think that some of the air might find its way into the lungs, and render them capable of floating. Or, which is a more important consideration than the other two, if a child is in good measure still, when it comes into the world, yet it may *sigh once* or *twice*, and then die irrecoverably, examples of which I have myself seen. Now if the child should sigh but once, this, I suspect, would cause the lungs to float, without however affording any satisfactory proof, or even presumption, that violence was necessary to destroy it. But though the floating of the lungs is no proof that a child was born alive, and more especially in a state of lively vitality, the sinking of the lungs, on the other hand, furnishes a very strong presumption that the child has been born dead, or, at all events, that it has never breathed. It is true that the lungs may become hepatized in consequence of disease, even in the adult; and when solidified in this manner, they may sink just in the same way, as if the person had never breathed; but, then, this disease is by no means common even in the adult, though I have myself seen it; still less is it a disease common to the fœtus, in which perhaps it has never been observed; and, further, still less likely is it to occur in a case of suspected child murder. I will venture to assert, if we could get together data, so as to form a calculation, we should find that the chances are myriads to one against such a concurrence. Now, in the uncertainty of all human affairs, chances of myriads to one may be looked upon as approximating to certainty, near enough for practical purposes; and, therefore, I conceive that the sinking of the lungs in water, is to be considered as proof, only not certain, that the child has never breathed; how far we may reasonably infer from this that the child was dead at birth, I leave for others to determine.*

The heart of the fœtus is remarkable for having both the ventri-

* On this much disputed point, the student would do well to read the "Researches to determine the Marks of Vitality in New-born Infants, by Dr. Bernt, of Vienna;" published in the Edinburgh Journal of Medical Science, vol. I, p. 461, 1826.

cles of equal thickness; it is also remarkable on account of an opening which leads from the right auricle to the left, and which is denominated the *foramen ovale*.* In the blood vessels too, there are peculiarities, some of which I may notice; and first, I may observe, that there is, in the fœtal state, a short artery leading from the pulmonary artery into the aorta in the fœtal state, the *canalis arteriosus*, as it is called, a canal which becomes closed not many months after birth. Secondly, there is, moreover, a short vein, the *canalis venosus*, also peculiar to the fœtus, leading from the vena porta of the liver to the vena cava ascendens, and, like the former, becoming, in good measure, closed no long time after birth. Thirdly, there are two umbilical arteries and the umbilical vein, also peculiar to the fœtal state, and, like the former vessels, becoming obliterated after the child has entered the world. Of the internal iliacs, each gives off an artery, which rises to the navel, and issuing there, passes along the umbilical chord, to reach the placenta, and be distributed throughout its substance. With these arteries there are veins which correspond, and these ultimately coalesce, so as to form one trunk, and this passes along the funis to the navel, and enters the abdomen, and mounts to the portæ of the liver, through which it ramifies in conjunction with the vena portarum, and the hepatic artery affecting principally the left side. It is this canal, the umbilical vein, which, becoming closed after birth, constitutes what by the anatomist is denominated the *ligamentum rotundum*. Of the fœtal blood† it has been asserted,

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* It is easy to conceive the use of the foramen ovale and the canalis arteriosus: the left auricle, receiving little or no blood from the lungs, could not furnish any to the left ventricle, if it did not receive it from the opening in the partition of the auricles. On the other hand, the lungs having no functions to fulfil, if all the blood of the pulmonary artery were distributed in them, the impulsive force of the right ventricle would have been vainly consumed; whilst, by means of the canalis arteriosus, the force of both ventricles is employed to move the blood of the aorta; without the joint action of both ventricles, probably the blood could not have reached the placenta, and returned again to the heart.—*Majendie's Summary of Physiology*, fol. 173.

† Fœtal blood, according to Fourcroy, differs from the blood of the adult in three things:—First, its colouring matter is darker, and seems to be more abundant:—Secondly, it contains no fibrin, but probably a greater proportion of gelatin, than blood of adults:—Thirdly, it contains no phosphoric acid.—*Fourc. Ann. de Chirurg.* tom. 7, p. 162.

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rying the knife from the convex to the concave margin, you would expose, in this manner, eight or ten pyramidal portions, not very firmly adherent.*

In females, the clitoris is larger in the earlier than in the latter months; and this large proportion of the organ I the rather notice, as, in an unguarded moment, it may lead you to mistake a female abortion for a male. It is only in the end of pregnancy that the testes descend to the scrotum: like those of birds, they lodge, till then, within the abdominal cavity. The descent of the testicles, it is said, takes place somewhere about the seventh month; and this fact may assist us in determining the age of the fœtus. Sometimes both the testicles fail to descend; sometimes one only leaves the abdomen; in some cases, too, they descend partially, and may lie in the abdominal ring, and may prevent its closure.†

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* It is remarkable that, in certain animals which haunt the water, the kidney is frequently constituted by separate pieces, which are loosely compacted with each other. Nor is it to be forgotten here, that while it remains in the uterus, the fœtus is aquatic.

† By an eminent agriculturalist in the West of England, Mr. Wreford, I am informed, that, where the testes fail, in this manner, to descend, in the ram, the animal is not capable of procreating; although it retains the power of sexual intercourse, and perhaps more so than the perfect animal. If one of these rams be employed, the whole flock remains unimpregnated—yet unions are frequent. Men who labour under this failure of the descent of the testicles, sometimes suppose they are impotent: and this impression, if strong, may have the effect of really creating a disability. I believe, however, that this impotency is almost entirely mental—not arising from physical causes: and this opinion seems to gather strength from those frequent unions of the ram. In the ram, it is true, the seminal fluid wants the generative power. But the defect rests there; and it may be fairly doubted, till we have proof to the contrary, whether even this defect necessarily attaches itself to the human genitals. I may here add, that, when the testes do not descend, they are not usually thoroughly developed; the organ, perhaps, remaining of one-third the size which it would have acquired if descent had occurred. Hunter has remarked this. A patient dying with strangulated hernia, I was requested to be present when he was opened: one testicle, of large size, was come down into the scrotum, while the other remained at the abdominal ring, and, lying a little way within, was certainly not above one-third of the size of the former. It was this testicle that had occasioned the strangulated hernia; for it kept open the ring, and a small piece of intestine having forced itself into the aperture, strangulation occurred and death. So that old as the patient was, and he was more than thirty, the hernia was what is called congenital. This man, during life, repeatedly refused to be examined; asserting that he had no swelling at the groin, though, in reality, the intestine protruded there; and thus, by a foolish aversion to the necessary investigation, arising out of a consciousness of this small defect of structure, the poor fellow actually lost his life.—*Dr. Blundell.*

In the fœtus, the thyroid gland is very large; being well supplied with blood, and larger in proportion than in the adult. The same observation applies to the thymus, proportionally much larger than in the adult, and lying behind the sternum, well charged with blood, and containing a whitish secretion, the use of which has not been well ascertained. The hands and arms of the fœtus are pretty thoroughly developed at birth, in order, I suppose, that it may lay hold of the breast. The inferior limbs are very small proportionally, and this, I presume, because children are designed to be carried in the arms. The skin of the fœtus is frequently covered over with a sort of fat; I have never myself made any accurate observations upon this; but if the fœtus were supported by the absorption of the liquor amnii, we should not expect to find this fat coating the surface, and this fact may, therefore, be urged as standing in opposition to the opinion.

It is a curious truth, well ascertained, that of the many structures which compose the fœtus, by far the greater number are of no use to fœtal life; indeed they are designed to operate after the fœtus is come forth into the world, and has entered on a new state of existence. That the heart itself is not peremptorily necessary to the welfare of the fœtus, seems to be certain.*

Neither, again, does the child require the chylopoietic apparatus: without the liver, without the stomach, without the bowels, it may be fat, and grow.† It seems that the child is nourished by means of the nutritious material which is absorbed at the placenta, the fœtal vessels acting like the root of a plant. I once made a curious physiological experiment, not without a view to some

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* We sometimes meet with twins, where the one is well formed and the other monstrous; the monstrous structure consisting, perhaps, of the lower part merely, the abdomen being represented by a large sac, containing a few folds of intestine, and the pelvic viscera; no heart is found in such cases, and yet, while it remains in utero, this monstrous structure flourishes as well as the perfectly formed child.

A case of this description was brought before the London Medical Society, by Mr. Fenner. *Lancet*, vol. 2, p. 315. 1828-9.

† See a preparation in Dr. Blundell's Museum, exhibiting a fœtus, consisting merely of the lower limbs, and a cyst forming a very imperfect abdominal cavity.

important practical reference, which succeeded to my wish. For three whole weeks, without the help of any other nourishment, I supported a dog merely by the injection of blood into the jugular vein; every day or every other day, a few ounces were introduced in this way; and though, from the want of nicety in my operations, the system became disordered, it was evident enough that the animal was well supported by it. Now it seems to be in this manner that the fœtus is nourished, without the help of the chylopoietic viscera, there is an absorption, not perhaps of integral red blood, but of the colourless yet nutrient portions, and this sanguineous fluid becomes as food for the support of the child.

It is a mistake to suppose that, in a well-formed child, there is no secretion going on; for, in some, certainly the kidney is in action, and a child may pass urine immediately on coming into the world; there is, too, a secretion of bile, and I have seen mucus in the stomach. But though there are secretions in the fœtal state, they seem to be far less general and abundant than those which occur after birth. It sometimes happens that a child is born with the urethra imperforate; now if the urethra remained in this condition for a few weeks or days after birth, the bladder would burst; but during the fœtal state, this imperforation may remain for any length of time, without occasioning material inconvenience. So, too, after birth, there is a large secretion of bile; but during the fœtal state, the secretion must be very small, for no bile passes the anus; and if the bile were secreted very copiously, the bowels would become completely over-distended with it.

During the fœtal state, however, those glandular apparatuses, whose action is necessary to the well-being of the child, are observed to operate vigorously enough; those, for example, which form the muscles—the tendons—the ligaments—the nerves—and so on. Indeed, these substances seem to be formed more rapidly before birth than afterwards; but those secretions which are not required during the fœtal state, are formed very sparingly; and the urine, the bile, and the chylopoietic secretions, belong to this class.

During the fœtal state, we can do very well without brains,* without marrow, without sensorium—without mind therefore. It is not true, however, that the fœtus in utero is destitute of sensibility, as some have imagined, and as the accoucheur would very willingly believe, when he is about to use the perforator. I have myself, in turning, felt the mouth of the fœtus, and have inserted my finger, to know whether or not the little infant would suck. Now, in two instances, I found that it has sucked as vigorously before birth as afterwards, thus showing that it felt hunger; that, moreover, it perceived the finger, that it had sense enough to perform the operation of sucking, and, therefore, that its mind was in action. It is remarkable, however, that when the perforator is used, the child is seldom felt by the woman to move. Having given myself to the more difficult part of the practice, I have too frequently had occasion to use this instrument; and, on these occasions, asking the mother whether she has felt the child move, I have usually received an answer in the negative. Whether it be that the sensibility of the brain is but small, even in the adult, so that from this cause, the fœtus does not feel so much pain as *a priori* we should have expected, or whether some other cause be in operation, I am not prepared to decide; but the fact is well ascertained; and it seems that little struggling is produced. Although usually the sensorium exists, yet the sensorium is not absolutely necessary for the welfare of the fœtal state; because a child formed without brains, is an occurrence by no means infrequent;† and, in these cases, we find that the fœtuses flourish, and

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* See a preparation in Dr. Blundell's Museum.

† Bearing on this point, and also advancing that *a fœtus may be born and even live* with this deficiency, I was myself, about two years back, present at a delivery—not certainly of a perfect, yet of a fine made child, at the full period. In this fœtus, in addition to a very excellent specimen of *spina bifida*, and other lesser particularities, the child ultimately proved to be *without the cerebellum*. For the first week after its birth it appeared to thrive, performed the several offices of respiration, deglutition, &c. without difficulty. There was paralysis of the inferior extremities (but not of the bladder), arising most probably from the spina bifida in the lumbar region. After the first week, the child gradually declined, and surviving one month and a day, it finally fell a victim rather to the disease in the loin, than to the want of the cerebellum. A preparation of this subject may be seen in the Museum of St. Thomas's Hospital.—*Ed.*

become very large, and seem to do as well as any other. I was formerly present at a case of this kind, where, in consequence of the great bulk of the head, notwithstanding the want of brains, there was great difficulty in getting it away, and this shows how much the fœtus and its head may grow, even without the operation of the sensorium. Very frequently, instances occur of children being born with one arm, or one leg;* and now and then monsters are formed, consisting solely of the lower half of the body, there being no brains and no spinal marrow, or only a very small portion of the cauda equina, and yet these monsters grow.

As on one hand there may be a deficiency of parts in the fœtus, so on the other, nature appears to have played her sports by giving duplicate members,† or redundances, and, moreover, in some well-marked cases, has even transposed the original organs.‡

There is a good deal of difference in the weight of the fœtus; the average, I believe, being about seven pounds; some, especially if born prematurely, weigh much less, some much more; you will now and then meet with a fœtus of ten, fifteen, or seventeen pounds, to omit those which are larger. When there are twins, the average weight seems, from observation, to be about eleven pounds; the one being generally heavier than the other. If there is a plurality

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* Dr. Hastings, of Worcester, relates a case of monstrosity, in which both the upper and lower extremities were wanting, and yet the child lived for near a month.—*Edinburgh Medico-Chirurgical Transactions*, vol. 2, p. 39.

† In the Phil. Trans. vol. lxxx, p. 296, there is the history of a *double-headed* male child, (the two skulls united by their vertices,) born in May, 1783, at Mungulhaut, in the province of Burdwan, in Bengal; and which was more than four years old at the time of its death, which was occasioned by the bite of a Cabra de Capello. A preparation of the case is deposited in the Museum of the College of Surgeons.

‡ See the body of a fœtus in which there is a complete transposition of the thoracic and abdominal viscera. The left lung occupies the right side of the chest, towards which the apex of the heart is also directed, while the right, or tri-lobed lung is situated on the left. In the abdomen, the greater lobe of the liver and the cœcum are situated on the left side; while the stomach and sigmoid flexure of the colon, (to show which the small intestines have been removed,) occupy the right. Also, a male fœtus, nearly at the full time, in which, some of the abdominal viscera, the liver, and stomach occupy the right iliac region; the greater part of the small intestines occupy the cavity of the thorax, into which they have passed through a preternatural aperture in the diaphragm.— *College of Surgeons' Museum.*

Also, a case of monstrosity with two heads, and which lived for some time, is recorded in the *Lancet*, vol. ii. p. 368, 1828-29.

of children, say to the number of three, four, or five, the average weight has not been very accurately ascertained, because those cases are rare; but the average is supposed to be about the same as that of twins—say of ten or eleven pounds. Dr. Hull met with a case in which there were five children at a birth, the total weight of the five being about eleven pounds and a quarter. The increase of weight is not regularly acquired.*

POSITION OF THE CHILD IN UTERO.

The position of the fœtus in the womb, seems to be, altogether, a position of repose. The chin is pushed down upon the chest, the thighs are bent forward upon the abdomen; in the space between the head and knees, the arms are deposited, and the back being slightly incurvated, the child is thrown altogether into a form which very much resembles that of the egg, well adapted to that of the chamber in which it lodges. After birth, our most natural position is the erect, with the head above; before birth, this position is usually reversed, and the head, as in tumbling, takes its place below, the fœtus lying, in the great majority of cases, with the head precisely over the os uteri; it is not always, however, that this is the case; sometimes the nates, sometimes the face, sometimes the back presents, but the presentation of the vextex is the most common. I am not satisfied with the explanation usually assigned, to account for the presentation of the vertex; namely, that it arises from the weight of the head, which, from mere gravity, brings it to the lowest place, provided, the fœtus being asleep, no muscular resistance oppose. For, if this be true, why is it that the head generally presents in quadrupeds, where mere gravity cannot be supposed to be the cause? Why is it, too, that it generally presents in those cases where there is a want of brains,

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* From measurement by Wrisberg, Burns, and others, it appears that an embryo of six weeks weighs about thirty-seven grains, at ten weeks three drachms, at twelve weeks two ounces, at the sixth month one pound, at the eighth between four and five; at birth the average weight is seven pounds avoirdupois, and varies from four to eleven pounds; the average height is twenty inches.—*Mayo's Physiology*, 2nd Edit. p. 475.

there being little more than the face of the child, and the head being by no means the heaviest part? In the case to which I have just adverted, the child came away under the presentation of the head, notwithstanding there were no brains. Where, too, there are twins, you frequently find that one of those twins is presenting by the vertex, commonly that which first issues, while the other lies under a preternatural presentation.

OF THE PLACENTA.*

By the placenta, you are to understand the vascular structure whereby the fœtus and the mother, the ovum and the uterus, are put into communication with each other.

There are three principal forms which, in the ovum of the mammiferous genera, the placenta assumes; sometimes it consists of a mere membrane with a large number of blood-vessels, such as it is asserted to be in the sow, and such as it certainly is in the mare, as I myself have seen. In other cases, we find it made up of numerous small pieces, from fifty to sixty, or more, in number, and which are distributed over the different parts of the ovum, every where meeting and uniting with the uterine surface; and this is the form of it in the ruminating animals. In other cases, again, as in the human ovum, and that of many other animals, we find the placenta consisting of a single fleshy mass only. Now, these three forms may be distinguished respectively by the names of the *membranous, ruminating,* and *that* which, *in structure,* resembles the human placenta.

The ruminating placenta is not without its interest, as it may assist your study of the human; and I am induced, therefore, to make it the subject of a few remarks. This placenta is made up of different parts, varying in number, but usually numerous; and each of these fleshy masses is composed of two portions, one growing from the surface of the uterus, vascular, cellular, and containing a secretion of milky appearance; the other growing

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* Placenta:—From πλακους, *plakous*, a cake; so called from its likeness to a cake.

from the surface of the membranous bag, enclosing the fœtus, and consisting of a tassel of vessels, which shoot into the fleshy substance of the uterus, much in the same manner as the roots of a tree into the ground. This tassel is formed of the capillaries of the umbilical arteries and veins of which I was before speaking. It deserves remark, that if you inject the uterus of one of these ruminating animals,—the cow, or the sheep, for instance,—you inject the vascular part, which is growing from it; but you do not throw one particle into the tassel which is growing from the surface of the membrane; and if, on the other hand, you inject the umbilical cord instead of the uterus, you inject the tassel, but not a particle of the injection will quit these vessels; so as, by leaving them, to diffuse itself over the vascular excrescence, and hence if by a sort of eradication, you bring away the whole tassel, you find the excrescence from the uterus remains perfectly white.* Now, it follows from this, which is the great point on which I wish to fix your attention, that there is no communication between the tassel and the excrescence, by means of vessels capable of transmitting red blood, otherwise your injection would pass through the communication. You inject the tassel, but the injection does not leave these vessels, to enter the excrescence apart from the tassel: you inject the excrescence, but, in so doing, you do not fill the tassel.

Those remarks on the ruminating placenta being premised, the make of the human placenta, and of those which resemble it, may be very easily understood: there are two forms which these placentas assume—sometimes they are circular, forming a sort of cake; such is the human placenta; and sometimes they form a broad band round the uterus, like a belt, whence they are sometimes denominated *zoniform.*

* See preparations in Dr. Blundell's Museum. The first showing the uterus of a sheep, with some of the excrescences seated on its surface; a second, a membranous bag in which the lamb is contained, and the vascular tassels, or little knots, growing from it; a third, showing that the uterus has been injected, and you will find, that in the tassels, none of the vessels have been filled, they remain quite white; and a fourth, in which the knot of vessels has been injected, but not a particle of the injection has entered the excrescence. The large size of the parts renders all this very apparent.

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the mother nor child appear to feel it; yet I remember once seeing a child which had a supernumerary thumb attached to the hand by a delicate filament, and which was taken off by the accoucheur with a pair of scissors; this filament was not thicker than a thread, and yet the child cried stoutly when it was divided. This child, however, did not cry when the umbilical cord, of much larger size, was cut through; so that it is pretty certain that nerves do not enter into the composition of the cord.*

The placenta usually adheres to the upper part or middle of the uterus, in front, laterally, or behind; now and then it lies over the uterine neck and mouth; and this extraordinary position, which, on cursory reflection, may appear of small importance, is, however, of great obstetric interest; for where it is so situated, the patient becomes liable to very dangerous floodings, the nature and treatment of which, we shall consider at large.

The number of placentas usually accords with the number of fœtuses; if you have several fœtuses, you have several placentas; if a single fœtus only, then the placenta is single; thus, with twins, there are usually two placentas; with triplets, three; and there are four or five placentas, when, as rarely happens, the woman produces four or five children at a birth. Sometimes, however, one placenta is common to two fœtuses; the two umbilical cords arising from the same centre.†

OF THE FUNIS UMBILICALIS.‡§

The fœtus is put into connexion with the placenta, by means of what is called the umbilical cord, short, generally, in the ovum

* M. Chaussier, in his Synoptical Table of the Trisplanchnic Nerves, printed above twenty years back, says expressly, that filaments of the hepatic plexus apply themselves to the umbilical veins, accompanying them into the cord, and thus arrive at the placenta.—*Journal Univers. des Scienc. Med.* April, 1826.

Sir E. Home, Bauer, Verheyen, Ribes, and others, agree with Chaussier, that the placenta is furnished with nerves; but it is denied by most other anatomists.

† Illustrated by a preparation in Dr. Blundell's Museum.

‡ Funis umbilicalis:—From *funis*, a rope or cord; and *umbilicalis*, the adjective of *umbilicus*, the navel.

§ Otherwise called the *umbilical cord* or *navel string*.

of animals, and longer, proportionally, in the human ovum, though its length is liable to much variety.* An average measure of this cord may be about two feet; sometimes the cord is very short.

I know not that any serious inconvenience results from the extraordinary brevity of the funis, excepting, perhaps, that if you lay hold of the child, and drag it too far from the mother immediately after birth, you incur the risk of prematurely detaching the placenta by a sudden pull, and may in this way give rise to hæmorrhage, not to add, that if the adhesion of the placenta be firm, so as to prevent detachment, the sudden effort might, perhaps, occasionally invert the uterus. Hence the propriety of this rule, namely, that as soon as the child enters the world, you ought to keep its abdomen as close as possible to the genitals of the mother, till you find by a little examination, whether the cord be or not of the ordinary length.

If the umbilical cord is much longer than ordinary, there is always a risk, lest in the form of a loop it should lie forth in the vagina before birth, an accident which is prevented by its being coiled round the neck or limbs of the child. If the cord lie forth in this manner, as already explained to you, the danger to the fœtus becomes very considerable, for the vessels becoming compressed when the head descends among the bones of the pelvis, and the circulation being in this manner arrested, at a time when respiration cannot proceed, the child dies in the uterus, suffocated. To prevent this, it was formerly recommended that a piece of sponge should be procured, and that this, together with the cord, should be pressed into the uterus, provided this may be accomplished without violence or risk of laceration; the sponge (to prevent the descent of the cord a second time) being left in the

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* Dr. Haighton met with a funis which was not more than six inches long. Mr. Lloyd, a gentleman formerly associated with this class, in one instance found the cord surrounding the neck of the fœtus, as many as six times, whence you may infer, that its length was by no means inconsiderable. Mr. Briggs, in another case, found the cord coiled around the neck seven times. Mauriceau has seen it at Paris an ell and a third, obs. 401. Hebenstreit, forty inches, Haller Disp. Anat. tom. v. p. 675. Wrisberg, forty-eight inches. Vide Com: Gotting. tom. iv. p. 60.—*Dr. Burns.*

uterus, to be afterwards expelled by the pains, in conjunction with the placenta.

The blood-vessels, of which the umbilical cord is in part composed, are, in the human ovum, three; one large umbilical vein, (when fully distended, nearly as big as the little finger,) and two smaller arteries—the umbilicals, of which I formerly had occasion to speak.* These vessels, in general, do not take a direct, but a more or less serpentine course,† and, in some instances, they are very much contorted. In the cord of the mare, as I am informed, the veins, like the arteries, are two in number. In the funis of the calf, beside the blood-vessels, there is another canal called the urachus, which leads from the bladder along the cord into a peculiar membranous receptacle, the allantois, of which I shall hereafter speak, and which seems to contain much of the urine of the fœtal animal. In the funis of the puppy, we find a single artery and vein arising from the mesentery inosculating with the vessels, there passing along the umbilical cord, and ultimately breaking up into a large number of capacious capillaries, which ramify, with great minuteness, over a very delicate membrane called the tunica erythroides.

No nerves‡ have been detected in the umbilical cord, although they have been sought for with great diligence; and I can state, from my own observations, that this part seems to be wholly destitute of sensibility, in respect to both the mother and the fœtus. No large lymphatic trunks have been found there: there is reason

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* Sometimes there is but one artery and two veins, specimens of which are described by Blandin and Velpeau.—*Dr. Ryan's Manual*, 3rd edit. p. 77.

A specimen of a cord with two vessels only, may be consulted in Dr. Blundell's collection. In this case, the vein and arteries are both single, and the latter of extraordinary capacity.

† The umbilical vessels run in a spiral direction, within the covering of the cord, and the twist is generally from right to left.—*Dr. Burns' Midwifery*, 7th edit. p. 182.

The arteries very often twist round the vein, in a very curious and beautiful manner. Sometimes they run in a parallel line with the vein.—*Dr. Denman's Midwifery*, by Mr. Waller, p. 133.

A preparation, showing considerable distortion of these vessels, may be seen in Dr. Blundell's Museum.

‡ Chaussier, Reuss, Darr, and others, entertain a contrary opinion.—*Dr. Ryan.*

to believe that lymphatics are wanting altogether in the placenta, and, therefore, we should not expect to find them in the funis.*

It seems, then, that the umbilical cord is in its composition exceedingly simple, made up, apparently, of the vessels, a cellular web, filled with a sort of gelatinous material, and by which cellular web those vessels are bound together, and of a membranous sheath, or prolongation of the chorion, hereafter to be spoken of, and which gives a covering to the cord from one extremity to the other. Of this membrane you may observe the thinness, the smoothness, the firmness, when you are bringing away the placenta; for when you lay hold of the funis, this membrane is lying in your hand.

In the thickness of the funis, which depends upon the quantity of mucus contained in the cells, more than upon the size of the vessels, there is much variety in different subjects; hence the cord may be unusually small, or on the other hand, very large. In the latter case, Mauriceau considers it proper always to apply two ligatures, instead of one, on the portion which remains attached to the child, for it has happened,† that by the shrinking of the cord under the ligature, the child has died from hæmorrhage.

Upon the umbilical cord we sometimes meet with knots,‡ and, if I may confide in reports received, sometimes two or three § knots may be found upon the cord at once. To Dr. Hunter I may refer you for a very plausible explanation of the formation of these knots when single, for he has suggested that the umbilical cord, at birth, may perhaps form a coil round the margin of the os uteri within, and that the fœtus, in passing the orifice of the uterus, may, at the same time, pass through the loop, carrying the umbi-

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* Diembroeck, Michaelis, Schræger, and Wrisberg, imagined they discovered lymphatics. —*Dr. Ryan.*

† A case of this kind has been described by Deglaud.

‡ Illustrated by a preparation in Dr. Blundell's Museum.

§ Mr. Rogers, an American, and a student at these Hospitals, informed me, that at New York, a case had occurred where three knots were on the funis, and yet, notwithstanding these knots, injection could be thrown from one end of the cord to the other without difficulty. —*Dr. Blundell.*

lical extremity of the cord along with it, so as to form the knot at the very moment when the body passes into the world. And this explanation enables us to understand well enough how a single knot may be formed; but then how is it that two or three knots are produced? how that a knot may be found on the cord in the earlier months, though the fœtus has never left the cavity of the uterus? Really the solution of this knot may remind one of that of Gordius, or of the knot scarcely less notorious, knit by the hand of Obadiah, fated to bring to light that comprehensive code of imprecations, the contents of which his liberal master so generously showered down upon every part of his person.

The origin of the cord is the navel; its termination is the placenta, where its insertion is commonly central, though it sometimes unites with the placenta at the margin, or intermediately. And this I the rather wish you to notice, because when the insertion of the cord is marginal, you might be led to imagine that one-half of the placenta had been torn away, the other half still remaining in the uterine cavity.

An eccentric insertion of the cord at the abdominal extremity is more rare, and yet now and then even this variety is observed, the cord springing from the one or other side of the abdomen.* The point is curious, but in a practical view it seems to be of small obstetric import.

INVOLUCRA,† OR MEMBRANES.

In the same way as the chick is enclosed in the shell, the human fœtus, too, is shut up in a bag, or cyst, this cyst containing the water, in which the child floats, for, in our origin, we are all of us aquatic. In general the number of the cysts corresponds with the number of fœtuses, though this is not invariable, for when

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* A preparation of the umbilical cord, entering the abdomen of the fœtus laterally, may be seen in Dr. Blundell's Museum.

† Involucra:—From *involvo*, to fold in: these membranes are so called, because they form an universal covering for the fœtus.

there are two fœtuses you may have a single cyst only, this being common to both, and in the opinion of some observers, this community of receptacle is by no means infrequent. There is an advantage to the fœtus, however, in having a receptacle, or an apartment of its own, because it then becomes more secure against accidents. In twin gestation, in the earlier months, it sometimes happens, that the membrane, being tender, gives way. Now, if the fœtuses are contained in separate bags, and there is a yielding of the membrane of one bag only, the other fœtus, included in another cyst, sustaining no injury, may still be carried on to the full period of nine months.*

In the earlier months of pregnancy, the involucra are composed of, at least, four membranes; the decidua uteri, the decidua reflexa, the chorion, and the amnion; but when the ovum is thoroughly developed in the latter months of gestation, the membranes are three only; the decidua uteri, the chorion, and the amnion, the decidua reflexa not appearing.† Of these membranes, the outermost is the decidua uteri, whence its name, because it is in contact with the womb, and receives vessels from it; the membrane which lies internally is the amnion, an organ which secretes the fluid already mentioned—the first element of the fœtus; and between these two membranes the chorion is interposed. In the latter months of pregnancy, the decidua uteri is somewhat thick, but it is so more especially in the earlier and middle months; being disposed moreover to exfoliate, separating into leaves or lamella. Now the placenta of the human ovum is contained between two

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* A pupil of my own, who grew up to be one of the finest young gentlemen of the class, during the course of his uterine life, had a very narrow escape of this kind. He once told me, that while in utero, he had a twin companion; the cyst, which at that time formed his own nest, remained uninjured, and he seems to have sustained no inconvenience: but, from one cause or other, that of his companion gave way, so that, in this helpless condition, the poor fellow was crushed like a butterfly.—*Dr. Blundell.*

† See a preparation, exhibiting the uterus with the three membranes annexed, and in which you may perceive that the amnion and chorion contain no injection, but both the decidua and uterus are full; both being supplied with vessels from the same source.—*Dr. Blundell's Museum.*

leaves of the tunica decidua, as a handkerchief interposed between two hands, both of the placentar surfaces being covered by the leaves of the decidua. This being the case, it follows, as matter of course, that the chorion and amnion must be spread out upon the inner surface of the placenta,* for they both lie within the decidua.

TUNICA DECIDUA.†

It was observed to you that the outer membrane of the ovum is the *tunica decidua,* called also caduca lacerabilis, and the spongy chorion, adhering externally to the uterus—internally to the chorion; remarkable for its high degree of vascularity; and further deserving notice, as it derives all its blood-vessels, so far as has been ascertained by injections, from the womb.

This membrane is, it seems, generated by the uterus itself, and is not produced from the same rudiments as the fœtus, the chorion, and the amnion. In extra-uterine pregnancy sometimes, though by no means universally, when the rest of the ovum is formed externally to the uterus in the ovary or tube, the tunica decidua becomes organised more or less perfectly in the uterine cavity, where, in these cases, the rudiments have never been admitted; and hence we may understand clearly enough, why it is that the deciduous vessels are derived not from the fœtus but from the uterus, they being supplied from that structure by which it is originally generated. If we observe the decidua in the latter months of pregnancy, we find that it is somewhat thick and tender, and of reticulated‡

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* Dr. Blundell illustrates these parts, by a preparation of a small portion of the placenta with the three membranes in connexion; the decidua above, the amnion below, the chorion ranging intermediately. In the preparation there is a portion of the placenta, and of the adherent uterus, suspended by the decidua. The chorion and amnion lie upon the inner surface of the decidua, from which they are partially detached; and the decidua itself is distinctly separated into two membranous lamina, between which the substance of the placenta lodges.

† Tunica Decidua:—*Tunica*, a coat or membrane; *decidua*, an adj. from *decido*, to fall or be cast off.

‡ There is a preparation shewing the flocky appearance of the decidua in the earlier

appearance, presenting a sort of net-work visible enough upon its surface, more especially if the membrane is immersed in water. In the middle months of pregnancy, the thickness is still more remarkable; and during the first two or three months, the membrane is so thick that it loses entirely the membranous appearance, and resembles a mass of flesh.* I have already observed, that it is between the leaves of the decidua, the placenta is interposed, and it is apparently the blending of these two structures which gives rise to that fleshy and massive appearance to which I have just adverted.

The principal uses of the tunica decidua are apparently two: it forms a connexion between the other parts of the ovum and the uterus, and it furnishes a bed in which the structure of the placenta may be elaborated.

CHORION.†

Interposed between the tunica decidua and the amnion, the true *chorion* is situated; this membrane having very few and small vessels only, particularly in the human ovum, and these being derived, not from the uterus, but from the fœtus; for the tunica decidua is a part or membrane of the mother, but the chorion is a part or membrane of the fœtus, indeed as much so as its arms, legs, or head, and perhaps of more importance to its welfare in the fœtal state. Hence the same rudiments which form the fœtus, form also the chorion, and hence the fœtal origin of the vessels of this membrane becomes sufficiently intelligible. In its sensible properties, the chorion is smooth, thin, and semi-transparent,‡ excepting during the earlier weeks of gestation, when it is covered over more or less completely with a fine shag, which gives it sometimes the

months; and its disposition to separate into layers, and in which the delicate reticulations may be noted without difficulty.—*Dr. Blundell's Museum.*

* See a preparation in Dr. Blundell's Museum.

† Chorion:—From χωριον, *chōrion*, and that from χωρεω, *chōreō*, to escape, so called because it always escapes from the womb with the child.

‡ See a preparation of the human ovum, in which the tunica decidua has been removed, so that the membrane on which the eye falls is the chorion—smooth, thin, and in a great measure transparent.—*Dr. Blundell's Museum.*

appearance of plush, if I may be allowed the comparison; and this shag is found to be nothing more than capillaries of the umbilical veins and arteries, so that in truth it constitutes the vascular part of the placenta. This fact is proved by injections: the injection of the cord fills this superficial fringe.* It is further proved and illustrated by the chorion of the sheep, on which we find those tassels of vessels formerly demonstrated, and which seem to be nothing more than the vascular shag collected into small knots, instead of being regularly dispersed over the whole surface of the membrane.

I know not whether we are perfectly acquainted with the functions of the chorion; but the most probable use seems to be that of generating those capillaries, and assisting, therefore, most importantly in the formation of the vascular part of the placenta.

AMNION.†

The ovum, I have observed already, is composed of three membranes; the amnion, or third membrane, lying internally, and spread out over the surface of the chorion and of the placenta. This membrane is remarkable throughout pregnancy for its thinness, density, and a transparency like that of glass. That it secretes the liquor amnii, there seems to be little doubt; and it is for this purpose, probably, that it is mainly intended, though in conjunction with the other two membranes, the chorion more especially, it assists in giving that strength to the ovum which is so essential to the security of the child.‡ The human amnion, so far as I know, has never been visibly injected, though the attempt has been many times made, the failure probably arising

* See a specimen of the chorion of the sheep, with the vessels separated into knots or tassels; they are injected, and the injection was thrown into them by the umbilical cord.

Also preparations showing the fringe covering the chorion during the earlier weeks, in some of them universally, in others topically; the resemblance to the vascular tassels on the sheep's chorion being very obvious.—*Dr. Blundell's Museum.*

† Amnion:—From *αμνιον, amnion*, and that from *αμνος, amnos*, a lamb or lamb's skin; so called from its softness.

‡ See a preparation in which the amnion is very fine, and answering to the purpose here observed.—*Dr. Blundell's Museum.*

from the extreme minuteness of the vessels ;* but in animals, as the cat and dog, for example, these membranes may be injected with facility, the injection being thrown in by the umbilical cord. The amnion, like the chorion, is an integral part of the fœtus, being formed from the same rudiments; and we find accordingly, from our injections in brutes, that it is from the fœtus that the blood-vessels of the amnion are derived. By injecting the vessels of the uterus, therefore, you cannot inject the amnion even in animals: to fill its vascular system, you must throw the injection into the cord.

FORMATION OF THE PLACENTA.

Having said thus much respecting the three membranes of the ovum, I may now proceed to make a few remarks on the way in which the placenta is supposed to be produced, a subject on which I forbore to enlarge, when treating expressly of this organ, as in that stage of our knowledge the formation of the placenta could not have been readily understood, a preliminary account of the membranes being required.

The placenta appears to be constituted of two principal parts—a large assemblage of vessels, and a large assemblage of cells; and the manner in which those two parts of the placenta are supposed to be produced, may be best explained by means of a graphic illustration. Under the stimulus of impregnation, the uterus is supposed to secrete a quantity of gelatinous material, by which the inner membrane of the uterus becomes completely invested, and this afterwards becomes the tunica decidua. As generation proceeds, the inner membrane of the uterus seems to throw off, into the gelatinous decidua, a considerable number of vessels, and, indeed, this admits of proof, because, if you take an ovum with the uterus adherent, on laying it open, and detaching the membrane, you may see the vessels which shoot from the one surface to the other. Again, it is further imagined, that those small vessels

* The amnion has been injected from the mother, by Monro and Wrisberg, and from the fœtus, by Chaussier.—*Dr. Ryan's Midwifery*, 3rd Edit. p. 71.

shooting into the ovum, elaborate there the cellular part of the placenta; and this opinion, if true, (and its truth is highly probable,) may explain to us why it is that the cells are in free communication with the uterus during gestation, and why the maternal blood flows through those cells so abundantly; for it is from her substance that they are formed, and the cellular portion of the placenta is not a part of the fœtus, but of its parent. But to proceed: in the same manner as the inner membrane of the womb throws its vessels into the decidua, a large number of vessels are also thrown off into the same membrane by the chorion; and by this membrane apparently it is, that the vascular part of the placenta is formed. All this appears to be going forward in the gelatinous material secreted by the uterus; in the very substance of which material these cells and vessels become formed; and this, in the most satisfactory manner, enables us to explain why it is that the placenta is lodged between those layers, or lamellæ, of the decidua, before demonstrated, for it is of this gelatinous material, which receives the cells and vessels into its substance, that the decidua ultimately consists.

Thus, then, it appears, that the human placenta, like that of the ruminating animal, consists of two organs combined—the one the cellular, formed by the menstruating membrane, like the uterine excrescences of the ruminating animal, a portion of the mother; the other, the vascular, formed by the chorion, like the tassels of the ruminating animals—a portion of the fœtus, indeed, nothing more than the ramifications of the umbilical arteries and veins. Of these structures, both become formed in the substance of gelatinous consistency secreted by the uterus, and of which afterwards the decidua consists.

TUNICA DECIDUA REFLEXA.

In the earlier months of pregnancy, besides the decidua, chorion, and amnion, there is yet a fourth membrane, to which, as you may recollect, I adverted at the outset,—I mean the tunica decidua reflexa. If taking an ovum about two months old, you wash

it and lay it in water, you may then see distinctly a membrane, thick, flocky, and lacerable—the decidua uteri; and if you dissect this away, you next exhibit the tunica decidua reflexa; removing the reflexa, you find the chorion, and beneath this the amnion. Now it is remarkable, that if the ovum be examined about the third or fourth month, we find that the reflexa is either wholly, or in a great measure vanished, the reason of which appears to be, that about this time the reflexa itself ceases to grow, though the growth of the ovum continues, and thus this membrane becomes more and more stretched, or attenuated, till at length it vanishes completely, or small vestiges of it alone remain.

The mode in which the decidua uteri reflexa appears to be formed, is thus explained:—It is said that the gelatinous material may go on accumulating within the cavity of the uterus, till the rudiments, which have entered from the Fallopian tube, become completely embedded in it, so as to lie below the surface. These rudiments, however, possessing the vital principle, and deriving nourishment from the surrounding parts, grow, and, becoming bigger, they spread out that portion of the gelatinous material which was lying over their surface, so that another membrane begins to form in this manner, the decidua uteri being doubled back upon itself, this reflexion becoming more and more apparent as the growth of the ovum is proceeding. The use of the reflexa is unknown; it has been supposed that it may assist in fixing the ovum, when small, in the uterus.

In the ovum of the puppy, we meet with a membrane called the *tunica erythroides*, very delicate and vascular, communicating with the mesentery by the artery and vein, already demonstrated; what is the use of this membrane, however, I am unable to explain. In the ovum of the calf, we meet with a large membranous bag, the *allantois*, as it is called, holding many pints of water—two or three gallons when distended—and communicating with the bladder by means of the urachus before mentioned.

In the human ovum, we sometimes find a little bag, about as big

as a pea, and which always lies near the margin of the placenta, this bag containing within it a little coagulated mass, the use of which is unknown. This small cyst is denominated the *vesicula umbilicalis*, and what may be the use of this vesicle has not been ascertained;* it seems to be more analogous to the tunica erythroides of the puppy than to the allantois of the calf, to which it has been likened, and the rather, because a filament, divisible into two more delicate, may be traced down from the vesicle to the fœtal mesentery, the filaments apparently representing the omphalo mesenteric arteries and vein. From Professor Meyer, of Bohn, I first learnt, that with proper care this membrane may be detected, not only in the earlier, but in the latter months. It seems not to be much larger in the end of pregnancy than in the commencement.†

LIQUOR AMNII.

The membranes are filled with a fluid varying much in its quantity, consisting sometimes of a few ounces, and sometimes of several gallons, but, on an average, measuring from half a pint to a pint, and this, which forms our first element, is called the liquor amnii.‡

When the liquor amnii is unusually sparing in its quantity, I know not that any inconvenience arises from that circumstance; but when there is too much of it, then you have that dropsy of the ovum of which I formerly had occasion to treat, and which is most effectually relieved by puncturing the membranes.

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* The use of the vesicula umbilicalis is to nourish the embryo by the albuminous fluid it contains.—*Dr. Ryan's Manual*, 3rd Edit. p. 72.

† See Specimens.--*Dr. Blundell's Museum.*

‡ The liquor amnii is purest, clearest, and most limpid in the first months; acquiring a colour, and becoming somewhat ropy towards the latter end. It varies in different subjects, both in regard to consistence and quantity; and after a certain period, proportionally diminishes as the woman advances in her pregnancy. It appears in every respect an excrementitious fluid. —*Dr. Hamilton's Outlines of Midwifery*, 4th Edit. p. 80.

The liquor amnii is sometimes transparent like water, at other times yellow, brown, green, &c. and of various consistencies.--*Dr. Dewees.*

These differences seem to depend upon the state of the constitution of the parent.—*Dr. Denman.*

The office which the liquor amnii discharges appears to be very important; in the first place it affords the fœtus a yielding medium, in which it moves about with ease; for, if the liquor amnii had been wanting, we then should have been fettered in our earliest formation, by the fibres of the uterus; again, facts prove that this liquor, somehow or other, defends us from the destructive pressure of the uterus, which, but for the action of the water, would crush us as you may perceive it has done a fœtus in my collection: for, in case of twins, the fœtus, which lodges in an unbroken bag, remains unhurt, though its companion, if the membranes burst, may, at the same time, be crushed by the pressure of the same uterus, which, owing to the protection of the water, inflicts no injury on the other child. Thirdly, in the progress of delivery, the water, in conjunction with the involucra, forms a sort of wedge, which, playing in the os uteri, lays it open, and, of course, expedites the delivery. You will observe, accordingly, that when there are pains, the bag is forced into the mouth of the womb, pressing gently upon the margins, and acting expansively, like a dilator, whence the necessity of a rule hereafter to be mentioned—I mean that we should leave the disruption of the membranes to nature—or, at all events, that we should take care that the mouth of the womb be fully opened, before we have recourse to any artificial means of laying open the bag.

I have said that a principal use of the liquor amnii is the protection of the fœtus from the effect of the uterus; and this is best proved from the consequence of a premature discharge of the water. I have three fœtuses* that have been crushed in this manner, like thousands before them; and it deserves especial remark, that in one of these cases, the crushed fœtus was a twin, the other child, its fellow, enclosed in a separate bag, but subjected to the pressure of the same uterus, escaping in consequence of being protected by the water of the ovum. Conceive to yourselves an egg lodged in the centre of a bladder filled with water; while secured in this manner, external pressure would not injure

* See the preparations in the Museum.

it; but should the bladder burst, and the water flow, the egg being no longer protected, might be crushed by the same pressure which it before sustained without injury; and thus, perhaps, it is with the fœtus in the midst of the liquor amnii.

It has been asserted,* that the liquor amnii nourishes the fœtus; but to this opinion I cannot accede, and on these grounds: first, where children are born in a perfectly healthy state, the liquor amnii sometimes is found to be fœtid; secondly, the fœtus, sometimes consists merely of the lower parts of the body—the legs, pelvis, and parts immediately contiguous, all the rest of its structure being wanting, and yet those fœtuses are nourished. Now it is clear that such monsters cannot swallow and digest the liquor amnii, for they have no apparatus for digesting, nor any organ for swallowing. Again, it happens now and then that the liquor amnii is discharged a fortnight or three weeks before the birth of the child; and I believe cases have occurred where the umbilical cord has hung a little way through the os uteri, showing clearly that the bag was open, and empty of the liquor, and yet the fœtus has been plump, and well nourished at birth, which could not have been had the nourishment of the child depended upon the liquor amnii. So that, not to push this point any further, on all these grounds, as children may remain in utero for a fortnight or three weeks after the discharge of the liquor amnii, and be nourished very well; as healthy children may be born where the liquor amnii is fœtid; and as you may have monsters without mouths or digestive organs, perfectly well nourished; I think it cannot be said the liquor amnii nourishes the fœtus. Add to this—that if

* Harvey and Diemerbroeck, considered the water of the amnion highly nutritive and lacteous; and with Rudbeck, Haller, Darwin, La Courve, maintained it passed by the mouth to the stomach; while Alcmeon, Buffon, and Van-den-Bosch alleged it was absorbed by the skin. Lobstein held the fluid was partly absorbed by the genitals; Osiander, Oken, and Muller, that it was absorbed and modified by the mammæ, then conveyed to the thymus gland, and finally to the thoracic duct; while Schurigius, David, Rœderer, Scheele, Winslow, Heroldt, Beclard, and Geoffrey Saint-Hilaire, believe it to enter the trachea and bronchi, and to be there elaborated for the purpose of nutrition. The present received opinion is that the placenta is the source of nutrition to the fœtus, and not the liquor amnii.—*Dr. Ryan's Manual*, 3rd Edit. p. 81.

you evaporate a table spoonful of the liquor, you may find, indeed, that it contains a little solid matter, allied to serum in its nature, but the quantity is very small.* Remember, too, that from the place† where it accumulates, the liquor must be formed either by the amnion, the cord, or the fœtus, strictly so called,—its skin, its kidnies or some other part. Now which ever of these organs produce the liquor, they are all parts of the fœtus, and it seems absurd to suppose that the fœtus can be nourished, and grow by means of a fluid which it secretes from its own vessels.

SECTION VI.

In this section, I shall take the opportunity of considering the circulation of the blood in the ovum, and the functions of the placenta.

CIRCULATION OF THE BLOOD IN THE OVUM.

The circulation of blood in the ovum, is in its nature complicated, and with a view to a more lucid consideration, it may be divided into two kinds—the *maternal*, I mean, and the *fœtal*.

The maternal circulation is exceedingly simple; the blood enters the cells of the placenta by means of the uterine arteries, and leaves them by means of the uterine veins; so that while the ovum remains in the uterus, a copious tide of the maternal blood flows through those cells, and this, when the ovum is detached, prematurely

* According to Professor Vauquelin, the liquor amnii presents at once acid and alkaline properties. It is formed of water, albumen, soda, muriate of soda, and phosphate of lime: M. Berselius says, he has recognised fluoric acid in it: perhaps it is not identically the same in different periods of gestation.—*Majendie's Summary of Physiology.*

It does not coagulate with heat like the serum of the blood; and chemically examined, it is found to be composed of phlegm, earthy matter, and sea salt, in different proportions in different subjects.—*Dr. Denman's Introduction*, 7th Edit. p. 138.

† Water is sometimes collected between the chorion and amnion, or between the lamella of the chorion. This is called the false water: it is in general in much smaller quantity than the true water; and, without detriment to the woman, may be discharged at any time of pregnancy.—*Dr. Hamilton's Outlines of Midwifery*, p. 81.

supplies the blood in those copious floodings which we shall have to consider.

The circulation of the fœtus is a good deal more complicated, but with a little attention on our own parts, it may be easily enough understood: It may be divided into three parts, the greater circulation, the lesser circulation, and the circulation peculiar to the fœtal state. In the circulation peculiar to the fœtus, the blood issuing from the internal iliacs by means of the umbilical arteries, is conveyed to the placenta, and diffused over its substance, which it fills like a sponge, floating at length into the umbilical vein, by which it is transmitted to the vena portarum of the liver: this is the first stage of the circulation. The blood in the vena porta may, in imagination, be divided into three portions, and of those three portions, two pass by means of the canalis venosus, from the vena porta of the liver, to the vena cava inferior direct, and thence to the right auricle of the heart, while the remaining or third portion passes through the liver in the ordinary way, so as to reach the venæ cavæ hepaticæ, the vena cava inferior, and the right auricle of the heart; and this is the second stage of the circulation, whereby, as we find, all the blood enters ultimately into the right auricle, two portions passing into this cavity by the canalis venosus, and one through the liver in the ordinary way. When the right auricle contracts, of the three portions of blood mentioned, one passes direct into the left auricle, through the foramen ovale, and thence to the left ventricle, and the ascending and descending aorta, following the ordinary route; but the same contraction which throws one portion from the right auricle to the left, through the foramen ovale, impels also the two other portions from the right auricle to the right ventricle, in the usual way, to be thrown afterwards out of the ventricle into the pulmonary artery, which, as every anatomist knows, is inserted into it. In the trunk of the pulmonary artery, the two portions of the blood separate, the larger passing direct into the aorta descendens, by a short and capacious tube, which leads direct from the one vessel to the other, the canalis venosus before demonstrated, and the blood in the

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lodges in the cells of the placentar structure, the fœtal in the vessels, the two fluids, like the air, and the blood in the lungs, being separated by a membranous texture, in thickness perhaps, not exceeding one part in a thousandth of an inch. During our aquatic, or fœtal life, the blood cannot be ventilated in the lungs; and this explains to us why it is, that a small part only is transmitted through these organs to nourish their substance, and to keep the vessels pervious.

In the fœtus, the circulation is of one kind; in the adult vascular system, of another; and we will now, proceed to consider this change, after birth is accomplished.

To understand this matter right, you must remember that it is a law of the vascular system, confirmed by various observations on its different parts, that when a canal or aperture is no longer of service in the circulation, it shall close itself gradually, so as to become more or less completely closed; thus, in the adult, if you tie a large artery, so much of the artery above and below the ligature, as is no longer serviceable in the circulation, gradually contracts itself, and becomes converted into a sort of ligament, and the same holds true of the veins.

Now when the fœtus comes into the world, it is usual to tie the umbilical cord; and in consequence of this ligature, the umbilical vessels, together with the canalis venosus, become no longer of service in the circulation, and therefore they become closed in conformity with the law before announced. Hence we find in the adult, that the umbilical vein is become converted into a mere ligamentous vestige, well known to anatomists under the name of the ligamentum rotundum of the liver. Again, when the child comes into the world, it begins to respire, and its lungs playing, the blood passes through them with very great facility; and the consequence of this is, that a large quantity of blood passing through the lungs, and a much smaller quantity flowing through the foramen ovale and canalis arteriosus, these canals first contract, and then close. The explanation is at least plausible, though perhaps, not, altogether satisfactory.

Now from what has been already stated, you may perceive, on a little reflection, that the peculiar circulation of the fœtus depends entirely in the existence of these most important channels; while they are open, the circulation remains fœtal; when they are closed, it becomes that of the adult. The causes, in fact, which occasion the closure of the canals peculiar to the fœtal vascular system, are also the causes which, after birth, occasion the conversion of the fœtal circulation into that of the adult, and these causes are the division of the funis, and the play of the lungs acting in co-operation with that ruling principle of the vascular system before mentioned, namely, that canals, no longer serviceable in the transmitting of the blood, will contract and close themselves up in a manner more or less complete.

FUNCTIONS OF THE PLACENTA.

Having explained to you, in our previous remarks, the structure of the placenta, and the circulations which are proceeding through it, I may now proceed to a subject which before would not have been readily comprehended, I mean, the functions which this important organ, the placenta, is discharging.

There is no organ of the body, in either state of our existence, which, during our stay in the uterus, is of more importance to our welfare, than the after-birth; and its functions, therefore, are well worth our study. By the after-birth, I conceive it is, that the fœtus receives its supplies of nutriment; for I have already endeavoured to prove to you, that it cannot be nourished by the liquor amnii.* The cells of the placenta, as before stated, are full of the maternal blood, and the vessels are filled with the blood of the fœtus; and there seems to be a communication between the cells and vessels by means of very minute pores—passages impervious to the integral red blood, but transmitting the subtler parts; and by means of these pores, supposed to exist, though not

* A fœtus may arrive at maturity, although it has no connection with the mother, and consequently no connection with the placenta.—*See a Case in the Glasgow Medical Journal*, 1828.

to be demonstrated to the eye, the subtler parts of the maternal blood—the serum and coagulable lymph, are absorbed into the vessels of the fœtus.

In the ruminating animal, as formerly shown, the placenta consists of an excrescence, and the vessels ramify through it, in the same manner as the root in the soil. These excrescences, the cotyledons, as they may be called, secrete a fluid, in its sensible properties, like milk, and which, after the death of the animal, may be pressed out from their structure in large quantities, nor can there, I think, be a reasonable doubt that it is by the absorption and ramification of this lactiform fluid that the young animal is nourished, just as the plant is fed by the fluids which it absorbs from the soil. By the animal chemist, so far as I know, this secretion of the excrescences has never been accurately analyzed; this fluid, so interesting in the generation of the ruminating animal, I would press upon the attention of those who are attached to the study of animal chemistry, as it is called: it is very desirable that we should know whether it be of the nature of milk, or chylous, or whether it constitute some third humour, which has a composition of its own.

The chick in ovo, also forms blood for itself from the yolk and white of the egg, which it absorbs, digests, and sanguifies. In a preparation in my museum, you may see the membranaceous tube which leads from the bag containing the yolk into the intestine. By this passage, it is, at least in great measure, that the aliment is transmitted. Now, to come down upon the point before us, much in the same manner as the chick and the calf are absorbing and sanguifying the fluids on which they feed,—the human fœtus, too, may be supposed to draw its nourishment from the blood which lies in the placentar cells, to be afterwards converted into blood by the action of its vascular system.

Besides, however, nourishing the fœtus, and operating as a sort of stomach or root, the placenta, too, is performing another office immediately essential to life, the placento-pulmonary, as it may be called, being equally discharged by the placenta, lungs, or gills.

Of the lungs, we are taught that it is their office to throw off carbon from the body; and this admits of demonstration,—for if the air from your lungs be passed through lime-water, a precipitate is formed, consisting of the carbonate of lime, the carbon being derived from the blood, and passing off in the form of carbonic acid gas. Now, it may be imagined that the office of the placenta is that of separating carbon from the fœtal blood, in the same manner as the lungs do after the birth; but though I am not prepared to deny that the placenta may separate carbon in very minute quantities, I am well satisfied that carbon is not separated from it in abundance, in the proportionate quantities in which it is afterwards discharged at the lungs. The blood which is entering the lungs, is of a black livid tint; that which is leaving the lungs, is of a bright vermilion; and the difference arises, in great measure, from a difference in the quantity of carbon, the blood, leaving the lungs, being freed from much of the carbon, while that which enters the lungs, contains large quantities of it; but it is not so with blood that is leaving and entering the placenta. I have myself been at some pains to get the blood at the same time from the umbilical vein and arteries, and, in the experiments hitherto made, I have not been able to discover any manifest difference in the colour of the two; if difference existed at all, it consisted in a mere shade, and was not to be compared with that observable in the colour of the venous and arterial blood of the adult; and, from all this, we may, I think, venture to infer, that the blood which leaves and enters the placenta, must contain carbon in quantities nearly equal.

Again, we are taught, with respect to the lungs, (but this is more dubious than the former opinion,) that they are the organs which receive the matter of heat into the body, and which support the animal temperature; and we know that, generally, the heat of the internal part is from ninety-eight to one hundred degrees. There is, however, no reason to believe that the placenta performs the office usually assigned to the lungs; because it is to be recollected, that the child is immersed in the liquor amnii, probably of

the same warmth as itself, and, like the urine, of ninety-eight or one hundred degrees; and, not losing its heat, it does not require a supply of caloric from the placenta.* Add to which, the opinion of Crawford, that the lungs are enabled to absorb heat, by previously emitting carbon. Now, as it has been observed already, that the placenta separates no carbon, or, if any, an exceedingly sparing quantity,—provided the separation of carbon be necessary for the absorption of the heat,—this is an office which the placenta cannot perform.

It seems, then, the placenta is not discharging the two grand offices usually assigned to the lungs; it is not separating carbon largely, and it does not absorb caloric, for the support of the animal temperature; and yet it is certain this organ does perform an office immediately essential to life, and which is performed by the lungs themselves, of which you have a very simple proof:—If a child comes into the world under the crural presentation, (legs first,) there being a pressure on the cord, at a time when respiration cannot proceed, in consequence of the head and shoulders being lodged in the uterus, in the course of a few seconds the child is in a state of distress, in the course of a few minutes it is in danger, and, in the course of a few minutes more, it is dead; and all this, because the action of the placenta is pressed upon when the lungs cannot play; for, if the child comes into the world head first, and breathes, you may tie the cord, and cut away the placenta, as indeed is the custom, yet no inconvenience ensues; and hence we may draw this plain inference, that the lungs and the placenta are performing one common office, immediately essential to life. When it is performed by the placenta, it is not required of the lungs; and, when accomplished by the lungs, it is not required of the placenta.

And now comes the question, what is the placento-pulmonary office? A question, which it is not in my power to answer. But

* It has been shewn by experiment that the heat of the fœtus in utero, does not rise above 92° 75′ F. or 95° F.: it is said to be more elevated when the fœtus lies dead in the womb.—*Majendie's Physiology.*

I cannot forbear expressing my conviction, that there is some most important physiological discovery latent here. Whatever this office is, it is obvious that it is immediately connected with the principle of life; and it is very remarkable, that, though we believe ourselves to be acquainted with the main office of the lungs, we certainly are not. The main office of the placenta is, I think, clearly this,—a placento-pulmonary function. This function consists in neither of the offices which are usually assigned to the lungs; I mean the absorption of caloric, or the separation of carbon; but seems pretty evidently to consist in some third office, with which, however, we are at present unacquainted.

SECTION VII.

SUMMARY REMARKS.

Having in the previous part of the work, given a lengthened account of the Anatomy and Physiology of the Gravid Uterus, and, also, of Impregnation, I shall here recapitulate the principal points.

ANATOMICAL AND PHYSIOLOGICAL REMARKS.

I shall now proceed to a few general remarks on the Anatomy and Physiology, not entering at large, of course, into so diffuse a subject, but merely touching on those points most interesting, and some of which are not without their obstetric importance.

The uterus in the unimpregnated woman, varies in its bulk, is, on an average, about as large as a small pear flattened, and lies at the brim of the pelvis, with its fundus forward and its mouth backward, so that the one lies above and behind the symphysis pubis, and the other on the sacrum. Upon either side of this uterus, in the sides of the pelvis, the *ovaries* are situated, resembling the testicles somewhat in their form, and hence frequently denominated the testes muliebris, by the older anatomists. These

ovaries consist of a covering of peritoneum, and proper coverings, which may be called the tunica propria, enclosing within it a cellular web, full of very minute vessels, and in this cellular web are embedded a number of vesicles, which may vary in number from ten to fifteen or twenty,* of unequal size, some of them being as large as mustard seeds only, and some as large as a full-grown pea, and more or less conspicuous in the ovaries of different women. For even in those cases where there is no reason to believe that the woman has been sterile, you must examine with care to see the vesicles distinctly, while in other cases these vesicles are so striking, that they are the parts which catch the eye as soon as the ovaries are laid open.† These vessels which are denominated the *Graäfian*, are the eggs of the human species. Again: stretching from the womb to the sides of the pelvis, we have the *broad ligaments*, which are formed by the peritoneum, which covers the uterus, partially in front, and completely behind, and which being thus disposed upon the womb, forms two layers, one in front and the other posteriorly, stretching from the sides of the uterus to the sides of the pelvis. In the superior parts of these broad ligaments, are situated, what are called the *Fallopian tubes*,‡ which are, in fact, the oviducts of women, somewhat vermicular in their course, for they do not run in a direct line; very small where they enter into the uterus, insomuch that a large bristle could scarcely be passed through the orifice; larger where they open near the ovary, for there a large probe might be inserted; and immediately within the orifice, which is surrounded by a muscular fringe or ruffle,‡ and which is called the morsus diaboli, dilated into a sort of receptacle, in which the first rudiments of the fœtus may perhaps lodge. Stretching from the womb to the

* See Note * page 28.

† In a preparation of the ovary, the interior is exposed, and the eggs, which are nestling there, are conspicuously discernible.—*Dr. Blundell's Museum.*

‡ In a preparation of the uterus with a portion of the vagina annexed to it, you may see the broad ligaments stretching to the sides of the glass, and you may see the fallopian tubes or oviducts, above which is the muscular ruffle, or fringe, which lays hold of the mammillary process.—*Dr. Blundell's Museum.*

external organs, is the canal called the *vagina*, lying on the rectum posteriorly, and the bladder and urethra in front; this canal varying much in its capacity, being large in women who have borne many children, and small in virgins, but being of a form and capacity evidently conformable to the make of the male organ.

REMARKS ON IMPREGNATION AND CONCEPTION.

When impregnation takes place, for I now proceed to give you a short account of it, one or more* of the eggs, or Graäfian vesicles, becomes the subject of the conceptive actions, and supplies of nourishment are poured into it from the surrounding parts; the eggs enlarge in their size, and they project beyond the surface of the ovary, so as to form the *mammillary process*;† and the parts around the vesicles, which are thus enlarging the ovum, become more vascular than they were before. About this time, the mammillary process, projecting like a nipple, is seized by the muscular fringes of the fallopian tubes, something in the same manner as the nipple itself is seized by the infant when at suck. The mammillary process lying in this manner in the orifice of the fallopian tube, it at length breaks open by ulceration, and discharges its contents in this canal; after which the rudiments, by little and little, under a sort of peristaltic action, are conveyed

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* Where there are two fœtuses, two vesicles are in general excited, and two lutea become formed; in a woman from which a preparation of this kind, in my collection, was taken, there were twins, and you may observe a corpus luteum in each ovary. This is not invariably the case, for, as a single egg may sometimes contain two chicks, so a single vesicle may, in some cases, contain two fœtuses. The woman in question, conceived of three children, and you may see two vesicles in one ovary, and one in the other; observe, at the same time, the high vascularity of the surrounding ovary.—*Dr. Blundell.*

† You may see several preparations: one showing the mammillary process projecting; a second, where it is laid open, having its contents escaped, so that a small cavity has been formed in the ovary, and this cavity is filled up with a yellowish material brighter in some than in others, the whole constituting what is celebrated among anatomists under the appellation of the corpus luteum; a third, in which the vesicle, after discharging its contents, is again partially filled with the yellow material; and in a fourth, the closure of the cavity has been almost completed.—*Dr. Blundell's Museum.*

from the tube to the uterus, to be deposited there as in a nest,—for the uterus of the mammalia has some analogies with the nest of a bird, which, in some pointed particulars, it resembles. Now this transfer of the rudiments from the ovary to the uterus, constitutes what, in the proper acceptation of the term, may be denominated its conception, or what, in birds, we should call the laying of the egg. Dr. Haighton found, that if, in the rabbit, he divided the fallopian tube more than eight-and-forty hours after its communication with the male, he did not, in so doing, interrupt the process of generation; but if he divided the tube within ten, twenty, or thirty hours, or even later than this, then the process of generation was interrupted, the rudiments never afterwards making their appearance in the womb; and therefore he inferred, that, in the rabbit, the process of conception, or the laying of the egg, is accomplished in eight-and-forty hours, but not sooner.

It has often been asked, what is the term that is required for the completion of human conception? But this is a question to which it is not easy to give a precise and satisfactory answer. I thoroughly agree with those who believe that it is of very early completion, say within the fortnight, or perhaps sooner.* A fœtus of five or six weeks is thoroughly formed, and as large as a large

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* At what exact time the fœtus of an ovum becomes visible, it is extremely difficult to determine, because it is almost always impossible to ascertain the date of the impregnation. I should believe, however, that the fœtus is visible before the end of the fourth week, because we find it has made considerable progress in its growth, at the usual time of ova dying in miscarriages, which is about the seventh week. Dr. Hunter then speaks of a preparation in which there was the appearance of a fœtus, although extremely small, and where, from peculiar circumstances, the conception was ascertained to be twenty-two days old.—*See his Anat. Descrip. of the Hum. Grav. Uter.* 4to. 1794, p. 87.

Sir E. Home, after soaking an impregnated uterus in spirits, detected an ovum within it, and supposed that only eight days had intervened between impregnation and death. *Phil. Trans.* 1817. Part ii.

Meckel asserts that the human embryo can be observed on the fifth day after conception; and that the ovum measures from six to eight lines in diameter.—*Dr. Ryan's Midwifery*, p. 67.

blue fly. How young, therefore, must its rudiments be when they pass in an unformed state through the uterine orifice of the fallopian tube, which is scarcely large enough to admit a bristle.

Much dispute has been raised respecting a question of some little speculative interest, I mean as to the form in which the rudiments come down into the womb, some contending with Haighton, that they descend in a loose amorphous state; and others, as Cruikshanks, that they leave the ovary, and pass the tube under the form of a small egg. Dr. Haighton examined a great many rabbits which had been recently impregnated, making his observations at different intervals after conception, but he never found in any one instance, until the process of epigenesis was begun in the uterus, that the rudiments exhibited any definite form, so that after instituting many observations of this sort, (and he was a very acute observer,) he became of opinion that it was not the vesicle of De Graäfe that was detached in the form of an egg, to pass into the uterus, but that the vesicle opening, discharged its contents into the tube, as an egg might do, if the shell were freely broken. Cruikshanks, however imagined, that the rudiments passed along into the womb in the form of an ovum, of rounded or oval shape, but in order to prove this, he laid open the tube, and applied distilled vinegar.

Now, Dr. Haighton used to observe tartly and forcibly enough, that *nature* did not apply distilled vinegar in her operations; and the observation was as just as it was keen; for even supposing the rudiments came down into the womb without any defined shape, of course the application of the vinegar might be expected to coagulate the serum, and to cause it to assume something of a defined shape immediately. On the whole, therefore, I assent to the opinion of my valued relative, and believe with him, that, in conception, the ovum comes down into the uterus, not enclosed in a membranous cyst, but in a loose and disengaged condition; and this opinion is supported by the inference to be drawn from the smallness of the uterine orifice of the tubes, evidently much too

minute in its capacity, to allow the vesicle to pass in its oviform condition.

I have sometimes thought that, as in birds, the oviducts are superadding to the yolks certain parts derived from the ovaries, which render them more perfect for generation,—for instance the whites and shells. It may not be impossible that the fallopian tubes may add something too; and this is more probable, first, because we find the inner sides of the fallopian tubes vascular in a high degree,* and secondly, because their inner membrane is folded longitudinally, as if nature intended to spread them out for the purposes of secretion. However, granting its existence, we have clear proof that this super-addition is not essential to generation, for extra-uterine fœtuses may form in the ovary, and, in these cases, the rudiments never get into the fallopian tube at all,—and can, therefore, derive nothing from it.

SECTION VIII.

FORMATION OF THE FŒTUS.

If we examine the uterus of a rabbit immediately after the process of conception is completed,—that is, at the end of the eight-and-forty hours,—we can scarcely discover there any traces of the rudiments; but if we wait for a few hours longer, and examine again, we shall then, according to Haighton, detect portions of the rudimental matter lying on the surface of the womb, and which, in their number, are found generally to correspond with the number of the Graäfian vesicles which have given way in the ovaries. Pausing for a few hours longer, and then, in another rabbit, making further examination, we now perceive that these

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* See the preparation of one of the fallopian tubes laid open; it is vascular in a high degree, and its folds are lying longitudinally; it is this structure that induces Dr. Blundell to think, that the tube is a secreting organ, as well as an organ of transmission.—*Dr. Blundell's Museum.*

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make their appearance, laterally, at the upper part of the most depending portion of the embryo, on either side, in the form of light-brown specks,* and I suppose that, about the same time that the eyes are produced, the other internal parts, as the brain, the viscera of the thorax, and abdomen, are elaborated too; neither legs nor arms being, at this time, perceivable. Formation still proceeding, the entire corpuscule of the embryo becomes separated into two parts—the head, I mean, and trunk,—which are afterwards retained in connection with each other by means of a short and rather slender structure, which afterwards composes the neck,—that fair column, the seat of dignity and grace, on which the human head is erected. About this time it is, when the neck is forming, that the legs and arms begin to make their appearance in the form of buds,† which burge on from the trunk, and in the further progress of generation, these budding arms and legs become elongated, and, no long time afterwards, the fingers and toes sprout forth,‡ the embryo, soon after these small members are completed, becoming thoroughly elaborated and accomplished in all its other‖ parts. While this formation of the embryo is proceeding, the involucra, of so much importance to our welfare while in the uterus, are becoming organized also; and, by the

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* See another preparation of larger dimensions and more perfect structure, the form still unsightly, and reminding one of the kidney bean—on either side of the most depending portion. Those who are accustomed to examine preparations of this kind, may distinctly see the eyes manifesting themselves under the form of circular spots of a brownish tint: nor is it unreasonable to suppose, that, when the eyes make their appearance, the viscera of the great cavities have been formed too,—the brain, the lungs, the heart, and the contents of the abdomen.—*Dr. Blundell's Museum.*

† A fourth specimen exhibits an embryo, not much larger than the preceding; its formation, however, is a little further advanced, and the first appearance of the arms and legs may be seen, while the hands and the feet, it will be observed, are beginning to form in the contiguous embryo, which stands by like a friend and companion.—*Dr. Blundell's Museum.*

‡ Very plainly to be perceived in a preparation in the Doctor's Collection.

‖ I would also again direct your attention to a further specimen, in which the embryo is to be seen elaborated and formed in all its parts—head, limbs, and trunk—so that, small as it is, we feel the operation of the social feeling, acknowledge it for our fellow-creature, and admit that it may with reason be, in a certain degree, put under the protection of the law.—*Dr. Blundell's Museum.*

time that the embryo is completely elaborated, the involucra will be found to exist in all their perfection, and we have the placenta, the membranes, the liquor amnii, and the cord ; parts which, as to their essential structure, are very early constructed, first needed during fœtal life, and, therefore, first formed.*

CAUSES OF MONSTROSITY.

In the process of formation, it sometimes happens, that great blunders are committed, and these errors and morbid deviations give rise to what are denominated monsters. By monsters, as formerly observed to you, we understand nothing more than fœtuses which deviate conspicuously from the ordinary make ; and the more immediate cause of this monstrosity appears to be the morbid operation of the forming powers, whatever their nature may be.

It has been often asked, and is still a question undecided, whether the imagination of the mother may have any influence in giving rise to those morbid formative operations on which the generation of monstrosity seems to depend—a question which is not to be decided by reason independently of observations, as a

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* The fœtus does not grow in an uniform ratio, but, as has been observed by the learned anatomist, Dr. Soemmering, the increment is quicker in the third than in the second month. In the beginning of the fourth it becomes slower, and continues so until the middle of that month, when it is again accelerated. In the sixth month, it is once more retarded, and the progression remains slow during the rest of the gestation.—*Dr. Burn's Principles of Midwifery*, 7th Edit. p. 175.

A fœtus of four weeks is near the size of a common fly; it is soft, mucilaginous, seems to hang by its belly, and its bowels are only covered by a transparent membrane. At six weeks, the consistence is still gelatinous, the size about that of a small bee, the head larger than the rest of the body, and the extremities then begin to shoot out. At twelve weeks, it is near three inches long, and its formation pretty distinct. At four months, the fœtus measures above five inches; at five months, between six and seven inches; at six months, the fœtus is perfect in all its external parts, and commonly in length about eight or between eight or nine inches; at seven months, it is between eleven and twelve inches; at eight months, about fourteen or fifteen inches; and at full time, from eighteen to twenty-two or twenty-three inches. But these calculations are not always correct.—*Dr. Hamilton's Outlines of Midwifery*, p. 71.

simple reflection may show; for, as we know but little respecting the powers which operate, we must necessarily know as little respecting the powers by which this operation may be influenced. In matters of this obscure and uncertain kind, to ridicule without giving ourselves the trouble to examine, seems to me to be at once both petulant and unphilosophical. Facts, and not *a priori* reasonings, form the basis of modern philosophy; that incubation should give rise to the formation of the chick within the egg-shell —that the conjunction of the sexes should give the first impulse to the formation of the infant in the uterus, must, independently of observation, have appeared both absurd and incredible. In the compass of generation, nothing need surprise us; it is the fairy land of physiology; and, in the hands of divines, its wonders may serve as a good preparative to discipline the mind for the more ready belief of those miracles which it is their office to inculcate. When first I set out on my physiological career, I certainly set out with a strong impression, that the fancy of the mother could not operate in the formation of her fœtus; nor am I prepared to concede, at the present moment, that this impression was erroneous; nevertheless I must, in candour, admit that various facts have been brought before me, which do prove beyond doubt thus much, that there is sometimes a very striking coincidence between impressions made on the mind of the mother, and appearances which manifest themselves on the body of the fœtus; these coincidences being sufficiently frequent to create a sort of suspicion that they may be of the nature of cause and effect. If I press my finger upon the box which now lies before me, it moves, but how do I know that this motion may not arise from some other simultaneous occurrence distinct from the pressure of my finger? In truth, should this coincidence of pressure and motion in this case be observed but once, were it not for analogical and uncertain experience, I should have just cause to doubt; but when I make this pressure repeatedly, under varying circumstances, and find invariably that motion ensues, unless some third cause of obvious operation be interposed to prevent it, I may reasonably infer that

the coincidence of these two occurrences is of the nature of causation; and in all cases of rarer occurrence, I conceive, the more frequent these coincidences, the stronger does the proof of causation become.

It would lead to a long disquisition, if I were to bring before you all the different facts which have been related to me, and which seem to shew that the fancy of the mother may have an effect in the formation of the fœtus; but some of the more striking facts, by way of illustration, I may perhaps be permitted to adduce.

In the first place, I myself once presided at a labour where the child, after birth, was discovered to labour under a deficiency of the cartilage of the ribs, and this upon the right side of the sternum near its middle. In consequence of this deficiency of the cartilage, there is in this child, now living, a sort of dimple, or impression, which is very peculiar, and of which the mother gave me the following account. In the early days of her pregnancy, she took one of her children to Mr. Travers, an eminent surgeon well known to you all, it having been supposed that there was some fracture or other of the collar bone, or the ribs contiguous; and Mr. Travers examining the child with a good deal of care, chanced to make a pressure on the ribs in front, near the sternum; the thumb bearing over this part, while his fingers were placed behind on the scapula, and the rest of the hand lay above the shoulder, the child being young and small; and, in doing this, he occasioned with the thumb a considerable dimple or indentation, which, as the mother, of great nervous irritability, told me, affected her very much, and produced in her that contraction of the skin, which is very significantly denominated the goose flesh. This little occurrence, however, did not ultimately make any very strong impression on her mind, though she thought of it occasionally during gestation; but when I saw the infant afterwards, she told me the story which I have very accurately related to you.

Again, a lady, whose name it would be improper to mention, (though I had the statement from one of our profession, her own son,) at a period, as I was informed, not earlier than the first two

or three months of her pregnancy, was very much alarmed by a beggar who had lost the hand and lower part of the arm, and who, to excite her commiseration, exhibited to view the mutilated member. By this shocking sight a strong impression was made upon her mind; and sometime afterwards, in a ball-room, on seeing a gallant officer who had left one of his arms in the field of battle, this impression was renewed, not without a slight emotion of horror, and the constriction of the skin, and some few months afterwards the child was born with a coincident want of the arm.

Now these cases are not solitary; the same tale has been often told, and the same concurrence has often been observed; and, to say the least of it, the coincidence deserves attention.

There was a child (of which I have got a drawing,) lately born at Plymouth, with excrescences pushing from the mouth, and which certainly resembled a large bunch of grapes, such as might appear in the mouth of a child, if it were endeavouring to devour, unbroken, the whole of a small bunch, there not being room sufficient to admit the whole at once behind the teeth. Before she was aware of this faulty formation, the mother was closely questioned by the accoucheur; and she certainly did state distinctly enough, that in the early period of her pregnancy, not, however, till near the fourth month, in passing along a street, she chanced to see a boy who had got a bunch of grapes, which he was eating very greedily, as boys will do, and that she had a very great desire to partake of them. Growing from the region of the sternum, too, there was an excrescence which might remind one of the wattle of the turkey-cock, an animal by which she had been frightened a little earlier in her pregnancy. The coincidence certainly merits notice.*

Tending to illustrate the same point, you will find in my collection, a kitten with an apparent parrot's head,† and the following

* To Mr. Baldy and Mr. Franklin Bellamy, I am indebted for this fact, of which a fuller account will be found in the Medical and Physical Journal for July 1827.—*Dr. Blundell.*

† Presented by Mr. Maurice Workman, of Reading.

is the tale which is connected with it:—An ancient lady, in his neighbourhood, who was, I think, childless, (it is pleasant to love something,) among other pets of her family, had a parrot, a cat, and a love of a lapdog, all co-rivals for the first place in affection, and who agreed with each other no better than the fair goddesses of Ida, at the time they disputed for the apple of beauty, and unveiled, in the presence of the Trojan shepherd, charms before unseen by mortal eyes. On some occasion or other, it seems, that the cat was in an apartment, and the parrot and the dog being placed to the right and to the left of the door-way,—minaud, then *enceinte*, retreating from the chamber, nearing the cage, perhaps to avoid her four-foot rival, was alarmed by the ferocious scream of the parrot, and scampered off in a great fright. Date afterwards proved that she was in the first days of her gestation, and she subsequently produced a good many kittens; all of them were well formed, with the exception of one, which has, as you will allow, a head in form very much resembling that of the bird by which she was scared. Mr. Maurice Workman is my voucher for these facts; in all that is essential they are, on my part, fairly stated. The healthy formation of the other fœtuses deserves especial notice; but, say what we will, the coincidence is well worth recording.

Particular facts of this kind I forbear to multiply, though the task is easy.* As these coincidences are occasional only, and perhaps rare, of course they do not demonstrate causation; but if on a candid accumulation of facts, it appears that the coincidences between the impressions on the mind of the mother and the

* In Dr. Blundell's Collection you may see a specimen of a twin monster; and a monster with the head like that of a pig. From these preparations, says the learned obstetrician, it would seem that monstrosity is early formation; as, indeed we should expect it to be, that is, before epigenesis, in other words, the formative process is completed. This consideration renders the reported effects of mental impressions less credible; it is, indeed, difficult to conceive their operation, after the formation has been once perfected; and yet, I think the impressions have been made on the mind later, after formation must be supposed to have been effected, in most recorded cases of this kind.

body of the fœtus are well marked, and not unfrequent, then, to say the least of them, they establish a very curious fact in animal generation, and their general bearing is to show that the two occurrences are, in relation with each other, as cause and effect.* I would that the affirmative of this could be proved; we should then be in possession of one of the principles of formation. But then it may be asked, how can these things be?—and how, it might once have been said, can it be that the moon should act on the waters? If, like many of our forefathers, we had no notion of the bulk of our satellite; if, like them too, we were ignorant of the principle of gravitation; if we had no idea that matter was capable of attracting matter, even at remoter and planetary distances, such an action, in such a state of ignorance, must appear incredible, yet, when once the necessary knowledge is communicated, the mutual attraction of the two masses of matter becomes to a certain extent intelligible enough. Observe here the progress of this wonderful discovery, for it illustrates the progress of all solid philosophy. The fixed relation between the moon and the floods was first sagaciously observed, and verified, allowance being made for the irregularities which arise from accidental circumstances. The probable connexion of the two, in the way of cause and effect, was afterwards inferred from the fixity of this relation. At length the large mass of the lunar body was suggested and demonstrated, and the mutual attraction of matter was evinced by experiments and calculations addressed to the senses or reason; and thus the doctrine, which at first must have been deemed a wild

* The Jews, under the belief of the maternal impression, are said to have been so solicitous about the beauty of their children, that care was taken to have some beautiful child placed at the door of the public baths, that the women, at going out, being struck with his appearance, and retaining the impression, might all have children as fine as he. The Chinese take still greater care of their breeding women, and prevent uncouth objects of any kind from striking their imagination. Musicians are employed at night to entertain them with agreeable songs and odes, in which are set forth all the duties and comforts of a conjugal and domestic life; that the infant may receive good impressions even before it is born, and not only come forth agreeably formed in body, but well-disposed in mind.—*Encyclop. Brit. Art. Callipædia.*

hypothesis, was not only proved but comprehended. And while all this was doing, some, in the first stage of the enquiry being variously occupied, paid no attention to the observations on which the discovery was to be grounded; and others, as the discovery proceeded, clamoured, no doubt, against the absurdity and impiety of the proposition. What! a small body like the moon, to act upon the huge mass of waters in the ocean? Lunatic! What! the great goddess of the Ephesians—the celestial archeress, whose gracious presence has been manifested to our heroes—whose miracles and oracles have astonished her votaries, and who even now steals down to the mysterious retreat of Latmus!—What! do you dare to assert that this sublime being may, after all, be nothing more than a huge globe of matter, the scene of tempest and volcano! Atheist! Such I can easily believe might be the spirit which animated the opponents of these doctrines. Yet in the midst of all these commotions, while puppies were barking, and men were clamouring, the moon shone—the ocean rolled—the seasons changed—the earth teemed—the mob of all ranks vanished from the scene, and by its mere intrinsic durability, without effort, the truth prevailed at last. Our prepossessions are not the criterion of truth; improbability and incompatibility may result, not from impossiblity, but from our ignorance of the requisite explanatory knowledge. All this is clear in speculation, but somehow or other, it is to be forgotten in practice. Doubt—observe—infer—still doubt, and bring the truth to the test of the most rigorous examination. Truth never yet shunned the light; how can she? it is her element.—But to return from this digression: Pray give to the profession, with rigid accuracy and well attested, facts relating to this important subject. Always, where it can be known, state the age of gestation, the absence or presence of the feeling of horror, and cutaneous constriction, and endeavour, so far as may be, to verify all by your own personal observations and inquiry of the woman herself. Monstrosity may occur in formation under the egg-shell. How can mental impression be supposed to operate here?

DURATION OF THE FORMATIVE PROCESS.

With respect to the duration of the formative process, it is well worth your notice, that although it is not clearly ascertained, there seems to be no doubt that it is in all cases short. The human fœtus, of such complicated organization, seems to be elaborated in the course of five or six weeks, at furthest; and the greater part of its structure is, most probably, perfected in a much shorter period.* There is nothing in the whole formative process which astonishes me more than the amazing rapidity and amazing facility with which it is accomplished; it is wonderful, indeed, to suppose that the human structure should be formed at all in procreation; but that all these delicate textures—that all this elaborate and finished structure of which our bodies are composed, should be formed, if, indeed, they are really formed in generation, in the compass of some five or six weeks, is almost beyond wonder. Now, that the fœtus is thus early perfected, in the first weeks of genera tion, I mean, must, I think, appear satisfactorily enough from what has been said. I know from my own observations, made with tolerably accurate data, that a fœtus of three months, independently of its lower limbs, is as long as my forefinger; and therefore it is not unreasonable to conclude, that a fœtus which is not so big as the least joint of my little finger, cannot exceed the age of five or six weeks. It was asserted by Hippocrates, that the formation of boys, is accomplished in thirty days, and that of girls in forty, an opinion of which I have met with some traces in the popular sayings of the North of England; but I forbear to intrude, by repeating them, into the mysteries of the Bona Dea. The opinions of Hippocrates are, many of them, grounded on that experimental observation which forms the proper bottom of human knowledge; and, without giving to this notion

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* Birds, many of them, form in the course of a few days; the maggots of insects, in the course of a few hours.—*Dr. Blundell.*

more than a very "academic faith," I think that it is grounded upon certain observations, of which the records are now lost.

OF EPIGENESIS AND EVOLUTION.

By physiologists it has often been disputed, whether in generation there is real formation, or whether these structures are merely developed in the process, the various organs being already in existence before conception is effected, though concealed from observation by their smallness, their transparency and their involution in each other.

Many physiologists have maintained, that in generation there is a real organisation, one part being formed successively upon another, by a process of *epigenesis*,* as it is called; but Swammerdam, Haller, and Spallanzani, seem to have maintained, that all living beings were formed in little at the creation, and that they were merely enlarged and developed in generation, being possessed of organization, before conception is begun; therefore, those swarms of locusts, possible as well as actual, were all, according to these speculators, enclosed in the ovary of the first parent; and of the shoals of fishes—and of the flights of birds—and of the innumerable multitudes, possible and actual, of which our race is composed,—all, according to this opinion, are coeval, and old as the creation, though passing in different ages through the door of life. Make all allowance for the infinite divisibility of matter—give due weight to the recollection, that the power of the Creator is boundless—remember the minuteness, scarcely conceivable, of the corpuscule of the animalculæ—still the more we reflect on this doctrine, (evolution, as it is called,) the more incredible it appears. On a point like this, in the present state of our knowledge, with respect to facts, it is, perhaps, impossible that we should obtain an absolute conviction, yet I

* Epigenesis:—From επιγινομαι, *epiginomai*, to generate upon.

acknowledge I feel, in my own mind, a persuasion almost amounting to conviction, that, in generation, there is a formation of parts which had previously no existence, and that in this process we have not, as Swammerdam and Haller, and others, have supposed, merely a developement and enlargement of organs which existed before, but which, by causes already mentioned, were concealed from our sight. Of your structures and mine, it seems to me not improbable that no parts existed some hundred years ago; nor does it, I own, appear to me impossible, that within that compass of time all the parts of our body have been completely and really organized.

There is nothing more certain, than that living parts do possess an organizing power; whence that power arises, I do not pretend to explain; but its existence, like that of the lunar influence on the ocean, is not the less certain, because, in our ignorance, we cannot tell in what it consists. Those who amuse themselves with the gay and airy mythology of antiquity, must all have read the tale of the Lyrnæan hydra; in physiology this story is, in some measure, realised, and the stag renews its horns, and the lobster its claws; the lizard can reproduce its eye, and the snail its head, and this repeatedly; or if the second head be removed by a dexterous hand, a third will sometimes sprout up in its place: nor must we forget a fact, on which, however, I do not lay equal stress, I mean, that in the generation of all insects, the maggot is converted into the fly. Now in all these cases, it is very evident that the living body, from whatever cause, really does possess a power of organizing parts, which had no existence before. I know, with respect to the butterfly and the caterpillar, it has been urged by the very laborious and able Swammerdam, that the parts of the butterfly are contained under the skin of the caterpillar, at least about that time when it is about to become converted into chrysalis: but setting aside for the present the proof of formative power taken from the transformation of insects, its existence is, I think, evident enough in the other cases which have been stated, that of the snail especially; for, I presume, no generous antagonist will

venture to maintain, without proof, that a snail has a repository of heads to supply the place of those which may be removed by the physiologist.

The existence, then, of a forming power, seems, from these facts, to be sufficiently obvious; nor is proof wanting to show, that this power is exerted in generation. For, not to weary you with the enumeration of facts less decisive, the dog, as I have been assured, may prove prolific with the sow, the fox with the dog, and the horse with the ass.* The last fact is acknowledged and familiar, and the mule which results from these connexions, is an animal of mixed structure. Now, unless we suppose (and how wildly) that this hybrid-organization was in existence in the genitals, male or female, before the generative actions were excited, we must, I think, presume, as Haller, indeed, has admitted, that in generation such a degree of forming power is exerted, that the structure, originally simple, is made to assume a double and mixed character. Kolreuter, impregnating with the male of one species the female of another species of the tobacco, obtained hybrids male and female, and then further, by means of the same male, impregnated a female hybrid, so as to obtain other hybrids of both sexes, approximating still more nearly to the male structure, and at length, by repeating his operations upon these principles, he produced, at last, hybrids in structure so exactly resembling the species of the male, that the botanist himself might scarcely discover the difference; and there seems to be but little doubt, that the whole process might be reversed, so as to bring down gradually the plants of the male species to an exact conformity with the make of the female.

Here, then, is an exertion of the forming power, high and extensive, diffusing its influence over every part of the new structure—and what more need be proved? for if we allow that in living bodies a plastic power is exerted, which may form the horns, the claws,

* M. Castes relates an instance in which a mare having been successively covered by a stallion and an ass, gave birth to two individuals, each of a different race.—*Lond. Med. Gaz.* vol. ii. p. 159.

the eyes, nay, even larger parts, as the head itself, and this repeatedly; and if we allow that in generation this formation is really exerted on every part of structure, why need we look further to understand how it is that new organizations are produced? *Frustra per plura.* Here you have a power, whatever its nature, adequate for the purpose of formation; for that which will produce the horns, the claws, the eyes, the head, may form also, no doubt, the other parts of the living system; and in mule generation, you have a proof which comes up towards demonstration, that after the union of the two parts of the genitals, this power is brought into high and extensive operation.

As in the contemplation of the divinity, however, so here, the more we reflect, the more our wonder increases. And of all men, the minute anatomist, well acquainted with those delicate, elaborate, and accomplished structures, of which the body is composed, must feel the greatest difficulty in persuading himself, that they are all really formed within the body of the female parent in the compass of a few weeks. Let it be recollected, however, that the mystery may lie entirely in our ignorance, and not in the nature of the process itself. Remember, that the action of the moon on the ocean, so incomprehensible to those who are uninstructed, may, to those who possess even a moderate share of the necessary explanatory knowledge, be made, in many points, intelligible enough. Were you to tell a savage that you could navigate the air, that you could explode the solid granite—that you could shut up the lightning in a bottle—that you could, in twenty-four hours, multiply copies of this work to the number of ten or twenty thousand, all alike in their characters, their errors, and their excellencies; if he were a man of plain sense, his first resource would be to disbelieve you, or, if convinced of your veracity, he would then, most probably, attribute to you a superhuman power, for such miracles and prodigies must, in his ignorance, appear to exceed the measure of mortal power—Θεος τις—the gods are come down among men. Roger Bacon was a conjuror, Columbus was a divinity, and poor Dr. Faustus had sold himself to the devil, if you

will give ear to the savage ignorance of semi-barbarians; but let him suspend his faith a little, let him learn, as he may in the course of a few hours, the general principles and agents with which you operate, and he finds, after all, that you are much such a being as himself—the operation was wonderful and mysterious, simply because the agents were not known. And thus, after all, it may be, nay, it probably is, in generation. Simple in the means, magnificent in the results, such is the character of those which we may call the greater operations of the Author of Nature; and I can easily persuade myself, that this stupendous operation, this grand, this glorious achievement of the living body, by which creation enjoys, as it were, a sempiternal youth, and rises with renewed vigour under death, the destroyer, may, after all, be simple and of easy accomplishment, and that our wonder reposes, not on the nature of the process, but rather on our ignorance of some few and simple means by which the great result is accomplished.

That generation really may not be as frequently represented,—an operation essentially unintelligible,—is, I think, rendered less improbable by various considerations; for, in the first place, generation is an act which may be performed by structures the most simple; by the polypus and the anemone, no less than by the most complex structures of the creation; a consideration which is surely worth our reflection, though I certainly should not think of laying on it my principal stress. Again, let us reflect on the immeasurable abundance in which many living germs are generated. The human species, it is true, is produced, as it were, painfully, and in small number; but it is not so with many very curious and complicated organizations. A sturgeon may, at a single spawning, pour forth above a million and a half of eggs. Does this seem to indicate that generation is a work of effort? I am informed, that the seeds of the filix may amount to many millions in each flower. Does this, again, seem to indicate that formation is a painful effort? When germs, animal and vegetable, are produced in such multitudinous and innumerable abundance, that, were they to be per-

fected, air, earth, sea, could not contain them, is it reasonable to conclude, that, in this system of things, formation is complex and painful?

There is yet a third argument, which, I think, strengthens my thesis, the simplicity and ease of generation; and that is taken from the great rapidity with which the living structures are formed. The human structure itself, perhaps, of all others, the most elaborate in all its essentials, is perfected in the brief space of a few weeks. Of birds there are many; and I may give the common fowl, as an instance of which, the principal structures become organized in the compass of a few days. And, as to the eggs laid by insects, as, for instance, the common large blue fly, I have myself known them to become living in the course of a few hours afterwards; so that, without rising into the regions of airy and giddy speculation, when I reflect on the simplicity of some of those structures by which generation is accomplished; when I consider in what abundance Nature, in some genera of living structures, is producing the buds and the seeds; when, lastly, I recollect how rapidly, in the most complicated and perfect animals, the structures that compose them are formed and developed,—I cannot help persuading myself that, in generation, the process is not really difficult; but that, like the marvels of typography, of electricity, of aëriel navigation, and the explosive powder, it depends upon some simple principles, which the human mind may, perhaps, hereafter, comprehend.

END OF PART II.

THE

PRINCIPLES AND PRACTICE

OF

OBSTETRICY.

PART III.

SIGNS AND DISEASES OF PREGNANCY.

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PART III.

SIGNS AND DISEASES OF PREGNANCY.

EMBRACING THE ORDINARY SIGNS OF GESTATION, AND THOSE DISEASES WHICH COMMONLY ATTEND UPON PREGNANCY.

In the first and second Section of this division of the work, will be considered the signs of pregnancy, and the means of discovering the progress of gestation; and in the third Section, an account of those diseases which arise from pregnancy, as their cause, or with which they are accidentally in connexion, and consequently demand a modified form of treatment.

SECTION I.

ON THE SIGNS OF PREGNANCY.

The most certain mode of knowing whether a woman be in a state of gestation or not, is by waiting till the term of nine months is completed, when, unless the pregnancy be extra-uterine, or unless there occur some of those extraordinary and rare prolongations which have sometimes been made the subject of physiological or forensic litigation, if the uterus contain an ovum, it will be expelled. It not unfrequently happens, however, and I have met with such instances myself, that women, from various causes, are exceedingly anxious, in the earlier, or middle, or latter months, to know

whether they are pregnant or not; and hence the accoucheur has been led to bring together a variety of signs, by which the decision of this question may be effected.

The indications of pregnancy, in number not a few, may be commodiously divided into three classes; of those, I mean, which are of ordinary occurrence; of those, again, which are rare, or anomalous; and of those, lastly, common indeed to all women, but which may be ascertained solely by means of a careful manual examination.

THE MORE COMMON INDICATIONS.

If a patient apply to me, anxious to know whether she is in a state of gestation or not, one of the first questions I propose is —have you any feeling of bearing, together with a sort of irritation about the bladder or the rectum, but more especially about the bladder? For, in consequence of the enlargement of the uterus, and of its descent into the pelvis, and of that increased action approaching to the inflammatory, occurring in the womb and the parts contiguous, it not unfrequently happens, in the earlier months, that micturition, and some little obstruction of the bladder, together with bearings, are produced.

ŒDEMA OF THE LOWER LIMBS.

From a variety of causes, an enlargement of the lower limbs, of the dropsical kind occurs: in some women, especially, this enlargement, whether of the one or both limbs, is apt to be produced in the earlier or subsequent months of gestation. If, therefore, a patient suppose herself to be in the earlier months of pregnancy, you ought always to ascertain whether the lower limbs are œdematous or not; and if your patient, previously in good health, has this œdema of the lower limbs unexpectedly, and in considerable degree, together with the other signs of gestation, you may then consider this, too, as a sign indicative of pregnancy, and, indeed as one of no small value.

VOMITING AND RETCHINGS.

It is obvious that you must not hastily conclude that a woman is pregnant, merely because she is attacked with vomitings and retchings in the mornings, inasmuch as these retchings and vomitings in women, as in ourselves, may be produced by a variety of other causes. Pregnancy occurring, however, women, perfectly well before, are sometimes seized with morning sickness, attended with retchings and vomitings; so that, during the greater part of the day, they are well enough, but when they rise, or even sit, in the morning, erect in the bed, if I may confide in reports, both retching and nausea are produced. In cases like these, a little mucus and gastric juice only are expelled from the stomach, and not an ill-digested chyme, this proving, apparently, that the disease is not to be ascribed to *dyspepsia*, but rather to gastric irritability. If, therefore, a woman, previously exposed to the cause of gestation, nor wanting the other signs, is seized suddenly with retchings, nausea, and vomitings, seizing her morning after morning when she quits her bed, or even when she takes the sedentary posture, there can be little doubt that all this is the result of gestation, and the sign becomes of no small value.

MOVEMENT OF THE FŒTUS.

In the earlier months of gestation, say in the first two or three, when the embryo is small, the movements of the fœtus, of course, cannot be felt, but in the middle and latter months, when the fœtus becomes large and strong, its movements are readily perceived by its mother. Now, where the motions of a child are, as they frequently are throughout the whole of the pregnancy, obscure and infrequent, they become of small value, as an indication of pregnancy, even though the woman have had a large family, and though, judging from this symptom, she persuades herself that she is pregnant. I know an instance of a lady, possessing more than average intelligence, the mother of twelve children, who was

led, by these abdominal movements, into an erroneous persuasion that she was pregnant again; for spasms of the abdominal muscles, and flutters of the bowels, may now and then be mistaken for the movements of a child. You ought, moreover, not to be ignorant that some women possess the power of simulating the fœtal movements, by the action of the abdominal muscles, as I am informed, so exactly, that even an experienced accoucheur might be deceived. By women of intrigue, this piece of slight may be abused. A woman, who possessed considerable skill of this kind, formerly exhibited her talents in this town for hire; she was visited by Lowder, Mackenzie, and some other celebrated accoucheurs of the day, and, after satisfying themselves that the womb was not enlarged, they made the usual examination of the abdomen, when they all agreed, that the movement was so exactly analagous to that of a fœtus, that no distinction could be clearly made out; adding, that if no internal examination had been made, they should, judging from this only, have satisfied themselves that the woman was with child. Should it be your duty, then, to examine a woman, who not only has her reasons for supposing that she is pregnant, but who finds her interest in this supposition, be on your guard against this simulation. These cases, however, are not frequent, and, in general, it is sufficient to recollect, that when the motions of the child are somewhat obscure, but little reliance is to be placed on them as a sign of pregnancy, even where women are perfectly honest; but where the child is very turbulent, and its motions are of consequence both frequent and violent, the sign becomes so strongly marked, and so decisive, that without looking any further, you may venture to infer the gestation is undoubtedly begun.*

* M. Le Jumeau de Kergaredec, the friend and "compatriot" of Laennec, has endeavoured to deduce *stethoscopic indications* of the pregnant state, in a small work, entitled "*Memoire sur l'Auscultation appliquée a l'Etude de la Grossesse*," Paris, 1822. A few additional particulars and some new observations are given in the later editions of Laennec, from which some succinct remarks will be found in the *Medico-Chirurgical Review*, for 1826, p. 607.

Dr. Kennedy of the Dublin Lying-in-Hospital, has written in favour of auscultation. M. Velpeau has tried it in a great number of cases in vain. Dr. Elliotson is in favor of it.

ENLARGEMENT OF THE ABDOMEN.

When women are pregnant, there is always, in the middle and latter months, an enlargement of the abdomen, greater where the hollow in the back is deep, less conspicuous when it is shallower—observed, however, in all, when pregnant, more especially in the end of gestation. You are all aware, no doubt, that from a great variety of other causes than pregnancy, abdominal enlargement may be produced, so as to render this enlargement, to the inexperienced, a very uncertain sign; from air, from fat, from water, from a diseased growth of the viscera, an intumescence may arise, and the appearance of pregnancy may be deceptively produced. From the enlargement of the abdomen, however, the more expert accoucheur may often form a very just opinion as to whether the woman be pregnant or not, provided he proceed with due caution.*

Dr. Fergusson, of Dublin, thinks it an unequivocal proof. Dr. Nagle, of the same city, thinks it equivocal. The conclusions drawn from the suspected value of auscultation are these: first, that the fœtal and placentar pulsations, when discovered by auscultation, are positive proofs of pregnancy; second, that in all cases before the fourth month, the diagnosis is extremely uncertain; third, that during the five succeeding months, better evidence is afforded by the progress of uterine developement; fourth, that there are no infallible signs of pregnancy, except, perhaps, those afforded by auscultation.

Previous to the application of auscultation, it was held by many authorities, that there was no infallible sign of pregnancy in the early months.—*Dr. Ryan's Manual of Midwifery*, 3rd Edit. p. 121.

Auscultation is a test that has recently been proposed to determine the pregnant state, and although it has been recommended by high authority, I am not inclined to attach much value to: by the stethiscope it is said that the circulation through the placenta and the pulsation of the fœtal heart may be distinctly recognised; but it requires a practised ear to distinguish them, especially in the early months: indeed it is stated that the attempt would be useless prior to the fifth month, and at this period the uterus will be sufficiently developed to enable any one to distinguish it by a vaginal examination, if he be at all accustomed to such operations. I have heard the pulsations of the fœtal heart by placing the stethiscope on the naked abdomen at the time of labour, but have been repeatedly foiled in my attempts at an earlier period, when the female has been dressed; it might probably be brought usefully into practice to assist in forming a judgment respecting the life of the child, when the use of instruments is required, and thereby to enable the accoucheur to determine whether the long forceps or the craniotomy instruments should be used in those cases where there is contraction of the superior aperture of the pelvis.—*Dr. Waller in his Edition of Dr. Denman's Midwifery*, p. 171.

* In the commencement of pregnancy, the abdomen does not become tumid, but, on the contrary, is often rather flatter than formerly; and when it does first increase in size, it is rather from inflation of the bowels, than from expansion of the uterus.—*Dr. Burns.*

The form of the tumour, as observed by the eye, is of no small importance, and I would advise you to acquire, from observation, a correct idea of it; nor must we forget its situation, lying in front of the abdominal cavity, and occupying the lower and middle parts. Swellings from air, being very elastic, always yield under the continued pressure of the hand, and may be urged from one part of the abdomen to the other, and allow the fingers to sink deep upon the spine; but the intumescence of pregnancy is firm and unyielding. The intestines, too, frequently gurgle when the enlargement is from gas, and, though sometimes lasting for weeks together, tympanitis is frequently fugacious, appearing and vanishing in the compass of a few hours. Swellings from water undulate more or less distinctly when struck with the hand; but, unless there be a distended bladder, or a dropsical womb in pregnancy, no fluctuation can be felt. An enlargement from fat is not topical, but diffuses itself over the whole body; in the limbs, face, and haunches, it may more especially be detected. The diseased and solid growth of the viscera is a work of much time, but the enlargement of pregnancy is rapid; so that we may often distinguish between the swellings which arise from these two causes, by ascertaining the time that they have been observed to subsist. In a word, mere abdominal intumescence is but an equivocal indication of pregnancy; but, by ascertaining its age, its firmness, its want of fluctuation, its seat in the abdominal cavity, and the form which it assumes, we may, in general, distinguish such swelling* from those various morbid enlargements which arise from air, water, fat, or the diseased growth of the viscera, or from the operation of these causes combined.

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* On the other hand, in some instances, pregnant women have been supposed to be dropsical, and actually tapped; and moreover, Mauriceau relates a case (shewing the difficulty of detecting pregnancy) of a woman who was hanged, and afterwards proved to be pregnant with a child of four months, notwithstanding the report of the persons who had visited her by order of the judge before her execution, and who assured the judge that she was not so. *Vide Mauriceau sur les Maladies des Grosses Femmes*; also *Dr. Gooch on the most important Diseases of Women*, p. 199.

STATE OF THE BREASTS.

After women have suckled, you cannot, in general, judge a subsequent pregnancy by the breast, but where they are pregnant for the first time, and, in general, it is then that they are most anxious for information—from the increase of the size of the breast,* from a certain fulness and tenderness, and an approach to inflammation, and, now and then, from a secretion, of a fluid, serous, milky, or mixed character, you may form a notion whether gestation be or not begun. There are some women in whom, before pregnancy, the breasts are remarkably small, and whose breasts become twice or three times as large, or even larger, after gestation begins. Now, when these sudden enlargements, and other changes, supervene in first pregnancy, and this after the patient has been exposed to the cause of gestation, there can be little doubt that pregnancy is begun. You must not, however, hastily conclude that a woman is pregnant, merely because she has an enlargement of the breasts; she may be getting very corpulent after her marriage, and the breasts may be enlarging in common with the other parts of the body. Enlargement of this kind, however, is known easily enough, by the concomitant increase of the hips, face, and limbs. Again, you must not hastily infer that a woman is pregnant, merely because she has a good deal of uneasiness about the breasts; for, if she suspect pregnancy, and is often handling the mammæ, she may, in this manner, cause them to become irritable and tender, as, in young females, they frequently are prone to be; nay, se-

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* The breasts often at first become smaller, but about the third month they enlarge and occasionally become painful.—*Dr. Burns.*

Enlargemant of the mammæ is a very common attendant upon genuine pregnancy, though it is not uniformly so—we have known a number of cases where they did not swell even at the later periods of gestation, and it was not until after delivery that they gave evidence of capacity to perform their ordinary functions; on the other hand, we have known them to enlarge considerably, where the menses were interrupted from other causes than pregnancy.—*Dr. Dewees.*

cretion itself may thus be produced. Again, you should not infer there is pregnancy, merely because there is a secretion of milk. I remember a woman, in this hospital, who had milk in her breasts, and who had not had a child for three years, nor had she been suckling for a length of time before; yet in this woman, whom I examined, at the request of the officers of the hospital, the milk formed so copiously, that when the breast was pressed, the milk oozed freely forth; and yet I satisfied myself, most unequivocally, that she was not with child. In the Ethiopian variety of mankind, the breasts are very active; and my friend, Dr. Chapman, gave me the case of a negress of Demerara, who, after her pregnancy, formed milk for twenty years together.

Again, about the age of five-and-forty, sterility supervenes, the catamenia ceasing to flow, and frequently, at this period, fulness, pain, and some enlargement of the breasts, take place; and therefore it is obviously necessary that the accoucheur should guard against delusion in these cases, and the rather, because it has repeatedly occurred. A woman, perhaps, marries at two-and-forty, and is anxious to have children; and the catamenia cease, and the abdomen becomes tympanitic, and the bosom is swelled and uneasy, and she supposes herself to be pregnant; and she engages her nurse, and she cozens her accoucheur, and she receives the gratulations of her friends; and she consults about caps and long petticoats; and she hopes it will be a boy; and she gets laughed at for her pains; though I must add here, that I think the ridicule is a little unfeeling.

To bring my observations to a point here, if a woman have had no child before, if she have been exposed to impregnation—if she have also the other signs of gestation—if the breasts double their size—if the enlargement be knobular, and not from fat—if there be secretion, tenderness, pains, then the enlargement of the breasts is to be looked upon as a very valuable indication of pregnancy; but where the enlargement is obscure, when the patient is very corpulent, when the woman has suckled a large family, and the breasts have been brought under a great deal of action, when,

again, the patient is about forty-five, the catamenia being likely to cease, and the breasts likely to sympathise with the cessation, the indications of the breasts cannot be safely relied on. Some ladies remain at five-and-thirty, for half a score of years or so. Time and tide wait for no man; but, with women, *c'est une autre affaire.*

VALUE OF THE AREOLAR SIGN.

If you examine the nipple in either sex, you will frequently find round it a discolouration of the skin, and this circular discolouration of the skin, sometimes distinguished by a rosy tint, and sometimes by its being of the same colour with the contiguous skin, but lighter, constitutes what is called the *areola,** a part which, in consequence of pregnancy, is liable to become changed, even from the first; for when a woman becomes pregnant, the areola may become broader and darker than it was before, and may, too, undergo a complete change of colour, the rosy or cutaneous tint becoming converted into a coppery red, or a dark mahogany brown. The change of the areola I should recommend you to study with attention; and the best mode of studying this, is not by reading or hearing, but by inspecting for yourselves. When you are attending cases in town, for instance, I would recommend you to take every proper opportunity of examining the areola; this you may do, on many occasions, without much exposure of the bosom, and, moreover, you will have occasion often to notice the areola, when the child is applied to the breast. The changes of the areola I have studied with a good deal of attention, both for your advantage and my own, and I find that they may be distinguished into three varieties, numerically discriminated according to their degree. Now, when the alteration of the areola rises to the highest point; when this part becomes broad and dark, and embrowned in fullest mea-

* The seat of the areola is the rete mucosum, so that in removing the rete you remove the areola too.

sure, more especially when pale before, perhaps, it changes to a deep brown, so dark that it reminds one of the skin of the negro, the indication of the areola ought to have great weight, at least, in a first pregnancy. By this indication alone, pregnancy has been not infrequently detected. More than once I have thus discovered it myself; but, on the other hand, when the areola is changed in the first or second degree only, its indications are of little value. And when a woman has had a large family before, even though the areola be changed in the fullest manner, no certain reliance can be placed upon the sign; for experience shows that the smaller changes are indecisive, and when there has been pregnancy before, it is difficult to decide whether changes in the highest degree are to be attributed to the operation of a fresh pregnancy, or the remaining effect of those which have preceded. To be short, the areola may, now and then, deceive, when you think that there is most cause to rely on it; but (allowance made for anomalies) if the change be in full degree—if there have been no pregnancy before—if the eye of the observer be experienced—if the other signs of gestation attend—the indications of the areola are deserving of a very confident reliance; not to add, that in many cases, pregnancy may be detected by the areolar changes alone, and they have the advantage of manifesting themselves very early in gestation.*

A girl, some years ago, I was requested to interrogate, and, upon examining the areola, I declared her to be pregnant; this she at first averred was impossible, but soon satisfied that I knew a little more about it than she was at first aware, she altered her tone, and three or four months afterwards, delivery occurred. In St. Tho-

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* The areola has been represented as an indubitable mark of pregnancy. This is not however suspected to be a primary consequence of a particular affection of the uterus, but of the preceding enlargement and alteration of the breasts: and though it generally occurs in pregnancy, it may be produced by any cause capable of giving to the breasts a state resembling that which they are in at the time of pregnancy, of which it can only be esteemed a doubtful sign. The areola is therefore found in many of the complaints which resemble pregnancy, and though generally, not universally, I think, in pregnant women."—*Dr. Denman's Introduction*, 7th Edit. p. 145.

mas's Hospital, I was also requested to interrogate a woman: she resolutely denied her pregnancy, but the indications of the areola put the matter beyond doubt, and when I made an internal investigation, I could distinctly feel the head of the child through the uterus. The woman was delivered within one or two months afterwards. I was once requested to interrogate a young lady of much talent and accomplishment, and great force of feeling. On examining the areola, I was at once convinced of her gestation, but as she denied the possibility, and would really have attested the throne of heaven, and Him that sits upon it, had I not entreated her to be silent, an internal examination was made, when I found the os uteri was opening, and the head of the child was distinctly observable; parturition afterwards taking place in the course of three or four days. I really once saw a woman actually in labour, who persisted, nevertheless, that she could not be pregnant; and it may not be amiss to remark here, once for all, that in points of this kind, the asseverations of the ladies ought to have no weight whatever; nor, indeed, when a denial is given, ought these asseverations to be called for, especially in the presence of a third person. Women seem to have a sort of instinctive feeling, that interrogations of this kind no man has a right to propose to them, and of consequence, that in answering such impertinence, they may say, and with solemnity too, what they please! Are the ladies the only persons who tell grave falsehoods?

SUSPENSION OF THE MENSES.

Pregnancy occurring, the catamenia is arrested; and I believe it is commonly from this sign that women judge for themselves whether they are in a state of gestation or not. The catamenia appearing month after month, on a certain day of the week, for commonly they appear every four weeks, the patient is exposed at length, to the causes of gestation, when the catamenia cease to flow, and they infer that pregnancy is begun, nor is it often that they find themselves deceived. Recollect, however, that in judg-

ing of pregnancy, from the retention or suppression of the catamenia, you must bear in mind the following considerations. In dubious cases, you must distinguish between the suppression of disease, and the suppression which is to be ascribed to gestation; the absence or the presence of the other signs will, in general, enable you to make your diagnosis here. It is to be remembered, too, that about the forty-fifth year the catamenia cease, independently of disease; earlier, however, in some women, and later in others. Now, at this time, as before intimated, there may be abdominal tympanitis, together with some enlargement and tenderness of the mammæ; so that in cases of this kind, where there is an enlargement of the abdomen, irritation of the breast, and suppression of the catamenia, the patient may deceive both herself and you. In dubious cases, manual examination alone may decide; but when this is improper, it is better to state frankly that the case is obscure—that a decisive opinion cannot be given—and that it is proper that the patient should not, in her hopes and confidence, too rashly commit herself with her friends, lest she become the subject of one of those ludicrous, yet painful disappointments, on which I before took occasion to remark.

Further: When a woman is pregnant, the cessation of the catamenia does not invariably occur, for amenorrhœa, though general in pregnancy, is not constant. A woman, supposing herself to be pregnant, asks whether gestation is possible, for it is added, the system is still regular. To such a query, the answer is, that it is not only possible, but probable;* for, notwithstanding what Den-

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* It is a general law of the animal economy, that, during the evolution of the fœtus, the function of menstruation should be suspended. In ordinary cases, therefore, the cessation of this discharge is one of the best and most certain indications of pregnancy. I believe no writer attaches greater importance to this sign than Denman, who, in a negative sense, considers it a never-failing one, and lays it down as a general principle, that no female, continuing to menstruate, can at the same time be pregnant,—he, at least, never having met with one instance to the contrary. A similar remark to which is also made by Burns. Such having been the experience of two of the most eminent accoucheurs, it may, at least, be regarded as a proof that exceptions to this law are of rare occurrence. But that this, like many general laws in physiology, has its exceptions and variations, there can be little doubt.—*Morley's Essay on the Symptoms of Pregnancy.*

man has said to the contrary, I have myself known women in whom, during the first three or four months, the catamenia have continued to flow, though not in so large a quantity, nor so long, as if they were not pregnant; and, in rare cases, I am told, but I have not seen any such case myself, the catamenia may continue to flow up to the very last month. A gentleman, formerly associated with this class, related to me the case of a lady of considerable intelligence, who had had several children, and in three or four of her pregnancies, the catamenia continued till the last month; in return—in kind—in every point, excepting the continuance and quantity, the flow was of the catamenial character. I need scarcely add, that women, when pregnant, are liable to red appearances, which are not of the nature of the catamenia. So that, to bring our observations to a point here, amenorrhœa is, in general, a very valuable indication of pregnancy; but without pregnancy, amenorrhœa may occur; and although gestation is certain, the catamenia may still continue to flow during the first months more frequently, and, in some rare cases, perhaps, during the latter months too.

And thus much, then, respecting the first class of indications, those, I mean, of more frequent and general occurrence in pregnancy, and to be ascertained, in good measure, by mere verbal inquiry; the central irritation—the swelling of the legs—the morning irritability of the stomach—the movements of the fœtus—the abdominal intumescence—the mammary enlargement and secretions—the changes of the areola—and the cessation of the catamenia.

ACCIDENTAL OR ANOMALOUS INDICATIONS.

Besides the more ordinary signs of pregnancy, just enumerated, there are other indications which manifest themselves in particular individuals only, and which, though of accidental and anomalous occurrence, are, however, sufficiently important to deserve attention: to the consideration of these we will now proceed.

During pregnancy, women sometimes have certain likings, and

still more frequently their antipathies. Some take an aversion to sugar, some to butter, some to wine, and this, perhaps, from the very commencement of their gestation. Sometimes women, when they are pregnant, become emaciated in a high degree, though perfectly healthy before; the breasts and abdomen enlarge, but the other parts diminish, and this constitutes, in certain individuals, a very conspicuous sign of gestation. It is an unwelcome, but still a very good sign, when the temper changes and becomes more acrimonious and morose; for certainly some females, who are naturally amiable, loose much of their good humour when gestation is begun, and a similar change is observed in the disposition of animals; for the rabbit, as delivery approaches, seems to acquire increased ferocity, and, though of herbivorous nature, not infrequently assumes the disposition of the cannibal, and is guilty of devouring its own young. With frightful dreams women are occasionally affected in the course of pregnancy. Dr. Lowder knew a woman who actually hired a nurse to sit by her bed side at night, and watch her countenance while she was asleep, that she might be awoke whenever her perturbed countenance seemed to show that she was labouring under those distressing visions of the night. The cause of this I look upon to be, a hurried circulation of the blood, and an afflux of it to the head, the disease being allied, in its nature, to convulsions, an affection, apparently, of the same family. Some two or three cases under my own care, have hitherto been relieved by cupping and opening the bowels. The glasses ought to be applied to the nape of the neck.

In pregnancy, pains are sometimes felt in various parts of the body; in the fingers, toes, and more especially in the teeth.—Odontalgia sometimes affects the whole of one side of the jaw, night after night, for weeks together, and this, too, even though the teeth are sound. Bark, valerian, and arsenic are the remedies which I have hitherto found of use.

It is about the third or fourth month, nearer the fourth than the third, that women have the peculiar sensation which is denominated the quickening, an excellent sign, consisting in a certain

feeling of motion in the abdomen, sickness of the stomach, perturbation of the mind, and a disposition to fainting. Now, in many females, these sensations may scarcely be perceived at all, the symptoms are so slight you cannot place reliance on them; but in some, on the other hand, they are very conspicuously observed, and in them it furnishes a valuable indication of pregnancy.

When women are pregnant, too, the blood is more or less sizy, so that when you take away some two or three ounces from the arm, the size may often be seen clearly enough on the surface of the crassamentum, and though this size may be produced by other causes, yet, in conjunction with the other signs, it forms a valuable indication of pregnancy.

Impregnation is not common during suckling, yet it sometimes occurs, especially after nursing has been continued for twelve or fourteen months; and, in these cases, gestation is indicated by the failure of the milk, for it rarely, I think, continues to form so copiously after the first two or three months, and I suspect that its quality alters. You may set down, therefore, among the anomalous signs of pregnancy, this suppression of the secretion of the milk, for wherever a sudden suppression occurs, without any other apparent cause to which it may be referred, it may not, without reason, be ascribed to pregnancy. In a word, all the morbid affections to which the system becomes obnoxious, in consequence of gestation, may be looked on as so many signs of its existence; but having drawn out from these the indications which I deem more especially deserving of a separate notice, for the rest belonging to this class, I must refer you to a future consideration, when I shall treat of the diseases of gestation.

SIGNS FURNISHED BY AN EXAMINATION.

When women are anxious, as in illegitimate gestation more especially, to know whether they are pregnant or not, there is yet a third mode of ascertaining the point, and that is, by a careful examination with the hand; and this, indeed, in some dubious

cases, is the only certain mode in which it can be investigated. Now the manual examination of pregnancy may be divided into two kinds; that of the earlier, I mean, and that of the latter months. When an investigation is instituted, in the end of a reputed gestation, the patient may be placed in the recumbent position, with the pelvis and shoulders moderately elevated, and the lumbar vertebræ depressed, so as to approximate the muscles, and give a complete relaxation to the coverings. Care, too, must be taken, that the bladder be emptied, whether by the natural efforts, or the catheter, as the interposition of accumulated water, may frustrate the whole inquiry. The abdominal surface may be well lubricated with oil. These preparations made, you may lay the hand on the abdomen, above the umbilicus, often perceiving there, on pressure, the gurgling of the intestines, with some degree of elasticity, especially towards the middle months. Having completed this part of the inquiry, you next examine the middle and inferior parts, observing the outline of the uterus—its roundness——its firmness under pressure—its equable surface—its position in the middle of the abdomen—and, in addition to all this, in some instances, the movements of the fœtus. The movements of the fœtus may, perhaps, be produced sometimes by the sudden application of a cold hand, or by changing the position of the patient, who may place herself successively in the sedentary, lateral, recumbent, or other postures, while the hand still rests over the region of the womb. Under these movements, now and then, I know not that I can say frequently, the accoucheur may be able to feel the child distinctly—a sudden blow may be given by the arm or leg of the fœtus, and where there is no deception practised on the part of the woman, which there will not be, unless she is anxious to be thought pregnant, this sign may be looked on as decisive. I have sometimes felt the child leap three or four times in the course of four or five minutes. This point investigated, you desire the patient to change her position, and lie in the posture of labour, on the left side, close upon the edge of the bed, with the loins posteriorly, and the abdomen inclined towards the mat-

trass, with the knees and bosom mutually approximated. Having placed the patient in a proper position, you then lubricate the first two fingers of the left hand, and pass them to the os uteri. In reputed pregnancy, an unbroken hymen is not impossible, but it is no certain proof of gestation; it may be proper, therefore, still to continue the investigation; and without much injury to this membrane, the examination may be made, but one finger only must be employed. When one or more of the fingers have been passed to the os uteri, this may be found to be more or less expanded; so that, in many cases, without much disturbance, the membranes, and the head of the fœtus, may be felt at the opening, especially in the end of pregnancy. Further pursuing the investigation, you may place one or two fingers of the left hand on the front of the os uteri, and the contiguous cervix; making at the same time, with the right hand, a counter pressure externally above the pubes, right or left; and by this manœuvre, provided the presentation be vertical, the head of the fœtus may often be felt between the two hands, and distinctly enough. Lastly, placing the fingers upon the cervix, between the mouth of the womb and the symphysis pubis, you may direct the patient to assume a posture intermediate between the sedentary and the recumbent, in which position the head of the fœtus may often be felt through the neck of the uterus; and then, if with a slight blow you give it an impulse, it rises in the water, and, in a second or two, subsides upon the finger again. This, too, in many cases, may be observed repeatedly, and in a manner too obvious to admit of a mistake. These observations cannot always be made, yet they may in many cases; and when they do occur, whether separately or in combination, they may, I think, be deemed decisive; for there can no longer be a reasonable doubt of pregnancy, when we can feel the movements—the membranes—and, above all, the head of the fœtus; whether this is to be distinguished at the os uteri, or through the neck of the uterus, or by the joint examination of the region above the pubes externally, and the cervix within. So, then, by feeling the membranes at the os uteri, and sometimes the head—

by feeling the head through the neck of the uterus internally between the os uteri and the symphysis pubis—by feeling the head of the fœtus interposed between the two hands placed at once respectively, externally, and within—by feeling, as before demonstrated, the movements of the head, as it rises and falls when afloat in the liquor amnii, you may, I think, in most, if not all cases, not only raise a high probability of pregnancy, but for a certainty infer its existence; and by this method, in the end of gestation, I have often been able to decide the point.

In the earlier months of gestation, you are sometimes requested to determine whether the woman be, or not, pregnant; and if you possess the requisite dexterity, it is generally easy enough to distinguish an enlargement of the uterus, but it is not so easy to determine whether the enlargement is to be attributed to pregnancy, or other causes; for the womb may grow in consequence of scirrhus, or polypus, or hydatids, or moles, or from a combination of these affections. An opinion in the earlier months, therefore, is always, more or less, doubtful; but these cases of morbid enlargement, in general practice at least, are not very frequent; so that if the woman have been exposed to the causes of impregnation, a womb, as large as the fœtal head, is a strong presumption in favour of gestation; and the presumption becomes strengthened, provided the patient have manifested, previously, no indications of uterine disease.

When anxious to ascertain with nicety what may be the bulk of the womb in the earlier months, we may direct the patient to drink copiously of water a few hours before, so as to enlarge the bladder, which should then be evacuated thoroughly by the catheter, or the natural efforts, so as to relax thoroughly the abdominal coverings in the region of the pubes. The patient, prepared in this manner, is then to be laid upon the left side, the nearer the edge of the bed the better, and two fingers of the left hand being placed on the os uteri, the fingers of the right hand may be placed above the pubes, where, with a moderate share of manual dexterity, the fundus, and, at the same time, the bulk of the womb,

may be felt in most cases, unless the system be unusually loaded with adeps. This observation having been made with care, another may be instituted; the fore finger of the left hand may be placed on the back of the womb, (for the rectum gives access to it,) the thumb of this hand may, at the same time, be rested upon the mouth of the uterus, while, as before, the fingers of the right hand may be applied to the fundus, where it lies above and behind the symphysis pubis; and by this method of examination, the bulk of the uterus may be again ascertained. Besides these nicer inquiries, which all patients may not be able to bear, two others may be essayed; and we may feel the large body of the uterus from the vagina, especially near the symphysis pubis; and we may throw the uterus from side to side, balancing it, as it were, upon the finger; and we may place the patient in the semi-recumbent posture, so that the plane of the brim may lie horizontally, afterwards ascertaining the weight of the uterus, by supporting it upon the summit of the index finger, inserted for this purpose a little way into the os uteri; when by the weight, the momentum, the bulk of the uterus, where it is felt behind the symphysis, we may form a shrewd conjecture respecting its general size. Thus, then, by examining from the vagina, the rectum, and the coverings of the abdomen; by weighing, balancing, and from behind the pubis feeling the body of the uterus, the enlargement of the uterus may, in general, be made out. Do not, however, form your opinion too hastily. If necessary, let a second examination be made, at the end of a few weeks. If the womb be pregnant in the course of this time, it will acquire a considerable increment of bulk, and this may further help our diagnosis here. All patients may not be able to bear these examinations. The neck of the womb is, in some women, very flexible; so that while the body remains motionless, the cervix gives way with facility; thus when the womb is heavy, the cervix may move with little momentum, and an opinion taken from this observation would be liable to deceive.

And thus much, then, respecting the indications by which ges-

tation is known; the ordinary, the anomalous, and those which are taken from manual investigation. Should all these signs prove indecisive, there is still one other which can scarcely fail us; but I deem it better not to mention it; and I should advise you, if it be doubtful, to wait till the end of ten or twelve months, when, unless the gestation be extra-uterine, or out of all rule, parturition must, sooner or later, occur.

SECTION II.

OF THE PROGRESS OF PREGNANCY.

Of the means whereby we may ascertain the age of gestation, and the time when it may be expected to close, we may judge in two ways—by examination, and by the reckoning, as it is called, and to the consideration of these methods we will now proceed.

MANUAL EXAMINATION.

As gestation advances, the neck becomes expanded, and the womb enlarging, there is, of necessity, an ascent of the fundus, which, together with the dilatation of the uterine neck, bears a certain relation to the progress which the pregnancy has made.

During the first three or four months, the whole bulk of the uterus will be found in the neighbourhood of the pelvis, where the summit may often be felt lodging a little above the brim. As the fifth month approaches towards its close, the summit will be found about half way between the navel and the pubes; and a little below the navel in the close of the sixth. In the end of the seventh month, the uterine summit is elevated above the umbilicus, and lodges half way between the umbilicus and the point of the ensiform cartilage. In the end of the eighth month, the fundus approaches very near to the sternum, unless it be sunk again in the abdominal cavity, in consequence of that preparatory con-

traction which occurs during the last week. These statements you may receive as approximations to the truth, though not, perhaps, as true in the strictest sense. I have verified them, in part, by my own observations; but never having turned my attention assiduously to this subject, I wish it to be considered, that I am not personally pledged for their accuracy. In different women, at the same stage of pregnancy, the elevation of the fundus may vary; nay, it may vary somewhat with the positions of the body in the same individual, and in the same stage of her pregnancy.

Further, the length of the cervix bears a fixed relation to the progress of pregnancy; for, during the first five months, unless dilated by a dropsy of the ovum, the neck retains its full length of an inch and a half; being at this time annexed to the body of the uterus, in the way of an appendix. Gestation, however, advancing, the neck expands, so as to form a part of the general receptacle for the ovum. In the end of the sixth month, its length is reduced to one inch; in the end of the seventh, to half an inch, and in the course of the two remaining months, the cervix becomes completely dilated, so that it can no longer be distinguished as a part forming an appendix to the great body of the uterus.

Now if the patient be recumbent, and the bladder be emptied, and the abdominal surface be lubricated, the fundus of the uterus may, in some women of spare habit especially, be felt distinctly enough; and, by the elevation of it, we may, in many cases, judge not inaccurately of the progress of the pregnancy, remembering generally, that when the summit is above the umbilicus, the gestation is in the latter months; when below, in the middle or the earlier, and that during the first three months, the body of the womb is lying entirely in the vicinity of the brim. Sometimes the elevation of the fundus will be made out more distinctly by placing the patient in the posture of parturition, and placing the fingers of the left hand on the os uteri, and those of the right externally, where the fundus lies. Nor is it difficult to form a judgment of the advancement of the pregnancy, by measuring the neck; for if

this is wholly expanded, the woman is in the end of the ninth month; if to the extent of two-thirds only, she is in the end of the seventh; if of one third, in the end of the sixth; and we may venture to infer that she is not beyond the middle, if the neck retain its full measure. Now, when it chances to be relaxed, the neck may sometimes be measured by passing the finger along its canal, so as to touch the membranes; but I would condemn this practice, as not unlikely to disturb the process of gestation; a safer measurement is afforded by passing the finger between the os uteri and the symphysis, so as to touch the body, when the length from the uterine body to the mouth may be ascertained, and with tolerable certainty.

Independent of these examinations, the progress of pregnancy is often ascertained, and more commodiously, by that computation which is called the reckoning, than by these more difficult and uncertain observations on the length of the cervix, or the elevation of the summit of the womb.

RECKONING.

Human gestation, it is asserted, is of forty weeks' duration, but I doubt the correctness of this opinion, and suspect, rather, that it lasts only thirty-nine weeks, plus one day.* A friend of my own knew, from peculiar circumstances, when impregnation was accomplished; thirty-nine weeks, plus one day, from this time, the delivery began. An acquaintance of M. Chambou made his observations on three pregnancies of his lady; in two of them, the delivery commenced at the end of thirty-nine weeks, plus one day, being accelerated some few days, in one of the three cases, in consequence of a fall.

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* Hippocrates, Aristotle, Galen, Pliny, Avicenna, Mauriceau, Riolan, La Motte, Hoffman, Stchenk, Haller, Berkin, Lieutand, Petit, Levret, Astruc, &c. maintained that pregnancy usually terminates at the end of the ninth calendar month, but might be protracted to the tenth, eleventh, twelfth, and some of them said to the fifteenth month.—*Dr. Ryan's Manual of Midwifery*, 3rd Edit. p. 180.

I was surprised to learn that, in a late investigation before the tribunal of the empire, nine months of the calendar, and forty weeks, were, by some of the witnesses, used interchangeably, as if they were commensurate periods; the error will appear on a little calculation, as the period of nine months is exactly equal to that of thirty-nine weeks, plus one day, provided of these nine months, five are of thirty days only, and four of thirty-one; and hence the duration of pregnancy, as here stated, is confirmed by the popular observation. This term of thirty-nine weeks, plus one day, may be measured by the lunar months or the solar, and the reckoning is called long or short, according as the long and short, in other words, the calendar month, or the month of four weeks, is employed in it. Our women generally use the long reckoning—the ancients seem, at first, to have used the short.

Rœderer made his observations on as many as a hundred cases, and found that in four out of five of these, the quickening, formerly described to you, occurred in the fourth month. When pregnancy occurs, the catamenia are usually suspended from the first.

Now, with these data, it is by no means difficult to ascertain the date of delivery with useful accuracy, for I believe it will generally take place five months after the quickening, nine months after sexual intercourse, and about nine months and a fortnight after the last appearance of the catamenia, later or sooner by a few days.

A lady once told Lowder, that her delivery would occur on the civic festival, the ninth of November, and her decision was confirmed by the event. When the reckoning is grounded on the intercourse, its accuracy is sometimes surprising; the reckoning from the amenorrhœa and the quickening are not equally exact, yet women are in general compelled to adopt them. Sometimes, however, furtive intercourse, a separation from the husband, or peculiar sensation felt about the bladder, the sacrum, and, in general, the central parts of the body, a few hours after using our sex, are found to mark out clearly enough the congress by which impregnation has been produced.

SECTION III.

OF SOME OF THE DISEASES OF PREGNANCY.

By the diseases of pregnancy, are to be understood those which arise from pregnancy as their cause, or which, from their accidental connexion with gestation, require a modified form of treatment, and of some of these I now proceed to treat.

NAUSEA* AND DIARRHŒA.†

Among the diseases, which are either referred to pregnancy, or which require a modified treatment in consequence of their connexion with it, one, not the least troublesome, is the irritability of the bowels and stomach, producing, in the earlier and middle months, both vomitings and purgings. Sometimes both these symptoms are occurring together, but more frequently they alternate: where there is diarrhœa, there may be less excitement of the stomach, and there may be vomitings where the diarrhœa is suspended. In those cases, in which there is much irritability of the stomach and bowels, of course the patient becomes a good deal reduced by it, and she may die‡ perfectly exhausted in consequence of the inanition, produced by the vomitings and purgings, and the incapability of taking food; or again, when much reduced, she may be carried off by a flooding, occurring, perhaps, during premature delivery.

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* Nausea:—From *ναυσια*, *nausia*, sickness, and that from *ναυς*, *naus*, a ship; because sickness, or a disposition to sickness, is produced by the motion of a ship.

† Diarrhœa:—From *διαρροια*, *diarroia*, and that from *διαρρεω*, *diarreo*, to flow through: A too frequent passage of the alimentary fluids through the intestines.

‡ Morning sickness, especially in the early stage of pregnancy, is so common as scarcely to be considered as any thing more than the effect of a natural sympathy between the uterus and the stomach. Sometimes, however, it passes the usual boundary, and occasions great distress, nay loss of life. It then becomes a morbid, instead of a natural, sympathy, and we are called upon to examine into its cause and treatment. Cases of death are recorded from this cause alone.—See *Medico-Chirurgical Review*, vol. 8, *New Series*, 1828.

It is not always in our power to put a stop to these vomitings and purgings; but, by resorting to the following measures, I think we may, in many instances, conduct our cases to a favourable termination. In the first place, then, if suspicious that there is any thing offensive and irritating in the stomach and bowels, ascertain whether this be so or not; and if there is, be careful to purify the stomach and bowels by some mild evacuants.—Chamomile tea, warm water, ipecacuanha, and so on, may be used, if emetics* seem proper; and of the milder laxatives, you may employ manna, senna, rhubarb and the like; or if you wish to purge more actively, perhaps senna and salts may be preferred.

Again, it is very desirable that you should diminish the irritability of the stomach and bowels. The irritability of the bowels is sometimes restrained by means of the mistura cretæ, the confectio aromatica, the preparations of opium, of kino, of catechu, of hæmatoxylum, all in their operative doses. Where there is a great deal of irritability of the stomach, the effervescing draught, strong coffee, opium, charcoal powder—perhaps, too, that potent agent, the hydrocyanic, may be advantageously tried. An invaluable remedy in gastric irritability is the effervescing draught; four scruples of the citric acid, dissolved in five ounces of water, may be put into one bottle, and five scruples of the carbonate of potass, in four ounces of distilled water, may be put into another; then a table spoonful of the solution from each of those bottles respectively, when put together, will effervesce smartly, and may be taken in this condition every half hour, for several times in succession, unless the vomiting previously cease. Often the first two or three quantities will be thrown up, but the medicine must not, on that account, be rejected in a pet. Opium is not very effectual in cases of this kind, when taken into the stomach. A piece of

* The employment of emetics must be cautiously had recourse to, for although abortion is very seldom occasioned by nausea arising from the pregnant state, yet emetics are apt to produce it.—*Ed.*

lint, dipped into the tincture of opium, and laid over the scrobiculus cordis, has appeared to me, in some cases, of great apparent service; it is recommended by Heberden.*

It seems, *a priori*, not very probable that powdered charcoal can be of use in these cases, but learning from a friend that, in the hospital in New York it had been tried in vomiting, with advantage, I was induced to give it an *essai*, and I can at least aver that I have seen no ill effects from it, not to add that it seemed to be of real efficacy. The method of administering it, is in the form of a very fine powder, twenty grains every two or three hours, till it has produced an effect. I ought to observe, that it makes the stools very black. Of hydrocyanic acid I have had very little experience in these cases. Some of my medical friends think it of much efficacy in quieting the stomach, and I would, therefore, recommend it to your attention. Recollect, however, that the remedy is not without its danger, and beware. Five or six minims in the day, I would not rashly exceed.†

If there is an inflammation about the conjunctiva of the eye, there is an irritability of the other parts of the organ; if there is an inflammation of the inner membrane, the bladder and the urethra become irritable; and, in like manner, the stomach and bowels become irritable also, in consequence of inflammation of the membranes which line them. That such is the state of the mucous tunic of these parts, you may suspect, if the tongue is red and swelled; if the evacuations are emitted with impetuosity, and with heat at the anus; or if, lastly, the pulse is at 100 or 105, and the abdomen

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* The application of a piece of folded cloth, moistened with laudanum, to the region of the stomach, has been of considerable service when internal medicines of the highest estimation have proved ineffectual.—*Dr. Heberden.*

† Begin with two minims (Scheele's strength) dissolved in any mucilaginous fluid, and increase it to four minims: this dose may be given every four hours for three or four times, afterwards waiting awhile, and if necessary, recommence it.—*Dr. Waller.*

The various sedative preparations of opium, as morphine, sedative liquor, or solid opium, are used with advantage. Opiate frictions to the stomach will succeed, when every other remedy fails.—*Dr. Ryan.*

Twenty drops of the oil of turpentine in the form of an emulsion and sweetened with honey, has succeeded, when every thing else had failed.—*Dr. Dewees.*

is somewhat tender under the touch. When the irritability of the bowels is caused by inflammation of the mucous membrane, it may, perhaps, be cut short by the antiphlogistic plan, more especially by applying leeches to the abdomen, to be followed by a large blister, the practitioner not forgetting cautious venesection.* The cases which are best adapted for this sort of treatment, are those in which you have the symptoms here enumerated, and where the patient, though still labouring under the disease, has a moderate share of strength remaining. I was requested by my friend, Mr. Sterry, to see a patient who had a good deal of irritability of the stomach, commencing in the middle period of pregnancy, and continuing till after her delivery. When I saw her, there were about ten or twelve watery evacuations in the course of the day, the tongue was swelled and red, the anus sore, there was tenderness and heat about the abdomen, and the pulse was about 100 in the minute. In this case, ordinary remedies having failed, about twelve leeches were applied to the abdomen; other remedies had been tried, without effect; a large vesication was afterwards produced, and the cure, of consequence, was sudden and complete. The evacuations became more solid in a few days; and this woman, who seemed to be in great danger of sinking under the discharges from the alimentary tube, was completely re-established, and afterwards became the mother of another child.

There is a third method of treatment, from which great advantage has sometimes been derived, and that is abstinence. Where the woman throws up every thing she takes, it is not to

* Small bleedings, where the sickness is attended with flushings, dry parched mouth and fauces, vertigo, or any other symptoms of fever, are safe and beneficial, and often give all the relief in our power to afford. Although a rash, indiscriminate, or frequent use of venesection, is to be guarded against as a hazardous expedient; it may often, if prudently employed, be the means of preventing abortion. It may be safely performed at any time of gestation, and repeated according to the urgency of the symptoms.—*Dr. Hamilton's Outlines of Midwifery*, p. 138.

When the nausea continues very troublesome, it is a general rule to take away a small quantity of blood, proportioned to the vigour and fulness of the habit and state of the pulse. It does good by relieving that state of the origin of the eighth pair of nerves, which occasions the irritability of the stomach, just as it would abate vomiting in other more formidable affections.—*Dr. Burns' Principles of Midwifery*, p. 215.

her nourishment, but an emetic. Now if, under these circumstances, she will remain for a few days, two or three, for example, without food, the irritability of the stomach may subside somewhat; and food, afterwards given with caution, may be retained. And here it is worth your knowing,—as, no doubt, most of you do know,—that when you wish the patient to abstain from taking food into the stomach, she may be supported by nutrient injections into the bowels. By my friend, Dr. Hull, of Manchester, a case is narrated, in which a hypochondriac, cutting his throat with a razor, inflicted a wound on the œsophagus, without, however, destroying life. By the advice of this distinguished practitioner the patient abstained entirely from food to be taken into the stomach, and, during three whole weeks, he was supported entirely by nutrients injected into the bowels. Hildanus has reported the case of a woman who, from irritability of the stomach, rejected all food during a space of five weeks; but she was supported the whole time in the way above intimated, being cured, and becoming, at length, the mother of a vigorous infant.

By Dr. Friend, in his eloquent letter to Dr. Mead, another case is recorded, in which, from a stricture in the œsophagus, the food was prevented from entering the gastric cavity, the stomach; and, in this case, it is added that, for weeks together, the patient, a nobleman, was supported in the manner mentioned by Hildanus.* In short, when the bowels are not very irritable, and

* A most remarkable case of complete *abstinence* for two years, eight months, and eleven days, is said to have occurred at Racconis in Piedmont.—*Lancet*, vol. i. 1828-29, p. 486.

We have reason, as well from analogy as from recorded facts, to believe it possible for man himself, under certain circumstances, not indeed to pass life altogether without food, but to lose all relish for it, and to habituate himself to fastings of very considerable length, and only interrupted by slender portions of the sparest and dilutest aliment. These cases are innumerable in which fasting has been endured ten, twelve, or fifteen days; and where there has been access to water, twenty or thirty days; Raulin mentions one of fifty-two days, water alone being drunk during the time; and Dr. Willan attended a patient who had fasted sixty-one days, with the exception of drinking from half a pint to a pint of water daily, mixed with a very small quantity of orange juice. But there are other cases related at full length, and upon authority altogether unimpeachable, of fasting continued for twenty-five months, three, ten, fifteen, and eighteen years; and, with a very spare and only occasional taste of solid food, through the entire life.—*Dr. Good's Study of Medicine*, 2d edit. vol. i. p. 121.

you wish the stomach to be perfectly quiet, you have it in your power to supersede the operations of this organ, for days, or even weeks, in succession, by a judicious administration of intestinal nutrition. Preparation of eggs, strong broth, or, perhaps, the serum of animals, may be found to answer the purpose, as well as most kinds of nourishment; but I have had but small experience here

Again, should all these remedies fail, you have yet another, and that is, the induction of premature delivery; for, when delivery occurs, there is reason to hope this vomiting will cease. In determining on the use of this remedy, however, remember, in the first place, that, if the woman is very much reduced, there is always a danger in these cases, lest the patient should sink under accidental flooding; this ought to be mentioned to the friends before the operation is performed. Further, provided the delivery be brought on before the completion of seven months and a fortnight, the child will frequently die, but if after the seventh month and a fortnight complete, it may be expected to live; and, therefore, when the remaining strength of the woman permits, it may be better to delay the delivery till this term is completed. Nor, in the third place, is it to be forgotten, that, where premature delivery is thus brought on, children are often presenting preternaturally,—the leg or the nates, the arm or the shoulder, being placed over the centre of the pelvis, instead of the vertex; nor that the child may perish, under the best management, in consequence of this unfavourable position.

When, from irritability of the stomach and bowels, women are in a high degree of weakness, it becomes of great importance to nourish the system; and this, provided all or the greater part of food taken by the mouth be rejected by the stomach, is by no means a very easy task. In cases of extreme emaciation, in consequence of this gastric or intestinal irritability, you will not suppose that I design rashly to advise you to nourish the patient by the injection of blood into the vessels; I cannot, however, forbear remarking, on this occasion, that this mode of treatment is not

altogether impracticable. I remember once, many years ago, taking a dog, and nourishing the animal for three entire weeks, merely by means of blood, which was injected into the external jugular vein; every day, or every other day, several ounces were injected, and, in this manner, without the help of any food, the system was sustained; water only was allowed this dog; and, though repeated observations were made, it is remarkable, that no voracity of appetite could be observed, during his three weeks' abstinence.

I have observed to you already, that where the stomach fails altogether, the system may, to appearance, be supported by intestinal injections; nor must we ever lose sight of this; every four or five hours, in cases of this kind, the injections may be thrown up, say to the measure of six or eight ounces; and, in those cases in which the rectum is irritable, perhaps its retentive power may be assisted by opiates—by the small measure of the injection, and by the cautious manner in which it is infused, Reid's excellent syringe answers admirably for these purposes.

But whenever the stomach is not totally disabled from acting, gastric nourishment is, I think, to be decidedly preferred, and the following hints may not be without their use. Throughout the whole four-and-twenty hours, the stomach may not be equally irritable; and thus some may bear nourishment in the earlier, some in the middle, and some in the latter period of the day; the tendency to morning vomiting, during pregnancy, is notorious to all. Now, in patients labouring under the disease which we are considering, you ought carefully to inquire into the state of the stomach, and ascertain at what part of the four-and-twenty hours the irritability appears to be the least excited, in order that the food may be, at these times, administered. Again: solids may sometimes be retained by the stomach where fluids, which give rise to more dilatation, may be speedily thrown off; and therefore, you should ascertain, from observations, which of those two kinds of nourishment may suit best with the gastric cavity. Solids have the advantage of lying in a smaller compass, within that compass

they contain a much larger supply of nourishment, nor are they so apt to produce gas. To these two remarks you may add a third, which is, that much depends, in cases of irritability of the stomach, upon the mere bulk of the food taken. A woman may, perhaps, be able to bear two or three table-spoonfuls of some fluid, as milk, for example, where she would not be able to bear half a pint. Now it is to be recollected, that if your patient is lying quiet in bed, a very small quantity of nourishment, either of solid or fluid, may be amply sufficient to support the system. Accordingly, patients lying in bed, who could not bear the larger quantities of food without rejecting them, have done very well, when they have merely taken two or three table-spoonfuls of milk every three or four hours. In their state of quiescence, this nourishment was enough.

Upon the more immediate causes* of irritability of the stomach and bowels, in these cases, it is not my design to enlarge; for, on the subject of proximate causes, though important, we are all apt to talk nonsense, but the following hints may not be misplaced. A principal disposing cause to the disease, seems to be pregnancy, in so much, that though we find the disease, it is true, continuing sometimes after delivery, yet, generally, it is relieved by it. Pregnancy may be supposed to operate by a sort of sympathy subsisting between the stomach and bowels upon the one hand, and the gravid uterus, and appendages, upon the other; and by sympathy here, I mean, as on all occasions when I use this term, a combination of unseen causes, whereby an impression on one part is enabled to operate on another, with which it has no obvious connexion in the way of cause and effect, and which causes may certainly not the less exist and operate, although we are unable to point out distinctly in what they consist; like the

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* Vomiting is a very frequent effect of pregnancy, arising either from a peculiar state of the origin of the eighth pair of nerves, from a state of the stomach approaching to inflammation, or even from a morbid condition of the uterus.—*Dr. Burns' Principles of Midwifery*, pp. 214, 215, 216.

principle of gravity, their existence and operations may be demonstrated by facts and observations.

In some cases of gastric and intestinal irritability, certainly the disease seems to be kept up by mere irritability of the surface of the bowels and of the stomach, independently of any inflammatory excitement; but though this may be true, I am persuaded, that what I stated before will be found to be correct, in many cases, namely, that the irritability of the stomach and bowels, is itself sometimes referrible to a certain inflammatory state, which exists in the mucous membrane; and of this I am the more persuaded, because in dissection I have found in children, labouring under a similar affection, the marks of inflammation, or of incipient ulceration on the intestinal surface. Redness of the tongue, soreness and heat of the anus, sub-obscure tenderness of the abdomen, and a pulse of one hundred and five or one hundred and ten in the minute, all sometimes observed—strongly tend to confirm our suspicions of an inflammatory irritation.

EFFUSIONS OF WATER DURING PREGNANCY.

These cases are not uncommon in women, even when in high health. Of these effusions the most frequent is *œdema** of the limbs, sometimes of the right leg, sometimes of the left, occasionally of both, and more or less extensively, for the disease may be confined to the ancles merely, or it may reach to the knees. But besides this œdema, which is so frequent, and unattended with any danger, there is a dropsical affection, which is noticed by others, and which I have myself seen in two cases, where the woman, during pregnancy, has a tendency to a general effusion, water exuding in all the principal parts of the body, the legs, the arms, the peritoneal sac, the chest, the head; the disease sometimes predominating in one part of the body, and sometimes in

* Œdema:—Οἴδημα, *oidēma*, from οἰδέω, *oideō*, to swell; a tumour: though the term is usually confined to soft serous swellings about the extremities.

another; but all the principal parts being affected at once. Nor am I speaking here of general dropsies arising from shattered health, and combining with pregnancy by a mere accidental occurrence; but of those general dropsies, in the course of her gestation, which may assail the woman, though in all other respects, she appear to be healthy enough, nor in any way the probable subject of such an attack. Now where the patient labours under ordinary œdema of the legs, the disease is of no importance; but where, which seldoms happens, the effusion is general, as in the case under consideration, there is much to be apprehended; for the water may accumulate so largely, as to interrupt the great functions of the body, and in that manner destroy life.

If a patient labour under one of those general effusions of dangerous consequences, of course your treatment should not be inactive. The most powerful hydropic remedies, including elaterium, you are justified in using; you will find this to have various effect in different patients; eight or ten, or twelve, or fourteen watery evacuations being sometimes produced by one-sixth of a grain, and powerfully promoting absorption. But besides the ordinary remedies proper in dropsical affections, I should, in these cases, feel strongly disposed to make trial of blood-letting, first, because, as a matter of observation, I think I have seen it useful, and, secondly, because I strongly suspect, that those effusions are not produced by debility of the woman, but rather by an increased action of the exhalent vessels, approaching to inflammation. If, indeed, a woman is very pale and thin, and weak, and apparently of dropsical diathesis, the dropsy may be considered as accidental, rather than the result of pregnancy; and I should not be inclined to recommend the lancet here; but if a patient, previously in the full vigour of health, becomes impregnated, and afterwards in the early, or middle, or even in the latter period of gestation, is suddenly seized with effusion, I should consider that the use of the lancet is proper enough. Burns, who has written so well on midwifery, has, I think, made the same observation.

There is, too, another remedy, peculiar to this form of dropsy,

and not to be lost sight of, and that is, the delivery of the woman; for the disease being connected with pregnancy, and evidently of danger, in the more pressing cases, we are justified in bringing the gestation to a close as soon as may be. Now in the middle and latter months, this acceleration of delivery may be accomplished without any greater risk than would be justifiable under the given circumstances, by introducing a proper instrument along the neck and mouth of the womb, puncturing those membranes, and discharging the water, all which might be done without the introduction of more than one or two fingers, for as to the forcing a delivery in these cases, by turning, or instruments, in the present state of knowledge, this is quite out of the question.

A woman, of vigorous constitution enough, (for I will relate one or two illustrative instances,) was seized, during pregnancy, with general effusion; parturition, however, came on, and the complaint ceased. Becoming pregnant again, she was a second time seized with an effusion, which took place in the legs, the chest, and the abdomen. A very eminent practitioner was called in consultation with myself in this case; nothing very active was attempted; we did not see our way clearly to blood-letting; the water continued to accumulate, and the woman ultimately died, apparently from hydrothorax. Now here is a case, then, which illustrates the danger of those effusions occurring during pregnancy, say in the earlier or middle months, even in women, to appearance, of very vigorous constitution. Some time afterwards, I was called to another patient, also of a constitution tolerably sound; in this case, effusion of water had taken place into the legs, the abdomen, and probably the head; for at the time when I saw her, she was insensible, and had occasionally convulsive fits. This woman was very freely bled to the amount of forty or fifty ounces at least, in the course of two or three hours; premature delivery was intended, but parturition came on of itself in the course of the four-and-twenty-hours; the next day I found the patient a great deal better; the day afterwards she was so much improved, that she appeared to be in a state of speedy convalescence; unfortunately, however,

she was seized with the puerperal fever, a complaint very prevalent and fatal at the time, and though she was in the hands of a very excellent practitioner, she sunk under the disease. Her improvement under the dropsical attack had been so great, that I had had taken my leave of her; nor did I see her under the puerperal fever, till some three or four hours before she expired. Now here is a second case, in which you have an example of a patient on the whole tolerably healthy, seized under pregnancy with a general effusion, productive of the most alarming symptoms; in this case, too, you have an example of the effectual relief derived from the active use of the lancet, and the evacuation of the uterus; therefore it seems, that, in addition to the ordinary remedies of dropsy, the abstraction of blood, and the induction of premature delivery, are, in these cases, the principal remedies, and on them, without neglecting other measures, I should feel strongly disposed to rely.

But what is to be done in those slighter attacks of sickness, or dropsy, during pregnancy, of more ordinary occurrence, for the more active practices cannot be required here? why, in the œdema of the legs, a bandage, a laced stocking, a little purging, the horizontal posture, patience, time, and delivery, will be of service, and in œdema of the labia, pressure with a T bandage, and compress. In both cases, puncture of the skin might be serviceable, but I never yet found it necessary. In morning sickness, time, patience, and the advance of the pregnancy, beyond the fourth month, will usually cure the disease: bleeding from the arm may be useful to the plethoric; the horizontal posture is proper to prevent the bearing of the uterus. If any offensive smell, or other obvious cause, excite the stomach, this should be intercepted.*

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* Dr. Lowder had a patient who was effectually relieved, by removing from the factory of her husband, a coach-maker, for when she became pregnant, the smell of the paint continually excited the stomach.—*Dr. Blundell.*

SYPHILIS.*

Syphilis, in connexion with pregnancy, is, so far as I know, not to be found among the upper and middle ranks of our countrywomen, but only in the lower orders; and, in this town, at least, not wholly averse to debauchery, these syphilitic pregnancies are of occasional occurrence.

I have not ascertained, by my own observations, that the administration of mercury, in cases of pregnancy, has a tendency to bring on the premature expulsion of the ovum; but such is the opinion which has been held by men who are very competent to decide on the point; and I have heard our surgical Coryphæus, Sir Astley Cooper, assert, that in the wards of this hospital, in former days, the administration of mercury in the higher doses, agreeably to the ancient practice, has been observed by the sisters to induce miscarriage, at least where aptitude existed. The administration of mercury, therefore, in cases of pregnancy in the earlier or middle months, must be used with corresponding caution.

In modern surgery, there are three principal modes in which syphilis is treated; by the fuller action of mercury—by its milder action—and by remedies of which mercury forms no part. If the latter remedies are really as efficacious as it is contended, and as all who wish well to mankind have reason to desire, these remedies would be peculiarly fitting in gestation; and surely in syphilitic pregnancy, if not in syphilis generally, the milder mercurial action is to be preferred to the violent; and instead of salivating the patient, you ought to content yourselves with producing merely a soreness of the mouth.

Again: there are two ways in which the mercurial action may be managed in the syphilis of pregnancy—I mean, either in such manner as may completely cure the disease by extinguishing or

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* Syphilis or Siphilis:—From σιθλος, *siphlos*, filthy; because the disease was supposed to have originated from the want of cleanliness.

destroying the poison, or in such manner, as may effectually check any pressing symptoms under which the patient may labour, so as to suspend and mitigate their violence; the remedy being laid aside, when this purpose has been obtained, to be resumed afterwards, should the symptoms require it. If a woman were in health, and not prone to miscarriage, I should be inclined to give the mercury, if I began it at all, in such quantities as to destroy the poison altogether; but in women more weakly, and who have repeatedly aborted before, the best indication of an aptitude to these expulsions, I should incline to try the administration of mercury in smaller quantities, and in suspensive doses, as it is our duty to save the child, if circumstances permit; always, however, in British midwifery, recollecting the maxim, that the life and health of the woman are paramount to every other consideration. This suspensory practice, however, it must be owned, is both difficult and delicate.

If a delivery occur after seven months and a fortnight, should the child be duly taken care of, it may live; if, however, on the other hand, parturition occurs before this term is completed, it may be no easy task to rear it; and, certainly the earlier and the younger the fœtus, the smaller the chance of its surviving. Now this is a principle, of which you ought to avail yourselves, in treating syphilitic affections by mercury; and if you have an option, you certainly ought to delay—I do not say the mercury, but the ptyalism, till the seventh month and a fortnight are completed; so that if the child be expelled, it may still live; and the longer you delay your mercurial action on the system, the greater will be the chance of survival, should premature expulsion occur. Nor can I accede to the opinions of those, who think that if mercury is to be given, it should rather be given in the earlier period of gestation, under the fear, that if delivery should occur while the patient is in a state of salivation, ill consequences may be produced by it. You will remember, in the present mode of administering mercury for syphilis, the remedy is much less violent in its operation, than when given according to former maxims. In the general,

I believe, it is quite sufficient to produce, and to keep up for six or eight weeks, or a little longer, a decided soreness of the mouth, produced, for example, by the hydrargyrum cum cretâ. Now, I will not say that a high state of salivation, concurrent with delivery, might not give rise to some danger, though I do not know of any ill consequences that have ensued in such cases, for opportunities of observing are not frequent; but I am satisfied that there is no immediate danger from a slight soreness of the mouth, which is all that may be requisite, in order to subdue the syphilitic affection.

With respect, therefore, to the use of mercury in cases of syphilis, these are my opinions in summary; as mercury is liable to produce miscarriage, use it with caution, and soreness of the mouth is, in all cases, to be preferred to an active ptyalism; in all cases mercury ought to be used sparingly; but caution is more especially necessary, if the aptitude to miscarriage be manifest; provided a disposition to miscarriage is known to exist, it is desirable not to induce the soreness, before the seven months and the fortnight are accomplished, as the child, if expelled prematurely, can scarcely be expected to survive; yet should the security of the mother demand an earlier administration of the remedy, her safety must be made paramount to every other consideration.

When we meet with syphilis in conjunction with pregnancy, we are, of course, led to inquire, whether much benefit might not be derived from any other anti-syphilitic. And the nitric acid has been so much recommended, that it ought not to be overlooked. Of the efficacy of this remedy, I forbear to pass a personal opinion; but I will give you the sentiments of a man of large opportunities, and very capable of judging—I mean the late Mr. Pearson. He says, that in using the nitric acid, he has found that the primary symptoms were not infrequently cured—rarely, however, permanently, for they were apt to return, and that sometimes even permanently. He says further, that where patients have been labouring under the secondary symptoms of the disease, the primary symptoms have sometimes been cured altogether, and the secon-

dary have sometimes been cured also, but for a time only. He adds, respecting the acid, that it seems to improve the strength, and that it may be given in conjunction with the mercury, but that this combination does not diminish the quantity of the mercury, which may be necessary for the cure. Now these are properties which may very reasonably recommend the acid to your attention, in the cases under our consideration; if it will sometimes cure the primary symptoms—if it will, in many cases, really suspend the symptoms, both primary and secondary, even for a few weeks only, cases of syphilitic pregnancy may now and then occur, in which it may do effective service, in place of a less desirable, though a more certain, remedy.

In cases of syphilis, we have been advised to make use of the woods, guaiacum, mezereon, sassafras, and particularly the compound decoction of sarsaparilla. In this country, the woods have, I believe, been generally rejected by the regular practitioner as cures for the affection, though an opinion is again gaining ground, that syphylis may be cured without mercury—certainly good news for the human race. In the warmer climates, the woods, it has been surmised, may be of greater effect; and, owing to a greater virulence in the disease, they may lose their effect in the colder climates; for there is a lurking suspicion that the venereal poison becomes more violent in our colder altitudes, than in those regions which lie nearer the line. Now, if it really be the case, that the woods possess a greater power in the warmer countries, if any of you should be practising in the East Indies, for instance, as many of our countrymen do, it might, perhaps, be worthy your while to give a fuller trial to the woods there, though I deem it right to add that, by Mr. Mansell, who has practised much in the Indian Peninsula, I am informed that in syphilis, mercury is the remedy on which the European practitioners rely.

In the syphilis of pregnancy, there is another palliative which deserves our attention, and that is the caustic. For it is a curious fact, that the malignity of the local poison of the chancre is so great, that if left to itself, it will go on committing its ravages,

till at length it has destroyed the genitals to a great extent, and yet the whole of this malignant topical power resides in a mere film of structure, probably not thicker than the finger nail, so that if you can but get down, through this structure, upon a healthy organization, you may obtain a complete cure of the disease; the constitution remains affected still, but topically the disease may be cured. Now, for this purpose, the destruction of the morbid organization, the stronger caustics may be employed; but I have myself seen, by means of lunar caustic applied ten or fifteen times, such a complete destruction of these morbid films as occasioned a complete cicatrisation. Now, in a woman labouring under chancre, small and manageable, it would be for your consideration, whether you had not better heal by caustic, and refrain from the use of the mercury until the latter months, or till delivery was effected, when you might have recourse to such administration of the mercury as would completely destroy the disease in the constitution. A friend of my own was telling me, some two or three years ago, that in the early period of his life, being seized with a chancre, he thought to heal it by the application of caustic; he attacked the disease very early, indeed on its very first appearance, and he had persuaded himself that it was completely subdued by this treatment, but, though the ulcer healed, in nine months afterwards he was seized by a regular attack of constitutional symptoms; the disease appeared on his skin, throat, and nose, and he was obliged to use mercury very largely, not without fumigation, to get rid of this troublesome affection. This case proves, that though you may heal a chancre by caustic, even when the first speck of ulceration is manifested, still you cannot prevent the constitution from being affected; but observe, what is here to our point, namely, that where a chancre is healed in this manner, the disease may lie, to all appearance, quiet in the system for nine months, perhaps, in some cases, for a longer time; and, in the syphilis of pregnancy, to gain time is a point of primary importance; for, by this means, we may be enabled to procrastinate the use of mercury till after delivery is accomplished, or,

at all events, beyond the term of seven months and a fortnight, that critical period of gestation which gives sufficient strength to the fœtus to enable it to support an independent existence. When the mother is infected with syphilis, the fœtus may be affected also. It is not to gonorrhœa, but to the chancrous form of the venereal disease, that the preceding remarks are designed to refer.*

DYSPEPSIA.†

During pregnancy, patients are sometimes affected with dyspepsia to be treated on the same general principles as a dyspepsia, apart from gestation, though the following remarks may be worth your consideration:—In dyspepsia, purgatives are not infrequently advised, nor ought we to forget that the milder should be used in the cases to which we are here referring, especially in women known to be prone to miscarriage. I have seen a miscarriage induced, apparently, in consequence of a moderate dose of calomel, to which, on one occasion, I gave assent; the symptoms seeming to demand it. Emetics, too, may be required in these cases; but they should never be used, without a clear necessity can be established, and the milder are to be preferred. I am not sure that there is so much danger from the use of emetics which are active as from active purgatives, for it is certain that women, during gestation, sometimes bear vomiting and retching surprisingly well. In dyspepsia you may deem it necessary to have recourse to the blue pill, and other similar remedies, and in these cases you must be very careful that it do not give rise to any high degree of salivation, because, as I have just been observing to you, more especially where there is a proneness to miscarriage, the

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* Dr. Legrand, of Amiens, proposes the use of *gold*, which he maintains has a more powerful influence on the venereal virus, and is not so detrimental to utero-gestation as mercury.—*See his Treatise on the Employment of Gold in the Treatment of Syphilis.*

† Dyspepsia:—Δυσπεψια, *duspepsia*, from δυς, *dus*, difficulty, and πεπτω, *peptō*, to digest.

higher degrees of mercurial excitement are supposed to occasion it. Nor let it be forgotten, that this remedy varies much in its effect on different persons. I once saw a lady who told me that she knew, from experience, that if she were to take but two or three grains of calomel, she would be completely under the mercurial influence, and, on a more minute inquiry into all circumstances, I found this to be correct. On the other hand, now and then you meet with patients that you can scarce bring under the mercurial action, under any administration of the blue pill; and, consequently, as the influence of mercury is produced in some constitutions with such surprising facility, and as there are some refractory constitutions which so powerfully resist its operation, you ought to proceed with no little caution, unless you are acquainted with the constitution of your patient.

CARDIALGIA.*

With very severe heart-burn, women, when pregnant, are sometimes affected; great heat of the stomach, a great deal of pain, accompanied with a drawing which seems to approximate the pit of the stomach to the spine, with pain shooting through the body, from the sternum to the points of the blade bones. Vomitings are apt to occur, and very strong acidities may be eructated, so acrid indeed, in some cases, that they may produce heat and excoriation in the back part of the mouth. When you have symptoms of this kind, concurring with much acidity, there can be no doubt as to the nature of the disease; and after clearing the bowels, which may be necessary, antacids may be properly enough administered, Lime, chalk, soda, magnesia, may all be employed in their turns,—chalk, if you wish to shut up the tube—magnesia, if you wish to open it. Among our various antacid compositions, there is one

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* Cardialgia—Καρδιαλγια, *kardialgia*, from καρδια, *kardia*, the orifice of the stomach, and αλγεω, *algeō*, to be pained. A pain or uneasiness at the upper orifice of the stomach, commonly called *heart-burn*.

form which has been recommended by Sims, Denman, and others, and, using it on their authority, I have tried it with considerable advantage:—One drachm of the burnt magnesia, one drachm of the aqua ammoniæ puræ, three ounces of the aqua cinnamoni, and five and a half of simple water; these are to be mixed, and the patient may take two table spoonfuls of the mixture whenever the symptoms are most distressing.

FASTIDIOUS TASTE.*

With fastidious tastes your patients are occasionally assailed, and women, sometimes, have a longing for certain kinds of food, and, more frequently, they become the subject of antipathies; these, indeed, are more common than the former; some, when gravid, cannot bear sugar, some butter, some tea, some wine, and so on. Of these fastidious tastes I have to remark, that when they can be gratified, I think we ought by all means to concede, more especially with respect to antipathies. I do not think a woman ought to be ridiculed, or urged, to the use of those things to which she feels a strong and insurmountable repugnance; of such experiments I cannot approve—why should we make them? Even in animals which, to do them justice, are free from affectation, conspicuous changes of taste are observed during gestation. This change becomes manifest, in a high degree, in the rabbit, than which no animal can be more clearly of herbivorous nature, for the rabbit in all cases, after delivery, devours the after-birth, that is, it becomes carnivorous; and this, I suppose, is the reason why she so often destroys her young also; for, finding the placenta a very delicious morsel, she is afterwards impelled to attack and devour her young too. Now, in the same manner as animals become the subject of these extraordinary appetites, women also may have their appetites influenced by certain changes of the nervous system, resulting from gestation, and these therefore, being the work of nature, ought never to be unreasonably opposed.

* Fastidious:—From *fastidio*, to loath, or to have a depraved appetite.

CONSTIPATION.*

In the early and middle periods of pregnancy, constipation is by no means uncommon; and, by some, this state of the body has been asserted to be natural to gestation. If the bowels are opened with regularity once in the day, or three times in the two days, probably this is all that is necessary to secure the patient's health. I generally, however, recommend that the bowels should be opened more frequently about a fortnight before delivery is expected to take place, because then I think, the bowels being thoroughly cleared, the delivery may be rendered more easy, and freed of some inconveniences. If a proneness to constipation exist, some laxative should be at hand to regulate the intestinal tube. If the form be pilular, rhubarb may be prescribed, with some small quantity of calomel; if a mixture, castor oil may be preferred. Salts are cold and flatulent.

PROLAPSUS UTERI.†

With prolapsus uteri, patients are sometimes affected in the earlier and middle parts of gestation, but more commonly in the earlier. They have a feeling as if something would issue from the body, with bearing and aching across the sacrum, and sometimes over the front of the abdomen. In the greater number of cases, where the patient labours under a descent of the womb in the earlier period of gestation, if she lie on a sofa she is relieved, and at the end of three or four months, when the womb, acquiring a larger bulk, finds rest upon the brim, a complete cure may be obtained. In rarer cases, however, the pelvis being of very large size, the womb continues to descend, and then the horizontal posture, and perhaps a pessary, may be resorted to; though I

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* Constipation:—*Constipatio*, from *constipo*, to crowd together. A costiveness, or unnatural retention of the fæces.

† Prolapsus:—From *prolabor*, to slip down; hence prolapsus uteri, a slipping down of the uterus.

believe it is very seldom that a pessary becomes necessary, and caution must accompany its use. In some cases, too, the womb being down in the pelvis, remains and grows there, and makes a strong impression on the surrounding and contiguous viscera, and becomes incarcerated in the cavity of the pelvis. Retention of urine concurs. In such cases, a catheter, small and flat, may, with proper caution, be introduced into the bladder, and the urine being drawn, to the amount of two or three pints, sufficient room may be made for the ascent of the uterus; after which, by a little well-directed pressure upon the os uteri, the womb may be pushed above the brim. When once replaced, the womb is not likely to descend afresh; for the very conditions of the case imply that the uterus is grown too large to admit of easy lodgment in the pelvis, so that if the patient be confined for a week or two to the horizontal posture, the womb meantime growing, she becomes secured, in consequence, against any further attack.

MICTURITION.*

Micturition is very common in the earlier or middle period of gestation, *dysuria*,† and even *ischuria*,‡ perhaps, accompanying.§ This arises from three causes; the first, a certain irritability about the neck of the bladder, derived, perhaps, from the uterus producing a tendency to spasm; the second, a bearing of the uterus upon the neck of this organ; the third, a descent of the uterus, though but a little way, under which it brings down the vagina and urethra, which is in connexion with the vagina, so as to distort and

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* Micturition:—From *micturio*, to have a desire to make water.

† Dysuria:—Δυσουρια, *dusouria*, from ἐυς, *dus*, difficulty, and ουρον, *ouron*, the urine: A difficulty of discharging the urine.

‡ Ischuria:—Ισχουρια, *ischouria*, from ισχω, *ischō*, to restrain, and ουρον, *ouron*, the urine: A suppression or stoppage of the urine.

§ When there is a frequent desire of making water, attended with much difficulty in voiding it, the complaint is called a *dysury* or *strangury*; and when there is a total suppression of urine, it is known by the name of an *ischury*.—*Dr. Hooper's Medical Dictionary, Art. Ischuria.*

obstruct it. These I believe to be the more immediate causes of the disease, and bleeding from the arm, leeches above the symphysis pubis, fomentations to the genitals, and the parts above, confinement to the horizontal posture, and drinking very freely of diluents, so as to dilute the urine, may, I think, be looked upon as principal remedies. Soda and uva ursi may be tried. Dysuria and ischuria are frequently caused by the restraint, which women sometimes dangerously impose upon themselves, from motives of delicacy, when they are engaged in company.

CALCULUS IN THE BLADDER.*

Calculus in the bladder during pregnancy, is exceedingly rare; yet this, however, does occur occasionally. A calculus may form, even larger than a pullet's egg, and such a one I was shown by a very excellent practitioner, Mr. Tipple, of Mitcham. A calculus of very small size would, most probably, not occasion any material inconvenience during delivery, but, if large, it might obstruct parturition; and the bladder too, being compressed and bruised between the calculus on the one hand, and the head of the fœtus on the other, a slough of the vagina and cervix vesicæ might ensue. In all cases where the calculus is large, it is very desirable that it should be taken away before delivery occurs. Now, by the operation of lithotomy, it may be removed, or more safely, perhaps, by dilatation of the urethra; an operation which has, for the last twenty years, been admitted into general practice.

ICTERUS OR JAUNDICE.†

In pregnancy, your patients are sometimes affected with jaundice in the middle or latter period, and a sort of jaundice which is to

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* Calculus:—Dim. of *calx*, a lime-stone.

† Icterus:—Ικτερος, *icteros*, the golden thrush; and this disease, so named from its likeness to the plumage of that bird, of which Pliny relates, that if a jaundiced person looks on one, the bird dies, and the patient recovers.

be referred to gestation as its cause. Where it merely arises from gestation, it is to be ascribed, I presume, to the pressure of the uterus, which not coming in contact itself with the biliary ducts, may however, press other parts, the intestines for example, against them. At delivery they are cured, for the pressure is then taken off the ducts ; and even before delivery, this sort of jaundice may cease about the eighth or ninth month, for the womb enlarging in its size, and altering, perhaps, in its shape, gets a bearing on other parts than the biliary ducts, and these canals becoming pervious, the gall escapes into the intestines, and the yellowness disappears.*

DYSPNŒA† AND COUGH.

In pregnancy, where the stomach is diseased, or where your patient is highly hysterical, she may become affected with dypsnœa ; and the attacks may be sudden, and alarm her so much, as to give her an impression that she is going to die ; nor is palpitation infrequent, and, indeed, this is most probably the more immediate cause of the disease. This disease is more alarming than dangerous ; it scarcely ever destroys life, though owing to a disordered action of the heart, it may produce sensations of fainting and death. Opium, ether, and other remedies of that sort, are calculated to moderate the violence of the symptoms, and attention must be paid to the diet.

With cough, our patient may be affected during pregnancy, and here I don't mean the ordinary catarrh, which cures itself, and passes off in the course of two or three days, but I mean severe coughs accompanied with great afflux of blood to the head,

* In some cases, the skin is partially coloured, the mouth, for instance, being surrounded with a yellow or brown circle, or irregular patches of these colours, appearing on different parts of the body. This is an affection quite independent of the state of the bile, and seems rather to be connected with conditions of the alimentary canal. It goes off after delivery and does not require any peculiar treatment.—*Dr. Burns' Principles of Midwifery*, 7th Edit. p. 223.

† Dyspnœa :—Δισπνοια, *dispnoia*, from δυς, *dus*, difficulty, and πνεω, *pneō*, to breathe : A difficulty of breathing, or impeded respiration.

and attended with a great deal of pain. In those cases where the abdomen is much shaken, the best remedy I know of is bleeding from the arm, leechings, opium, hyoscyamus, or other anodynes; laxatives may be taken to keep the bowels regular, but not to disturb the digestive organs and nerves. In dry cough paregoric elixir, to the amount of a drachm, will sometimes give present relief. The hydrocyanic acid, to my mind, deserves a trial, though I have had but little experience in this medicine.

CONVULSIONS.*

During pregnancy, women are sometimes affected with convulsions, a disease I shall hereafter consider very largely, and I forbear, therefore to enter into that topic now. Where convulsions do not actually occur, there is sometimes a very obvious tendency to the attack, flushing of the face, throbbing of the carotids, severe pains in the head, and sensations of the brain, as if it were too large for its receptacle, which, indeed, in a certain sense, it is, in consequence of the blood flowing into it too copiously. The best remedies for symptoms of this kind, are bleeding from the arm, or the nape of the neck, or temples, by cupping-glasses, or by leeches, and then the warm bath, with purgatives, perhaps emetics, and, ultimately, when the skin is open, anodynes. I should not use the warm bath till bleeding had been premised.

ODONTALGIA† OR TOOTH-ACHE.

Women sometimes suffer severely from odontalgia, in the course of pregnancy; and though the teeth are all sound to appearance, yet, night after night, there may be severe attacks of the aching, so that

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* Convulsion:—From *convulsio*, a spasm, and that from *convello*, to shake or rend.

† Odontalgia:—Ὀδονταλγια, *odontalgia*, the tooth-ache; from ὀδοντος, *odontos*, genitive of ὀδους, *odous*, a tooth, and αλγος, *algos*, pain.

while all the rest of the family are enjoying their repose, our luckless patient is obliged to get up and pace the chamber to cool the system, and quiet the irritability under which she labours. From this pain the whole jaw may suffer severely. The extraction of the teeth, in cases of this kind, is out of the question; if there are none of them obviously affected, and even if a tooth were carious, I should hesitate before I had recourse to this operation believing, as I do, that it is ascribable to a certain state of the nerves which pregnancy produces, rather than from the condition of the tooth. Burns says, that miscarriage is reported to have followed extraction itself.* The volatile tincture of valerian, bark, and carbonate of iron, are principal remedies here. Would the arsenical solution be of service? I was once called to a Greek lady, a Smyrniote, at the other end of the town, suffering violently with this disease, night by night, so that she could get no rest; all the ordinary remedies had been tried, in ordinary doses, but in vain; I gave her the volatile tincture of valerian, and bark, as largely as the stomach would bear, and with the effect of arresting the disease, so that throughout the remainder of her gestation, she continued almost entirely free.†

PTYALISM‡ OR SALIVATION.

Very copious salivation will sometimes occur during gestation,

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* The tooth may be sound or diseased, but, in neither case, ought we to extract it in the early months, if it be possible to avoid the operation. I have known the extraction followed in a few minutes by abortion. Blood-letting frequently gives relief, and, sometimes, a little cold water taken into the mouth abates the pain. In other cases, warm water gives more relief.—*Dr. Burns' Principles of Midwifery*, 7th edit. p. 227.

† The most successful, I might almost say infallible remedy for tooth-ache, where there is caries of the tooth, is the application of nitric acid, which gives instant relief, and produces no pain whatever. It is to be cautiously introduced on lint, and the mouth washed with tepid water.—*Dr. Ryan's Essay on the immediate cure of Tooth-ache.—Lond. Medical and Surgical Journal*, vol. vii.

‡ Ptyalism:—From πτυαλισμος, *ptualismos*, a copious discharge of the saliva, and that from πτυαλιζω, *ptualizō*, to spit.

and where the patient has not taken one grain of mercury. I saw a case of this sort, which strongly resembled mercurial ptyalism, but the fœtor was wanting, and the gums were not ulcerated; there was merely the high action of the salivary apparatus. If the quantity of saliva is not very great, the patient may swallow it; and in that manner, perhaps, she may moderate somewhat the exhaustion, which would otherwise occur; my patient, however, secreted the saliva so plentifully, that when she swallowed it the stomach was offended, and a vomiting ensued. Now should the saliva be formed in very large quantities, and should the system suffer considerably in consequence, I should recommend the induction of delivery, which, in all probability, would cure the disease; but where the secretion is smaller, a remedy of this kind would not be justifiable. A meddlesome midwifery is bad. The patient did well without.*

MASTODYNIA.†

In the first pregnancy, women may suffer a great deal of pain about the breast, called *mastodynia*, sometimes referrible to a sort of tendency to inflammation; for, in the first pregnancy, a large and rapid developement of the breast may occur, the mamma becoming two or three times as large as before marriage. When the woman suffers severely from this, I would recommend leeching, bleeding from the arm sparingly, fomenting, and the ordinary

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* Salivation is not a constant attendant upon pregnancy, except in a very small degree: indeed it seldom exists in excess. In the mild form it will scarcely require attention; for it may even pass almost without notice. But it becomes very distressing and enfeebling when excessive.

As a general plan of treatment, whether moderate or severe, we have constantly endeavoured to destroy the accompanying acidity of the stomach by the various antacids; to keep the bowels free by the frequent use of magnesia; rinsing the mouth with lime water, and the use of solid animal food, together with a strict injunction to the patient to resist the desire to discharge the saliva from the mouth as much as possible.—*Dr. Dewees' Midwifery.*

† Mastodynia:—From μαστοδυνια, *mastodunia*, pain and inflammation in the breast, and that from μαστος, *mastos*, the breast, and οδυνη, *odunē*, pain.

remedies for slight inflammatory action. If the disease were inconsiderable, I should use friction with oil, perhaps a little olive-oil and camphor; in general, poultices, fomentations, tincture of opium, and oil mixed together; but, for such cases, patience is the best remedy.*

DROPSY OF THE OVUM.

I have previously noticed, that women are sometimes affected with dropsy of the ovum, a disease which I have now seen repeatedly. Perhaps a pailful of water may collect in the cavities of the uterus, and under this disease sudden alarming symptoms may occur. The abdomen may fluctuate as if from ascites, so that the first impression on your mind is, that the dropsy is of the peritoneum; there is, too, sometimes a great deal of pain and tenderness of the abdomen; perhaps when you touch it there is an outcry, and independently of the pressure, the suffering may be great, and there are pains as of parturition. Suspecting what is the nature of the disease—from the sudden enlargement of the abdomen, from the reputed pregnancy of the uterus, from the pains and the forcings, you make your examination, and then you may, in general, clearly feel the membrane lying in the os uteri, already begun to dilate. If the dropsy of the ovum is not considerable, you are not justified in rupturing the membrane and discharging the water, because in the later period of gestation especially, a woman in this situation, may still carry the child the full time, and may be otherwise in healthy condition; if however the dropsy occasion much pain and inconvenience, so that something must be done, the most effectual remedy that I know, is to discharge the fluid, and this may be done by opening the membranes, either extensively, so as to emit the

* If tight lacing be only avoided, and the breasts be permitted to expand, no material inconvenience will arise from their enlargement. Tumefaction, tension, and pains in the mammæ are natural consequences, and seldom require medical treatment.—*Dr. Hamilton's Midwifery.*

whole at once, or by making one or two small punctures so as to discharge it by degrees, the latter being the safer though the more tedious mode. A bandage should be prepared, and tightened as the water is discharged, otherwise syncope and collapse may be produced. That of my friend Mr. Gaitskell will answer very well.

RIGIDITY AND LAXITY OF THE ABDOMEN.

Your patient during gestation may suffer a good deal, in consequence of rigidity of the abdomen, particularly in the first pregnancy. The uterus growing very fast, the abdominal coverings do not grow in proportion, and this produces a distention and uneasiness, to be felt particularly about the edge of the ribs, or supposed to arise from the state of the bladder, and if you are thoroughly imbued with the hepatic doctrine, the liver, of course, becomes the scape-goat, and blue pill is the medicine prescribed. If you can clearly refer the pain to this over-distention of the abdomen, and the rigidity of its coverings, leeches over the abdomen, poultices, and abstractions of blood from the arm, will be found the best remedies, if indeed remedies be required.*

Some women labour under an affection just the reverse of the preceding, I mean an exceeding *laxity* of the abdominal coverings, so much so, that sometimes when they are pregnant, the womb, not being duly supported, falls to the one side or other, or forwards. Much relief is obtained from lying recumbent on the sofa, but, independently of this, you may sometimes help the

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* Sometimes the distension is so considerable that the skin becomes inflamed, and even cracks, so that there is a little oozing from various parts. The true skin also cracks when the outside is not altered, by which there remains upon the integuments of the abdomen of women who have had children, a number of cicatrices, as if the parts had been scarified, or there had been slight longitudinal ulcerations. The same effect is also occasioned by extreme corpulence.

For the ease both of the distension and consequent soreness, some unctuous applications should be rubbed over the abdomen every night at bed-time. The ointment commonly recommended for this purpose is composed of veal fat, beaten up with a small quantity of rose water.—*Dr. Walter's Edition of Denman's Midwifery*, p. 167.

patient by means of a well contrived corset or bandage, which the corset-maker may be directed to contrive; in general, women will make things of this sort better than the surgeon's instrument maker. In short, any thing that will give a general support to the abdomen, and throw the bearing upon the spine, may be found to answer very well. Sometimes, besides the support which is given by the bandage with the corset, a very broad busk, as it is called by women, that is, a broad leaf, or lamella of steel, placed in the stay over the yielding part of the abdomen, may be found more or less effectual in keeping the uterus in its place.

FALSE PAINS.

You will now and then be called to women, in the course of pregnancy, labouring under what are called false pains; that is, pains simulating the parturient, but not arising from delivery. Those false pains are produced from three causes commonly; first, they may be pains seated in the nerves, but this is rare; secondly, they may be the produce of spasm, the biliary ducts, of the ureters, of the intestines, or of the womb itself; and, thirdly, and most frequently, those pains may result from inflammation, and be accompanied with a fever. They are known not to be pains of labour by their seat—their sensation—their mode of return—and sometimes, and, in some measure, by their being permanent, and, above all, by an examination. If the pains are those of labour, we find that the os uteri opens and widens, and the membranes protruding, and these being broken, the head bears down; on the other hand, if they are not the pains of parturition, probably the os uteri is shut, and there is no bearing down; or should the os uteri be open a little, we do not find an increase of dilatation. This I shall treat of more largely, when speaking of natural labour, and to those remarks I must now refer you. Of course the treatment of false pains, must vary with their nature; but, of general means, the most effectual are bleeding, opium, and now and then, perhaps, the warm bath, though very often this is not

required. Inflammation may require very active remedies, but this will be considered hereafter.

FŒTAL TURBULENCY.

Lastly, a woman may suffer severely from a turbulent fœtus, which kicks, and cuffs, and plunges with violence, perhaps in consequence of convulsion, until the woman feels as if it would make its way through her body.—A lady, the wife of one of my medical friends, was attacked severely with this disease. Bleeding may be tried, in these cases, to the amount of a few ounces, in order to relieve and diminish somewhat the excessive agitation which the pain and alarm produce. Opium may be given, according to the effect produced, with a view of quieting both the mother and the fœtus; and I have no doubt, from my own experiments, that when the narcotics are taken, they often get into the blood and mingle with it; and this may explain to us how the opium, taken by the mother may operate in the child, for being taken into the maternal blood it may pass into the placenta, and get absorbed through the placentar pores into the vessels of the fœtus. In the worst cases, discharge the liquor amnii, for this in the course of a day or two, will rid the patient of her troublesome inmate. In the case referred to, manual restraint of the fœtus afforded much relief: an attendant at the bedside compressed the uterus, and compelled the fœtus to lie quiet; and under a severe paroxysm of this kind, very effectual relief was obtained. The restraint of the child, the effective use of opium, the discharge of the liquor amnii, and the abstraction of blood to the amount of ten or fifteen ounces, are the remedies to which I look in cases of this sort. Probably the child, when born, will prove weakly, and may die within a few hours afterwards.

END OF PART III.

THE

PRINCIPLES AND PRACTICE

OF

OBSTETRICY.

PART IV.

THE ART OF DELIVERY.

THE

PRINCIPLES AND PRACTICE OF OBSTETRICY.

PART IV.

THE ART OF DELIVERY.

CONTAINING SYSTEMATICAL AND PRACTICAL REMARKS ON LABOURS AND DELIVERY IN ALL THEIR VARIETIES.

In the preceding Parts your attention has been engaged by three great Sections of our subject, namely, the Anatomy of the Female System, the Physiology of the same, and the Signs and Diseases of Pregnancy, so far as the knowledge of these is necessary to the comprehension of Midwifery. From those inquiries we now proceed to the division of our subject which stands next in order, comprehending delivery in all its varieties; and we may commence with a few general remarks.

SECTION I.

ON DELIVERY.

It is scarcely necessary to observe to you, that by the term delivery, you are to understand that process by which the ovum, the fœtus I mean, and the secundines, are pushed into the world.

THREE STAGES IN PARTURITION.

This process, occasionally very brief, is more frequently protracted, and may, therefore, be conveniently divided into distinct stages, or periods. By different accoucheurs you will find that different methods of division have been adopted ;* for myself, I am accustomed to separate the process into its three stages, (a division which I find sufficiently minute for practical purposes,) the first stage terminating with the complete expansion of the os uteri, the rupture of the membranes, and the discharge of the water ; while the second closes with the expulsion of the child ; and the third, with the detachment and the expulsion of the secundines. Of these three stages, in a natural labour, the last is the most important to a general practitioner, and I would advise you to study it with attention, for if we except the flooding cases, the laborious and difficult labours, which in the second stage require more than ordinary skill on the part of the accoucheur, are by no means so frequent as those who are inexperienced are apt to imagine.

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* Dr. Denman divides labours into *three* stages. The first including the dilatation of the os uteri; the rupture of the membranes; the discharge of the waters. The second, the descent of the child; the dilatation of the external parts; the expulsion of the child. The third, including the separation of the placenta, and the expulsion or extraction of the placenta.—*Aphorisms*, 8th edit. p. 7.

Dr. Hamilton adopted a similar plan of dividing parturition into its three stages.—*Outlines of Midwifery*, p. 191, 194, 196.

The *London Practice of Midwifery* makes four stages:—"The first stage is that where the head of the child enters the pelvis, passing down as far as it can move, without changing its position. The second includes the period of the child's head passing through the os uteri into the vagina. The third, the change which has taken place in the vagina and os externum. The fourth, the delivery of the child, and the expulsion of the placenta."

Dr. Merriman likewise adopts four stages, viz. During the first stage, the head of the fœtus descends into the superior aperture of the pelvis, and the os uteri becomes dilated to about two inches in diameter in the absence of pain. The second stage produces that change in the position of the head, which turns the forehead into the hollow of the sacrum, and brings the occiput to emerge under the arch of the pubes. The third stage produces the expulsion of the child through the os externum. The fourth stage is accomplished by the delivery of the placenta.—*On Difficult Parturition*, 4th edit. p. 9.

FIVE CLASSES.

The process of delivery, though (except in extreme cases where the Cæsarian operation may be necessary,) always essentially the same, varies a great deal in its circumstances in different cases, so as to require a corresponding diversity of treatment. Hence arises the necessity of dividing your labours into classes,* not for the sake of making useless and refined distinctions, and wasting your valuable time and more valuable intellect in logomachies about method, but in order that plain practical rules may be laid down for the management of different forms of labour. Now the various forms of parturition may, I think, be divided commodiously enough into five classes, and it is this classification which, after some little experience in the art of teaching, I have been accustomed to adopt, so that in the subsequent pages, to one or other of the following five classes of the natural, the preternatural, the flooding cases, and those which are laborious, and those which are anomalous, all labours will be referred.

By a labour which is *natural*, I understand not only those deliveries in which no morbid symptoms occur, but also those cases of parturition which are natural upon the whole; that is, where the head of the child is presenting at the full period, and where the fœtus and the secundines are expelled by the natural efforts, and this too, within four-and-twenty hours from the decided commencement of the labour; and in our acceptation of this term, the labour is deemed natural, provided these characters concur,

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* Hippocrates made only two classes, the natural and preternatural. Denman divides labours into four classes; natural, difficult, preternatural, anomalous, or complex. Hamilton adopts the classification of Denman. Burns divides them into natural, premature, preternatural, tedious, instrumental, and complicated. Baudelocque into three classes; natural, manual, and instrumental. Dubois, Desormeaux, Boivin, and Lachapelle agree with Baudelocque, but include face presentations among natural. Conquest, Dewees, Blake, and Merriman divide them into natural and preternatural. Davis divides labours into natural, preternatural, complex, and instrumental. Ryan into natural, preternatural, manual, and instrumental.—*Dr. Ryan's Manual*, 3rd edit. p. 154.

even though in place of the vertex the face or forehead should present. If it so happens, as it will sometimes, that the head of the child be not presented, but that some other part is found to be over the centre of the pelvis, the foot for example, or the breech, the abdomen, the shoulder, or the arm, or the leg, the labour then requires to be managed by rules peculiar to itself, and these deliveries are properly enough classed together under the head of *preternatural* labour. With very large eruptions of blood, labours are sometimes attended; these eruptions of blood preceding perhaps, or accompanying or following, the birth of the child. Peculiar practices of course are required, when great quantities of blood are coming away, and life is endangered in consequence; and it becomes necessary therefore to constitute a third class of labours, comprising, not indeed every case in which a small red appearance is observed at the vagina, because, in many, if not all cases, this occurs, but those cases in which you have blood coming away in alarming abundance, whether before or after parturition; and these may be denominated the *flooding* labours. By *laborious* labours, which constitute our fourth class, I understand those few labours, (for in judicious midwifery they are few,) in which it is necessary to have recourse to instruments to complete the delivery, whether the lever, the forceps, or the perforator be preferred; and lastly, by labours which are *anomalous* and *complicated*, I understand those labours which, with the exception of the extra uterine, are, upon the whole, natural enough, but to which there is superadded some extraordinary symptoms, requiring corresponding or important variations in the method of management. Cases, for example, in which you have inflammation of the head, the chest, the abdomen, and so on, creating difficulty; or those cases in which you have ruptures of the perinæum, vagina, or uterus; and those cases in which there is fever, plurality of children; or in which the fœtus is lying externally to the womb. Thus much then respecting the classification of labours, so far as I conceive observations on them may be of practical utility.

EARLY ATTENDANCE NECESSARY.

When you are summoned to a labour, and especially if you have engaged yourself to attend, I would advise you, by all means, to see your patient as promptly as may be afterwards; for although sometimes you may be prematurely present, and may have to retire, yet procrastination is never wholly unattended with danger, because the labour may proceed more rapidly than you imagined; and there may be floodings, preternatural presentations, or other anomalies, requiring prompt obstetric aid. A child may descend under the feet presentation, and, in consequence of your absence, the head and body of the fœtus may be retained within the parent at the time when there is a pressure on the umbilical cord, and the circulation being impeded, the child may be suffocated. To avoid these, and similar misfortunes that might occur, and which I might mention, it is better, in adherence to the general rule, that the accoucheur in all cases, and especially where he has engaged himself, should attend at the earliest moment after the summons is received.

INSTRUMENTS SOMETIMES REQUIRED.

If the case to which you are called, be known to be laborious and difficult, the lever, the forceps, and the perforator, may be taken along with you, more especially in a country place, where you may have to ride many miles. But, as a general habit, I strenuously dissuade you from making familiar companions of your instruments, because they are not wanted—*noscitur a sociis.* The very fact that an accoucheur, on all occasions, puts the lever into his pocket when he goes to attend a labour, proves that he is an officious, meddlesome, and, therefore, in my mind, so far, a bad accoucheur. Some men seem to have a sort of instinctive impulse to put the lever or forceps into the vagina. Repeatedly I shall state to you, that you are not needlessly to interfere with the natural efforts. It is only, therefore, in those cases, where you

have every reason to expect difficulty, that you are justified in taking your instruments. "Lead yourselves not into temptation;" if you put your instruments into your pocket, they are very apt to slip out of your pocket into the uterus. The only apparatus which I should advise you to take with you in ordinary, is a case containing the tincture of opium, a catheter, a tracheal pipe, and a lancet. Your lancet for bleeding is very convenient in the country, especially where the women are robust, plethoric, and with the softer parts more rigid, demanding the relaxation which venesection is calculated to produce. By all means carry with you, too, the tracheal pipe, designed to inflate the child's lungs where it is still-born, in a manner hereafter to be fully explained; and by this instrument, many a child may be preserved. Where the bladder is filled and there is a difficulty in emptying it, the catheter may be required, hence the advantage of this instrument; a double catheter, or a flat one, should be preferred. Sometimes during delivery, but still more frequently afterwards, opium is required and the fluid form is of more rapid operation. If a woman has had no children before, and suffers but little after delivery, your opiates are needless; but where there have been two or three children, and you learn from your patient that she always suffers a great deal of pain after delivery, the best method of relieving this pain, is to give her about thirty drops of the tincture of opium about one hour after the delivery, thirty drops more being administered an hour after the first, if relief be not obtained.

PRELIMINARY INQUIRIES.

If you are well known to your patient, on reaching the house you will be welcome to her apartment; but if you have not frequently seen her before, nor attended her on former occasions, I would recommend you not immediately to pass into her chamber. Not having her full confidence, by your presence you might agitate her, and in these cases it is proper to avoid every thing that may produce commotion of the nervous system. It is better,

therefore, that the accoucheur retire into some adjoining room, where he may see the lady patroness the nurse, who has generally a great many foolish nothings to say, all of which he may as well bear with patience and *bon-hommie*, two useful obstetric instruments, which may be fearlessly carried to every labour, and the practice of which may be learned excellently well on the lady in question. When the shower of words is blown over, or when Mrs. Speaker reluctantly pauses to draw breath, dexterously seizing the auspicious moment, you may make inquiries respecting the progress of the labour, the condition of the bladder, the state of the bowels, and so on; questions which, in ordinary cases, may with more delicacy be proposed to the nurse than to the patient herself. Should you chance not to be a weak head, a dear man, a pious man, a good kind creature, or still worse, should the lady be pettish, and declare you to be a brute or a physiologist, so that for these manifold offences she never, never will—never can see you—you may remain in the house, as the female 'never,' in these cases, comprises but a small portion of eternity, perhaps on an average some one or two hours, and when caprices and antipathies are a little subdued by the pains, your presence will be cordially welcome. Now, then, the pains being severe, after you have entered the room, you may make your examination, and if you find the labour rapidly advancing, you must remain at the bed side, lest the child should come into the world in your absence; but if on the other hand, you are satisfied that delivery is merely commencing, you may use your own judgment;—remaining, or retiring into another room, as little circumstances render expedient. But here let me remark to you in the way of caution, that the head sometimes comes away very suddenly, particularly when the pelvis is narrow at the brim, as formerly demonstrated. The os uteri may have been open for one or two hours, the head making no progress; when unexpectedly, under one severe pain, perhaps, the fœtus descends, and emerges when it may be you are on the point of leaving the chamber. Be on your guard under such circumstances, otherwise, as many others have done, you may lose the confidence of the patient.

STATE OF THE ROOM.

The more quiet the room the better. The cooler the better; a small fire is advisable, unless the weather be oppressively sultry, for it tends to ventilate the apartment. There should not be many companions with the patient; the nurse, the accoucheur, some very intimate friend, a sort of confidante, to whose kind and sympathising ear she may communicate all her anxieties and all her sorrows,—these are the only attendants she requires.

POSITION IN THE EARLY STAGE.

If the labour is not making much progress, confinement to the bed is not necessary. Such confinement, indeed, tends to make a woman solicitous and impatient, because it leads her to expect that the child will rapidly come away. In the first period, therefore, when the os uteri is beginning to open, and the delivery is proceeding in a very tardy manner, the patient may choose her own position, sitting, standing, or pacing the chamber, as inclination leads; but if you find the labour is going on rapidly, as you do in most cases, where you have been called in by the advice of the nurse at the proper moment, you must then confine the patient to that posture under which the delivery is to be accomplished.

POSITION IN THE ADVANCED STAGE.

Among different nations and different tribes, different postures of delivery are become in a manner national. The German ladies, I am told, are delivered in the sedentary position, well calculated to accelerate parturition, by keeping up the bearing of the child's head on the os uteri. In this country, our women are delivered usually when lying on the bed, a posture more easy to themselves. In Ireland, those of the plebeian class are frequently placed upon the knees and elbows, a custom to which some of them adhere

when they come over to this country. For ordinary use, however, in British midwifery, I conceive that our national position is the best, because, in general, it is to this posture of the body that the obstetric rules are accommodated. Now in easy deliveries, when the obstetric offices are few, the woman may lie on the left side, near the edge of the bed, with her feet against the bed-post, and a towel or long napkin secured to the same post in her hands, so as to give her firm points of bearing during the pains; or if the head be not likely soon to reach the outlet of the pelvis, she may vary this posture, as inclination leads. But in those labours which require all the assistance of our art, the posture ought to be composed with greater nicety, and the lady as before lying on the left side close upon the edge of the bed, the shoulders should be thrown forward, and the loins backward, and the spine a little incurvated; the knees should fall towards the bosom, and the bosom towards the knees, and the abdomen towards the bed.

GUARDING THE BED.

When the patients are in this manner placed upon the bed, it becomes necessary to defend the bed by a proper apparatus, in order to prevent its being injured by the discharges, and this apparatus it is which constitutes what is called the guarding. Among the lower orders of society, it is a frequent custom to roll up the bed, and a blanket is interposed between the patient and the sacking; but in the middle and superior ranks a more complicated contrivance is adopted, varying according to fancy, but essentially constructed as follows: a skin of red leather is laid on that part of the bed where the woman's hips are placed, and over this one or two blankets, or two or three sheets, folded so as to form an absorbent mass which may imbibe the discharges; over this there is spread out another sheet, which is either pinned to the bed furniture or fastened to the post of the bed, so as to keep the whole of the apparatus in the proper place. The guarding of the bed is the office of the nurse, and

with it the accoucheur has little concern, but I am induced to touch on this familiar topic, as when the accoucheur is of juvenile appearance, nurses will sometimes inquire, *ex insidiis*, in what manner he would wish the bed to be guarded? Now if you were at a loss here—if you were ignorant of the apparatus—if surprised, you were to ask what the woman meant, adding, perhaps surlily, that the only guard necessary was yourself, she would infer you had seldom been at the bed side before, and presume your ignorance of more important matters. *Parva leves capiunt animos*, and with these the bulk of the intellectual world is peopled.

SECTION II.

ON NATURAL PARTURITION.



Quitting the previous general remarks, we will now proceed to the consideration of natural parturition, or that form of labour in which the child's head presenting at full period, is expelled by efforts which, on the whole, are natural, within four-and-twenty hours after the discharge of the waters. And in a view to my observations upon this process, the whole course of it may be divided into two parts, the first of which terminates with the birth of the child, and the second with the expulsion of the secundines.

Illustration:—The cut above represents the uterus in the eighth or ninth month of pregnancy. It is stretched to near its full extent with the waters, and the fœtus entangled in the funis, M, the head presenting at the upper part of the pelvis. The placenta, KK, is situated at the superior and posterior part. The coccyx, E; the inferior part of the rectum, F; the vagina stretched on each side, G G; the os uteri, H; and a portion of the urinary bladder, II, are also visible.—*Smellie.*

PRECURSORY SYMPTOMS.

In natural parturition you will sometimes find the delivery is promptly terminated, and with few preliminary symptoms, particularly in the case of women whose family is large, whose pelvis is capacious, and whose softer parts are relaxed. A single pain, perhaps, occurs, and the child is pushed unexpectedly into the world. More generally, however, parturition coming on in a more gradual manner, precursory symptoms occur, and first the patient observes above, a shrinking of the abdomen, which appears to sink down towards the pelvis; this being produced, I suppose, in part by the contraction of the uterus, and partly from the mass of the uterus, together with the child, subsiding gradually into the pelvic cavity. This sinking may occur two or three days, perhaps more, before active parturition commences. When, too, delivery is about to begin, women frequently have a good deal of irritation about the bladder, and sometimes the intestines being affected, they are infested with diarrhœa and tenesmus, together with a frequent desire to pass urine—sometimes with these premonitory symptoms is combined a discharge which issues from the vagina, consisting of mucus tinged with a little blood, and this constitutes what is called *the shew* or token of delivery.* The mucus is from the follicles, numerous and large, which lie in the mouth and neck of the womb, and the blood consists of a small drain from a few capillary vessels, passing from the cervix uteri to the membranes, and laid open by detachment of these membranes and disruption of these vessels, when the lower frustrum of the ovum descends a little, and the mouth of the womb dilates. Hence it is, because the show of the blood is indicative of the

* Mistakes are sometimes made respecting the *shew*. Thus if a woman has a slight discharge of blood, not a very unusual occurrence towards the end of pregnancy, she is thought to have a *shew*, and labour is in consequence speedily expected: but the appearance of pure blood does not constitute a *shew*. The *true shew* consists of a glairy and sanguineous discharge mixed together; and this rarely happens, till some progress has actually been made in the dilatation of the os uteri.—*Dr. Merriman's Synopsis of Difficult Parturition.* 4th edit. p. 4.

dilatation of the os uteri and the incipient descent of the membranes, that this sanguineous appearance may be looked on as the token of commencing labour. Now when the labour is about to commence, all these symptoms may be manifested, and you may class them together under the head of the preliminary or precursory symptoms;—the shrinking of the abdomen, the discharge of mingled mucus and blood, the irritation of the bladder, and the disturbance of the intestine, of various duration before active parturition commences, lasting for a few days or a few hours.

SYMPTOMS DURING THE FIRST STAGE.



When women have borne large families, of ten or twenty children, for example, delivery sometimes commences with but little preparatory suffering; more frequently, however, and in the first labours especially, you have a great deal of cutting, sawing, and grinding felt during the first stage, while the mouth of the uterus is gradually expanding itself, and the ovum is pushed down. In ordinary cases, those cutting, sawing, and grinding pains, felt in the back, front, and sides of the abdomen below, and in the upper part of the

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Illustration:—The marginal cut above shews, in a lateral view and longitudinal division of the parts, the gravid uterus when labour is somewhat advanced. The distance of the scrobiculus cordis, B, from the last lumbar vertebra, A, is shewn by a dotted line. The usual thickness and shape of the uterus, C C, when extended with the waters, and, D, the same contracted and grown thicker after the waters are evacuated.

E E represent the figure of the uterus when pendulous. In this case, if the membranes break when the patient is in an erect position, the head of the fœtus runs a risk of sliding over and above the pubis, whence the shoulders will be pushed into the pelvis.

F F represent the figure of the uterus, when stretched higher than usual, which generally occasions vomitings and difficulty of breathing.

In this period of labour, the os uteri being more and more stretched by the membranes pushing down, and beginning to extend to the vagina, a great quantity of waters is forced down at the same time, and (if the membranes break) is discharged: whence the uterus con-

thighs, attack the patient at pretty regular intervals, of from twenty to thirty minutes: occasionally, however, we meet with women in whom the grinding and cutting pains are permanent, the patient complaining, and writhing, perhaps, almost incessantly for hours together;* and this particularly, if she be irritable and sensitive; and I the rather notice this, because I have seen practitioners confounded by these severe cutting pains when permanent, supposing that they must be attributed to some other cause than the efforts of parturition.

DESCENT OF THE CHILD'S HEAD.



After these pains have continued for a longer or shorter period, a few minutes or a few hours, we then observe the commencement of the bearing efforts under which the woman draws in her breath, bears down forcibly, and is compelled to make a struggle with all the muscles of her body, abdominal, thoracic, and of the members. Those bearing pains which are accompanied

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tracts itself nearer to the body of the fœtus, which is here represented in a natural position, with the vertex resting at the superior part of the ossa pubis, and the forehead towards the right os ilium. As soon as the uterus is in contact with the body of the fœtus, the head of the same is forced backward towards the os sacrum from the line of the abdomen, B G, into that of the pelvis, viz. from the uppermost F to near the end of the coccyx, and is gradually pushed lower, as in the next wood-cut.—*Smellie.*

* The irritable state of the os uteri during the first stage of labour very often produces from sympathy, shiverings and vomitings; and when the cutting pains are very frequent and severe, despondency and lowness of spirits generally prevail.- *Dr. Merriman's Synopsis*, 4th edit. p. 13.

Illustration:—The third cut shews the natural position of the head of the fœtus when sunk down into the middle of the pelvis after the os uteri is fully dilated: a large quantity of the waters being detained in the womb, by the head filling up the vagina. A, the superior part of the uterus; B, the superior parts of the ilia; C, the inferior part of the rectum; D D, the vagina largely stretched with the head of the fœtus; E E, the os uteri perfectly dilated; F, a portion of the placenta; G, the membranes; H H, the ligamenta lata; I I, the round ligaments, both stretched upwards with the uterus.

The vertex of the fœtus being now down at the inferior part of the right os ischium, and

with a sort of groaning, are attended with the descent of the child's head, and are found, therefore, to occur principally in the second stage of the delivery, after the os uteri is dilated, and the waters are discharged.

EFFECTS ON THE OS UTERI AND VAGINA.

While those efforts are going on, whether attended with the cutting, sawing, grinding sensation, and a great deal of bearing or not, we find great changes are produced in the state of the os uteri and vagina. On a first examination, the disk of the os uteri is, perhaps, no broader than a sixpence; but dilating gradually with uncertain rapidity, it assumes successively the breadth of a half-crown or crown-piece, or a circle of a still larger diameter; and undergoing these dilatations, it may be very thick, soft, and yielding, which is desirable; or it may be rigid, thin, and of unwelcome firmness, when delivery proceeds more slowly, unless, as sometimes, sudden changes occur. Examining the os uteri also, you have an opportunity of examining the membranes; and doing this, you may distinguish the cyst charged with water. When first an examination is made, the os uteri being little dilated, the membranes with the water not protruding, perhaps the cyst cannot be felt, and, in your obstetric noviciate, deceived by this circumstance, you may imagine that the water is already discharged; but, as the labour advances, the fluid collects about the mouth and neck of the womb, and first the aqueous cyst is felt within the uterus, and afterwards tense and overcharged during pain, it pushes down through the dilated os uteri forming

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the wide part of the head at the narrow and inferior part of the pelvis, the forehead, by the force of the pains, is gradually moved backwards; and, as it advances lower, the vertex and occiput turn out below the pubes, as in the next illustration. Hence may be learnt of what consequence it is to know, that it is wider from side to side at the brim of the pelvis, than from the back to the fore part; and that it is wider from the fore to the hind head of the child, than from ear to ear.—*Smellie.*

there within the vagina a hemispherical swelling, the gathering of the waters, in form like the breast, but without its softness. At this time, when the pains are on the patient, the bag seems as if it were overcharged with water, and on the point of disruption; but touching it again, as soon as the pains go off, we find it relaxed and yielding, as if but partially filled. And here it may be proper to inspect those preparations in my museum, which show respectively the different phases of the os uteri, and the varying protrusion of the membranes; they deserve to be examined with attention.

ERUPTION OF THE LIQUOR AMNII.

When at length, the mouth of the os uteri is laid wide open, the bag, which seems to be extremely tense, lying out into the vagina, bursts open spontaneously, or under the touch of the accoucheur, or without his touch, and a large eruption of water, of half a pint or a pint, for example, takes place, and thus, though you are not feeling the membrane at the moment, you may know the laceration has occurred; here, however, it may be as well to remark, that it is not always a rupture of the membranous cyst, containing the child, that takes place at this time, for we may have a rupture of another receptacle, this membranous receptacle being made up of three thinner tunics, one lining the other; and the water may issue from the bag, formed between the decidua and the chorion, that is, the two outer linings, a considerable discharge being produced in this manner. When the eruption is not from the bag in which the child is contained, alarm may be occasioned, but this is groundless; nor do I know that the point is in any way of much importance, though, to prepare your mind for the accident, I thought it proper to mention it. Let me add, that when there is a plurality of children, the number of gushes may correspond with the number of the fœtuses.

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that, I mean, stretching from the upper part of the forehead, to the lower part of the occiput, lying, throughout the labour, between the front and back of the pelvis. In cases of this kind, formidable difficulties may arise, and sometimes craniotomy becomes necessary, and much more rarely the forceps, the head being sometimes expelled by the natural efforts within the twenty-four hours, not without much pressure upon the bladder, rectum, and perinæum.

In labours on the whole natural, presentations of the forehead, occiput, and ear, may occur. Of the ear, the presentations are so rare, that I deem it unnecessary to dwell on them; and presentations of the occiput requiring no peculiarities of management, require no further notice; but when the forehead is lying over the centre of the pelvis, the case becomes a little more important. The forehead rectification, or instruments, may become necessary in some cases; but in most instances, I believe, the labour may remain altogether natural enough; notwithstanding the fœtus being expelled within the twenty-four hours by the unassisted efforts of the womb, the presentation sometimes changing for that of the forehead, and sometimes for that of the face. When the face of the child presents, rectification may be sometimes proper; or if the head be large, or the pelvis small, or the parts rigid, the perforator may be required, the forceps being seldom admissible when instruments are really necessary; but in face presentations, generally, if you will leave them alone, I believe the head will frequently descend under the natural efforts; though the softer parts, the rectum, bladder, vagina, and perinæum more especially, may be compressed more than desirable. So that it seems, from this general survey, that in natural labours, as they are technically called, there are various ways in which the head may pass, or attempt a passage—the vertex presentations being most frequent; but the presentations of the face, the forehead, the occiput, or the ear, the more rare, not being excluded altogether.

PAINS DURING PARTURITION.

The passage of the child through the pelvis is attended with a great deal of pain, as we all know; and so certain is this, that the efforts are usually denominated *the pains*. The sensations are described as of various kinds—dislocation, bursting, incision, and a certain indescribable feeling, which it is extremely difficult to render intelligible to our sex. But, to explain:—when parturition is going forward, in its commencement particularly, the woman may have a pain, as if the sacrum were going to quit its place. This is what I call the dislocatory feeling. This feeling leads the woman to call upon the nurse, and bid her bear upon the back—a practice from which she finds considerable relief. I suppose, therefore, this sensation may be partly produced by the sacrum being put aside a little by the passage of the child. I was once asked by a lady, whether, at the moment of delivery, the back bone was not actually dislocated? Such was her feeling on the subject. And as there is a relaxation of the ligaments, during the delivery, as I before explained to you, some slight displacement of the sacrum posteriorily may be supposed really to occur. Nevertheless, I have strong reason for suspecting, what I should not have supposed *a priori*, that this pain in the loins is owing to the dilatation of the os uteri; for, where I have myself been putting my fingers into the mouth of the os uteri, and dilating it, when perhaps I ought not, and when it may be, I had better, perhaps, have refrained, this feeling of dislocation has been distinctly felt. During the passage of the head through the vagina, it is that the next sensation, that of disruption, is perceived; and this sometimes so forcibly, that I have heard patients compare it to a feeling, as if they were torn limb from limb.

The cutting, sawing sensations, are observed on two occasions; first, when the mouth of the womb is expanded, and secondly, when the head passing the genital fissure, the perinæum is forcibly dilated, women sometimes exclaiming at this time, "You are cutting me," when in reality, the accoucheur is merely supporting the part.

The strong contractions of the womb which expel the child, and which may be called the bearing efforts, give rise to the remaining sensation, and that is a very distressing one indeed; so severe, that it compels the patient to cry out, and is a sort of feeling women cannot distinctly define; nor can they therefore make you clearly comprehend it. It seems to be produced by the strong muscular action of the womb, and may, as to its cause, be of the same nature, though not of the same feeling, as we experience in the gastrocnemii muscles, when seized with the cramp.

BIRTH OF THE HEAD.

When the child's head enters the world, very great relief is obtained; some women say they feel as if they were in Heaven, or use other expressions equally glowing and emphatic. This cessation of the pains may be of brief duration only, or it may continue for ten minutes or twenty minutes; one or two strong pains afterwards supervening, and the body being expelled. In natural labour, as a general practice, after this expulsion of the head, it is always wrong for the accoucheur to lay hold of the child, and pull out the shoulders; he ought to suffer the natural efforts to expel them.

DURATION OF THE PROGRESS OF PARTURITION.

The duration of the whole process, and particularly that of the second stage of labour, varies exceedingly, the child being expelled sometimes in a few minutes, sometimes after exertion of six, twelve, and twenty-four hours, or longer.* Giving my atten-

* The following notes from *Dr. Burns' Introduction*, evidently prove that "in proportion as we remove women from a state of simplicity to luxury and refinement, we find that the powers of the system become impaired, and the process of parturition is rendered more painful." In a state of natural simplicity, women, in all climates, bear their children easily, and recover speedily; but this is more especially the case in those countries where heat conspires to relax the fibres, p. 333.

The Greenlanders, mostly, do all their common business just before and after their

tion almost entirely to the difficult forms of labour, I have not had much opportunity of remarking, in many cases, those indications which, in natural labour, foreshow its probable duration. I may observe, however, generally, that the more the previous children, the more speedily labour proceeds. *Cæteris paribus*, the larger the pelvis the more rapid; the smaller the pelvis, the more tardy the delivery. Where the softer parts are relaxed, the delivery is facilitated; and where they are rigid, it is delayed. Much depends upon the efforts of the woman. In some women the efforts are sluggish; in others they are very violent. Much also depends upon the state of the os uteri; and if you find it wide open, thick, soft, and yielding, where a woman is of the ordinary size, and the womb is active, and there have been children before, the head descends quickly enough; but if the disk of the os uteri do not

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delivery; and a still-born or deformed child is seldom heard of.—*Crantz's History of Greenland*, vol. i. p. 161.

Long tells us that the American Indians, as soon as they bear a child, go into the water, and immerse it. One evening he asked an Indian where his wife was; "he supposed she had gone into the woods, to set a collar for a partridge." In about an hour she returned with a new-born infant in her arms, and coming up to me, said, in Chippoway, "Oway saggonash payshik shomagonish:" or, "Here, Englishman, is a young warrior."—*Travels*. p. 59.

Comme les accouchemens sont très-aises en Perse, de meme que dans les autres pais chauds de l'Orient, il n'y a point de sages femmes. Les parentes agées et les plus graves, font cet office, mais comme il n'y a gueres de vieilles matrones dans le harm, on en fait venir dehors dans le besoin.—*Voyages de M. Chardin*, tom. iv. p. 230.

Lempriere says, "Women in Morocco suffer but little inconvenience from child-bearing. They are frequently up the next day, and go through all the duties of the house with the infant on their back."—*Tour*, p. 328.

With the Africans the labour is very easy, and trusted solely to nature, nobody knowing of it till the woman appears at the door of the hut with the child.—*Winterbottom's Account of Native Africans*, vol. ii. p. 209.

The Shangalla women bring forth children with the utmost ease, and never rest or confine themselves after delivery; but washing themselves and the child with cold water, they wrap it up in a soft cloth, made of the bark of trees, and hang it upon a branch, that the large ants with which they are infested, and the serpents, may not devour it.—*Bruce's Travels*, vol. ii. p. 553.

In Otaheite, New South Wales, Surinam, &c. parturition is very easy, and many more instances might, if necessary, be adduced. We are not, however, to suppose that in warm climates women do not sometimes suffer materially. In the East Indies "many of the women lose their lives the first time they bring forth."—*Bartolomeo's Voyage*, chap. ii.

exceed the breadth of a shilling, being thin, unyielding, and contracted, then parturition is not so speedily accomplished.

THE MORBID EFFECTS OF PARTURITION.

In the progress of labours, such as I have described, there are various morbid symptoms, not, indeed of much importance, yet not to be overlooked altogether. When the child is about to enter the world, tenesmus is felt, in consequence of the bearing of the head on the sacrum, perinæum, and rectum. Micturition will also take place, principally, I suppose, from the pressure of the child's head on the neck of the bladder, and in the commencement of the labour this requires no remedy, but you ought to leave the room occasionally. Cramps are likely to be produced from pressure on the obturator and sciatic nerves, and in a natural labour, an attack of the cramp is generally favourable; the child being sometimes born soon after the cramp comes on, as it occurs principally when the head of the child is rapidly descending. Again, in natural labours you have vomitings occurring during the first stage, and scarcely requiring a remedy. If medicine be necessary, the effervescing draught is, perhaps, the best. Four scruples of citric acid may be dissolved in four ounces of water, and five scruples of carbonate of potass in four ounces of water, and a table spoonful of each of these when effervescing, may be given every quarter or half hour, till the vomitings cease. Very severe rigors and shivers are felt, with which, if you were unacquainted, you might be alarmed, women sometimes shaking as if they were in an ague fit. If this be followed up by symptoms of pyrexia, fever is to be feared; if by severe pains in the head and abdomen, evidently not proceeding from the labour, then you may suspect that there is inflammation. If there be much flushing of the face, throbbing of the carotids, and the pulse high, you will have reason to apprehend that convulsions may supervene. In such cases, abstract blood; twenty or five-and-twenty ounces from the arm. These accidents, however, are rare: in general, where you have these symptoms, without the other signs

of fever, inflammation or convulsions, they are not to be viewed as alarming, but as auspicious, as they seem to indicate that the labour will be active, and its termination speedy.

SECTION III.

DUTIES OF THE OBSTETRICIAN.

We have now to speak of the duties which devolve upon the accoucheur, in the management of a labour; duties which, though few, are by no means unimportant.

DECISION IN DUBIOUS CASES.

If, when parturition begins, you make examination of the abdomen externally, you may generally find the uterus clearly enough distinguishable beneath the abdominal coverings, and forming a tumour there both hard and solid. If, further, an examination be made within, frequently one or two fingers may be passed into the mouth of the womb, and beyond this opening you may feel the cyst charged with water, sometimes distinguishing the presenting part. Even where the uterine mouth excludes the fingers, still if you place them between the os uteri and the symphysis pubis, the child may be felt just behind and above the symphysis, through the neck of the uterus, so that there can be no doubt that the woman is in a state of pregnancy: and of consequence, it rarely happens that much investigation of this point is requisite. And yet, now and then, where there chances to be a good deal of pain, resembling that of parturition, but arising from another cause; and where the woman, under error, has supposed herself to be pregnant; the practitioner is called to cases of reputed delivery, when, in reality, gestation is not begun. A gentleman once calling at my house, told me, not without earnestness, that he had under his care, a case of labour, about which he was very anxious. "The

mouth of the womb," said he, "is beginning to open, and I can feel the child, but the patient is somewhat weak, and labour makes but little progress." On my inquiring how long delivery had been protracted,—a few hours, was the reply; and he added, that there was no very pressing symptom. A meddlesome midwifery is bad, I rejoined, therefore it is better to wait, and not unwisely and rashly distrust the best of accoucheurs—Nature—the mother of us all. A day or two passed away, after which, he called on me again, observing, that his patient, still undelivered, was getting weaker and weaker, and that he wished me to give her a visit. On entering the apartment, I saw the woman lying in state, with nurses, accoucheur, and all the formalities attending a delivery; one small point only was wanting to complete the labour, which was, that she should be pregnant; for although the practitioner, one of the omnipotent class, had distinguished the child's head in the uterus, there was, in reality, no fœtus there. A few hours afterwards the patient died, and on examining the abdomen, we found the peritoneum full of water, but the womb, clearly unimpregnated, was no bigger than a pear; and thus, it sometimes happens, that you are called to reputed deliveries, when, in truth, the patients are not even pregnant; and you may therefore set down as one office, which, in natural labour, devolves on the accoucheur, that of deciding, in dubious cases, whether pregnancy exist or not.

SYMPTOMS DURING THE EARLY STAGE.

In general, when you are summoned to a labour, there can be no doubt as to the commencement of the delivery. Often you are not called upon till the middle of the process; when you find the womb open, the liquor amnii discharged, and the head of the fœtus approximating the outlet, so that respecting the reality of the parturition there can be no doubt. As women, however, have occasionally false pains in the abdomen, sometimes of a spasmodic nature, and sometimes inflammatory, it may be that you are called

to a labour supposed to have made some progress, when, in truth, it has not begun. To decide, therefore, in these cases, whether the delivery has commenced or not, is a second duty which devolves upon you; and this you determine by the following diagnostics. When the pains occur, make a careful examination of the os uteri; and if you find, after a succession of pains, that the mouth of the womb is not merely dilated, but of increasing dilatation,—with a disk, at first, as large as a shilling,—becoming, after a few efforts, as broad as a dollar, such increasing expansion is decisive proof that delivery is begun. Mere openness of the os uteri, however, proves nothing. I know, from personal observation, that the mouth of the womb may admit with facility the entrance of two fingers for a fortnight or more before delivery commences; but when there is not merely expansion, but an increasing expansion of the os uteri, the commencement of the labour may be regarded as certain.

Desirous to know whether delivery be, or not, begun, you must make further observations upon the membranes. If, during the pain, you feel the membranes tense, like an overcharged bladder, and relaxed during the absence of pain, so as to yield readily under the touch of the finger, it may be certainly concluded that parturition is commenced; or should the membranes be ruptured, examine the presenting part, which you will find advance and retreat simultaneously with the action and inertness of the uterus. Here then are the three principal indications, by which we are enabled to decide, in dubious cases, whether the delivery is begun; —the advance and retreat of the presenting part, the tension and relaxation of the membranes, and above all, the increasing expansion of the mouth of the uterus.

Other indications of incipient parturition there are, less decisive, but not to be passed without notice: when delivery commences, you will find sometimes an openness of the vagina, and a considerable relaxation of its texture. You will find, too, that the patient has usually the pains described to you before, of a cutting, grinding, and sawing character, returning perhaps every ten or fifteen mi-

nutes, or perhaps every twenty. Moreover, when delivery commences, the shew frequently issues from the vagina, formerly supposed to be of peculiar nature, but consisting, in reality, of mucus, mixed with a little blood. Lastly, when delivery begins, usually, a few days previously, there is that descent of the abdomen, mentioned in a preceding part; the abdominal tumour becoming smaller than it was before. All these, however,—the descent of the abdominal tumour, the appearance of the shew, the state of the pains, and the relaxation of the vagina, are to be looked upon as presumptive, not as decisive signs. The tension and relaxation of the membranes, the retreat and advance of the presenting part, and, above all, the increasing dilatation of the os uteri; these are the sole diagnostics in which, in dubious cases, we may confide; and these diagnostics, properly consulted, will preserve you from the folly of needlessly waiting for hours together to make the discovery at last, that labour is not yet commenced, or, perhaps, after all, that the patient is not pregnant.

ON RUPTURING THE MEMBRANES.

When delivery has made some little progress, you may distinctly feel the expanded os uteri, through which, as the waters gather, the aqueous cyst is bearing, and for the management of this cyst some rule is required. Now there are some practitioners, who are in the habit of bursting the membranes as soon as they can reach them, because they think that, in so doing, they accelerate the labour. While there are others, and I should be disposed to accede to their practice in preference to that of the former, who always leave the rupture of the membranes to nature, as they conceive it improper needlessly to interfere. To burst the membranes by the finger, instead of waiting for spontaneous rupture, is faulty; first, because the interference is needless and meddlesome; secondly, because this cyst of water is the instrument nature employs, in order to dilate the mouth of the uterus, the opening of which it enters like a wedge, acting on its margin by expansive pressure.

On the other hand, it is not wise, in every instance, to commit the rupture of the membranes to the natural efforts; because now and then, in the sixth or seventh month especially, the ovum tends to come away unbroken, like the egg of an ostrich, and when this is the case, much flooding may occur, and the child will, most probably, be drowned, as it comes into the world, immersed in a bag of water, and may perish. So again, sometimes, though very rarely, the membranes are morbidly unyielding, firm as a bullock's bladder, and labour may be delayed for several hours in consequence. These are, therefore, exceptions to this general rule of leaving the rupture of the membranes to the natural powers, and the rule, therefore, which I would prescribe, and which, if adhered to, will, I conceive, in general, keep you near the just line of practice, is the following: in general, commit the rupture of the membranes to nature, and, in nineteen cases out of twenty, they will yield, and the delivery will do well. If, however, you find that the os uteri is laid wide open, and that the membranes pushing down along the vagina towards the external parts, are not giving way, you may then rupture them; for, no longer of service in dilating the passages, they may retard the birth; or should the laxity of the parts, or the capacity of the pelvis, allow of their transmission entire, floodings fatal to the mother, and destructive to the fœtus, may be the result.

EARLY KNOWLEDGE OF THE PRESENTATION.

In labours generally, it is of very little importance, whether the practitioner knows, or not, what is the presentation, because, in general, it is a natural one, and notwithstanding his ignorance, the child will safely enough come away. Nevertheless, as we explained in a preceding part, in treating of the passage of the child through the pelvis, it may be that the child lies unfavourably for transmission, and the aids of art may be required. In cases of this kind, an accomplished and scientific accoucheur ought to be prepared to administer the necessary assistance; as, however, he can do no-

thing till he know the presentation, it is desirable that, in every labour, he should as early as may be, make out what is the part of the child that is lying over the centre of the pelvis, so that he may take his measures accordingly.

There are different periods of the labour at which the presentation may be ascertained; when, for example, the head is about to enter the world, or when the os uteri is fully expanded, and the membranes are broken, and the cranium is on the point of entering the brim of the pelvis, or when, lastly, the disk of the os uteri, about as large as a shilling, will admit two of the fingers, so that if you make your examination when the womb is quiet and the membranes are relaxed, the presenting part may be easily distinguished. Not to bewilder you, however, with discordant practices, I may observe, that in ordinary cases, it is, on the whole, the best to make the examination at the time commonly recommended; that is, when the mouth of the os uteri is laid wide open, when the membranes are broken, and when the liquor amnii has just been evacuated, then the head of the child, lying naked within the brim of the pelvis, within your reach too, unaltered by compression, you may the more easily recognize it.

Now, in a labour that is natural, and such as I am here considering, the mouth of the uterus being open, the membranes broken, and the liquor amnii just discharged, the vertex of the child may be known by its roundness, and its hardness, by its sutures, and its fontanels, often by the adjacent ear, and frequently by the hairy growth upon the scalp. To ascertain all this, requires some small share of experience and dexterity, but not much; for with an ordinary share of skill, the practitioner may decide easily enough, whether it be the vertex or some other part that is lying over the centre of the pelvis.

POSITION OF THE WOMAN.

In making the above examination, you put the woman into different positions, according to the custom of the country where you prac-

tice. Of some countries, the accoucheurs make the examination in the recumbent posture; of some in the sedentary; and among the plebeians in Ireland, the patient is examined on the knees and elbows. For the purposes of British midwifery, however, perhaps the ordinary obstetric position of this country is the most convenient; that, I mean, in which the woman lies on the left side, as near to the edge of the bed as may be; the bosom approaching the knees, the knees advancing towards the bosom, the shoulders forward, the loins posteriorily, the feet, if agreeable, bearing against the post of the bed, when the position being composed in this manner, the first and second fingers of the left hand, as formerly recommended, will be found the most convenient for making the examination.

SITUATION OF THE DIFFERENT PARTS.

If you have clearly ascertained that the presentation is the vertex, the principal point of examination in natural labour, perhaps it is better, when you are young in practice, not to disturb the mind with investigations respecting the situation of the different parts, unless, indeed, this be done with a view of acquiring from exercise a more complete mastery of examination; for in ordinary labours it matters little whether you are acquainted or not with the situation of the cranium. Every accomplished accoucheur, however, deserving to be considered as an adept in obstetrics, ought to be able to determine this point at once; and when you have attended, perhaps, some hundreds of cases, and paid particular attention to this part of examination, you will find this easy enough. Many accoucheurs fail egregiously, but the fault is not in the art, but in the man; for if we except some few cases, the situation of the head may be readily made out, provided the practitioner, not a mere talker in midwifery, is really a proficient in his art. Now when you are desirous of discovering situation, make it your first endeavour to distinguish the ear, by interposing the finger between the symphysis pubis and the head of the fœtus; and there, if the

accoucheur be skilful, and the condition of the labour natural, without difficulty, even in the earlier parts of labour, the ear may be felt. Again, anxious to ascertain the position of the head, examine the ear once more, taking care not to double the part upon itself, observing carefully which is the flap of the ear, and which is that part of the ear which is bound down close upon the head, for the flap of the ear lies towards the occiput, as the part which is sessile is lying towards the face. But to illustrate: when I examine the head of this model as it lies in the pelvis at present, I find the detached portion of the ear, the flap, is lying towards the right of the pelvis; whence I infer that the occiput also is lying to the right. I further find, that the portion of the ear which is seated close upon the side of the head, is placed to the left of the pelvis; and hence I learn that the face is lying to the left. So that where you feel the ear, and take care not to displace, and falsify its indications by doubling it upon itself, observing respectively those parts which are attached and disengaged, you make out the situation of the face and occiput with facility and precision. Further, by examining the sutures and fontanels, (an observation never neglected in my own practice,) you may again determine what is the situation of the head. Feeling the sagittal suture, you trace it to one extremity, and there discover a fontanel of small size, of triangular shape, and of three concurrent sutures, the two legs of the lambdoidal and the sagittal; well, this part I know by these characters to be the little fontanel, and where the little fontanel is, there is the occiput; in this demonstration, therefore, to the right of the pelvis. Then tracing the sagittal suture back upon the other extremity, you find there a larger deficiency of bone; the greater fontanel of rhomboidal shape, with conflux of four sutures, I mean the two legs of the coronal, the sagittal, and the frontal. Now by these characteristics I recognize the larger fontanel, seated here to the left of the pelvis, and as the larger fontanel lies near to the face of the child, therefore it is to the left of this pelvis that the face is situated; so that by examining carefully the ear, sutures, and fontanels of the head, in ordinary

labours, the position may be discriminated with great exactitude. Sometimes the membranes are ruptured before the os uteri is dilated; examinations may be made in these cases as soon as the finger can be introduced. In ordinary examinations, the position of the patient requires no nice adjustment; but if you would examine with more than ordinary care, the rules of posture already prescribed must be observed. When the vertex is much swelled from compression, it may be confounded with other parts, and more especially with the nates, from which, however, with due care and dexterity, it may be discriminated readily enough by the diagnostics enumerated. Under continued pressure of the finger, the intumescent scalp is gradually dissipated when the sutures and fontanels become clearly distinguishable, or the edge of the parietal bone may be found lying on the margin of its fellow; or sometimes we have, in a copious growth of hair, a decisive indication of the vertex. These obscurities from intumescence, are frequent in consultation cases, but in cases originally under your care, they must be of rare occurrence, provided you adhere to the rule before enjoined, and make your examinations in the earlier part of labour, as soon as the liquor amnii has been discharged; for before effusion of the liquor, the cranium can be but little compressed.

IN NATURAL LABOUR DO NOT INTERFERE.

In a natural labour, the less you interfere the better, and therefore when once the membranes are open and the position of the head is made certain, provided you find the child lying in such manner as not to require assistance, you have in fact little to do beyond merely sitting at the bedside and watching the progress of the head to the outlet. If it be a case of instruction, and you are beginning your practice, then indeed it is proper that you should examine as frequently as may be, without injuring the woman, with a view of learning to recognise the different parts of the pelvis and the head. But if the case is managed, as cases gene-

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kindly and effectually, and the placenta becomes more safely detached. When the child's head is come into the world, therefore, remember that a prudent practitioner ought not to interfere, but must still suffer the uterus to act in its own way, when by the natural efforts the shoulders will be expelled.

THE FUNIS ROUND THE CHILD'S NECK.

It not unfrequently happens in labours, on the whole, natural—perhaps, in one out of five or six cases,—that the umbilical chord is surrounding the neck of the child, coiled round the part once only, or repeatedly, say six or seven times. When the chord surrounds the neck, in this manner, the simplest and best method of detaching it, is to put a finger, or two, into the loop, by pressure dilating it, afterwards laying the chin upon the chest, and bringing the loop over the back of the head, so as to set it at liberty. If you cannot disengage the chord in this manner, you may then open it as before, and suffer the shoulders to pass the loop. If, however, the chord surround the neck two or three times,—and I have heard of one case in which the coils were six, and another in which they were seven in number, the loops being many, you cannot open the chord in this manner, but a better method is to leave the chord round the neck until the body be born, when it may be disentangled with facility.

CUTTING THE FUNIS.

When the body is expelled, you may lay hold of the child; but be careful not to draw it away far from the genitals of the mother. In general, the umbilical chord of the human female is about two feet long, occasionally much longer; it sometimes happens, however, though rarely, that the chord is unusually short. Now, in such a case, if you were to draw the child away, you would, in fact, make a pluck at the placenta, and if the womb were disposed to become inverted, this displacement might be produced; or the womb,

resisting the impulse, you might partially detach the placenta, producing perhaps a flooding, not without its dangers; so that to preclude these dangers, it is better to keep the fœtal abdomen close upon the genitals of the mother, until you find the chord is of full length. The child in the world, the next office which devolves upon you, is that of tying the umbilical funis; an operation which, perhaps, it might not always be necessary to perform, because I believe that, in many cases, if the umbilical chord were cut through, and no ligature were applied, such is the well provided contractility of the umbilical arteries, that they would close, and dangerous hæmorrhages would be prevented; particularly if, as in a state of nature, the chord were divided by the teeth, as I presume it is among animals when divided by them at all. Nevertheless, as the safer course is to tie the funis, and as this practice is generally adopted, ligatures should always be applied. In tying the chord, you may make use of two ligatures, the first at the distance of about three or four finger-breadths from the fœtal abdomen. Close upon the abdomen, the ligature ought not to be applied; first, because a portion of intestine protruding in the way of hernia, might be included in the ligature, giving rise to strangulation; and, secondly, because, the chord being tender, you might, with the ligature, cut down into the vessels, occasioning thereby a bleeding, which, as no room would remain for a second ligature, it might not be easy to repress. At the distance of two or three finger-breadths from the abdomen, therefore, the first ligature is to be put on, and the second may be applied about two inches from the first. Of the kind of ligature, it may be remarked, that a small skein of thread or silk will answer the purpose exceedingly well, consisting not of two threads only, for these might break or cut the chord, but of several, ten or twelve, for example. When applying, coil the ligature once round the chord, and draw it very tightly, not neglecting this caution, as the elasticity of the funis protecting the vessels, they might by lighter pressure be imperfectly closed, and might show a disposition to bleed. Having coiled the ligature once round the chord, and tied it in a single knot, apply

it a second time on the same crease as before, and draw it tightly again, afterwards making a third loop still on the same crease with the preceding, drawing it tightly also, and securing now by a double knot. The first ligature applied in this manner, the second may be put once upon the chord, about two inches from the former, and then, the chord being brought under view, you may divide with the scissors, not, however, ambitiously imitating certain great originals in midwifery, of whom some have amputated a finger, together with the chord, and others a portion of the male organ.

The umbilical chord divided, you cover the head with a cap, and, on turning round, you are perhaps surprised to find near you some fair nymph, who presents a woollen texture called *the receiver*, and to the protection of this lovely vision, of course, the guardian spirit of the child, the much expected visitant, is confided. Respecting the fit moment for applying the ligature to the chord, a difference of opinion prevails: some advising us to wait till the funicular pulsation ceases, and others recommending a ligature as soon as the fœtus enters the world. Not, however, to enlarge tediously on this subject, I may remark here, that when the child is vigorously alive; breathing, crying, struggling, enjoying the full action of the respiratory and vascular system, I do not scruple to put a ligature on the funis as soon as it comes into the world. On the other hand, if I find that the vital actions are very weak, whether from previous pressure on the chord, on the head, or any other part, I delay the ligature until indeed I am obliged to cut it away, in order that I may have recourse to the respiratory apparatus, and the use of the warm bath, of which I shall hereafter treat.

EXAMINE FOR A SECOND FŒTUS.

As soon as you have delivered the child to the attendant, you should, in every case, make an examination to ascertain whether there be another fœtus in the uterus. Repeatedly it has happened, that the accoucheur has wished the patient joy, has retired from

the room, has even left the house, and yet perhaps as soon as he crossed the threshold, a second child has made its appearance, to the no small gratification of those classical friends, to whose kind offices I was before adverting. Now in order to avoid so gross an error, you ought, in all cases, as soon as the first child has emerged from the uterus, to ascertain whether there be a second. If, as in ordinary labours, no second fœtus be in the womb, on laying the hand above the symphysis pubis, you distinguish there the uterus forming a mass of varying firmness, in bulk not exceeding much the size of the fœtal head, and when proceeding with the investigation, you examine internally at the mouth of the womb, sometimes the placenta, sometimes the membranes, may be felt—never, of course, the parts of a fœtus. But what if there be a second fœtus in the uterus? Why, in such cases, the womb examined externally, feels as large as in the end of gestation; and when the internal examination is instituted, the cyst charged with water, or the members of the child, may be distinctly felt. Blood collecting in the membranes of the fœtus, which has been expelled, sometimes simulates the watery cyst of another child; but the issue of clots in place of water, prevents deception here. Water, air, adeps, or a diseased growth of the viscera, of the ovaries especially, may produce abdominal enlargement, confounded by the unskilful with the intumescence from a second child; but the scientific and able accoucheur may, I conceive, always distinguish by grasping the contracted womb externally, or examining the mouth and neck within. Satisfied that there is no other child in the uterus, you may then very carefully wrap up the genitals in well aired napkins, afterwards bracing the abdomen with a broad bandage applied over the abdomen externally to the dress of the patient, with that degree of tension which may yield a sense of grateful support. Mr. Gaitskell, of Rotherhithe, has contrived a bandage excellently well adapted for this purpose. The bandage may be followed by a cordial composed of one table spoonful of brandy, and three of water, with as much sugar and nutmeg as may agreeably flatter the palate of the patient.

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tion ; and on examining the child next day I found that scarcely a particle of air had entered the lungs. Neither can you effectually inflate the lungs, so as to execute the artificial respiration well, by blowing the air into the mouth, not even if you previously open the *rima glottidis* by the insertion of the finger, and close the œsophagus by pressing the larynx upon the œsophagus. The only mode of performing this operation effectually is by means of a small instrument, the tracheal pipe, which I think every accoucheur should carry along with him to a labour. The tracheal pipe is a little tube of silver, designed to pass into the trachea, its end closed like a catheter, with a long, broad fissure on either side to give free vent to air and mucus. The closed extremity and lateral openings I prefer, as there is less risk of injuring the delicate membrane of the trachea, if a terminal aperture do not exist. In introducing this instrument there is some difficulty at first, if you do not manœuvre rightly; yet every moment is of the greatest importance, for while you are blundering the child is dying. Now not to detain you needlessly, I may be allowed to observe, that my own method of operating is the following :—I pass the fore-finger of my left hand down upon the root of the tongue and into the rima glottidis, and then using the tube with the right hand, I slide it along the surface of the finger, used as a director, till reaching the rima I insert the tube at the moment when the finger is withdrawn from it, afterwards feeling on the front of the neck whether the instrument is lying in the trachea or the œsophagus. This done, you may take the child into your hands, and from your own lungs you may inflate the lungs of the fœtus, emptying them afterwards by means of double pressure of the hand, on the thorax I mean, and the abdomen, the latter pressure being necessary in order to urge upwards the diaphragm. Operating in this manner, you may execute the artificial respiration with the best success. Five-and-twenty, or thirty respirations there ought to be in a minute, the new-born child breathing faster than an adult. You may ask me, perhaps, whether it would not be better to use bellows ? Make the experiment, and you will not repeat the

question. When you have performed the artificial respiration for a few minutes, you make your observations on the child. Feel the chord, and you will sometimes have the satisfaction to find it pulsate. The best point for examination is at the very root of the funis, close to the abdomen. You sometimes feel the pulsation there; when at the distance of an inch from the abdomen it cannot be perceived, the arteries being so contracted that they do not admit the entrance of the blood. Examine the thorax, feel the heart, and you may sometimes, through the ribs, obscurely perceive its beating; observe the face, perhaps you find the cheeks reddening—the countenance forming—the lips quivering. When these marks of returning life are observed, pause for a little, and frequently the child will be observed to make a spontaneous effort of respiration; a deep sigh is the first breath it draws; in twenty or thirty seconds it breathes again. Now if on suspending the artificial respiration the heart continue to beat—the chord to pulsate—and the respirations to increase in frequency—further aid from the tube will not be required; but should the pulsation cease in the chord, and the sighs be heard no longer, then your operations must be resumed; and thus repeatedly, as the case requires; at one time you try the natural powers of the child, at another you support the respiration by art. There is yet another practice proper in these cases, which is use of the warm bath. Procure a capacious vessel to be in readiness, always, when you expect a still-born child; provide also a kettle filled with hot water, and an ewer with cold; mix the waters, and bring them to the temperature of 97° Fahrenheit; or perhaps higher; take care that the water is not so hot as to scald the skin. With your own hand you may judge of the temperature, particularly if you have been in the habit of using it thermometrically. Well, then, into this warm bath immerse the child, the face being kept above the water; and occasionally, by this warm bath some little respiration has been restored, even when the artificial respiration has failed; I conceive this, therefore, to be a very valuable remedy. The object of the bath is to excite the system, and especially to procure the circulation of the

blood. This bath, however, requires using with some science. Sir Anthony Carlisle has found, that if he plunge a hedge-hog into water, of the temperature of thirty-eight or forty degrees of Fahrenheit's thermometer, he may keep it submersed for thirty minutes, and, on removal, the animal may survive; but if he submerse it in water of ninety-four degrees Fahrenheit, for eight minutes, it dies. So that the animal seems to drown much faster in warm water than in cold. Now granting this to be correct, and Sir Anthony is supported by a previous and analogous experiment performed upon the kitten by Dr. Haighton, which, as he ascertained, will drown sooner in warm than in cold water; this principle must be important in managing the bath for the child. When respiration and circulation are proceeding, the heat by exciting action, tends to support the vital principle; but if neither circulation nor respiration proceed in the bath, the heat tends to exhaust and destroy. And the practical inference I would draw from this, is very important: if you find, on immersing a child in a warm bath, that it neither breathes nor circulates, you ought not to keep it there, for, in so doing, you would destroy; you may leave it in for half a minute, and then take it out, and try the artificial respiration again; but if you find it is improving in the warm water, you may let it remain in the bath for five, ten, or fifteen minutes, or more or less. If deemed proper, it would be easy to execute artificial respiration, while the child was in the bath.

Other subordinate remedies there are, which are not to be forgotten. Errhines you may put into the nose—snuff, for example; or you may rub the thorax, strike the nates, or introduce a little brandy into the stomach. For this purpose, put your tracheal pipe into the œsophagus, and, taking about a tea-spoonful of brandy into the mouth, impel it into the child's stomach, through the œsophagus. Brandy given by the mouth, in the usual manner, may get into the trachea, and produce inconvenience; wash the pipe before you insert it into the trachea. Never hastily despair of the means of resuscitation. Many a fœtus is laid aside as dead which,

by a diligent use of resuscitants, might have been saved. A woman, run over by a stage, was carried into St. Thomas's Hospital, and died in a few minutes after admission. This woman was in the end of pregnancy. By my friend, Mr. Green, I was requested to assist in the Cæsarian operation. In thirteen minutes from the last respiration of the mother, the child was taken out. In fifteen minutes from the last respiration of the mother, I began the artificial respiration. During fifteen minutes longer I continued it, ultimately resuscitating the child completely, and had due care been taken it would probably have been living still. Mr. Tomkins, of Yeovil, a gentleman formerly of this class, very accurate in his observations, used resuscitants for an hour and five minutes by the watch, before obvious signs of life appeared, the child recovering, however, at last, and living, I believe, for some time afterwards.

SECTION IV.

BIRTH AND MANAGEMENT OF THE SECUNDINES.

We now proceed to speak of the birth and management of the secundines—the placenta and membranes, in labours on the whole natural.

NATURAL EXPULSION OF THE PLACENTA.

If the womb chances to be more than usually active after the birth of the child, it sometimes very promptly expels the placenta. More generally, however, after the child is come into the world, the womb reposes itself for fifteen or twenty minutes, after which contractions occur, and sometimes, though rarely, as I have myself seen, the placenta is completely expelled from the vagina; sometimes, and more frequently, it is pushed into the upper part of the vagina, or in part expelled from the uterus, so that it lies partially in both cavities; and sometimes it may be pushed down to the mouth of the uterus, so that at the os uteri the insertion of the

cord may be easily felt. This expulsion of the placenta, more or less complete, is usually attended with a discharge of blood, of varying quantity, seldom, however, exceeding a few ounces, a gurgling noise perhaps indicating when the blood comes away; and this I rather mention, in order that, being on your guard, you may be prepared for the accident, not feeling needlessly alarmed when the hæmorrhage occurs.

EFFECTS OF UTERINE CONTRACTION.

These contractions of the uterus, which, occurring after the birth of the child, expel the placenta, are of no small importance, and the effects which are produced by them may therefore be worth our consideration; and first we may observe, that when the uterus contracts, in consequence of the diminution of the extent of its surface internally, detachment of the placenta is produced, in the same manner as under a contraction of the hand, a handkerchief separates from the fingers which contain it—the palmar surface diminishing, while that of the handkerchief remains unchanged. Again in contracting, the uterus does not merely detach itself from the placentar surface, but as I have told you already, it more or less completely expels the organ, pushing it beyond the os externum or into the vagina, or into the mouth of the uterus, or into that part of the cervix uteri, where it may be felt lying behind the disk formed by its mouth. To these two effects of uterine contraction a third may be added, scarcely less important —I mean the security it gives against the risk of inversion. If the womb is in an uncontracted state, its cavity large, its parietes thin, its substance soft and flexible, and you, laying hold of the placenta, draw down without previous reflection, there is a great risk lest the uterus, to use an expressive illustration, should be turned inside out. But if the womb, as it ought to be when the placenta is taken away, is contracted in every direction—its cavity small, its sides thick, its substance hard—under these circumstances an inversion is not only improbable, but perhaps impossible. So that it seems,

among the advantages arising from the contraction of the uterus, we may enumerate, not merely detachment of the placenta, and the expulsion of the placenta, but the security against uterine inversion, which this contraction best affords. A fourth advantage, not to be overlooked, derivable from uterine contraction is, that it diminishes the risk of hæmorrhage from the womb. Into the placenta there are a number of blood-vessels shooting; those vessels, arteries, and veins are of very large capacity. Now why is it, that when you take away the placenta and lay all these vessels open, you have not always a large eruption of blood? Much may, perhaps, be ascribed to the concretions which form in the mouths of these vessels, and still more to the uterine contractions; for where the womb contracts, its muscular fibre contracts, and when the fibre contracts, the vessels are contracted also; for the vessels ramifying among the fibres, these fibres when contracted around them, like so many ligatures, close the branches, venous and arterial. I will not assert, for this is unproved, that if the placenta be withdrawn while the womb is in the uncontracted state, hæmorrhage must always occur. Now and then, where the circulation is low and vascular orifices are closed by sanguineous concretions, abundant hæmorrhages may not be produced; but certain it is, that unless the womb be thoroughly contracted, there is always a risk of bleeding; a risk which, as explained already, is very materially diminished by the contraction of the muscular fibres. For various reasons, then, it is clearly very desirable, that after the birth of the child the full contraction of the uterus should be obtained, for this contraction it is which detaches the placenta, expels the placenta, secures the womb against the risk of inversion, and the vessels against the more formidable and fatal eruptions of the blood.

STATE OF THE UTERUS AFTER DELIVERY.

If you examine the womb,—as ought to be your custom, immediately after delivery,—there are four very different conditions in

which it may be felt; sometimes it is large and lax, and nearly as big as the adult head; and sometimes it is small and soft, not bigger than the head of a full-grown fœtus, and yielding like the breast under the touch; sometimes, in a third condition, very different from the preceding, you find it small and rounded, and as hard as a piece of cartilage, or as the head of the fœtus; and sometimes, again, you find it in a fourth and intermediate state, very hard at one moment, and very relaxed at another. In all these four conditions, which it may not be amiss to recapitulate, the womb may be found after delivery; large and soft, small and soft, contracted, rounded, and very hard, or contracted and rounded with occasional induration, and occasional pultification.

Those tangible conditions of the uterus, are to be made out solely by examination above the symphysis pubis carefully instituted; and every scientific accoucheur ought to be able to determine with certainty, in what condition the organ lies. You will find, generally, on applying your hand above the symphysis pubis, feeling the uterus there, grasping it as felt through the abdominal coverings, that you may readily enough, especially when rounded and hard, determine the state in which it is. If, however, you find a difficulty in feeling the uterus, and no hæmorrhagic symptoms occur, you may wait; and, by and by perhaps, examining a second time above the symphysis pubis, when the womb is more contracted, rounder, and more indurated, you may feel it obviously. Should you, however, still seek the womb in vain, though desirous to ascertain what may be its condition, you may then pass two fingers, the first and second of the left hand, to the mouth of the uterus, an operation easily accomplished, as the passages have been laid open by the child; and thus getting a bearing on the uterine mouth, you may throw the womb forward, and then, undoubtedly, the hand being applied externally through the coverings, and above the symphysis pubis, the womb may be felt; for, in fact, it is thrown by the action of one hand into the hollow of the other.

Of these four conditions of the womb after delivery, remember

there is one only which is to be looked upon as perfectly healthy and altogether desirable. The woman may do well under the three other states of the uterus, but this alone is secure; and I here allude to that condition of the uterus already mentioned, in which, like the head of the child, it feels contracted, round, and permanently indurated, for it is this contraction of the muscular fibres which secures against the probable risk of flooding or inversion. If the womb be large and pulpy—if, though contracted, it feel soft and yielding—if, lastly, alternating its condition, it seems at one time soft, and at another indurated;—although the woman may be perfectly well, and although, no dangerous symptoms appearing, very active practice may not be required; yet you are to look upon the condition of the patient as at best uncertain, till that permanent rounded contraction, assimilating the uterus to the head of the full grown fœtus, be observed.

MEANS TO SECURE UTERINE CONTRACTION.

You will ask me, perhaps, whether there are any gentle means which you may employ, in order to secure a contraction of the womb when torpid? Something may be done by the administration of a cordial. A table-spoonful of brandy, for example, with two or three table-spoonfuls of water, to be given immediately after the birth of the child. Some advantage is obtained, by suffering the uterus to expel the child by its own efforts, in the way recommended. After the birth of the head, as a meddlesome midwifery is bad, do not, seizing the head, drag forth the body of the child, but rather leave the expulsion of it to the natural efforts; for the womb being stimulated in this manner to more complete contraction, you will find the exclusion of the placenta will become more easily accomplished.

It helps, moreover, this contraction of the womb to lay the hand above the symphysis pubis, to feel the uterus, to grasp it in the hand, but not so violently as to occasion pain, and to roll the hand about upon the uterus; this rolling of the hand, and this irritation

of the uterus appearing sometimes to operate as a useful stimulus to the womb. So that by the application of these simple means, which can do no injury, even if they produce no benefit, by the compression of the uterus—by the rolling of the hand—by allowing the child to be expelled by the unaided efforts of the uterus; the uterine fibre may be stimulated, and there is reason to believe that the susceptibility of the uterus may be augmented by the administration of some cordial, as soon as the child makes its appearance in the world.

INJUDICIOUS REMOVAL OF THE PLACENTA.

Where the placenta is rudely and injudiciously torn away by the hand of the accoucheur, the worst consequences may be expected to ensue. Floodings, tremendous lacerations, inversions of the uterus—such are the effects of obstetric violence—ferocious and atrocious obstetric violence; that insatiate and gory Moloch, before whose bloody shrines so many thousands have been sacrificed, to be succeeded, in future years, by still more numerous victims. Observing these awful consequences resulting from the artificial separation of the placenta, Ruysch first, and afterwards Denman and Hunter, recommended, that in all cases after the birth of the child, the expulsion of the placenta, like that of the fœtus, should be committed to the natural powers; for they added, "the same natural powers which are adequate to expel the child, are surely adequate to expel the placenta also." And there is no doubt, that if our women, *ferino more*, unaided by art, were committed to their natural powers altogether, like the females of barbarous hordes, in the great majority of cases the placenta would come away; but experience is said to have shown, and from the decision of experience there is no appeal, that in some cases, when the placenta is left to be expelled by the natural efforts, fatal consequences occur. Many cases are said to have occurred, in which floodings have taken place, and some in which the placenta, long retained, could not afterwards be abstracted; and where, remaining

unexpelled for two or three days, under the procrastinated use of means to extricate it from the uterus, the greatest injury has been inflicted; so that the practice, twice brought to trial, once in Holland, under the authority of Ruysch, and once in this country, by the advice of Dr. Hunter and Denman, has now been laid aside, probably not without good reason. It seems, therefore, to be pretty well agreed, among those who are competent to form an opinion, that though we are not to be injudiciously and rudely tearing at the placenta, it is necessary, nevertheless, that some artificial assistance should be given; and the greatest and nicest, perhaps the most important of all questions, in the management of a natural labour, is the discrimination of the moment at which this assistance ought to be interposed. Shall we interfere immediately? Shall we wait for an hour? or shall we delay still longer, before the placenta is brought away?

By different practitioners, different rules have been prescribed; and as they have their excellencies as well as their defects, I shall now briefly lay them before you. Some there are, and I think Dr. Hunter was of the number, who recommend that we should take our rule from time, and this has the advantage of being a rule of easy and exact application, for the chronometer becomes our oracle. Wait (they say) till four hours after the birth of the child. If the placenta comes away before the four hours have elapsed, it is well; if, on the other hand, it still remains in the cavity of the uterus, manual interference may become necessary. There are others, who judge by the pains, without any regard to the time at which the woman has been delivered: pains, they say, accompany the contractions; the contractions expel the placenta; the pains therefore indicate the time at which artificial assistance should be interposed. These practitioners, therefore, after delivery, seat themselves at the bed side of the patient, refraining, for one or two hours, from manual interference, if no pains occur, but as soon as the pains commence, following in the track of Nature, our best instructress, they lay hold of the umbilical chord, and endeavour to bring the placenta away. Nor is this rule to be despised.

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delay the removal, even though the glass be run out, provided the placenta be still lying beyond the touch of the finger.*

Here then are the four cautionary points which I wish you to remember. Before you abstract the placenta, ascertain always that there is no other child in the uterus. Wait for half an hour† after the birth of the fœtus, no particular symptom forbidding; satisfy yourself that the womb is permanently contracted; remembering that it is always desirable that you may feel the insertion of the funis, or the body of the placenta, before the viscus is taken away. I could wish that these cautions might be ever before the mind; importunately and uncalled, presenting themselves to the recollection, like the captivating notes of some favourite melody; or to speak a language more generally intelligible, the no less captivating traits of some favourite face.

MANNER OF REMOVING THE PLACENTA.

If agreeably to these rules you interfere in the extraction of the placenta at the proper moment, you will generally find that the removal may be easily accomplished as follows:—The woman placed on her left side, lay hold of the umbilical chord with your right hand, and the substance of the placenta lying forth, secure a bearing on it with the fingers of the left; having secured your hold, if there are pains, by all means wait for those, and co-operate; for I have found in slighter difficulties, that in removing the placenta, the pains assisted effectually, and perhaps that the placenta could not have been abstracted without them. If pains be wanting‡

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* No attempt should be made to extract the placenta for *one* hour after the expulsion of the infant, unless hæmorrhage come on, and then it must be removed as soon as possible.—*Dr. Ryan.*

† The late Dr. John Clarke took some pains to ascertain the length of time which nature required for effecting the expulsion of the placenta; and he found, that, upon an average, it took up *twenty-five* minutes.—*MS. Lectures, Dr. Merriman.*

‡ The pain which produces the separation of the placenta is sometimes so slight that the patient is hardly sensible of it; in this case, however, she perceives a little discharge from the vagina at the time of separation.—*Dr. Merriman.*

I advise you to take advantage of the expiratory descent; the epithet is not, perhaps, inappropriate, for often with every expiration, we find the chord descending a little, the placenta being by degrees pushed forward, so that if at each point of descent you prevent its retiring, by little and little the burden is brought away. Perhaps in many cases it may matter little in what direction* you pull, though a man of plain good sense, knowing as you do now, the axis of the pelvis, would wish to draw in a line, tending on the whole from the umbilicus to the coccyx. If you find there is a difficulty in abstracting the placenta, continually elevating your hold as the placenta advances, you should seize that part which is last emitted from the uterus, not continuing to grasp that portion of the placenta which first escaped, lest you tear it away. Do not haul out the placenta; do not jerk out the placenta; do not tear out the placenta, leaving, unobserved, one half of it in the cavity of the uterus. Do not lacerate and leave the membranes to form afterwards a receptacle for clots, or to alarm the patient by their unexpected appearance; *arte, non vi,* must as usual be your device; lead, coax, seduce. Well, then, in this gentle, cautious manner, substituting gentleness and skill for force and brutal violence, you remove at once the placenta and the membranes.

NECESSARY CAUTIONS.

The removal of the placenta accomplished, I recommend to your practice the three following cautions: and first, if there have been difficulty in abstracting the placenta, satisfy yourself that no inversion of the womb has taken place; for practitioners have sometimes unconsciously inverted the uterus, leaving it in that condition, an accident which can never happen to you, provided you forbear to remove the placenta till the womb be contracted.

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* In order to facilitate the extraction of the placenta, the funis should always be directed in the axis of the brim, cavity, and outlet of the pelvis, as it passes those parts.—*Dr. Conquest.*

You may, however, drowse sometimes at the bed side, and in these torpid and forgetful moments, carelessly abstracting the placenta, inversion may occur. As, therefore, the neglect of this accident is of serious consequence in all cases, and especially if the secundines be withdrawn with difficulty, make it your rule to ascertain afterwards whether inversion have been produced. Of the characters marking inversion, we shall hereafter treat more largely, remarking, at present, that if in its natural position the womb may be felt in the usual situation above the symphysis; while it is wanting at this part, and forming, like the child's head, a tumour in the vagina, when inversion exists.

A second point to which I wish you also to give your attention is, that of ascertaining that you have got the whole of the placenta from the uterus, and this not by thrusting your fingers into the uterine cavity, a practice to which I must remain decidedly hostile, but by taking the placenta and laying it out upon a napkin, examining both surfaces, and raising the membranes so as to ascertain whether the placenta and the annexed involucra be complete. If any part be wanting, the cause of this deficiency should be ascertained; if the whole be there, then of course there is none remaining latent in the uterus. Tenacious of this caution, you will not, like some of the omnipotent practitioners, leave, without knowing it, one quarter or one half of the placenta in the uterus, the patient, in some rarer cases, sinking, or becoming the subject of vomiting, flooding, and alarming pains, with, perhaps, the expulsion of the mass nine or ten days after the delivery was supposed to have been completed. Adhere, therefore, to this practice, so simple, so easy, and so beneficial to the patient, and when you have abstracted the secundines, satisfy yourself thoroughly that the whole mass, fleshy and membranous, is away.

There is one other caution, a third point, never to be forgotten, I mean the risk there is of bleeding, both before and after, but especially after the abstraction of the placenta. Those bleedings, as some melancholy cases prove, may be incautiously overlooked by the accoucheur, and really not always with much blame.

Though often more alarming than dangerous, these bleedings are never to be despised; to two women, dead from these floodings, I have been called in one night. To you, however, provided you adhere to the rule of interfering at the proper moment, fatal hæmorrhages, connected with the birth of the placenta, will rarely if ever occur, for they are highly improbable, if the womb be well contracted. When these bleedings are external they can scarcely be overlooked; the patient feels, and perhaps the practitioner hears, the flooding, as the blood falls upon the floor. But let it be remembered, that you may have internal hæmorrhages,—all the blood collecting in the cavity of the uterus; known by an alarming tendency to deliquium, a womb that is bulky, and a copious eruption of the blood by gushes when the uterus is compressed. Remember, too, that when the patient reposes on a large bed, in the centre of that bed a pool of blood may form without your being aware of it; if, therefore, faintness occur, if the body become cold, and the strength collapse, and the respiration be small or deep, and spasmodic, examine the uterus, and if you find no accumulation there, inspect the hollow of the bed.

Here, then, are three cautions which I would wish to impress indelibly on your minds and my own, their recapitulation being justified by their importance. After the placenta has been removed, satisfy yourself that the whole has been abstracted; ascertain, in the more difficult cases especially, that inversion has not been occasioned; and on all occasions be on your guard against those floodings, external, internal, or on the bed, often attended with little danger if the patient be well managed, but which, if neglected, will sometimes very suddenly and unexpectedly destroy; and let me add, in terminating this part of our studies, that although floodings may now and then occur long after delivery, yet they are most to be apprehended within a few minutes after the birth of the child, not unfrequently too making their unwelcome attack when the accoucheur is performing his ablutions and about to retire.

ERRORS IN MANAGING THE PLACENTA.

My remarks on the placenta, tedious, perhaps, yet necessary, I may close, by pointing out in a summary manner, the errors which, in managing its expulsion, you are liable to incur.

To commence then: I am afraid that some will heedlessly remove the placenta when there is another fœtus in the uterus. He smiles—he bows—he retires—another child is born.

I am afraid, again, that some will be forgetting that, in ordinary cases, when the placenta is taken away, he ought to ascertain whether the uterus be globose and indurated. Watch, therefore, and be careful that you never bring away the placenta without first examining the condition of the uterus. With urgent earnestness, I recommend this caution. Lay your hand above the symphysis pubis, get into the habit of invariably doing this in all cases; till this is accomplished, your duty to the patient has not been discharged.

I hope that no one will needlessly thrust his hand into the uterus, yet I have my misgivings. I hope, after all I have said of the tearing, and lacerating, and sloughing of these parts, you will never needlessly have recourse to this barbaric practice. Some of my obstetric friends, and whose talents I esteem, fall into this error; they grate my ears, by boasting how frequently they have carried the hand into the uterus, and with what facility the placenta has been removed: that this operation may be easily effected, I have no doubt; that it is sometimes necessary, I shall hereafter show; but depend upon it, if you do carry your hand into the uterus on every occasion to get away the placenta, some woman will die at last, and die the victim of your mismanagement; at this moment, perhaps, some amiable but ill-fated creature blooms the light and life of her admiring circle, who must hereafter fall an untimely sacrifice to some cruel and ruthless arm.

The tearing of the placenta, and leaving in the womb a portion unobserved, is another error to which you are exposed; especially if, instead of seducing, you haul forth the placenta. If, in every

case, you, as it were, seducingly allure away the placenta, the accident of tearing it can scarcely ever occur; but if you proceed with negligence and violence, large portions of the placenta may remain in the uterus, as I have myself seen.

To suffer the patient to flood unperceived, whether into the bed or the uterus, is another error against which you ought to guard; the majority of these cases ultimately do well, it is true, but I wish you to be prepared for the worst. You may make merry with this caution in ninety-nine cases, but perhaps you will look a little grave upon the hundredth.

The inverting of the uterus, unconsciously at the time, and without observing the accident till hours afterwards, is another error to be deprecated. If the womb be inverted, upon observing it immediately, you may soon replace it; but if it is not known within a short space, reduction becomes impossible. I suppose that it would be difficult to find, in the annals of midwifery, one case where a womb has been inverted, and remained so four and twenty hours, reduction being afterwards accomplished.*

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* But to illustrate by preparation:—I have one specimen of the inverted womb, thin, flexible, and of easy inversion, especially when paralytic, and softened from the loss of blood; in which condition of the uterus, the placenta is not to be taken away.

I have another specimen of the contracted uterus; puerperal, like the former, but mark the difference. In the former preparation the womb is capacious, its texture thin, its substance flexible; but here, where the womb is contracted, the cavity is small, the textures thickened, the substance indurated, the uterus hard as a bit of cartilage. Of the former uterus, inversion would be easy, but no inversion could occur here. You will observe, too that where the womb is contracted in this manner, the placenta is detached from the surface, and it must be in a great measure expelled from its cavity; and this is the condition of the uterus when the placenta may be safely removed.

I have a third preparation of the uterus in the uncontracted state, and looking on the inner surface to which the placenta cohered, you find there is a number of large unclosed vascular orifices, yawning, as it were, destruction on the patient. Now this preparation shows the condition in which the vessels are, if you tear away the placenta before the womb is contracted, exhibiting the formidable opening at which the effusions of blood occur. But in the contracted preparation, if you look at the blood-vessels, you will find them all closed by the abbreviation of the surrounding fibre, as by so many ligatures, and this is the best preservation against hæmorrhagia; it is Nature's tourniquet, her system of living ligatures, which, as yet, no art has imitated. You see, then, that it is not without good reason that I am so anxious, before you abstract the placenta, that you should secure the contraction of the womb.

Another preparation demonstrates the placenta such as it appears when properly abstracted;

CONCLUSION.

Such then are the general rules which I would prescribe for the management of that most important stage of parturition; I mean the birth of the secundines—the delivery, as, perhaps, by way of eminence, it has been denominated by our Gallic neighbours. When, from large experience and much reflection, you have of yourselves formed better rules of guidance; by all means, but not till then, let these now given be laid aside as superannuated and defective. Nothing can be more abhorrent from my wishes, than to exercise over the mind any influence which does not emanate from truth and reason; be that far from you and me! for there is not, perhaps, any intellectual habitude more certainly preventive of our progress in solid knowledge, than that which leads a man indolently to neglect the exercise of his own observation and reason, to adopt servilely the opinion of those who are gone before him. Observe for yourselves—think for yourselves. He is surely less than the least of all philosophers, one who is not worthy to be called a philosopher, who does not often inculcate these maxims. Think for yourselves, then; not arrogantly; not inconsiderately; not (if you please) invading those regions of thought which lie beyond the sphere of human understanding; but on topics within your reach, with observation and reflection, deep and broad, still think for yourselves; never burying in indolence that inestimable gift of nature, so much insulted and disparaged,—Reason; *lux lumenque vitæ divinæ particula auræ*;—Reason, the fair mother

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in the placenta there is a good deal of variety, but laying it on the napkin, and examining it for yourselves, you will find that if healthy, it always resembles the specimen.

Do not needlessly thrust the hand into the uterus; that is the voice that issues from this preparation:—he that has ears to hear, let him hear it.

Do not needlessly thrust the hands into the vagina; is the voice that issues from this preparation:—he that has ears to hear, let him hear it.

Do not needlessly pass the hand into the genital fissure; is the voice that issues from this preparation:—he that has ears to hear, let him hear it. Ah! that violence of an ignorant and savage hand? After examining these preparations, tell me, is it too much to assert, that in obstetrics, a thrust of the hand is more dreadful than a thrust of the bayonet? Could the field of Waterloo exhibit injuries more dreadful than these?—*Dr. Blundell.*

of philosophy, and the brightest and noblest inheritance of the human species.

SECTION V.

EFFECTS PRODUCED ON THE GENITALS BY PARTURITION.

When parturition occurs, effects are more or less liable to be produced on the softer structures, I shall therefore explain to you some of those which are the most important.

DILATATION OF THE PARTS.

When delivery occurs, there is an extensive dilatation of these parts; the os uteri, when contracted, will scarcely admit the catheter, but when dilated, it becomes so widely expanded, as to allow the passage of the head, and this too with facility. The vagina, small in its capacity, relaxes itself gently and softly under the pressure of the cranium, so as to sustain the transmission without injury, while a further softening prepares the genital fissure in such manner as to fit it for the emersion of the head. You may set down, therefore, among the effects of parturition, the softening and relaxation of the genitals, the expansion of the os uteri, the opening of the vagina, the dilitation of the genital fissure, not to mention the yielding of the levatores ani; for the vagina passing through these muscles, of course they must yield when the head passes.

LACERATIONS AND CONTUSIONS.

Where the parts are yielding as they ought to be, and where the first impregnation is effected at an early age, as nature intended, contusions and lacerations are rarely found to occur; but if it so happen from the customs observed in society, or from any other cause, that the first impregnation is too long delayed, then such rigidity may subsist, that, if the head be large, the pelvis

small, the efforts vehement, or the accoucheur officious, lacerations and contusions of the most formidable kind may be produced. Sometimes the body of the uterus, more frequently the neck, is torn. Sometimes we have lacerations of the vagina, or lacerations of the perineum, or lacerations of the back part of the cervix of the bladder, laying this part open into the vagina in a way you may readily conceive, from observing the situation of the bladder with respect to the vagina. These lacerations, as observed before, may be produced in various ways:—by the needless introduction of a rude and ignorant hand, by the officious and rough insertion of the lever or forceps, or, when these instruments have been already introduced, by the too rapid abstraction of the head. The head is secured, the womb is acting, cheerily the accoucheur advances with labouring, comforting himself with the expectation of a speedy emersion of the child; when, in evil moment, forgetful of the perineum, he ruptures it from end to end, and cripples his patient for the remainder of her days. Spontaneously, or without much interference on the part of the practitioner, lacerations of the genitals may occur; the parts are rigid, the pains are vehement, the practitioner is absent, or the woman starting from her position and losing his protection, the perineum yields, and suddenly the child's head bursts into the world. Against this accident you should always be prepared; but in candour it must be confessed, that laceration may occur, when little blame can be attached to the accoucheur. Add to this, that the back part of the neck of the bladder may be easily torn, in a way which a little attention on your part may readily prevent. Suppose, for example, the bladder to be charged with urine to the amount of one or two pints—suppose, further, that the child's head passing the pelvis and bearing on the symphysis pubis, divides the bladder in two parts or chambers, one portion lying above the brim, the other portion below, before and beneath the head, so that it receives during transmission the full pressure of the cranium; under these circumstances, should the fœtus descend rapidly while the bladder is loaded, disruption of the cervix will pretty certainly occur.

INFLAMMATIONS AND SUPPURATIONS.

During parturition it happens sometimes that inflammations and suppurations of all the viscera within the pelvis are produced. When the pelvis is small, the head large, and the labour difficult, all the pelvic viscera are liable to be contused, the vagina especially. Indeed, the violence of labour considered, it really appears surprising, that inflammation of these viscera does not more frequently occur; but the Creator has wisely adapted those parts to the force they are destined to sustain. The neck of the bladder, however, with the urethra, the rectum, and the parts adjacent, are all obnoxious to inflammation, to which the cellular web, already mentioned, is particularly exposed, matter sometimes accumulating in consequence, to the amount of six or eight ounces. A frequent pulse, a foul tongue, a heated surface, a general irritability of the system, a tenderness of the parts in the vicinity of the symphysis felt, on compression, or from jarring the viscera, by striking or giving concussion to the pelvis; these are the leading characteristics by which their condition may be known. Where matter is collected, hectic occurs; you may haves hiverings, sweatings, vomitings, purgings, wastings, and the patient may be carried off in the course of a few days; or if she be of more vigorous constitution, and in a purer atmosphere, the abscess may open and discharge its contents either into the rectum, vagina, or perhaps, the bladder itself. In one of the last cases of suppuration brought under my notice, the patient recovering, a good deal of matter came away, apparently from the urethra, along with the urine, and I have a strong persuasion that, in this instance, the pus and urine were mingled in the cavity of the bladder, into which the abscess was presumed to open.

SLOUGHINGS.

You will sometimes find, (nor must this effect of labour be forgotten,) that under the pressure of the head, sloughs of the

softer parts will take place, and of the more extensive kind too. The inner surface of the perineum may slough, or the labia pudendi, on either side; and what is more to be dreaded, the sloughs may occur in the upper part of the vagina, by which the canal may be laid open into the rectum on the one hand, or into the bladder on the other.

MICTURITION.

Among the effects produced on the softer parts under parturition, when labour commences, a frequent desire to pass water deserves your notice, resulting, I suppose, in part, from pressure of the child's head on the neck of the bladder, and partly from irritation. In more laborious labours too, you sometimes find that the bladder is shut, so that neither the urine nor the catheter can be passed, this closure being occasioned, partly by the pressure of the child's head on the urethra, and in part, by its becoming displaced and distorted. Now, accumulation in the bladder is always to be deprecated; by it, lacerations of the body or neck of the organ, may be produced in the manner already explained. When the urine is collected, it is not always in our power to introduce the catheter, even though the head be.a little repelled; in order, therefore, to prevent the accumulation, as much as may be, the patient should be directed to pass the water while she retains the power; to drink but sparingly, and, in preference, to use those warmer drinks which tend to increase perspiration.

INCONTINENCE OF URINE.

Incontinence of urine is sometimes observed, arising from various causes; by much pressure of the cervix of the bladder it may be produced, independently of dissolved continuity, in consequence of mere weakness, the retentive powers returning spontaneously in the slighter cases in the course of two or three weeks. When the injury is more serious, the debility remaining for weeks or months

afterwards, perhaps for years, it is said that a blister on the lower part of the back will do good, and this may be tried. Incontinence of urine, too, results occasionally from rupture of the neck of the bladder, torn open during delivery, in the way before demonstrated. In cases of this kind, after the delivery, let a catheter be inserted into the bladder, and kept there; and let a sheep's bladder, or any other contrivance you please, be connected with the under extremity of the catheter, so as to receive the urine. Keep the parts quiet, improve as much as may be the general health of the patient, and you will now and then have the satisfaction to find, that these rents which were large enough to admit two or three of the fingers, become closed up.

COMPRESSION OF THE NERVES.

When the head passes the pelvis, the nerves may be compressed, more especially if the cranium be large, or the pelvis small, or the lever or the forceps be employed, the trunk of the obturator and the origins of the sciatics being the nerves of the pelvis which are most exposed. Numbness and spasms of the lower limbs occur when the head enters the pelvis; perhaps the patient exclaims, "I've the cramp," and relief may be obtained by friction and compression of the affected part. After parturition, in general but little inconvenience is felt, yet now and then torpor and debility remain for months subsequently, and more rarely the patient is quite lame; but I once had a patient, a hawker, accustomed before delivery to pedestrian exertion, walking ten or fifteen miles daily, who, for some few days after parturition, could scarcely cross her chamber, yet in the course of a few months she recovered in great measure the power of the member. Kosciuskow, the celebrated Polish general, who, I think, fought the last battle for the independence of his unhappy country, sustained a division of the trunk of the sciatic nerve from the thrust of a Russian bayonet, and remained lame for some years afterwards, recovering, however, ultimately, (if I am rightly informed,) the use of the limb, and exhibiting in his own person a striking proof of the

restorative power of these parts. When the nerves are injured, therefore, recovery, though tardy, may be expected. If severe cramps are produced by instruments, it is better to lay them aside. Cramps appear to be occasioned by the entrance of the head into the pelvic cavity, and when resulting from pressure, therefore, are prognostics of approaching delivery.

TENESMUS.

By the bearing of the cranium on the rectum and perineum, tenesmus is produced, an accident worthy of a transient and cautionary remark. Moved by feelings of delicacy, the patient may request her attendant to quit the bed side; but he must beware of being misled by her solicitation. It is when the head is pushing through the outlet that this sensation is most troublesome, and were the accoucheur to quit his post at this moment, the head suddenly emerging when the perineum was unsupported, a dreadful laceration of this part might, perhaps occur.

SECTION VI.

TRANSMISSION OF THE CHILD THROUGH THE PELVIS.

The fœtus may pass the pelvis, or attempt a passage, under four different presentations, and four only, and the presentations I mean are those of the head, of the feet, of the breech, and those in which the child is lying across the pelvis. Under one or other of those general presentations, cephalic, natal, crural, or transverse, the passage of the child must be accomplished or attempted.

VERTEX PRESENTATION.

Of all the presentations, the cephalic are decidedly the most common; and of the parts of the head, that which presents most frequently, and which forms the presentation in all ordinary labours, is the vertex, or that part of the summit around which the hair is curvilinearly ranged.



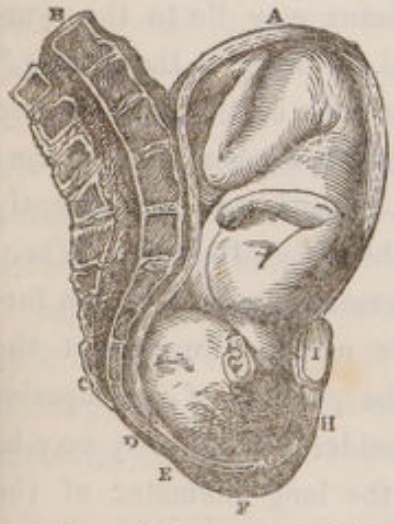
When the vertex presents, as in an ordinary labour, we find, in the commencement of parturition, that the face is lying upon the sacro-iliac synchondrosis, the occiput on the acetabulum, and the chin upon the chest; and in this position the head descends with facility. In consequence of the face lying in this manner towards the one, and the occiput towards the other side of the pelvis, the long length of the head stretching from before backward is in correspondence with the long diameter of the brim, which reaches from side to side, the two diameters agreeing with each other. If the face lie forward, the head will not descend with equal facility, the long diameter of the head being opposed to the short diameter of the brim. From the natural situation, therefore, evident advantage is derived, the face lying towards the sacro-iliac synchondrosis, and the occiput being opposed to the acetabulum, the long diameters correspond.



In a labour that is natural too, the vertex presenting, we further find the chin depressed upon the chest, so that the two parts are brought into contact with each other. The chin thus placed upon the thorax, the occiput descends, and you bring the shortest of the three long diameters, or axes of the head,—that I mean which is stretching between the upper part of the forehead and lower part of the occiput,—to bear upon the

For a further explanation of the illustrations consult the notes at p. 218 and 221.

long diameter of the brim; a great deal of clear space, into which the whole mass of your fingers may be passed, being retained in this manner on the side of the pelvis. If the chin be separated from the chest, so that the longest of the three diameters of the head, namely, that stretching between the chin and the vertex, is made to correspond with the long diameter of the superior aperture, a larger space is occupied in consequence, and (excuse the levity) the brim becomes brimful. Thus we find, on examination, that in this natural position of the head, the cranium lies in fact in that exact situation which, of all others, is the most favorable for transmission through the brim, the chin being brought upon the chest, the face upon the synchondrosis, and the occiput upon the acetabulum; under these favorable positions plenty of room is obtained, and the head of the fœtus readily descends.



When the head reaches the outlet of the pelvis, we then find it emerging under the following situation: the vertex presenting, the occiput lies out under the arch of the pubes, the face, and forehead, are deposited in the hollow of the sacrum, and the sagittal suture stretches along the perineum, or that portion of the softer parts which is interposed between the genital fissure and the anus. Now if you examine this position of the head at the outlet, in comparison with those properties of the inferior aperture, which I formerly explained, you will see that nature, in an ordinary labour, places the head in the position the most favourable for passage. The face and forehead lying in the hollow of the sacrum, the occiput lying out under the arch of the pubes, the long diameter of the head accords with the long diameter of the outlet, for the long diameter of the outlet

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For a further explanation of the illustration consult the note at p. 224.

lies between the pubes and the coccyx, whence arises a great facility to the passage of the head. If the face had been to the one and the occiput to the other side, difficulty must have arisen, for the long length of the head would have been opposed to the shorter length of the outlet, and the passage would have been thereby obstructed; it is clear, therefore, that when the head passes into the pelvis under the vertex presentation, a turn is accomplished, pre-eminently called a turn; and by this the occiput, in the first part of labour on the side of the pelvis, is carried forward under the arch of the pubes. Suddenly the occiput may start forward into this position, but more frequently it turns gradually, so that unless you are continually examining, you may scarcely know when the evolution is effected.



Under presentation of the vertex, the face of the fœtus may lie to the symphysis pubis all through the labour,* and in consequence of this unfavorable position no small danger may arise; the mother herself not unfrequently suffers, and the fœtus often dies. When, the vertex presenting, the face lies forward in this manner throughout the labour, in the passage of the superior aperture, considerable difficulty may be occasioned, the long diameter of the

* When the face of the child is inclined towards the pubis, the peculiarity of the position is not usually discovered in the early part of the labour, or even when the first stage is completed, the practitioner being generally satisfied with knowing that it is a presentation of the head. But when there is an unusual delay, perhaps without any very obvious cause, it then becomes a duty to investigate and explore the cause; and it is not a very unfrequent thing to find the face turned towards the pubes. This position is most readily known by our being able to feel the greater fontanel in a common examination, though it is also proved by other circumstances relating to the features of the face, or various parts of the head, which may be readily discriminated.—*Denman's Midwifery*, 7th Edit. p. 249.

The forehead inclined towards the pubes is the most common of all the wrong presentations of the head. The following are the indications; the presenting part is not so conical towards the arch of the pubes, the bones do not ride one over the other, the scalp does not readily form

head being opposed to the short diameter of the brim. If the head be large, or the pelvis small, it cannot be transmitted through the aperture; and even when the head is smaller and the pelvis more capacious, the chin of the child lying on the chest, so that, of the three long diameters, the shortest is opposed to the short diameter of the brim, it is not without strong uterine effort and many pains, that the descent is effected, and the bladder, rectum, and vagina are all of them liable to suffer from the severe pressure to which they are subjected; besides the face lying forward, you will find that no part of the head lies out under the arch of the pubes, as in ordinary labour, nor does the occiput lodge itself in the hollow of the sacrum, without that loss of room just mentioned. You may observe, moreover, when the head emerges, that on the rectum and perineum, the occiput must bear most forcibly, and in those cases, especially in which instruments are unskilfully employed, contusions, lacerations, and sloughings, will not improbably be produced. To all which we may add, that, occasioning so much compression, the head is itself forcibly compressed; the fœtus not uncommonly perishing in consequence of cerebral contusion.

Important as this case is, I shall demonstrate the different parts of it again in the way of brief recapitulation. The vertex presenting, and the face lying forward throughout the labour, there is difficulty at the brim, because the greatest length of the head does

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into a cushion, the hollow of the sacrum is not so completely filled up by the head, the anterior fontanel is to be felt towards the symphysis pubis, and the sagittal suture inclines towards the back of the pelvis.—*Dr. Merriman's Synopsis*, 4th Edit. p. 44.

Illustration:—The cut represents the head descended into the cavity of the pelvis, the face forwards to the symphysis, and the vertex lodged in the concavity of the sacrum.

A, the lumbar vertebræ; B, the coccyx; C, the pubis: D, the anus; E, the os externum, not yet begun to stretch; F, the nympha; G, the labium pudendi of the right side; H, the buttocks; I I, the uterus.

When the head is small and the pelvis large, the parietal bones and the forehead will, in this case, as they are forced downwards by the labour pains, gradually dilate the os externum, and stretch the parts between that and the coccyx, in form like a large tumour, till the face comes down below the pubis, when the head will be safely delivered. But, if the same be large and the pelvis narrow, the difficulty will be greater, and the child in danger.—*Smellie.*

not correspond with the greatest length of the aperture; the head, however, being frequently forced down by the strength of the pains, but not without much suffering from resistance and pressure. Further, the vertex presenting and the face lying forward, there is great difficulty at the outlet, arising from three causes, first, because no part of the head lies under the arch of the pubes; secondly, because the occiput does not fit in nor commodiously adapt itself to the hollow of the sacrum; and thirdly, and very principally, because the back part of the head or occiput is making so much pressure on the perineum and rectum, that it occasions bruising, laceration, and sloughing, with much resistance of those parts.

It seems, then, that where the face throughout the labour is lying forward on the symphysis, many difficulties are occasioned; what is it then, that the accoucheur can do in order to diminish, surmount, or remove them? What is there that he can with prudence do, and without committing the unpardonable sin of midwifery, the sin, I mean, of those obstetric reprobates, the meddlesome and the pragmatic? That turning the child is universally unjustifiable when the case is indisputable, the dexterity great, and the circumstances are conducive, I will not venture to assert. And when the softer parts are lax, and the pelvis is capacious, and our dexterity from long practice such that we can introduce the hand into the cavity of the uterus, and lay hold of the child's legs, and bring it away with facility, by the operation of turning; I will not say that under such circumstances, we may not now and then be justified in making the attempt. By this operation we clear ourselves of the malposition of the head, the vertex becoming changed into the crural presentation. Decidedly, however, and in the strongest language I can use, I would reprobate this turning as a general practice in these cases, because you will be contusing the vagina, if you are needlessly pushing the hand up the uterus, because you will be tearing the womb, pulling the head from the body—meddling. Remember also, that until you acquire the dexterous use of the fingers, you must frequently be deceived

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every pain, and this, too, without injury to the delicate structure of the female, unless turbulence and violence unfit you for the duties of an accoucheur. So that to recapitulate in these cases in which, the vertex presenting, the face is on the symphysis, we may sometimes, though very rarely, attempt to turn the fœtus by the feet, or sometimes when the head is above the brim, we may effect the rectification by the hand, forceps, or lever; or sometimes, lastly, and most securely, by laying the two fingers on the cheek, and gradually with every pain bringing the face towards the side, and ultimately into the hollow of the sacrum, a rectification of the unfavorable situation may not unfrequently be accomplished.

But what is to be done, should neither the rectification of the situation of the head, nor the turning of the child be deemed the proper practice? You cannot rectify perhaps: to turn the fœtus is impossible.—Why, in cases like these, the general rule should be your guide: first, give a fair trial to the natural efforts, which the wise accoucheur who has seen much, and thought much, never hastily distrusts. If, therefore, no dangerous symptoms manifest themselves, let the womb act powerfully for four-and-twenty hours after the discharge of the liquor amnii, and notwithstanding its unfavorable position, the head will frequently descend. But if dangerous symptoms appear, the bladder becoming obstructed, the parts about the neck of the womb inflaming, the pulse rising in frequency, and remaining between the pains at one hundred and twenty-five or more in the minute; or, if independently of these or other symptoms, the womb have been in strong action for twenty-four hours, the head not advancing—with tenderness and prudence, the lever or forceps might be tried; or, lastly, should, these instruments be unavailing, or should symptoms of danger manifest themselves, (to be effectually relieved by delivery only,) or even independently of such symptoms, should the head make little or no progress, though the womb have been in action after the discharge of the liquor for six-and-thirty, or eight-and-forty hours, compelled by an inexorable necessity, you must have recourse to the perforator, your reluctance being somewhat diminished

by the recollection that, under such circumstances, the fœtus, even when unopened is generally born dead. In every labour attended with difficulties or dangers, there must be need for the exercise of a corresponding discretion; by individual contingencies, general rules must be modified, but adhering to the directions which I now prescribe to you, I am persuaded you cannot wander far from the correct line of practice.

To conclude then with a summary: when, the vertex presenting, the face lies forward throughout the labour, and this is ascertained; in some cases you may turn, though with a trembling hand; in some cases you may rectify, always justified in trying that simple method of rectification, by lateral pressure with the fingers, as before mentioned. In the majority of cases, however, and especially if you are as yet inexperienced in the practice of midwifery, you may trust with confidence to the natural efforts;* these failing, you may have recourse to the lever or the forceps; and these not availing, the perforator. Under the best management, (unless you can rectify,) these are bad cases, as the bruising, lacerating, and sloughing of the parts, and the death of the child, are to be apprehended.

FACE PRESENTATION.



When the head of the child presents, you sometimes have the face lying over the centre of the pelvis, the chin, I believe, usually lying on one side of the pelvis, and the vertex on the other, so that the greater lengths of the head, and the superior aperture, reciprocally correspond. Under the efforts of the uterus, the face presenting, the head is gradually worked down, and, at last, we find it lying in the outlet of the pelvis; the chin, at this time, usually

* In these cases, the head may be longer than ordinary in passing through the pelvis; but

taking its situation under the arch of the pubes, and the vertex and occiput in the hollow of the sacrum and coccyx, and upon the perineum; the child when about to emerge, lying with the ears on the side of the pelvis, the chin under the arch, and the occiput and vertex in the hollow of the sacrum and perineum as before described. The head advanced thus far by a continuance of the pains, and the occiput being gradually rolled out from the hollow of the sacrum, the head is pushed into the world, the perineum and all the softer parts, being stretched dreadfully, so that there is great danger of laceration, especially if you accelerate the escape of the occiput by the use of the lever or the forceps. I will suppose, then, that you are called to a case in which the face is presenting. What is to be done? must you meddle? must you use instruments? must you turn the child? Now, in the face presentation, as in the case already described, in which you have a presentation of the vertex, the face lying forward throughout the labour, I do allow that in occasional and exceptionable instances, when the pelvis is large and the softer parts are lax, the accoucheur skilful and confident, and above all, judicious, may carry the hand into the uterine cavity, and bring the child away by the operation of turn-

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if this (the pelvis) be well formed, and the pains strong, the head will be at length excluded, and in the majority of cases the child will be born alive.—*Dr. Merriman's Synopsis.*

Dr. Burns, on the contrary, says that the natural efforts ought not to be relied on, but that the position of the head should be rectified with the fingers.—*Principles of Midwifery.*

Illustration:—Shews, in a lateral view, the face of the child presenting, and forced down into the lower part of the pelvis, the chin being below the pubes, and the vertex in the concavity of the os sacrum; the waters being all discharged, the uterus appears closely joined to the body of the child, round the neck of which is one circumvolution of the funis.

A B, the vertebræ of the loins, os sacrum and coccygis; C, the os pubis of the left side; D, the inferior part of the rectum; E, the perinæum; F, the left labium pudendi; G G G, the uterus.

When the pelvis is large, the head, if small, will come along in this position, and the child be saved; for, as the head advances lower, the face and forehead will stretch the parts between the frænum labiorum and coccyx, in form of a large tumour. As the os externum likewise is dilated, the face will be forced through it; the under part of the chin will rise upwards over the anterior part of the pubes; and the forehead, vertex, and occiput, from the parts below. If the head, however, is large, it will be detained, either when higher, or in this position. In this case, if the position cannot be altered to the natural, the child ought to be turned, and delivered footling.—*Smellie.*

ing, laying hold of the feet as before described, and abstracting it under the crural presentation. As an exception to a general rule this method of delivery may be proper enough; but observe, as a general rule of practice in face cases, with the whole weight of authority which I may possess with you, I condemn it. Do it ninety-nine times, and successfully, and I condemn it still; because you are meddling, because you are cramming your hand into the uterus without any sufficient cause; because you are as it were doing your best to tear the vagina; because ninety-nine operations undeservedly successful, may lead to the hundredth and the destruction of your patient.

It is the same with respect to rectification; if you find the pelvis large, the softer parts lax, and your fingers very adroit, under such circumstances you may venture to introduce the hand for the purpose of rectifying the position of the head, an operation, sometimes perhaps accomplished with facility, while the head lies at the brim. In these cases, operating with the fingers or the lever, you may make that which was facial a vertex presentation. But understand again clearly, that this is an exception from a general principle—a practice unfit for the novice, though conceded occasionally to the adroit and experienced accoucheur.



When the face is the presenting part, the most favourable and the most usual position, is with the chin towards the symphysis pubes; but the contrary position may sometimes occur.

In presentations of the face, the stoical rule will apply; a rule which might be whispered into the ear at all times, when you are at the bed side—*naturam sequere;* delivery is a natural process, give therefore a fair trial to the natural efforts. When, then, you

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Illustration :—Shews in a lateral view of the right side, the face of the fœtus presenting, as

find a face case, frequently, nay, generally, you have little to do; you need not send for another practitioner; you need not allow your minds to get into a state of perturbation, as if you had some mighty feat to achieve.* You have only to sit quietly at the bed side, to support the confidence of the woman, to let the uterus act, to protect the perineum, to open your hands as it were, and receive the child which nature deposits in them. If, however, the head, be large, or the pelvis small, it may be in this, as in the vertex presentation, that the natural efforts fail; and in most cases, you may try the lever or the forceps, but with gentleness, with caution, as on your dearest friend, bewaring lest you occasion a laceration or sloughing of the softer parts; and these instruments failing, should delivery be peremptorily requisite, you must then lay open the forehead, and discharge the contents of the cranium, when the head will readily descend.

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in Cut I, p. 279, but in the contrary position; that is, with the chin to the os sacrum, and the bregma to the pubes, the waters evacuated, and the uterus contracted.

A, the os externum not yet begun to stretch; B, the anus.

In such cases, as well as in those described in the last cut, if the child is small, the head will be pushed lower with the labour pains, and gradually stretch the lower part of the vagina and the external parts; by which means the os externum will be more and more dilated, till the vertex comes out below the pubes, and rises up on the outside; in which case the delivery is then the same as in natural labours. But, if the head is large, it will pass along with great difficulty, whence the brain, and vessels of the neck, will be so much compressed and obstructed, as to destroy the child. To prevent which, if called in time, before the head is far advanced in the pelvis, the child ought to be turned, and brought footling. If the head, however, is low down, and cannot be turned, the delivery is then to be performed with the forceps.—*Smellie.*

* The management of these cases must, in a great measure, be left to nature and time, which will gradually effect the delivery; but the bones of the face not being capable of compression, do not yield to the form of the pelvis, and therefore very often many hours elapse with but little perceptible progress. The children are usually born alive, but the features of the face are amazingly distorted, and do not recover their proper appearance sometimes for many days.—*Dr. Merriman's Synopsis.*

I have twice known the presentation of the face converted by the pains alone into a natural presentation.—*Dr. Merriman.*

FOREHEAD AND EAR PRESENTATIONS.



Under presentations of the head, we sometimes find the forehead lying over the centre of the pelvis, instead of the face. And this presentation, made out in the way hereafter described, by a careful examination, can rarely, I believe, occasion much difficulty; for after there have been a few pains, the head turning somewhat, the vertex or the face descends, the case being afterwards managed by rules already prescribed. Ear presentations also occur, but they are so rare or so easily conducted on the principles already laid down that I consider it unnecessary to enlarge on them.

FOOT OR CRURAL PRESENTATION.

By the French obstetricians, the crural or foot presentation is divided into no fewer than six varieties, in practice conveniently reduced to two kinds only, those in which the abdomen is lying anteriorly more or less, and those in which it is placed on the back of the mother, whether it bear a little to the right or left, or fall directly on the promontory of the sacrum.

Illustration:—Shews in a front view of the parts, the forehead of the fœtus presenting at the brim of the pelvis, the face being turned to one side, the fontanel to the other, and the feet and breech stretched towards the fundus uteri.

A A, the superior part of the ossa ilium; B, the anus: C, the perinæum; D, the os externum; the thickness of the posterior part before it is stretched with the head of the child; E E E, the vagina; F, the os uteri not yet fully dilated; G G G, the uterus: H, the membrana adiposa.

If the face is not forced down, the head will sometimes come along in this manner; in which case the vertex will be flattened, and the forehead raised in a conical form; and when the head comes down to the lower part of the pelvis, the face or occiput will be turned from the side, and come out below the pubes. But, if the head is large, and cannot be delivered by the pains, or if the wrong position cannot be altered, the child must be delivered with the forceps. If they should fail, recourse must be had to embryulcia.—*Smellie.*

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pits approach the inferior aperture, that you pass up the fingers, so as to get a bearing on the arms, and throw them as much as may be, upon the back of the pelvis, towards the face of the child; and with these precautions, the axillæ of the child being brought down to a level with the external parts, the body of the fœtus being thrown out of the way, and into such position as shall favour the descent of the arm, putting all the fingers, if practicable, about the bend of the elbow, and sweeping the arms in succession over the cheek, you disengage them from the cavity of the pelvis. When the arms are drawn forth, usually the head descends without further difficulty, more especially if the cranium be small, or the pelvis be capacious; but should difficulties arise, you may endeavour to throw the face and occiput at the brim, on the sides of the pelvis respectively, so that the greatest lengths of the head and the aperture may correspond with each other; and then, bearing the head towards the symphysis pubis, yet drawing on the whole in the axis of the brim, on the line stretching from the navel to the point of the coccyx, you cause the head to come down. The head descending in this manner, when it reaches the outlet of the pelvis, put the face into the hollow of the sacrum, and the occiput on the symphysis pubis, and then drawing downward and forward, careful not to lacerate the perineum, you complete the delivery.

Now all this, on account of its importance, I demonstrate afresh. The feet presenting, you suffer the womb to act till the thighs are lying forth in the outlet of the pelvis; then, gently grasping the legs, you sway the body a little from side to side, or from before backward, careful that the genital fissure sustain no injury. When the breech passes, guard the perineum; when the abdomen passes, draw forth a little the umbilical chord, so as to prevent its extension during the subsequent descent of the child. When the thorax approaches, cautiously, tenderly, yet effectually, pass the finger into the side of the pelvis, and if the arm on either side be descending, extend it, and lay it at length along the side of the trunk. When the axillæ begin to enter the inferior part of the pelvis, be very careful, as they come forward, to press the arms

toward the promontory of the sacrum, preventing their impaction between the head and the pubes, and in this manner facilitating their subsequent descent. The axillæ reaching the outlet, throw the body, in the position most conducive to the descent of the arm; placing three or four fingers about the bend of the elbow, and in succession swaying the arms downward with a sweep over the face. Afterwards, abstracting the head with due attention to its position, guarding the perineum, and indeed taking care that the whole operation be conducted with that degree of force only which may inflict no violence on the mother or her child. *Vir consili expers mole ruit suâ.* Contusion, laceration, sloughings, decapitation, dislocation, fractures—these are the dreadful evils to which brute force may give rise.

Under the crural presentation, the abdomen of the child is sometimes situated anteriorly, the case being just the converse of the preceding. Now when the abdomen, as examination shows, is situated on the front of the pelvis, there are two modes in which the child may be extracted, though not with equal facility; and first, we may draw down the feet as before, and the axillæ being brought to a level with the outlet, we may extricate the arms by throwing the body thoroughly out of the way, getting the fingers into the bend of the elbow, and sweeping the arm out of the pelvis over the face of the child, behind the symphysis. Although, however, the child may be abstracted in this manner, you will find there is a difficulty in the abstraction of the arms. Now this being the case, it is wise to throw the abdomen of the child to the back of the mother; and by laying hold of the thighs with the left hand, and spreading on the back of the fœtus the fingers of the right, you may sometimes transfer the abdomen to the posterior surface of the womb and vagina, making a turn; when you produce a foot case with the abdomen seated posteriorly, to be managed by the rules already given. To make this change of situation, little skill may be required; but there is one point of nice determination, I mean the selection of the proper moment for performing the operation; for before the turn is made, you

may, if you please, draw the head and arms into the pelvis; you may, if you please, impact them there, and you may, if you please, unwisely attempt to make the turn, when you have unwisely made the operation impracticable. But to proceed: *Incidit in Scyllam qui vult vitare Charybdem.* In avoiding this error, you may fall into the other extreme; you may attempt to place the abdomen on the back, when only the tips of the feet are lying within reach, a practice unadviseable, as the turn, though accomplished, must be effected with difficulty, seeing that a force applied to the ancles, will not readily act upon the head and shoulders above. What, then, is to be done? On the whole, I think the best time for performing the operation, is when the thighs make their appearance; for in grasping them, you may get command over the body and other parts, the head and shoulders still lying above the bones of the pelvis, and of course not being impacted in the brim. It seems, then, that under crural presentations, it becomes the office of the accoucheur to co-operate by drawing down the child; but there still remains a question, viz. what is the proper moment at which the co-operation should be given? And here I may state to you a maxim of midwifery, on which, hereafter, I shall frequently lay stress; I mean, that in selecting the proper time of giving assistance, the accoucheur often shows his judgment, more than in the execution of the manual operation itself. The manual operations of midwifery are sometimes sufficiently easy, but much nice discrimination is required to seize the moment at which these operations should be performed. Let us suppose, for instance, a foot presentation, a first delivery, the parts rigid, the head large, the pelvis small, laying hold of the legs without reflection, you advance the child without difficulty, till the thorax enter the pelvis: but mark the result—in consequence of not selecting for your operations the proper moment, you find yourself, if I may be allowed the expression, on the horns of a dilemma; the legs have descended easily enough, the abdomen, too, has opposed but little difficulty, but the head and shoulders will not pass. Now if, anxious to avoid the laceration of the mother, you wait for a relaxation of the

softer parts, the child lying with the legs in the world, and the head and thorax in the pelvis, its life becomes the sacrifice; pressure on the umbilical chord occasioning a suffocation, probably as painful as the death of the felon who perishes by the rope. On the other hand, if desirous to preserve the fœtus, you draw down without delay, you lacerate and bruise the softer parts of the mother, so that by giving assistance at an improper moment, you endanger at once both the parent and the offspring. Aware of the risk, practitioners have endeavoured to lay down plain rules, which may enable us to decide when we ought, and when we ought not to interfere; and there are some who, not without reason, take their indication from the laxity of the parts, and the expansion of the os uteri, and if on examination they find that the parts are lax, and that the dilated os uteri is as broad as the disk of a crown-piece, they commence the delivery, refraining from manual operations if the parts are rigid, or if the mouth of the womb be shut. There are others again, as Denman, for example, who ascertain the moment of interference by the descent of the child. If the breech is at the outlet, they deliver, and if it lie at the brim they wait; the chord is not under pressure; the life of the fœtus is not in danger; a meddlesome midwifery is bad, and there is yet no need for accelerating the birth. There are, again, other practitioners, who judge by a rule which, if of easy application, would perhaps be preferable to the former, and this rule is taken from the state of the umbilical chord. If the chord be pulsating strongly, they let labour proceed without interfering, considering that there is no danger of suffocation, as the fœtal heart is in full play; but if pulsation in the chord be weakened or suspended, they endeavour to abstract the fœtus as promptly as may be, unless they believe it to be lost beyond recovery.

For myself, I am accustomed, in my own practice, to combine these rules, and to act under the influence of all three. With me, of course, it is a maxim never to deliver while the softer parts are rigid, and the os uteri is little expanded; but if the softer parts are relaxed thoroughly, and the disk of the os uteri exceeds that

of a crown-piece, I deem myself so far justified in assisting the delivery. But this is not all: although the softer parts are yielding, and the os uteri is dilated, under the impression that meddling is wrong, and that the natural powers are great, I give a fair trial to the natural efforts, waiting, as Denman advises, till the breech is pushed down upon the outlet, and the chord becomes compressed; and then, finding the breech in the outlet, and the softer parts relaxed, I proceed with the delivery, not neglecting the examination of the chord, advancing more rapidly if the pulse fall, and in a more slow and gradual manner if the firm beat of the chord indicate that the child is secure, always bearing in mind another axiom of British midwifery, I mean, that the life of the child is invariably to be sacrificed to the security of the parent, and never accelerating the birth more than the softer parts will bear.

BREECH PRESENTATIONS.*



When the breech of the child is lying over the centre of the pelvis,—the abdomen and legs may be variously situated, in front, behind, to the one or the other side, obliquely, backward, and forward, and so on; and thus we may, if we are fond of minute divisions, produce a great variety of cases. In a view to practice, the presentations of the breech may be commodiously enough divided into two leading sorts or kinds; those, I mean, in which

* Breech presentations were formerly very much dreaded, as it was supposed, that there was not room for the child in this doubled position to pass through the pelvis. Hence some of the older accoucheurs attempted to turn the child, and bring the head to present, but since the time of Ambrose Paré, who gave directions to bring down the feet in *all* preternatural presentations, the attempt to turn the child to a head presentation has seldom been made.—*Dr. Merriman's Synopsis*, 4th Edit. p. 71.

Illustration:—Represents, in a front view of the pelvis, the breech of the fœtus presenting and dilating the os internum, the membranes being too soon broken. The fore-parts of the

the abdomen of the child, as in the crural presentations, is lying posteriorly, that is, on the back of the mother; and those cases in which it is lying more or less in front. And if you understand thoroughly well the principles on which these two varieties of the breech presentation should be managed, all the intermediate cases may be conducted with great ease.

And first, then, of the presentation of the breech in which the abdomen of the child is lying more or less on the back of the mother. When the vertex of the child presents, I have observed to you already, that large as the head is, in natural labour, it is easily expelled by the spontaneous and unaided efforts of the womb; and thus it is with the presentations of the breech. It does not follow, because you find the breech presenting, that therefore the case is difficult, that further obstetrical assistance is requisite, that manual interference is requisite in order to secure the descent. In general, by the unaided efforts of the uterus, the

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child are to the posterior parts of the uterus; and the funis with a knot upon it, surrounds the neck, arm, and body.

I have sometimes felt in these cases, (when labour was begun, and before the breech was advanced into the pelvis), one hip at the sacrum, the other resting above the os pubis, and the private parts to one side; but, before they could advance lower, the nates were turned to the sides and wide part of the brim of the pelvis with the private parts to the sacrum; though sometimes to the pubes. As soon as the breech advances to the lower part of the basin, the hips again return to their former position, viz. one hip turned out below the os pubis, and the other at the back part of the os externum.

In this case, the child, if not very large, or the pelvis narrow, may be often delivered alive by the labour pains; but, if long detained at the inferior part of the pelvis, the long pressure of the funis may obstruct the circulation. In most cases, where the breech presents, the effect of the labour-pains ought to be waited for, till at least they have fully dilated the os internum and vagina, if the same have not been stretched before with the waters and membranes. In the mean time, whilst the breech advances, the os externum may be dilated gently during every pain, to allow room for introducing a finger or two of each hand to the outside of each groin of the fœtus, in order to assist the delivery when the nates are advanced to the lower part of the vagina. But, if the fœtus is larger than usual, or the pelvis narrow, and after a long time, and many repeated pains, the breech is not forced down into the pelvis, the patient's strength at the same time failing, the operator must, in a gradual manner, open the parts, and having introduced a hand, into the vagina, raise or push up the breech of the fœtus, and bring down the legs and thighs. If the uterus is so strongly contracted that the legs cannot be got down, the largest end of the blunt hook is to be introduced. As soon as the breech or legs are brought down, the body and head are to be delivered, there being no necessity here to alter the child's body.—*Smellie.*

nates will be gradually pushed to the external parts, in the same manner as in ordinary labours the head is pushed down into the outlet, and to these efforts we ought to trust. And when in this manner the breech has gradually descended, so that it lies at the outlet, you may then lay your finger upon the one side, and your thumb upon the other, and without violence, (a brutal error, always to be reprobated) with gentleness and firmness, co-operating with the pains, if there be any, you may draw, throwing the body a little from side to side; often assiduously, solicitously, examining the perineum, that portion of the skin which is lying between the anus and the genital fissure, lest in drawing the nates this part should be torn. Advancing the breech in this manner, and as the part descends, carrying the back of the child towards the abdomen of the parent, you find the legs spontaneously drop forth;—what was a breech, becoming of consequence a foot presentation, to be managed afterwards by the rules already prescribed.

To repeat: in the breech presentation, the belly of the child lying on the back of the mother, the natural efforts push the nates to the outlet; it may be in a few hours, it may be in a few minutes, the length of the time depending upon the capacity of the pelvis, the size of the fœtus, and the laxity of the softer parts. The breech reaching the outlet, you lay your fingers on the one, and your thumb on the other side, and solicitously guarding the perineum, co-operating with the pains, if there are any, and now and then feeling the umbilical chord, which lies between the thighs, —you draw, remembering that you are operating on the softer sex, proceeding with gentleness, and not with violence; *arte, non vi,* like men, and not like brutes, for it may be so translated.

It will sometimes happen, as observed already, that the breech presenting, the abdomen of the child may lie forward throughout the labour. Aware that under the breech presentation, the abdomen lying anteriorly, the natural efforts, if fairly tried, will commonly push the nates to the outlet; to these you ought generally to trust, though it must, I think, be admitted that the part does not quite so speedily descend in this case as in the preceding;

the nates then being pushed down upon the external parts, you may, as before, lay the fingers on the one, and the thumb on the other hip, and swaying the child a little from side to side, and co-operating with the pains, you may draw down with gentleness, suffering the legs of themselves to drop forth. If, indeed, you wish to fracture the legs, you may do this with facility; put your fingers on the middle of the thigh-bones, give a pull with the sympathetic gentleness of a brewer's dray-horse, and you will break them easily enough, for at this period the bones are very fragile. But, as I presume you have no wish to do this, you had better, perhaps, draw forth, as recommended, suffering the legs to escape spontaneously. Dr. Lowder was requested to see a woman labouring under the presentation of the nates; the labour being difficult because the breech was large, and the pelvis small. The action of the womb being powerful, however, the breech was pushed to the outlet of the pelvis, and the accoucheur laying hold of the hips, assisted a little with his characteristic gentleness, but suffered the legs to drop forth of themselves. To this case a midwife had been called—a woman; and after the Doctor had brought away the child, she went up to it, examined the thighs, and turning round with surprise, exclaimed, Why, you have not broken the thighs? No, said the Doctor, why should I? I should not like to have my own thighs broken, and why should I break the child's? Why, said she, "I always break the thighs:" And this operation, it seems, she achieved, by pulling them violently in the manner demonstrated.

Let then, the natural efforts bring the breech to the outlet of the pelvis, then lay hold of the hips, as demonstrated; draw down, carefully guarding the perineum, suffering the legs of their own accord to come forth, or at all events soliciting them with the utmost gentleness only, taking care lest the bones be fractured: after which, the legs being expelled, you obtain a foot presentation, to be managed by the rules already prescribed.

There is, however, a second mode in which you may advantageously manage this case where the nates present, and the abdomen

of the child is lying on the abdomen of the mother; and that is by rectifying the position, which may be accomplished in three modes. You may carry your hand into the pelvis when the child is at the brim, and turn the abdomen on the back. Or if the breech present, the abdomen lying forward, you may wait till the natural efforts have pushed the child to the outlet, and then slowly, and not without difficulty, you may make the turn. Or, lastly, you may delay till the legs have dropped forth, and then you may rectify the position, *arte, non vi*, provided all this can be accomplished without violence.

Now it certainly is desirable, that the fœtal abdomen should lie on the back of the mother, in these cases, more especially, before you attempt the extraction of the shoulders and head; because, as I have before asserted, you will find the head, arms, and shoulders come away more easily when the abdomen is lying this way, than when placed anteriorly; and I should therefore recommend you as a general practice, to turn the abdomen on the back.

You will remember, I said there are three occasions in which you may accomplish this; when the legs drop forth—when the breech is down at the outlet—and when the breech is at the brim. But, on the whole, I would dissuade you from making the turn when the breech is at the brim; for, to make this evolution then, you must carry your hand into the pelvis, an operation never justifiable, unless the necessity be inexorable; since in doing it, you may lacerate, contuse, and kill. It is better, therefore, to wait till the breech is pushed down upon the outlet, when you may attempt the turn; or should you fail in your attempts to turn when the breech is at the outlet, you may wait till the legs are escaped, when you may endeavour to accomplish it by grasping the hips with one hand, and spreading the other on the back, effecting the necessary movement by the co-operation of the two.

Under the breech presentations, as before observed, if you give a fair trial to the natural efforts, in most instances the fœtus of itself descends to the outlet,* the accoucheur happily having little

* The first stage of labour in breech presentations is frequently very slow; for though the

to do, except to sit at the bed-side, and to abstain from injury or mischief. However, as the natural efforts are now and then insufficient to push the head to the outlet, so also when the breech is large and the pelvis small, they are sometimes insufficient to expel the nates, so that artificial assistance is necessary. Now, the methods of assisting in the breech presentations, when necessary, are the following: in the first place, you may put your finger into the bend of the thigh, acting as with a hook, and drawing down with the finger on either side alternately, co-operating with the pains, you will find that you can draw with great effect, the uterus actively assisting. Should you not have power enough to draw with effect in this manner, you may then, taking two handkerchiefs, put one over the bend of either thigh; and laying the handkerchief neatly into the fold formed by the thigh and abdomen, so as to get an even bearing upon all the parts, you acquire a hold at once firm and safe, and may extract with much effect. In cases of this kind, too, you may give assistance by means of a blunt hook; an instrument, however, to which I am myself exceedingly averse, as, like the finger of a rude accoucheur, it has no feeling for the mother or child. Using this method, you employ this hook of iron, which may at times be tried with considerable advantage, and sliding the finger into the fold, conducting the instrument by the finger, you plant the hook on the bend of the thigh, so that the curve has a general bearing upon the parts, the instrument not resting upon its point. Remember, in using this instrument, that force will produce terrible effects, and you may occasion sloughing, or may cripple the child for life; or (which is scarcely a greater evil) you may destroy it. There is yet another mode in which you may assist the descent of the breech, and which I think worth your knowing, though I do not

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nates and thighs do not take up so much room as the head, yet either they do not readily adapt themselves to the shape of the pelvis, or the action of the uterus is slower or less regular, in consequence of the awkward position of the fœtus. No means, however, can with propriety be employed to hasten the progress of the labour; and by degrees the dilatation of the parts is effected, and the nates are forced lower and lower into the pelvis, till at length they protrude through the os externum.—*Dr. Merriman's Synopsis*, 4th edit. p. 73.

recommend it to general practice;—and that is by the use of the forceps. Now I am deterred from the forceps by the alarms of Capuron, who asserts, the use of the instrument in this case to be *toujours dangereux sinon meurtrier pour l'enfant.* He thinks you may bruise the sides and viscera of the abdomen by the application of the forceps to the breech; and so you may, if you use force; but force, I have told you, is to be exploded from midwifery. If you lay hold of the hips with the forceps, you may grasp with gentleness, and if the parts slip from the instrument again and again, so much the better, for that shows you are not using a force too great, and to replace them is easy. If they come away six times, apply them seven, and persevering, by little and little, you may at length bring the nates to the outlet. Assisting then in one or other of these modes, by the finger, the handkerchief, the blunt hook, or the forceps, even in the more difficult cases, the breech may be made to descend; yet this is not universal, for sometimes there is so much narrowness of the pelvis, at the brim especially, that under the breech presentation the fœtus cannot descend at all. Now, in a vertex case, where the head could not be expelled, you would lay open the cranium; an operation this, which cannot be performed on the presentation of the nates. What then is to be done? Why, to introduce the hand, to lay hold of the child's legs, and instead of the breech, to draw down the feet, is perhaps the only practice that remains, and in this manner the difficulty may be easily removed. And here, perhaps, some one may be disposed to say, mentally, "That thought I like; that method I would always adopt in breech presentations; it gives me a command over the child." Is this your determination —this your intended practice? Then give me leave to tell you, that you are wrong; and you are wrong, because you are meddlesome; because in so doing, you might rupture the vagina and uterus; and because, in so doing, you have less chance of abstracting the fœtus alive; for it is worth observation, that more children are born alive under presentation of the breech than of the feet, for under the breech presentation a groove is formed

between the abdomen and thighs, where the umbilical chord sometimes lodges, protected from any pressure that occasions that interruption of the circulation to which it is liable in the crural presentations, where the chord lies naked and undefended.

Thus much then respecting the management of the breech presentations; into the consideration of them I have entered at length, for they are cases, on the whole, by no means unfrequent in their occurrence. When the breech presents, you are not pragmatically to interfere. The natural efforts commonly push the fœtus to the outlet. The natural efforts failing, you have recourse to the finger, the handkerchief, the blunt hook, or the forceps. It rarely becomes necessary to bring down the feet by the hand, but the necessity existing, you proceed in the modes demonstrated.*

TRANSVERSE PRESENTATION.

When neither the superior nor inferior extremity of the child presents, the fœtus is said to lie across the pelvis. Under the presentation of the arm, of the shoulder, of the back, of the hip, of the abdomen, of the chest, you have so many transverse positions of the fœtus; and those cases, although they differ somewhat

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* In all cases in which the child is expelled or extracted by the breech or inferior extremities, the placenta is usually managed without difficulty or danger, and it is generally, though not always, excluded more easily and in a shorter time than after a natural birth.—*Dr. Denman.*

The placenta in these cases is frequently separated from its attachment to the uterus before the head of the child is expelled from the vagina, and hence an additional reason why no delay should take place in the latter part of the delivery, even though there should be no injurious pressure upon the umbilical chord; for with the separation of the placenta, there is, of course, a cessation of its functions, and the infant's life is placed in great jeopardy unless the atmospheric air have access to its lungs.—*Dr. Waller.*

When the breech presents and the parturition is tedious, the parts of generation are often swelled and livid. When the parts are merely turgid a little, and purple from congestion of venous blood, nothing is necessary to be done. But when inflammation takes place, it is more troublesome, for being of the low kind, it is apt to end in gangrene. Fomentations are useful, but often mild spirituous applications succeed best.—*Dr. Burn's Midwifery*, 7th edit. p. 362.

as to the presentations, are all conducted essentially on the same general principle, whence the subject becomes greatly simplified; for if you thoroughly understand the principle of management in one of those cases, you can apply it to them all. Now of all the various transverse presentations which I have just been demonstrating, by far the most common and the most difficult is that of the arm or shoulder, of which, indeed, you must frequently hear mention; and therefore, without bewildering you by entering into the consideration of all the varieties of transverse presentations which occur, and which I have seen, I shall confine myself solely to the presentations of the arm.

When the arm of the child is presenting, provided the woman have reached the full time of gestation, you cannot, in this position, abstract the child. If with ferocious ignorance you lay hold of the arm and pull, (the fœtus being of the full size,) torturing the innocent child like Damien the assassin, you break, you tear it limb from limb. But if the fœtus be under the age of six complete months, the delivery being premature, then the child is so small and so pliable, that if the pelvis be large or the pains be strong, it will pass under the shoulder presentation, yet even in these cases, it is wrong to draw the child. To illustrate all this, I have a pelvis of the standard capacity, and a model of the size of nine months; under the brachial presentation, you will find it cannot pass. Also a second model, of the size of seven months; which, under the brachial presentation, cannot be transmitted; likewise a third model, of the size of six months complete, which, under the strong efforts of the womb, you will find, might be pushed away, so that this is one mode in which the transverse presentation may be transmitted without change of position.

It is worth your knowing further, that when a child is lying transversely, and more especially when it presents by the arm or shoulder, it may sometimes be expelled at the full time of pregnancy, with no exertions on the part of the accoucheur, under natural efforts, by what Denman has denominated a spontaneous

evolution ;* the arm of the child ascending a little, (not much, however, as Gooch has well observed,) and the breech descending into the pelvis, so that under the breech presentation the child comes away. In general, however, unless the child be softened and relaxed by death, it can scarcely undergo that doubling in the pelvis, which is necessary to allow of its coming forth in this manner. I suppose, therefore, that in nine cases of ten, or it may be that in nineteen of twenty, where evolution occurs, the fœtus is destroyed ; and sorry I am to add, that as a general mode of delivery it cannot be relied on. How much is this to be regretted! Happy would it be for you and for the mother, and for the child, if under the arm presentation, as under that of the nates, the fœtus might be expelled unaided by the accoucheur. Many a vagina would be saved, many a uterus hereafter to be torn would be preserved, and many a death which must now take place in the course of the next few years, would be prevented! But the only cases in which I can recommend your trusting to this spontaneous evolution, are those in which you cannot effect the turning of the child in the usual way, or those in which the tendency to evolve is obvious. You make your attempts and fail, then the evolution may be properly essayed ; or, perhaps, examining with care, you perceive the arm moving, or by the side of the arm the thorax or flank beginning to protrude : perceiving in this manner obvious symptoms of evolution, you say, I won't interfere here ; a meddling midwifery is bad, the natural efforts being clearly engaged in effecting the evolution, I will not obstruct them. I was called, some few months ago, to a case in the neighbourhood of the London Hospital, a presentation of the arm, attended by a gentleman of some obstetric tact and talent. In two minutes after I entered the room, with scarcely a complaint on the part of the

* This evolution was first of all noticed, I believe, by Schœnheider; but Dr. Denman was the first who, in this country, called the attention of practitioners to it. He collected no less than thirty cases, but in these only one child was born alive.—*Dr. Burn's Midwifery*, 7th edit. p. 370.

woman, the arm presenting, the child was brought away. As my predecessor had been labouring without success to deliver, this speedy abstraction of the child occasioned no small manifestations of surprise, and when we were apart, my friend asked me how it was possible I could deliver her so easily and speedily after he had laboured so much and to so little purpose? To say the truth, said I, I did not deliver her at all; for on reaching the bedside, I found the spontaneous evolution was nearly completed, and I had only to hold forth my hands till the child dropped into them. To another case I was called, where two practitioners had tried to turn the child and failed, and where I tried myself, and failed too. Finding that perseverance would burst the uterus, let us wait, I said, to see what the natural efforts will accomplish; if they do not effect the delivery, further measures may be used, but do not let us distrust our great and kind mother too soon. In the course of an hour, the child came away under a spontaneous evolution, effected by the natural powers, and the woman did very well; and we all found that we did more service by sitting down to the dinner table than by working at the bedside.

However clumsy, and however rough, and however dangerous the practice, yet, whenever you have a presentation of the shoulder or arm, I am compelled to admit, that on the whole the best general practice is to carry the hand into the uterus, and to bring the child away by the operation of turning. The arm hanging forth, you take off your coat, remove the sleeve of the shirt, lubricate the arm and particularly the hand, and then, *arte, non vi*, with the fear of lacerating the womb before your eyes, relentingly, tremblingly I had almost said, if indeed a surgeon may tremble, you carry the hand into the uterus, and draw down the feet of the child, always with the risk of tearing the genitals, even when you operate in a manner the most skilful and dexterous.

I have repeatedly observed to you, that in ordinary labours you should be careful not to interfere too soon; but here is a kind of exception. Where you have a presentation of the shoulder and

arm, and turning is obviously necessary, the sooner you operate the better; for if you delay, the womb may contract, and without using great force, the turning may be impracticable. As soon, therefore, as the softer parts are relaxed, and the disk of the os uteri is as large as a crown piece, and your hand, being small, may be carried into the uterus, without violence, approach the feet and perform the operation of turning before the water is discharged, or at all events before it has been long discharged; and then, in general, from my own experience, I think I may say (having seen many cases), the operation may be effected, easily enough.

SECTION VII.

MEANS OF ASCERTAINING THE POSITION OF THE CHILD.

Our observations on the passage of the fœtus being concluded, I now proceed to treat of the means whereby, at the bed-side, in the living woman, we may ascertain the mode in which the child is descending; for it is evident that all our speculative knowledge respecting the passage of the fœtus can avail but little in practice, unless you can at the bed-side, when called upon to attend a case, determine in what manner the fœtus is coming away.

The ancients endeavoured to make out the position of the fœtus by means of external examination. Neither would I have the modern accoucheur entirely neglect this manœuvre. Empty the bladder, if necessary, that the situation of the womb may be more easily ascertained; place the woman in a recumbent position, with the shoulders and legs a little raised, so as to relax somewhat the abdominal muscles, and then carry your hand over the abdomen, in order to know the form of the womb, and, if possible, the position of the child in it.

More certainly, however, and with greater ease, the modern accoucheur ascertains the position by examination, as it is called; that is, by touching those parts of the child, which are lying within the reach of the fingers. By this mode, when the vertex

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nose, the protuberant eyes, and above all, the toothless mouth, readily known, if you have been in the habit of feeling this cavity, will enable you to distinguish the face. Feeling the eyes, nose, mouth, and forehead, you will not only be able to make out the presentation, but the situation likewise: the ears, when felt, further assisting your diagnosis of the position of the head. A forehead presentation is probably more easily than any other, confounded with a vertex presentation, when you first feel it. On examining the forehead, you say to yourself, complacently enough, "O, this is a natural case, I shall soon get away." But when you come to examine the case again, feeling what you take to be the sagittal suture, and tracing it to the one extremity, you find there the large fontanel, and on tracing it to the other extremity, your fingers are conveyed to the eyes and nose, when the nature of the case is obvious enough, so that you find you have been congratulating yourself too soon. Where the breech of the child presents, you will recognise this part by its roundness and softness, by the cleft between the buttocks, the genitals, the anus, and if the fœtus be a male, by the scrotum. And do not take a lancet to lay open the child's scrotum, with risk of injuring the testicles; for in these breech cases, where the child is a male, there is sometimes, I suspect, a little water lodging there; and some practitioners, thinking they feel fluctuation, may be impelled, perhaps, to tap,—a meddlesome operation, for which no necessity exists. When, then, you have made out the breech by these indications, the roundness, the softness, the cleft between the buttocks, the scrotum, the genitals, and anus, you will be able, with little further examination, to decide whether the abdomen of the fœtus is lying on the back or front of the parent. The arm presenting, you may, if you are omnipotent in ignorance and negligence, confound it with the leg; and I have known this feat achieved, though with ordinary care, and under ordinary circumstances, the error is scarcely possible. *Nil mortalibus arduum est.—Cælum ipsum petimus stultitiâ.* But there is more difficulty in discovering the presentation of the shoulder; so much so, in-

deed, that even an experienced and good accoucheur may be deceived here. He feels a roundness and hardness, which he mistakes for the vertex; and it may require no small share of examination and discrimination to distinguish between these parts, when the shoulder is altered by compression. The only way of distinguishing, is by making an extensive and repeated examination, when you feel the ribs, the axilla, the arm, and the cleft between the arm and sides, by which the presentation may be pretty clearly ascertained. Under a first examination, you may be easily deceived, but you must make the examination very carefully and repeatedly, as distinction is of the first importance; for if it is a vertex case, you are to do nothing, and if on the other hand, the shoulder present, and hence the weight of the observation, it becomes your duty to turn the child as soon as the feet may be approached. The best mode of making out the position of the child's legs in these cases, is, by examining the position of the hand. When my hand, for instance, is stretched from my side, intermediately, between supination and pronation, the palm is in the direction of the abdomen; the back, in the direction of the back; the thumb lies towards the head, and the little finger to the feet. Now, let us apply this to the case before us; and suppose that you can see only the hand of the child; if the palm is lying in front of the mother, then the abdomen must be in the front, and the legs too. The thumb lying to the left side of the pelvis, I know the head is to the left side; the little finger lying to the right side of the pelvis, I know the feet are there. Now, knowing this, you may carry up the hand directly to the feet, and are not compelled to enter the womb at random, and to go roaming after the feet, over all the regions of the uterus, for a quarter of an hour, perhaps, before you find them.

In order that you may recognise the child by the parts mentioned, it is absolutely necessary that you should have been in the habit of frequently examining those parts. Now the readiest mode of becoming familiar with the presentation is, to take every opportunity of examining children after birth; and if you do this

in the careful manner in which you ought, after having attended twenty labours, you may become better acquainted with the touch of the different parts, than the man who, in a hundred cases, has been at the bed-side like the pet lap-dog, and who has examined perhaps with little more intelligence and attention. If you have a case in town, for instance, every time you call you should take the child into your hands, and examine the characters of the different presentations,—sometimes the head, with its sutures and fontanels, —sometimes the face of the child, with its eyes, nose, and mouth, —sometimes, and with equal solicitude, the other presentations, the shoulders, the back, the abdomen, and the nates. Again, in order that you may examine well and successfully, it is not only necessary that you get a thorough knowledge of the tangible parts of the child; but it is necessary further, when the examination is made, that the woman, if possible, should be lying perfectly quiet. Now, in many instances, women are so irritable and inflamed, in cases of difficulty especially, that they cannot lie still. In these circumstances take away blood, foment the parts, give sixty or eighty drops of the tincture of opium, or a corresponding portion of Batley's anodyne, and, in a quarter of an hour or twenty minutes, perhaps, you make the examination without disturbance. When examinations are made, the posture of the woman may be various. The ordinary obstetric position is, perhaps, on the whole, the best. If you wish to examine with nicety, let the woman lie on the left side, close upon the edge of the bed, the abdomen facing a little downwards, the bosom thrown upon the knees, the shoulder lying forward, and the loins posteriorly, the very reverse of the position in which the stupidity of the nurses generally places them.

I would recommend you to examine with both hands, and with dexterity too. Nature has given you two, and why not employ them? Make the most of them you can. When learning, examine with the right hand, as often as with the left; for there may be cases, in which it is necessary to get the equal use of both sets of fingers. But, in saying this, I would add, what is not an unimportant truth, that (the woman lying in the ordinary manner) you

will never examine so well with the right as with the left hand; therefore, by all means learn to examine with the left. I am told by practitioners, that they can examine well enough with the right hand; but I have seen the best accoucheurs, and particularly one very able man, who has been twenty or thirty years in practice, and who has delivered far more women than I have done, or ever shall do, who could not by any possibility do that with the right hand, which I easily accomplished with the left. Where a woman was supposed to be pregnant, I put both fingers into the os uteri, and felt distinctly the head of the fœtus, although, after examination, he remained doubtful of the pregnancy. Now, I am persuaded, that the only reason of his failure was, that he used the right hand in his examination, in place of the left. By all means, therefore, use your fingers—your fingers of both hands, but give those of the left hand a preference over those of the right; if you examine well, you may actually carry the two first joints of the fingers completely above the linea ileo-pectinea, while an awkward accoucheur scarcely reaches the brim. In ordinary cases, this is so much the better, for deep penetration is not required; but in extraordinary difficulties, when nature calls for help, unable to ascertain the position of the child, they don't know how to assist her in a scientific manner.

There is another hint I would give you relating to this important operation, which is, that you are not angels, and need not, therefore, give yourselves celestial airs affecting intuition. Do not content yourselves with merely sliding the fingers a little way up into the vagina, suddenly and smilingly exclaiming, "O, a presentation of the vertex;" for perchance, it may turn out to be the shoulder, the breech, or the forehead that presents, and to your very great discomfiture, you find, after all, you have mere mortal knowledge —*humanum est errare*. Now I would advise you, in all cases where there is difficulty, to make your examination repeatedly, slowly, and to examine every part that lies within reach. You cannot feel too carefully, if the examination be really important. If you affect this intuitive mode of deciding, at first touch, what is the present-

ing part, you will be precipitate and err; but if you take pains to examine, if you insinuate the finger far, and make your examination completely, familiarising yourselves with the touch of the different parts of the child, you will come, in general, to a correct conclusion. When examining, some introduce the whole hand, (a bad practice,) and some a single finger only; if you can succeed with one finger, that should be preferred; but as a general mode, the better method is to introduce two fingers—the first and second of the left hand, the nails being pared, and lard being applied abundantly, especially about the knuckles. You should too, carry the fingers far into the pelvis. When first making the attempt you will, perhaps not be able to advance sufficiently, but keeping near the front, a deeper penetration may be easily accomplished.

These then are the principal points to be attended to in making your examinations: first, be familiar with the feeling of the different parts of the child (and I have told you how to acquire this familiarity); then, in ordinary cases, make your examinations carelessly if you please; but if you like to examine with nicety, place the woman on her left side, close to the edge of the bed, the knees and shoulders lying forward, and the nates posteriorly. Let the parts be prepared for investigation by opiates, fomentations, and bleeding, if necessary. When learning, examine with the left or right hand fingers; sometimes with both; always with tenderness. Never interfere, except where it is necessary; and where it is necessary, carry the fingers as far up into the pelvis as may be. Do not in dubious cases, decide hastily, from one examination only, but make your examination more than once.

SECTION VIII.

ON FLOODING CASES.

Where the discharge of blood occurring before or during par-

turition, is in small quantity only,* it may be regarded with little apprehension, being perhaps rather favourable to the patient than otherwise, because it tends to relax the softer parts. It too often happens, however, that instead of these smaller eruptions we have the blood breaking from the uterus in large abundance, to the amount of two or three pints, for example; when, dangerous in a high degree, it requires in the different cases a treatment various in its modification, but essentially the same in all; and hence it is that I have thrown together in one class all those cases in which the blood is largely bursting from the uterus, considering them under the general appellation of floodings, a title at once interesting and familiar to every obstetrician.

SOURCE OF THE HÆMORRHAGE.

In the earlier months of pregnancy, when the blood is coming away largely from the uterus, the discharge may be produced by the detachment of any part† of the ovum from the uterine surface; for in these earlier months, say in the second and third, the vessels of the uterus shooting in large number into every part of the ovum, no part of the ovum can become separated from the uterus without rupture of vessels and consequent hæmorrhage. Again, in the latter end of gestation, say the seventh, eighth, or ninth months, the vessels still push into the ovum on all sides, but those which are

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* It may happen that the degree of hæmorrhage is much greater than appears externally; for blood may be poured into the space between the uterus and the placenta, sufficient to produce syncope, or even death: and yet there may be very little appearance of discharge from the vagina.—*Dr. Merriman's Synopsis.*

† It has been a common opinion, that flooding proceeded always from the detachment of a part of the placenta; but this point is not established. In several cases of uterine hæmorrhage, the placenta will be found attached to the fundus uteri; and we cannot suppose that in all of these, the whole extent of the membranes, from the placenta to the os uteri, has been separated; yet this must happen before the discharge can in these circumstances appear. We can often account for the hæmorrhage, by supposing a portion of the decidua to be detached; and we know that the vessels about the cervix are sufficiently able to throw out a considerable quantity of blood, if their mouths be open. But in most cases of profuse hæmorrhage we shall find, that the placenta is attached near the os uteri, and more or less of it separated.—*Dr. Burns' Midwifery*, 7th Edit.

pushing into the membranous part of the involucra, are few and small, and if torn, discharge but sparingly; while the vessels which pass reciprocally from the placenta to the uterus, are very numerous and very capacious; hence it happens that flooding to a great extent must take place when these vessels become torn open in consequence of a disjunction of the placenta and uterus from each other.

WHY A LARGER OR SMALLER QUANTITY DISCHARGED.

The quantity of blood which passes away varies exceedingly, amounting in some instances to a few ounces only, in others to a few pints, or quarts, perhaps I might add gallons. And this variation in the measure of the discharge, arises principally from the following causes, operating separately or in combination: I mean the age of the pregnancy, the extent of the separation, and the duration of the process. On the age of the pregnancy much depends, and you may lay it down as an axiom, generally though not universally true, that the floodings of the latter months are more copious than those of earlier gestation. For when the blood flows away in the earlier months, it flows from a uterus of small size and from small vessels; in which, therefore, there is much less blood than we find in the same organ at a more advanced period of gestation; while those floodings which break forth in the latter months make their attack when the uterus is thoroughly enlarged, with all its vessels numerous and capacious, and plentifully filled with blood. Hence it holds, as a sort of general prognostic, that while all the floodings in the later period are attended with much danger, those which occur in the earlier months, provided the woman enjoy an ordinary share of health, are seldom destructive to life, though the general health may sometimes suffer severely. Again, when the ovum separates from the uterus, the quantity of the hæmorrhage may be determined, in part, by the extent of the detachment. Thus, even in the earlier months, if the ovum separate extensively, a copious bleeding may occur, while a sparing

bleeding may take place, even in the end of gestation, provided the detachment of the placenta from the uterus be of small extent, not exceeding two or three square inches, for example. Nor is it to be forgotten that there is much variety in the duration of these floodings, the discharge in some cases recurring for weeks together, while in the other cases the whole attack is comprised within the compass of a few, two or three days, for example, or even of two or three hours. And hence a third cause, giving rise to variety in the quantity of blood discharged; for where the process is short, the discharge of blood of course is of short continuance, and may too be very sparing; but when the floodings are protracted for days or weeks together, half a pint escaping on one occasion, a pint on another, a quart perhaps on a third, it is obvious that the total quantity of blood lost may soon exceed even a gallon.

So here then are three leading causes, to the joint or separate operation of which the quantity of bleeding may be attributed;— the age of the pregnancy, the extent of the detachment, and the duration of the process.

CAUSES OF THE CESSATION OF HÆMORRHAGE.

We frequently observe with satisfaction in flooding cases, that after a certain quantity of blood has been discharged, where the patient is judiciously managed, or where she is left to her own resources, that unless she act very imprudently, the hæmorrhage ceases either permanently, or at least for a time. Now, noticing this, the inquisitive mind may be led to inquire, (and not without reason) what is the cause of this permament or temporary stoppage of the bleeding? because the knowledge of such a cause may perhaps enable us to co-operate with nature more effectually when using remedial means. On this point, therefore, I next proceed to remark. When blood flows from the uterus, the discharge seems to be arrested in part here, much in the same manner as it is suppressed in other structures of the body, where dissolution of continuity has taken place; by faintness, I mean, and by the formation of clot.

The current of the blood slackens; the quantity which in a given time is transmitted through the uterus, diminishes; the concretions which form over or within the mouth of the bleeding vessels, the flow of the blood being languid, are less liable to be pushed away; add to which, that the experiments of a very excellent experimental physiologist, Mr. Thackrah, of Leeds, having confirmed the opinion, that when the body is fainty, the blood becomes more prone to concretion; this approach to deliquium it is evident does not merely diminish the risk of a detachment of the coagula, but effectually facilitates their formation. Among the causes, therefore, which first suppress the bleedings from the uterus, you may enumerate the fainty condition produced by the hæmorrhage. A woman losing two or three pints of blood, and being, perhaps, of hysterical diathesis, she becomes very fainty, and under this tendency to deliquium concretions form, under which, together with that closure of the vessels which is effected by the formation of that layer or coat of blood which lies over their orifices externally, little coagula are produced, which penetrate into their cavities, perhaps, to the depth of a line, and effectually close them on the principle of the plug. And hence in bleedings, whether from the uterus or from other parts of our structure, unless the patient be in danger of sinking into that state of asphyxia, or deep faintness, from which recovery is not to be expected, we ought by no means to be in haste to rouse them; that faintness which shakes to pieces the nerves of their friends, is in truth not their danger, but their security; and allow me to strengthen this remark by observing, that if bleeding be stopped, as it generally is in these cases, provided the patient possess the ordinary share of bodily vigour, however alarming the faintness may appear to the inexperienced, in general she recovers gradually and safely if left undisturbed.

If in other parts of the body a wound be inflicted, in four-and-twenty, or in eight-and-forty hours afterwards, sometimes in a shorter period, provided the vessels laid open be not of a very large size, and the hæmorrhage do not proceed so as continually to interrupt the process, inflammation supervenes in the coats of the

vessels, and this inflammation gives rise to a deposit of adhesive matter in the orifices of the vessels, which, becoming consolidated by organization with the tunics of the vessels which enclose it, renders the security of the obstruction complete. For a thorough development of this principle we are indebted to the late Dr. Jones, a physiologist of great promise, hurried from us by an untimely death, at the very moment when he was beginning to rise gradually into well-merited distinction, and indulging the fair hope of enrolling his name in the glorious company of those creatures of intellect:

> "Inventas aut qui vitam excoluêre per artes,
> Quique sui memores alios fecêre merando."

Now, it is a question whether in the uterus, similar in its vascular organization to the other parts of the body, the same defensive inflammations may not also occur; and whether, after the hæmorrhagy has been temporarily restrained by clots and faintness, a more secure closure of the vessels may not be accomplished in the course of a few hours by the deposition of small plugs of adhesive matter, and an organized union of them to the sides of the bleeding vessels in the manner just described. That such adhesive inflammation takes place in the bleeding vessels of the uterus, has never been clearly demonstrated, though it appears not improbable; it seems the less certain, however; first, because it has never been demonstrated to the eye, and, secondly, because we find that a woman once bleeding from the uterus, there is always, if she stir about, a great disposition to a renewal of the discharge. Now, if by adhesive inflammation, all the vessels were shut up, as in other parts of the wounded body, it seems, on the whole, scarcely probable that the hæmorrhage should be so easily renewed. Among the means, therefore, of arresting bleedings, the closure of the vessels by phlogistic adhesions may be properly enumerated; but it must be admitted, in the present state of our knowledge, that its operation on the womb is uncertain.

Thus far the suppression of hæmorrhage from the uterus, bears a near reliance to the stoppage of bleedings from other parts of the

body; but you ought to be aware, that eruptions of blood from the uterus may be restrained, more or less effectually, by the operation of a third cause, peculiar to gestation, and that cause is the discharge of the liquor amnii. Even when that fleshy mass, the placenta, is lying over the mouth and neck of the uterus, the discharge of the liquor amnii, when practicable, might perhaps tend to diminish the hæmorrhage. But, however facts may hereafter dispose of this question, there seems to be little doubt, that if no portion of the placenta be lying upon the mouth of the uterus, the membranes alone covering it in the ordinary manner, the discharge of the waters will, in most cases, arrest the flooding, or so far diminish it, that it becomes no longer dangerous.

Peculiar to the uterus, there is yet a fourth means by which the bleedings may be arrested, and that is, the complete evacuation of the uterine cavity, effected by the spontaneous expulsion, or the artificial removal of the ovum, fœtus, and secundines. The thorough contraction of the muscular fibres of the uterus, and, of consequence, the effectual constriction of the blood-vessels greatly diminish the risk of hæmorrhage, and in the earlier or later periods of gestation, when floodings occur, if the ovum be expelled, the uterus contracts itself, so as to become permanently round and firm, and hard, like the head of a fœtus: in general, further hæmorrhage ceases, and thenceforth the patient is secure.

How it is that the discharge of the liquor amnii has the effect of diminishing and stopping the bleeding so effectually, I am not able satisfactorily to explain, though, I suppose, something may be attributed to the partial constriction of the vessels by the surrounding fibre, and something again to the pressure which the contracting uterus makes upon the placenta. After the liquor amnii is discharged, the uterus always contracts itself, and indeed expels the ovum within an uncertain period of one, two, or three days; so that the escape of the water is not only immediately effectual in checking the hæmorrhage, but ultimately brings the patient a still more certain security,—that, I mean, which is derived from the complete evacuation of the womb. When the ovum is away, we

can more clearly understand how the stoppage of the hæmorrhage is effected. The uterus then decidedly contracts, the muscular fibres contract too, and, of course, necessarily cause a constriction of the uterine vessels, which are ramifying among the fibres. By the thorough contraction of the uterus, therefore, you insure, at the same time, a thorough contraction of the vessels, which, by the constriction of the muscular fibres round them, are closed as effectually as if they were secured by a set of ligatures, and compressed much in the same manner as the fingers of one hand are pressed upon the fingers of the other.

Here then are the four principal causes which operating separately or in connexion, seem to stop the discharge of the uterine blood:—the formation of clots under faintness; the closure of the vessels by inflammation; the discharge of the liquor amnii; and the evacuation of the uterus. To this important topic I have given the more attention, because you never can scientifically assist nature in the stoppage of these floodings, unless you understand the mode in which she operates.*

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* In my museum, you will find some illustrative preparations. 1st. One of the uterus, large as in the ninth month, injected and dried; two arteries, (the spermatic) supply the upper and middle regions; and two, the inferior uterine, the parts which lie below. All these vessels, you will find, are of considerable capacity, large nearly as the goose quill: it is no way surprising therefore, that bleedings so copious occur in the latter months. 2nd. Another preparation is a strong contrast to the former, consisting of a portion of the womb in the earlier months; you will there see the vessels small as threads; from vessels like these, but little hæmorrhage may be expected. It is clear, therefore, why the bleedings of the earlier months are so sparing. 3rd. A preparation formed from the human ovum, consisting of the cyst, containing the fœtus and the liquor amnii, in connexion with the placenta: the water being within. When the membrane is ruptured, and the liquor amnii is discharged, the ovum becomes much diminished in its bulk, and the womb therefore, in the earlier months especially, is enabled to contract itself considerably. 4th. Is a preparation of that part of the uterus to which the placenta coheres, the structure being uncontracted; in which you may observe the blood-vessels, by unclosed orifices opening on the surface internally, very numerous and large, and with their patulous orifices yawning destruction on the patient; of some, the orifices are sufficiently large to admit a small goose quill. Such are the vessels laid open when in the end of pregnancy, the womb being uncontracted, the placenta becomes detached; look at those orifices, and you will no longer be surprised that, in the close of gestation, the blood is bursting from the womb, in such copious and dangerous abundance. 5th. A preparation, the counterpart of the former, consisting of a section of the uterus in the contracted state, the contraction being thoroughly effected; looking on the surface exposed by section,

UTERINE HÆMORRHAGE SOMETIMES RAPIDLY FATAL.

Hæmorrhage from the uterus may suddenly destroy life; the after floodings more especially, under which patients sometimes die, and very unexpectedly. The woman is delivered with unusual facility; the placenta is removed, it may be, with more than ordinary care; the practitioner leaves the room, and is, perhaps, in another apartment, conversing with some of the family respecting the auspicious termination of the labour, when suddenly he is summoned to the chamber of the patient, where he finds her at the point of death. Repeatedly cases of this kind have occurred; generally, however, when the patient sinks in consequence of the loss of blood from the uterus, death steals on its victim in a more gradual manner; and there is, therefore, more opportunity for the use of those remedial means by which the bleeding may be checked, and the danger averted. Now, where death, in this manner, makes an insidious approach, three or four hours may pass away before the respiration ceases, while there occurs a long train of symptoms to which I have been too often witness, and which may, I think, be divided advantageously into two classes,—those which may be looked upon as less alarming, and those more dangerous symptoms, which are to be regarded as the more immediate precursors of dissolution.

THE LESS ALARMING SYMPTOMS.

And first, then, we may observe, that when blood comes away in large quantities from the uterus, alarming symptoms soon begin to appear: the extremities become damp and chilly; the tongue, lips, and cheek, pale and ghastly, the pulse frequent, (one hundred

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you will observe all the vessels of large capacity constricted and closed up by the compression of the surrounding fibre; and such are the results of that complete contraction of the womb, which, as before observed, is obtained by the removal of the ovum. Think of these things.—*Dr. Blundell.*

and forty, fifty, or sixty,) small and perhaps intermittent, disappearing in the wrist for a few seconds, or even for a few minutes, nay, for an hour or more, and then returning; and there is weariness and weight in the limbs, and fainting, and sighing, and vomiting, and cessation of the pains. Now all these symptoms you may throw together under the head of symptoms alarming in a high degree, but which are not to be looked upon as indications of immediate and almost certain dissolution.

THE IMMEDIATE PRECURSORS OF DISSOLUTION.

When the patient is about to die in consequence of the blood she has lost, in addition to the preceding symptoms, which may have been precursory, the following also frequently occur: the whole body becomes damp and chilly; the very breath becoming cool, as you may feel sometimes by putting the back of the hand a little before the mouth; and the pulse intermits very much, or perhaps it is permanently imperceptible in the wrist, which it may be for minutes, aye, for half an hour, an hour, or even longer than this, before the dissolution takes place, and soon the patient becomes restless, and wishes to alter her posture, and no persuasions induce her to lie quiet; relief flies before her, she changes her position, and again she changes, but remains uneasy still; and now the irritability and exhaustive oppression continually augmenting, she gets at length into a state of involuntary jactitation, throwing her limbs about upon the bed, and deep convulsive gasping sobs occur, and these are speedily followed by a cessation of the cardiac and pulmonary actions. When respiration is once stopped, she is gone beyond the reach of any known remedy, under received methods of management—not even transfusion itself can save her; a solemn pause follows, presently broken by ejaculations scarcely audible; some dear friend sobbing and in tears, exclaims, "Can you do nothing? Is there no hope?" What can you answer? "Nothing! None!" But if we could have foreseen; if, instead of raising a senseless clamour against experiments and experi-

mentors, we had only availed ourselves of the helps of physiology; if we had only supplied the necessary blood; if we had only transfused (and how easily it might have been done!) at worst she could but have died.

THE HÆMORRHAGE MAY OCCUR IN GUSHES OR DRAININGS.

In flooding cases, there are two ways in which the blood may be discharged, by gushes, or by drainings. In the latter months of pregnancy, when the bleeding first comes on, the blood frequently rushes from the uterus by impetuous bursts, so that in a few seconds a pint or two may be lost; and this it is, which constitutes the gushes, then after this gush, the hæmorrhage may cease altogether, or it may be converted into a slow oozing from the uterus, continuing more or less for hours together. And this latter kind of bleeding it is, this slow and sparing discharge from the uterus, in the course of a day or two, occasioning sometimes large losses of the vital fluid, which constitutes what are called drainings. Now the gushes are produced by the detachment of the placenta or ovum from the uterus, by which the vessels are immediately laid open, and the drainings seem to arise in part from the languor of the circulation, produced by faintness, and also in part from the formation of clots, which give only a partial closure to the vessels, so as not to put an entire stop to the bleeding, although at the same time they preclude the eruption of large quantities at once.

SECTION IX.

MANAGEMENT OF SIMPLE FLOODING CASES IN THE EARLIER MONTHS.

Having said thus much on the nature, effects, and spontaneous suppression of flooding generally, I will now proceed to the consideration of the method of treatment, commencing with the management of the more sparing floodings, those especially of the earlier months; for example, the first three or four.

REGIMEN AND POSITION.

If you are called to a patient in the earlier months of gestation, labouring under a small discharge of blood from the uterus, she will tell you, that she has a shew, occurring, perhaps, spontaneously, or attributed, it may be, to some accident, a blow, a fall, a Christmas party, a long walk. Well, the discharge appearing in this manner, one of the first measures to be prescribed is a sort of antiphlogistic regimen. To the horizontal posture the patient should be confined, for days or weeks together, lying extended on the sofa, or the bed; the bed being enjoined in preference to the sofa, if the disposition be restless, as the woman is then less likely to rise occasionally and stir about. The chamber, if sultry and close, should be immediately cooled; stimuli should be forbidden, and especially port wine, a drink to which women when flooding are sometimes much addicted. They consider it to be nourishing and astringent,—half a bottle or more is sometimes taken in the course of the day: I might mention much larger quantities, but respect for the sex prevents me from hyperbolizing here. That port may be of use when cordials are required, I do not deny; wine, however, must be regulated by the medical attendant, and as a general beverage it is improper. Plain nourishment is requisite, particularly if the discharge have been rather copious. These are very important points of treatment.

MILD APERIENTS.

Again. Called to a case in which the discharges from the uterus are sparing, you should always inquire diligently into the state of the bowels, not infrequently in these cases closed. On two accounts, moderate evacuation appears to be desirable; first, because by clearing out the bowels you will remove any irritants which might be lodging there, in the rectum especially; and, secondly, because in clearing the bowels, by this measure you cool the system, perhaps heated by febricula. Drastic purgatives, or even active laxatives, are highly improper; they may occasion the premature

expulsion of the ovum. Manna, rhubarb, magnesia, Epsom salts, or castor oil, in small doses, may succeed very well.* To calomel I am averse; on some bowels it acts roughly, and I have seen it apparently occasion miscarriage.

FEBRICULA OR SLIGHT FEVER.

You will often find in these more sparing floodings, that there is a certain degree of fever; the surface is warm, the tongue is white, and the pulse is one hundred or one hundred and ten in the minute,—in the nervous much more frequent. Now when this is observed, it will not be amiss to administer to your patient some refrigerant infusion of roses, for example, with the sulphuric acid and sulphate of magnesia, in small doses, more with a view to the refrigeration of the system, than the laxative operation on the bowels. Nitre may also be tried, a powerful refrigerant; if used as a placebo, in daily doses of fifteen grains only; if really employed with the view of obtaining its full effect, then in much larger quantities, nay of one or two drachms in the twenty-four hours; the practitioner carefully watching the patient, so as to ascertain whether the nitre irritate the stomach or not. To mix nitre with infusion of roses is unchemical, as more or less decomposition ensues.

When a sparing hæmorrhage from the uterus is combined with febricula, the digitalis seems to be particularly appropriate, and there are some accoucheurs who are very partial to its use. In operative doses, Dr. Haighton had found it rather an unmanageable remedy. Dr. Hamilton seemed at one time to suppose, that in effective quantities it might destroy the child; whether this be so or not, I really cannot, from my own knowledge, decide. Experiments on animals are wanted to illustrate the point. Burns, who has written so largely and so well on the subject of midwifery, has

* A pint of cold water, either by itself, or mixed with salt, or a spoonful of vinegar, may be thrown up the rectum; this often succeeds in producing a stool, and it is otherwise useful as a refrigerant applied to parts contiguous to the uterus.—*Dr. Merriman's Synopsis*, 4th edit. p. 121.

found the digitalis of great service. In the more obstinate bleedings, with febricula, on the very respectable authority of Burns, I would recommend the digitalis to your consideration, adding, that if you give it at all you ought to give it in operative doses. Now those doses you will find to vary exceedingly in different individuals, one requiring a much larger quantity than another. Sixty drops of the tincture, or an ounce or an ounce and a half of the infusion, in the course of twenty-four hours, are moderately effective quantities; care must be taken, when the larger doses are given daily, that the patient be sedulously watched by a competent person. Purging,—dying sickness, a double quantity of urine, a pulse of long intervals, or of unequal intervals, or with intermissions, are singly, or in conjunction, the marks that digitalis is in action; if you find any one, or all of those effects taking place, the digitalis is to be immediately laid aside altogether, until you have an opportunity of knowing whether an accumulative action will occur or not; for every one knows that when this medicine begins to act, it may continue for hours to operate, with a perpetually increasing force, till the patient's life is endangered. To start into the sedentary posture, and to move suddenly, are both dangerous when the digitalis is in action; so also are large evacuations from the bowels.

TURPENTINE.

In cases of hæmorrhage from the uterus, whether of more copious or more sparing quantity, we are advised to make use of the oil of turpentine, a remedy which has received the approbation of Denman.* Though not prepared by my own observations to assert its efficacy, yet on trial I have not found any effects which prohibit its employment, though it must be acknowledged, that it is sometimes rejected by vomiting. Afloat on water, it is very conveniently administered; in this condition, it is more likely to

* Oil of turpentine, in proper doses, has been recommended, and certainly is a very powerful medicine in hæmorrhages; but it seems better suited to those which are habitual, or of long continuance, than to those which are instantly profuse and dangerous.—*Dr. Denman's Midwifery*, 7th edit. p. 374.

remain on the stomach, than when formed with egg, or other intermediates, into an emulsion—a form of turpentine odious to the stomach. The aptitudes of the stomach for retaining the oil are various. In other cases I have myself, occasionally, given the turpentine very largely, so as to satisfy myself, that though there are some individuals who can scarcely bear one or two drachms of it in a day, there are some who, in the course of twenty-four hours, can take the larger quantities—three, or even four or five ounces, prior and smaller doses being increased gradually, and the effects on the chylopoietic, and other parts of the system, being sedulously watched. Used as a placebo, its doses must be small; but if given with a view to some decided effect, half an ounce, or an ounce, on an average, may be given in the twenty-four hours. If it remain on the stomach, it is well; if rejected repeatedly, it may be laid aside altogether, though you may sometimes reconcile the stomach to its reception by the use of the effervescing draught.

ABSTRACTION OF BLOOD.

Among the remedies, in cases of more sparing bleedings from the uterus, bleeding by venesection, or otherwise, may be enumerated as one, and not the least important. Bleeding, I believe, where the patient is in a febricular state, and is lusty and plethoric, may be useful; and sometimes when we take away blood from the arm, whether from cause or coincidence, the bleeding from the uterus becomes stopped. It is right, however, to mention here, that though bleeding in the sparing floodings is advisable generally, yet, if used indiscriminately in all cases, it may destroy. It is, I think, obvious enough, on a little reflection, that you ought not to have recourse to the lancet in those cases where the patient has already lost a great deal of blood. If, in consequence of blood lost already, the limbs are cold, the pulse small and frequent, the cheek pale, the countenance ghastly, why should you bleed? And yet I have seen patients bled in such cases! What is the advantage that is to be derived from venesection here? All the abatement of

vascular action, derivable from an abstraction of blood, has been obtained already, in consequence of eruption of the vital fluid from the uterus.

Again. If, from the previous eruption of a large quantity of blood from the uterus, you have reason to fear that a future copious discharge may occur, it is unsafe to bleed. If the woman have lost much blood already, the advantages derivable from a diminution of the quantity of the circulating fluid, are, as before observed, already secured. Besides, how do you know, after you have taken a pint or two from the arm, that another one or two pints may not flow from the uterus? And how do you know that those together, may not be sufficient to sink the patient? They are not, therefore, copious floodings, but sparing discharges, which justify the intervention of the lancet. It is generally improper to bleed largely in the latter months, because the vessels are large, and the blood, at this time, is liable to burst forth in copious abundance. When the placenta is lying over the mouth of the uterus, for reasons more fully explained hereafter, there can be no certain security till the child and after-birth are away. In the latter months, therefore, when the placenta is lying over the uterine mouth, it is especially unwise to bleed. To preclude an eruption from the uterus, venesection can be of little use, and, indeed, when the woman is delivered, whether by turning or the natural efforts, the blood will always be forced to come more or less copiously away, and often in large abundance. Venesection, therefore, employ if you please, in your robust country patients, who have sparing discharges from the uterus, in the earlier and middle months; nay, it may be proper to repeat them, but beware of bleeding where collapse is already begun, where large eruptions have taken place already—where the patient is advanced to the latter months of gestation, and where you have reason to believe that the placenta is lying over the mouth of the womb.

PROPER NOURISHMENT.

In cases of hæmorrhage from the uterus, of somewhat copious quantity, there is another remedy, perhaps too much neglected, and that is, proper nourishment. If a woman goes on losing a little blood every day, she at last sinks into a state of inanition, in the end reaches such a level of depletion, that some three or four ounces of blood may make the difference between life and death. That fatal quantity, if nourishment have been neglected, may be wanting to her in the decisive moment; on the other hand, if she take plain and nourishing food, the supply to the vessels may be kept up. Plain sense, the wisest of mentors, will enable you in most cases to decide with judgment on this practice. If your patient, too full already, require bleeding from the arm, you bid her abstain from a nourishing diet; but practising in a large town, like this metropolis, you may have under care women in a state of great inanition, and to whom it may be absolutely necessary that nourishing food should be given. When nourishing food is taken, there are two ways in which it may be administered, either in the fluid or in the solid form: broths, jellies, fish, fowl, or flesh. Now, where the patient can take the solid food, I prefer it on two accounts; first, because if digested well, in a given bulk it contains more nourishment, and, secondly, because where women are weak, and loose much blood, they are apt to become very flatulent; and in this flatulency there is no danger, but it is inconvenient. By fluid aliment, also, diarrhœa may be produced; and under inanition, the mucous membrane of the bowel is too apt to suffer, giving rise to fatal purging.

GASTRIC ASTRINGENTS.

With respect to gastric astringents, that is, astringents to be taken into the stomach, on these I have little reliance; and by astringents, I do not mean the refrigerants before mentioned, as the sulphuric acid for example; but astringents properly so called,

catechu, kino, alum, hæmatoxylum, and so on. Alum I have administered in the larger doses, though I have not known it productive of any very good effect. Not to appear negligent, these remedies you may try, but I would not have you rely on them to the exclusion of others more valuable; they are of excellent service after the battle is won.

ON THE FAINTNESS.

Of faintness I have already given my opinion. If the deliquium be such that the woman is likely to sink into a state of asphyxia from which she will never recover, then of course you must do your whole endeavour to prevent it. It would be too much to assert, that under small discharges from the uterus, it is impossible that fatal asphyxia may occur; but such is the nature of our art, that we must practise, not on the anomaly, but the general principle; and on this principle it must be admitted, that the faintness from small bleedings is unattended with danger—is highly conducive to the cessation of the bleeding, and in the general, therefore, ought not to be artificially relieved.* For once, even in floodings, a meddlesome midwifery is bad. Let the patient lie in peace upon the bed.

SECTION X.

MANAGEMENT OF THE MORE COPIOUS FLOODINGS.

It has been observed, that we sometimes meet with cases of the earlier months, especially in which the discharge from the womb is sparing; but in practice, we also meet with another variety of the

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* Cordials or stimulants should not be given to those who are faint from hæmorrhage, till by the duration of the faintness, we conclude there has been sufficient time to produce those effects which would prevent a renewal of the hæmorrhage, or lessen its danger, if it should return; and then cordials are to be given liberally, and repeated as often as the circumstances may require.—*Dr. Denman.*

disease, that, I mean, in which the discharge of blood is more copious, more dangerous, and more pertinacious—a sort of bleeding occurring occasionally in the earlier months, but still more frequent in the middle and later periods of pregnancy.

REST AND NOURISHMENT.

As in those cases where the discharge of blood from the uterus is sparing, it is always proper, when the discharge becomes copious, that the patient be placed in the recumbent posture, and that she be kept perfectly still; nor, if she lie in a very small room, or in a confined situation, provided the strength will allow, ought we to neglect her removal to a larger and more airy apartment, for the stimulus of heat has an obvious tendency to keep up the bleeding.

Again, in those cases where the discharge from the uterus has been copious, as in the more sparing discharges, you are not to neglect the administration of nourishment. Nourishment the patient can scarcely take with advantage, provided the large gushes of blood are still upon her; but it happens generally, in the cases under consideration, that after one or two large gushes, one, two, or more pints of blood escaping, the patient sinks into a state approaching deliquium, a small drain of blood alone remaining; and under these circumstances nourishment may be administered with a fair prospect of advantage. Often, it is true, the digestive powers are in great measure lost; but generally, I conceive, a part of the food is digested, and contributes more or less to the formation of chyle and blood, in quantities not to be despised when the patient is endangered by inanition.

TURPENTINE.

In the earlier months of pregnancy, where the discharge of blood is small, the oil of turpentine is recommended, on authorities in matters of experience well deserving our deference. By Denman, and others, this same oil is recommended in the more obstinate

cases of flooding, now under consideration; and although I have not myself tried the oil sufficiently often to enable me personally to vouch for its efficacy, yet on the whole, from the experiments which I have made with it, the impression left on my mind is favourable to its powers. I have told you already, that the quantity which different stomachs will bear is exceedingly diversified: from half an ounce to an ounce in the course of twenty-four hours may be considered as an average dose; sometimes you may exceed this, and sometimes even a smaller daily quantity will be rejected by the stomach. A drachm or two at once may be administered, floating on distilled water, a form less offensive than that of emulsion, sometimes recommended.

STIMULANTS.

Further, when there are large discharges of blood from the uterus, the patient being prone to sink into a state of asphyxia, it may then, no doubt, become necessary to keep up the action of the heart by stimuli, (spirits more especially,) administered in a manner which I shall hereafter prescribe; but if, on the other hand, you are persuaded that the faintness is fugacious, beware of rousing the patient too hastily. Of the vascular action a certain degree of reduction is safe and to be wished for in these cases, because, under this faintness, the stream of blood loses its impetuosity, and the inherent disposition to concretion is augmented, the quantity of blood passing through the vessels in a given time, and consequently the quantity of blood in given time discharged from these vessels, when torn open, being smaller in consequence; and on all these accounts, if the faintness be not very great, it is to be looked upon as a natural, and very powerful, and very desirable remedy, for staunching the discharge.

ACETATE OF LEAD.

In flooding from the uterus, considerable advantage appears to

be derived from the use of lead taken in the stomach, or administered by the rectum. To omit less weighty authorities, this remedy, Dr. Haighton used to mention with great commendation, conceiving that he had himself used it with decided advantage. If you make trial of the lead, it is in the larger doses you should employ it, the quantity being from four to six grains of the acetate in the course of twenty-four hours; six grains being a "large daily dose," and four grains in the twenty-four hours, a dose more moderate. With respect to the mode of administration, it may either be dissolved in distilled vinegar, with a proper mixture of distilled water, or it may be formed into pills. And as the lead sometimes offends the bowels, giving rise to very severe spasms there, endeavours may be made to correct this evil, by the conjunction of the lead with opium. To two grains of the super-acetate, add half a grain of opium, to be formed into a pill, and this the patient may take two or three times a day: or again, to five grains of the super-acetate of lead, add sixty drops of the tincture of opium, three ounces of distilled vinegar, and the same quantity of distilled water, mixing and dissolving; the patient afterwards taking, four times a day, one quarter part for a dose. The lead, reputed a powerful medicine, especially where there is a tendency to draining, is, it must be acknowledged, an unwieldy sort of remedy,—a kind of elephant in the battle. For this reason, the lead ought not to be used, unless the case seems peremptorily to require the more active treatment. It is not on every occasion that I would advise you to sit down, and, as a matter of course, to prescribe the super-acetate. If, however, you find the discharge copious and dangerous, and, above all, degenerating into obstinate drainings; if, to use a strong expression, death stare the patient in the face, under such circumstances, the active use of the lead might be recommended, and I think you would be fully justified in giving those large, and somewhat dangerous, daily doses, of which the measure was before given.

Under the action of lead, a paralytic affection, affecting the brachial muscles, is liable to be produced, occasioning a weakness

of the wrist, denominated the dangles. In painters, and those whose occupations lead them to handle the more active forms of the lead, this obstinate paralysis is now and then produced. Whether the internal use of the lead have the same effect, I am not prepared to decide; but I never saw or heard of a single case of flooding or other bleeding, where, under the use of the super-acetate, this distressing disease has threatened the patient; and although I conceive that this fact ought to put you on your guard, there is no reason why you should be intimidated or deterred by it. *Colica pictonum* is certainly produced sometimes, by the lead in larger doses; a very severe pain, extending itself along the bowels, as the lead makes its way through them, harassing the patient much, but lasting a few hours only. From twenty to thirty grains of the compound extract of colocynth, with two or three or four grains of opium, is a useful remedy in these cases: or provided you deem the pain to be seated principally in the larger bowels, an ounce of the *oleum ricini*, and half a drachm, or a drachm by measure, of the tincture of opium, may be injected into the bowel with advantage.

Where the lead is given with due caution in the larger doses, it may be given in safety; but you may ask me, in what do these cautions consist? If you are administering the lead largely, you should observe the bleeding, and if you have effectually stopped it, let the lead be laid aside. Active and dangerous as the remedy is, a single dose more than seems to be justified by the urgency of the flooding, ought not to be administered. When the lead is administered, watch; if intestinal pains are not produced, it is well; while, on the other hand, if you find severe pains in the bowels, the remedy should be laid aside, for, under these circumstances, its continuance is not, perhaps wholly unattended with danger. Again, in administering the lead, you ought to bear in mind, as you proceed, the aggregate quantity which may have been already given. Till, from your own experience, you find that more may be safely administered, do not rashly exceed the aggregate of twenty or thirty, or, at most, thirty or forty grains of the super-acetate,

relinquishing the further use of the remedy if these quantities are inadequate to afford relief. So that by not exceeding a certain aggregate, which may be fixed by your own observations, by relinquishing the lead as soon as intestinal spasms become manifest, by refraining from the further use of the remedy, as soon as the bleeding is effectually checked, however small the quantity which may have been administered, you secure to yourselves, I think, the active use of the remedy without its danger.*

COLD APPLICATION.

When discharges of blood from the uterus are sparing, it is not my custom to apply cold, powerfully and extensively, to the lower parts of the abdomen—the back, thighs, buttocks, and so on; although, in conformity with popular feeling, I have recourse to vinegar and water, particularly if the temperature of the patient be warm. But when the discharges of blood are more abundant, cold, a very powerful remedy, must be called to our aid, and ought to be effectually applied, though not without due caution. When a woman has lost so much blood, that she is in every part of her body cold already, which, in dangerous bleedings, is no uncommon occurrence, the application of cold, though, in conformity to popular prejudice, it may be recommended, is, I fear, of small advantage; but if you have a great deal of blood coming away, and if, with this, there is a certain warmth of the system, and a sort of febrile hurry of the circulation, in such cases cold may, perhaps, be administered with decisive advantage. Cold water is sometimes sprinkled over the body; cold water is occasionally injected into the rectum; and ice, naked or wrapped in linen, is occasionally pushed into the vagina, the remedy not being without its dangers, for if you freeze the vagina it dies. To omit these

* Consult "Experiments and Remarks on the Internal Exhibition of the Acetate of Lead, chiefly with a view of determining to what extent it may be safely administered in the cure of Diseases, especially Hæmorrhages. By Mr. Laidlaw."—*London Medical Gazette, May 9th*, 1829.

practices, however, there are, for ordinary purposes, two modes in which the cold may be administered; the one is by laying bare the abdominal surface, and dashing over it cold water from the cup, or by means of the hearth-brush dipped in a pailful of water, a rough, yet effective, practice; the other, a gentler method, conducted as follows:—

From the cistern, or the well, you procure a pailful of water, to which a pint or two of vinegar, recommended by popular opinion, may be added; then, taking some napkins, you effectually refrigerate them, by dipping into this cold mixture, or by thoroughly besprinkling their surface. This done, you apply them extensively to the central parts of the body, front and posteriorily, as soon as they become warm; it may be every two or three minutes, oftener or seldomer, as the communication of warmth from the body of the patient may require. In some cases, the local application of cold seems really to be of considerable advantage; I have met with a case of draining, where other remedies have been tried with but little effect, and where the cold alone appeared to be efficacious in checking the discharge.*

PLUGGING THE VAGINA.

If the fœtus be come away, and if you have removed the placenta, in general practice it is unwise, where there are large discharges, to plug the vagina; for this, in many cases, might occasion an internal bleeding, the bleeding continuing, though the efflux is prevented, and the blood, of consequence, accumulating in the cavity of the uterus. Where, however, in the more copious floodings, the womb is not emptied, and the placenta is not yet away, the plugging of the vagina may be tried with considerable advantage. The purpose of plugging is, that of allowing the blood to accumulate in the vagina and the uterus, so as to form there clots, which may close

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* Several French practitioners are said to have injected *lemon juice*, cold into the uterus, and that it has proved very successful.—*Ed.*

up the mouths of the bleeding vessels. This object may be variously obtained: taking a napkin and folding, you may lay it upon the genital fissure, closing the orifice of the vagina without the introduction, or the irritation, of a plug. More conveniently, however, in many patients who are not irritable in these parts, you close the canal, by introducing a plug of tow, or sponge, or soft cloth. Cloth or sponge, is the plug which I am myself in the practice of introducing, more or less, according to the capacity of the cavity, recollecting that the smallest mass which will prevent the discharge of blood from the vagina, is the best for the purpose. Of women, there are some in whom the vagina is so destitute of irritability, that introduce what you will there, the organ bears it without reaction; of others on the contrary, and more especially of young females, the vagina is sometimes so exceedingly susceptible, that the plug cannot be borne, unless, perhaps, for a few hours; and, in these cases, the application of a napkin to the genitals externally, may be substituted. When the plug can be borne for a few hours only, apply it nocturnally; this may prevent your being called up in the middle of a cold December night. When the plug remains quiet, don't be in too much haste to remove it; recollect, that the longer it is left there, the more completely will the vessels become contracted and closed up.

DEOBSTRUENTS.

In the earlier and middle months of pregnancy, as in the end of gestation, you will find, as I explained to you in a preceding part, that to empty the uterus is a most effectual mode of stopping the blood, and hence the use of deobstruents; for it generally happens, when floodings have occurred previously to the birth of the ovum, that on the abstraction of the ovum and the complete evacuation of the uterus, the discharge wholly, or in a great measure, ceases. Where a patient is labouring under floodings in the earlier or middle months, and more especially under obstinate floodings, recurring again and again; the emergency justifies us

in having recourse to this remedy, unjustifiable perhaps in cases less pressing. In such cases, the thorough evacuation of the uterus is the only remedy on which we can certainly rely. The uterus, however, it is not in our power to empty with the same facility and certainty as the intestines or the stomach; but there are three remedies of the deobstruent class deserving a trial in these cases, and these three deobstruents are—succussion, injection, and the secale cornutum. A jolting ride on a rough road, in an uneasy carriage, where the propensity to miscarriage is strong, may occasion the expulsion of the ovum. The remedy is rude—scarcely to be recommended—fitted to a few cases only—where strength remains—and the pregnancy is of the earlier months—say the first two or three; in latter gestation it would be dangerous. A medical attendant should be in the carriage,—the house of the patient should always be at hand. Saline clysters will do little, if the womb is indisposed to contract; but if the fibres are in action, an ounce of salts and six of the infusion of senna, or other more powerful stimuli of the rectum, may be tried with advantage. But of all the stimuli exciting uterine contraction,* that, which, failing flatly in some cases, in others, however, seems to operate in the most decisive manner, is the secale cornutum, or ergot. In powder, in infusion, in decoction, it may be given; and suspecting from some experiments made, in conjunction with Mr. William South, that its virtues reside in a vegetable alkaloid, I presume it may hereafter be administered in the form of pill, like the quinine, when probably it may be found less offensive to the stomach:—I would invite the chemists to the investigation of this point. In general, my formula has been, of ergot ʒj. in coarse powder, of boiling water three ounces, to be decocted rapidly to one half, the

* The Ergot of Rye does not satisfactorily appear to have any dominion over the uterus, except in its parturient state. It certainly exerts no influence on it in its amenorrhœal derangement, nor is it probable that it would in the condition of pregnancy, until it became excited by the stimulating distension that induces the peculiar contraction which causes the expulsion of the fœtus. This is a happy circumstance, as it prevents the abuse of directing its powers to a premature expulsion of the contents of the uterus.—*Dr. Kinglake.*

patient taking of the decoction poured off, one-third every twenty minutes, unless some obvious effect were previously produced. In one miscarriage of the third month, to omit others, after the administration of the ergot, I remember the pains became almost incessant till the ovum was expelled. The ergot will not, I think, act unless the uterus be irritable and disposed to the pains. At Butler's, in Covent Garden, you may get supplies of the secale cornutum. It is principally produced in America, and perhaps I may add the South of France.*

DISCHARGING THE LIQUOR AMNII.

In as many as thirty cases where floodings occurred in the end of gestation, and where the placenta was not lying over the os uteri, Merriman found that the discharge of the liquor amnii either stopped the floodings, or reduced so greatly the quantity of the bleeding, that it became no longer dangerous.† By Rigby, under similar circumstances, the same remedy was tried, and in fifty or sixty cases with the best success.‡ Set down, therefore, the discharge of the liquor amnii among the remedies for suppressing the floodings of the latter months. Nor is it difficult to accomplish this; carrying one or two fingers of the left hand through the os

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* The secale cornutum, diseased rye, or *seigle ergote* of the French, is a black, curved, morbid excrescence, like the spur of a fowl, which is found in the spike of the *secale cerealis* of Linnæus, especially in hot climates, when a great heat suddenly succeeds to much moisture. The cause of this excrescential disease in rye, appears to be an insect which penetrates the grain, feeds on its amylaceous part, and leaves its poison in the parenchyma; hence it is full of small foramina or perforations made by the insect.—*Dr. Hooper's Medical Dictionary.*

If a small piece of camphor be put into a bottle, containing ergot of rye, reduced to a fine powder, the peculiar properties of this invaluable remedy will be retained, unimpaired, for a considerable length of time, two or three years at least.—*Lancet, July 4th*, 1829.

† I have usually adopted the method of rupturing the membranes, as a means of lessening or suppressing the flooding, and as yet have no reason to be dissatisfied with the plan: for, in almost every instance, the discharge has entirely ceased, or has been so much diminished, as to secure the safety of the patient; and yet there were some among these patients, whose cases, from the profuse hæmorrhage, were abundantly alarming.—*Dr. Merriman's Synopsis*, 4th edit. p. 123.

‡ See his Essay on Uterine Hæmorrhage, &c.

uteri, up to the membranes usually felt with facility, take a bluntly-pointed instrument, say a female sound, for example, sharpened for the purpose, and with this instrument puncture the membranes and discharge the liquor.* Under this operation, the hæmorrhage becomes diminished, perhaps immediately; and although the ovum may now and then, perhaps, be retained till the end of the nine months, especially if opium have been given, yet more generally in two or three days afterwards, the whole is expelled, and the womb emptying itself, contracts thoroughly, so that the flooding becomes entirely suppressed. In all cases, in the middle or later months, where there is an obstinate efflux of blood from the uterus, remember that you have in the discharge of the liquor amnii a most powerful remedy; in some of the worst floodings, where other remedies are failing, you lacerate the membrane, and the hæmorrhage ceases.

MANUALLY EMPTYING THE UTERUS.

By manually emptying the uterus, so as to allow of a thorough contraction of its cavity and constriction of its fibre, the bleedings may be suppressed, though not in all cases, in many. And there are different modes in which this evacuation may be accomplished; sometimes in floodings, we find the child's head has been pushed down into the vagina, where we may apply a pair of forceps upon it, and draw it forth. In other cases, and these are far more frequent, the child is lying entirely above the brim of the pelvis in the cavity of the uterus, so that no part of it, except the presentation, can be felt. Now in cases like these, the hand may be introduced into the cavity of the uterus, and by the operation

* The operation is performed by passing a finger or two into the uterus, and then introducing a sharp pointed wire, or female sound, sharpened for the purpose, through the membranes, thus allowing the escape of the liquor amnii. Others separate the membranes for an inch round the orifice of the womb, while Dewees recommends the hand to be passed towards the fundus uteri, in the last months, between the womb and membranes, when the latter are to be ruptured.—*Dr. Ryan's Midwifery*, 3d edit. p. 472.

of turning, the fœtus may be brought away. Even in the earlier months, although the manual evacuation of the womb is undesirable, the parts being thin and lacerable, should the removal of the ovum be deemed necessary, it may sometimes be accomplished. With the utmost gentleness, lay the left hand in the cavity of the vagina, passing the genital fissure for this purpose. Then the bulk of the hand remaining in the vagina, let the first and second finger be passed up into the cavity of the uterus, so as to reach from mouth to fundus, while the womb, felt above the symphysis pubis, is by the action of the right hand pressed down upon the fingers of the left. By this manœuvre, the contents of the uterus may be brought within reach and control, and, by a small action of the fingers, may be easily got away. Though practicable, this operation is of dubious use: if unskilfully or unwisely performed, it is surrounded by the risks of laceration. Thus, sometimes by the insertion of the fingers, sometimes by the operation of turning, and sometimes when the head of the child is lying in the vagina, by the judicious application of the forceps, the fœtus and placenta may be abstracted; when, as before, the womb contracting, and the muscular fibres becoming constricted, little further discharge of blood need in most cases be apprehended. And thus much, then, respecting the principal remedies to which you are to look, when you have the more obstinate and dangerous discharges of blood from the womb.

SECTION XI.

MANAGEMENT OF THE MORE COPIOUS FLOODINGS, IN THE LATTER MONTHS ESPECIALLY.

We now pass to the consideration of the third sort of cases, frequent in consultation practice, and of the utmost importance—I mean those cases in which large quantities of blood are come away from the uterus, in the latter months more especially, and where you find, on entering the apartment, that the woman is

already dead; or, as more frequently happens, that she is lying in a state merely approaching to asphyxia. To two dead females I have been called in the course of one night, both destroyed before my arrival by large eruptions of blood from the womb. And should you meet with cases of this kind, as they must occasionally fall within the circle of a comprehensive practice, your first consideration relates to the removal of the child.

REMOVAL OF THE CHILD.

In some instances, the fœtus, low down in the pelvis, or lodging in a dilated os uteri, might be abstracted with little disturbance by turning, or the forceps; in others, the os uteri being shut more or less completely, the fœtus could not be extracted without violence, by the natural passages, and the razor, and the Cæsarian incisions, would, in a scientific view, be a preferable method of delivery. In deaths from flooding, however, the fœtus will rarely be found alive. The interrupted placento-pulmonary function frequently destroys it even within the uterus, perhaps while the mother still survives. Considering, as I do, that the fœtus ought certainly to be saved from drowning; if practicable, I should in my own family, wish the child to be withdrawn, if this could be accomplished without violence; but should delivery be impracticable, without laceration of the uterus, or the Cæsarian incisions, I should forbid it. Before the patient is utterly dead, and past all feeling, to remove the fœtus by violence is a horrid cruelty, which we must, I am sure, all of us, with one voice, condemn; and considering how possible it is, that some sensibility may still remain, even when an ordinary practitioner little suspects it, as the security of the mother is always paramount in British midwifery, in conformity with this principle, I think that severer measures ought to be forbidden altogether, interdicted even in those cases where the woman appears to be dead. Generally, however, under these large discharges of blood, on arriving, you find your patient still living, but in a state approaching to asphyxia: she is pale and ghastly,

and cold and gasping, and, in great measure insensible; her heart flutters, there is little or no pulse in the wrist: she lives still, but the grave yawns under her, eager for its prey; move her from one side of the bed to the other, she dies; disturb the clots by passing the fingers into the vagina, she dies. It is clear that when patients are in this condition, trembling upon the very brink of destruction, there is but little time for you to think what ought to be done; these are moments in which it becomes your duty not to reflect, but to act. Think now, therefore, before the moment of difficulty arrives. Be ready with all the rules of practice, which those very dangerous cases require.

CIRCUMSTANCES UNDER WHICH THESE HÆMORRHAGES OCCUR.

Called to a case of this kind myself, the first thing I do, is to direct my attention to the circumstances under which these bleedings occur; for these floodings may occur in the pregnant, or the unimpregnated,—in the earlier, or in the latter months, without the placenta over the os uteri, or with a placenta partially, or altogether covering this part—before the birth of the fœtus, or afterwards—before the birth of the placenta, or afterwards—or, in twin cases, one child being born, the other may remain in the uterus—or, when the secundines have to appearance been removed, a large piece may still remain in the uterus, the accoucheur not suspecting, in the latter, still more frequently in the earlier months. These points are of no small importance. On reaching, therefore, the apartment of your patient, the attention should be directed immediately to all of them; this is easily done, if you have them on your mind, and should certainly by no means be neglected.

HAS THE BLEEDING BEEN ARRESTED?

If I am called to one of those cases in which the patient approaches to asphyxia, I am anxious to know whether the bleeding has been arrested; sometimes it is going on, more frequently it

has been arrested, or the discharge which continues is a mere shew. To determine a point so important, I would recommend you, with as little disturbance as may be, to clear the blood from the genitals; and then, again, with as little disturbance as may be, to spread cautiously a napkin between the hips and the bed; this done, another clean napkin, interposed between the thighs, may be applied against the orifice of the vagina, and if there is no further discharge the napkin will retain its whiteness, but if the bleeding continue, blood will make its appearance on the napkin in the form of concretions and a red patch, broader or more circumscribed, according to the quantity of the discharge. Of the abundance of the bleeding you may judge from the colour; if red, then larger orifices are open—if pale, then smaller; or, at all events, in the latter case the discharge is smaller, and, of course, less likely to be productive of danger.

IS THE SYSTEM ON THE RALLY OR THE DECLINE?

In cases of this kind also, where the patient is approaching to asphyxia, I am very anxious to know whether the system be on the rally or the decline—a most important inquiry. Now, sometimes, you find the patient is evidently improving from half hour to half hour; her hands and feet are warmer—her pulse is stronger—her countenance is brighter—her mind is livelier—in a word, there are all those appearances of amendment which, after you have been in practice a little, you expect to meet with when the strength is rising. On the other hand, however, you are sometimes meeting with different cases, in which, although the hæmorrhage is stopped, the patient is evidently on the decline. After floodings, women sometimes die in a moment, but more frequently in a gradual manner; and over the victim, death shakes his dart, and to you she stretches out her helpless hands for that assistance which you cannot give, unless by transfusion. I have seen a woman dying for two or three hours together, convinced in my own mind that no known remedy could save her: the sight of these moving cases first led me to transfusion. Expe-

rience is the only means of acquiring the knowledge of these mortal symptoms. To seize the tact which will enable you to determine with promptitude and certainty whether death must ensue or not, the cases must be seen. For a full enumeration of the symptoms which indicate the death arising from inanition, I must refer you to the history of them already given; it may not, however, be amiss in the way of repetition, to remark here, that to myself the fatal termination is principally foreshown by a certain ghastliness of the countenance—by a restless disposition to change posture—by a long-continued cessation of the pulse in the wrist—by a gasping respiration, like that produced by running—and by a jactitation of the arms and legs, joined with a feeling of most oppressive anguish. From these symptoms, associated with the ordinary signs of inanition, women seldom escape; nor must it be forgotten, that they sometimes, in a fainting fit, die suddenly, or more slowly, without the harbingers of dissolution to foreshow the event.

CHANGE OF POSITION.

If you are called to cases in which there has been a good deal of discharge from the uterus, the patient lying in a state approaching to asphyxia, you will sometimes find her, as you enter the room, supplicating that her posture may be changed, and this more especially, if under the flooding, restlessness have supervened. Now I wish you to understand, most distinctly, that the change of posture is very dangerous, and that frequently, when it is allowed, it does not afford the expected relief. When a great deal of blood is come away from the uterus, even where the patient is rallying and likely to do well, and where, perhaps, for two or three hours together, but little discharge has occurred, were you to direct the patient to be lifted from one side of the bed to the other, you might cause a terrific disturbance of the circulation, or a renewal of the discharge destructive to life. One woman, in whom a large bleeding had been suppressed, perished, in this manner, under my own observation; to appearance all danger was

over—like a thunder-cloud it was passed away—when, unhappily, she rose to the erect posture; the flooding was renewed, and she sank. Many years ago this case occurred to me, and made a strong impression on my mind. A patient, on whom I performed the operation of transfusion, and who was very effectually relieved by it (ultimately recovering) two or three hours afterwards, was so urgent with me to allow a change of position, that my feelings subduing my judgment, I assented. From this disturbance of the body, however, such perturbation of the heart ensued, that for three or four minutes together, I thought the patient would have sunk; and, really, the recovery might more properly be ascribed to our good fortune, than our good practice. I was once called to a patient, in whom there was a large discharge of blood from the uterus, and where the woman was reduced to a state approaching to asphyxia, though likely to do well; this woman, contrary to my wishes, was moved, and for a few minutes her life seemed, of consequence, to be in danger the most imminent. So to revert to the rule with which I set out, and which these facts illustrate, remember, that if you are called to cases in which the women are lying in a condition approaching to asphyxia, you ought never without need to move them at all—and, above all, you ought not to move them into the erect posture. One change you may, perhaps, sometimes make with advantage, gently and cautiously raising the legs, so as to bring the blood upon the heart and central parts of the body, you may with equal caution and gentleness withdraw the pillows, and suffer the head to sink below the shoulders; the head, if the woman chance to be already lying close upon the edge of the bedstead, being allowed to hang down over it a little way, so as to facilitate the access of the blood to the brain. All this, I say, you may perhaps do, in these cases, with gentleness, with caution—shall I add, with fear and trembling; but, after all, I am not altogether convinced of the excellence of the practice, nor dare I dogmatically pronounce, that it is either very useful or very safe.

SECTION XII.

MANAGEMENT IN THE ASPHYXIAL STATE.

When closing the previous section, we were engaged in making some observations upon the management of those cases in which large quantities of blood come from the uterus, the patient being reduced of consequence to a state approaching to asphyxia,* a subject which I now resume.

EMPTYING THE UTERUS.

Called to a patient labouring under the asphyxia of flooding, probably one of the first impulses which you may feel will be to empty the uterus; and you may either consider the propriety of discharging the liquor, if not discharged already, or you may revolve in your mind whether it would be proper or not to carry the hand into the uterus, with a view of abstracting the placenta, fœtus, or whatever else may be lodging there. In these cases, however, of vast importance, and in their occurrence by no means uncommon, awake—reflect—beware—before you make your decision; for, on your determination the life of the patient depends. In these cases of alarming collapse, be it remembered, that, if the flooding be suppressed, you are on no account to interfere manually, not even an examination should be rashly made; disturb the clots, and you renew the bleeding, and the patient gasps—heaves—breathes deeply—throws her arms about upon the bed, and dies. Even though the woman be on the rally,—her extremities warmer, her pulse larger, her mind recovering, her strength increasing—should there with these symptoms be little or no return of the bleeding, it is improper manually to interfere: disturb the clots and she may perish still. But if, asphyxia threatening, the bleeding from the womb return copiously, by gush or clot, or more

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* Asphyxia:—Ασφυξια, *asphuxia*, from *a*, priv. and σφυξις, *sphuxis*, a pulse.

abundant draining, you may then, perhaps be justified in having recourse to manual operation—the discharge of the liquor, the removal of the fœtus, the abstraction of the placenta; operations, no doubt, of danger in these cases, even under the best management; but, on the whole, perhaps, of less danger than the continued flooding which they are intended to suppress. I regret that, on a point of practice so important, I am compelled to unsettle my opinion by the interjection of the dubitative—perhaps; but, after all I have seen of these cases, I am not sure that it would not be better to refrain from manual operations altogether, when the collapse is extreme, even though the flooding return somewhat copiously, the suppression being confided to other remedies before enumerated, or to the effects of the faintness. These are dreadful emergencies, and surrounded with difficulties; refrain, your patients occasionally sink; if you do not deliver, blame is frequently imputed. I acknowledge, whatever opinion might be formed by those about me, for myself, however, I had rather feel within that the patient perished under the operations of nature, than that my meddlesome hand was unhappily auxiliary to her destruction. Perhaps the rule may be laid thus: when asphyxia threatens, if the flooding be stopped wholly or in a great measure, watch and assist the patient in other ways, but refrain from manual operation and disturbance of the clots. On this point of practice, among competent judges, there can, I conceive, be no doubt. Further, when asphyxia threatens, should the flooding pertinaciously or obstinately return, an occurrence by no means very frequent, though in vigorous women manual operations may be justifiable, provided they contain the only remaining hope of effectually stopping the bleeding; yet, if the patient be weakly and much collapsed, and danger of death from the hand be immediate, it may be wiser to abstain altogether from manual disturbance, and to commit the woman to her own resources, assisted by the other means of suppression not obnoxious to the displacement of the clots. In coming to our determination, the degree of disturbance likely to arise from the operation must be considered;

for example, to puncture the membranes and discharge the liquor amnii, may be proper enough, when the introduction of the hand into the cavity of the uterus would be certain death. But, in the third place, what is to be done, if manual operation have been rejected at this season of collapse, and, if the woman, rallying completely at the end of a few hours, the ovum still remain in the uterus—the system being, of course, exposed to a return of the bleeding? Why, under these circumstances, should the flooding not return, manual operations are still to be deprecated; but, should the bleeding recommence, then, with promptitude, the patient having vigour to sustain the operations, these should be had recourse to, and the liquor ought to be evacuated, and the fœtus or the placenta ought to be taken away according to rules which will hereafter be explained and prescribed.

COLD APPLICATIONS SOMETIMES ADVISABLE.

Where a great deal of blood has been lost, and the patient is lying in a state approaching to asphyxia, it may be proper, perhaps, to apply cold to restrain the bleeding; and, if the hæmorrhage is going on, and if there is some warmth still remaining about the body, the application of cold, as formerly prescribed, by means of a napkin or otherwise, may be fitting enough. Even in other cases, where the application of cold does not appear to be necessary, it may be proper to administer it in forms less extensive and intense, because the popular opinion is in favour of it; a little vinegar and water may, therefore, be applied externally. Nevertheless, I conceive, myself, where patients are reduced to the state I am now supposing, and are already exceedingly cold, so that if you touch any part of the body it is as chilly as a corpse, this topical refrigeration will be of very little use; nay, there are some cases in which, if you were to push it far, it might be hurtful, the woman being so greatly debilitated, and the heart and arteries being prone to a cessation of action altogether.

PLUGGING THE VAGINA NOT GENERALLY NECESSARY.

I know not that it is generally necessary, in the cases we are now considering, to plug up the vagina; because, on applying napkins as a test of the bleeding, in the way formerly prescribed, you will often find that the hemorrhage is altogether stopped; there is no rush of blood, and no large clots are coming away, the circulation is too low to admit of this; you find merely a small stain on the white surface of the cloth. If however, the plug is not likely to do mischief by displacing the clots, in those cases where the hæmorrhagia is disposed to continue, I would recommend a closure either with sponge or tow, or old cloth; old cloth I should prefer. After-floodings, I mean those cases in which the bleeding comes on after the child is away, and before or after the birth of the placenta, are as before observed, scarcely fit for the plug; at least it is only a dexterous accoucheur who could use it in such cases with advantage. The cases best calculated for plugging are, those in which much blood has been emitted from the uterus, the patient collapsing, and the bleeding continuing, while the fœtus or ovum still remain within the uterine cavity.

NOURISHMENT.

When women are much reduced, in consequence of large quantities of blood lost from the uterus, their digestive powers are in a great measure destroyed; and, certainly, there is often such irritability of the stomach, that whatever you may introduce into its cavity is speedily rejected. On both these accounts, you will find in flooding cases, the more formidable floodings especially, that to nourish women in this state, as some medical orators have advised in our debating societies, is by no means an easy task; nevertheless as nourishment, and the support that is to be derived from it, are of no small importance, when women are approaching to a state of asphyxia, supplies of aliment ought by no means to be overlooked. Respecting the advantage of solids, my mind is not made up.

Broth; eggs, differently prepared; bread and milk; milk itself; may any of them be recommended, the last two have the advantage of being easily procured and prepared. Broth, or beef tea, requires a longer preparation. Half a pint or a pint, remaining in the stomach, may, if I may be allowed the expression, be deemed a sufficient dose.

OPIUM AGAINST RESTLESSNESS.

In those cases where women are approaching to a state of asphyxia, you will find sometimes beginning to manifest itself, that restlessness which I have mentioned more than once. The patient wishes to change her position; she throws about her feet or arms, and perhaps, in some convulsive moment, suddenly she turns round, though perfect quiet, so necessary to her safety, has been strictly enjoined. Now, so far as I understand the practice, it is in these cases, after much blood is come away, and the patient, of consequence, has been gradually reduced, and disposed to irritability, that the large doses of opium, advised by Hamilton and others, as Stewart, for example, should be administered. If the fœtus is still in the uterus, and it is not your intention to carry up your hand and bring away the child by the operation of turning, it would, perhaps, scarcely be proper to give the opium in the larger doses, for it might prevent the pains, and the spontaneous evacuation of the womb, though it is not so powerful in this way, as mere speculatists might suppose. The case best calculated for the opium, is,* I conceive, that in which there is a good deal of restlessness, and where the child has been taken away, or where it is your intention to perform the operation of turning. It might,

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* The cases in which opium seems most beneficial, are, states of irregular or spasmodic action of the uterus; cases requiring the child to be turned, but where rigidity of the os uteri prevents the ready introduction of the hand; and cases where, after delivery, great irritability prevails; but I firmly believe that laudanum is much more generally employed in hæmorrhages than either theoretical reasoning or practical experience warrants.—*Dr. Merriman's Synopsis.*

indeed, be plausibly argued against its being largely given in those cases, that opium may prevent the thorough contraction of the womb, even after the fœtus has been abstracted. A serious accident, contraction of the womb, being one of the principal securities against bleeding; for, as I told you before, when the womb contracts, the muscular fibres contract, the vessels becoming contracted also, are closed as it were by so many ligatures. Notwithstanding this plausible objection, however, after what I have seen of these contractions at the bed-side, provided I expected any solid benefit from the opium, I should not, on this account, be disposed to delay its administration. When opium is administered, in those cases where a great deal of blood has been lost, it should be measured according to the effect which it exerts upon the system; for ordinary doses will not operate on a woman half dead already, from the eruption of the blood. From two to three drachms, by measure, of the tincture of opium, it may be necessary to give in two or three hours, provided you mean to operate powerfully on the system, the practitioner commencing with one hundred drops, and repeating a dose of fifty or sixty every twenty or thirty minutes, according to the effect produced.* Be firm in the use of the opium, but not rash; you may safely give the larger doses, if you give them under the control of a judgment sagacious and attentive. When the opium is beginning to act on the system, then, of course, your hand should be stayed; if irritability is much diminished, if your patient become drowsy, if there is a tendency to that garrulous delirium which you may often observe in women where they have taken narcotics, then you ought to discontinue its administration.†

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* Stewart exhibited a hundred drops of laudanum, and fifty or sixty every twenty minutes, until the desired effects were produced. Hamilton advised five grains of opium, and three every hour, until seventeen grains were given.—*Dr. Ryan's Midwifery*, 3d edit. p. 474.

† In the fourth volume of the Medico-Chirurgical Transactions, two cases of large bleeding from the womb, attended with very dangerous symptoms, are recorded by Stewart. In those cases opium was employed, and they afford a very excellent illustration of the doses women may take, and the effects that are produced by them. I was not, however, from a

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lowness of circulation, it is not capable of being acted on by the spirit in the same manner as it would be, provided its condition were more lively and susceptible. Half a wine-glass-full of rum may be administered as a dose. Where it operates, it usually operates, I think, more speedily than opium. Wait for twenty or thirty minutes, sometimes ten or fifteen minutes only, and you may see pretty clearly whether the spirit will act on the system or not; if the lips are reddening, the pulse rising, the extremities warming, you have attained your object, the patient is on the rally, and, for the time, at least, no further quantity of spirit need be given; for it is not to stimulate too highly, but merely to touch the beam of the balance, and turn the wavering scale in our favour, that the spirit is given at all. But, on the other hand, if in the course of ten or fifteen minutes the spirit already administered is not observed to act, a repetition of the doses becomes necessary, till at length you reach those larger and extraordinary measures to which I before adverted.

DEATH AFTER THE CESSATION OF FLOODINGS.

Debating societies have, I conceive, no place in scientific medicine; societies for discussion proffer many advantages, but the distinction is too often overlooked; in the eagerness of debate you will sometimes hear it asserted, that if women are well managed in their floodings, the after-floodings especially, however alarming may be the symptoms, death will never occur; these assertions I have myself not unfrequently heard, but the intrepidity of assertion must sometimes be rebutted by equal intrepidity of unbelief: to declarations of this kind, I always turn a deaf ear; I have seen the fact to be the contrary: I have seen, that, under the best received modes of treatment sometimes, and still more frequently under management of average excellence, women must occasionally sink. Nor is it, I think, arrogating too much, to affirm of those who make these assertions, that if not negligent or insincere, they can have had but few opportunities of seeing those more dangerous

forms of flooding on which they are presuming to dogmatise. My observations being entirely free from personality, I deliver them with the more freedom. In medical discussions, to deal rashly and roundly in asseverations of this sort, refuted by experience, can have no effect with men of sense and observation, beyond that of diminishing or destroying confidence in the authority of the speaker: to talk in this manner, is to butt against the fact: it is (to use comparison), to run the head against a brick wall; or, if I may use an expression less homely, but not more forcible or appropriate, it is to impinge blindly and with certain discomfiture, against the solid materials of truth.

When women, after large and dangerous floodings, are, to appearance, recovered, it sometimes happens in the course of a few days or weeks subsequently, that they are carried off by vomittings, purgings, and hydropic affections, and more especially by purgings. After the floodings, inflammations, and it may be excoriations, of the intestine membrane supervene, and these give rise to irritability and diarrhœas, and gradual or more sudden declensions of thestrength, under which, notwithstanding all the care that may be taken of the patient, she occasionally sinks and dies. It sometimes happens too, and if I were to examine the pages of my *adversaria*, I think I should be able to adduce several instances of this kind,—it happens sometimes that women suddenly and unexpectedly perish under flooding, or, as before observed, sinking after the stoppage of the bleeding, in a manner more gradual; they are one, two, three hours, or perhaps longer in dying, the latter cases being, I think, by far more frequent. After delivery, perhaps the patient lying quietly upon the bed a few minutes before or after the birth of the placenta, a sudden gush of blood takes place from the uterus, to the amount of two or three pints; instantaneous collapse of the strength ensues, and from that time forth it may be, though little more blood is lost, the patient's doom may be looked upon as sealed. It is true, indeed, that at times she rallies, and, it may be, rises so conspicuously, that, according to ordinary prognostics, you would expect her to do well; but then again she sinks to rise, and sink again,

like the flashes of the half-extinguished taper, with a reluctance which avails her nothing, she is gradually subsiding lower—lower —lower, till at length she suddenly drops into that grave from which, under the use of received remedies, no human art can save. Of twenty cases of flooding well managed, I believe that nineteen will frequently do well; but probably you will find the twentieth to be of the kind which I have been here describing, and for this we ought to be prepared.

TRANSFUSION IN THESE CASES.

If transfusion, with all its effects and excellencies about it, should be found hereafter to be as safe as other received operations of surgery (venesection for example,) it may then, I conceive, be performed in those cases where there have been large discharges of blood from the uterus, although the danger arising from the inanition may not be very imminent. In the present state of knowledge, however, and until we have further proofs of its efficacy and safety, in cases which are not desperate in appearance, I should not recommend the operation of transfusion; but, if you have under care a patient in whom the flooding has been copious, in whom, further, the womb has been emptied, and the hæmorrhages been stopped; should this woman, as I have myself on several occasions seen, be sinking gradually into the grave, so that even to those who have seen much of floodings the case appears to be without hope: under such circumstances, I affirm that it is highly proper to have recourse to the operation of transfusion, provided we are competent to perform it. On the human body, no needless experiments should be made. I speak the truth when I declare, that I have not to charge myself with having ever by speech, writing, or conduct, in my whole professional career, among rich or poor, in any way endeavoured to give countenance to a contrary principle; but, nevertheless, I maintain, that desperate emergencies occur in which the use of this not desperate remedy may become a sacred duty. Nor is it very difficult to distinguish

these emergencies, asking yourselves these simple questions: if I were myself in the same state of inanition with this poor creature, or, more interesting still, if some woman near to me, and more than dear, were in the same state of inanition, should I wish transfusion to be performed? Provided you have an ordinary share of sense and experience, those piercing whispers which enter the soul, the whispers of conscience, I mean, will tell you plainly whether you ought to operate or not. Do as ye would be done by; in surgery as in ethics, the principle universally applies.

In performing this operation, which I shall presently explain to you more at large, it is not necessary that you should inject any very copious quantity of blood, for, in the present state of our knowledge, it would be unwise to endeavour by large injections to raise the patient at once from a moribund condition to a state of vigour. What is the ordinary average measure of blood required in order to turn the trembling balance in our favour, has not as yet been clearly ascertained by facts and observations. From what little I have observed, however, I should suppose that from half a pint to a pint may be considered as a very ample supply; and I feel persuaded, that of those women who have sunk under floodings, the greater number would not have been lost, could they but have retained the last ten or sixteen ounces of the blood which they have lost.

Although I have said an operation of this sort is not to be rashly prescribed, and although, in the present state of knowledge, it ought to be confined to those cases only which, according to our honest judgment, must be considered as desperate without it; yet let me add further, in the way of caution, that where there is need of the operation, it is obvious that the sooner it is performed the better. I have myself seen two women die, whose lives I feel persuaded might have been preserved to society, had transfusion been more promptly begun. Anxious to refrain from the operation, while there remained hope of life without it, I delayed the use of the syringe so long, that before transfusion could be commenced, the patient in both instances was breathing her last. For this delay

I was, perhaps, to blame; but I reflected, it may be not without reason, that the operation was novel; in the retreats of my study, I had heard the clamour which had been raised against it, and I was solicitous that I might not, by having recourse to the operation under circumstances where the need for its use was ambiguous, bring upon myself the suspicion of being a thoughtless enthusiast, who was disposed upon all occasions, however slight, to have recourse to the transfusing syringe, and upon the operation itself, the discredit of being supported by such an advocate. To give you a summary, then, of what appears to me to be important on this point, I conceive, that under the large eruptions of blood from the uterus, if well managed, in general, say in nineteen cases of twenty, your patients, though they may alarm and shake your nerves, will nevertheless ultimately do well, and transfusion will not be required. I maintain, however, notwithstanding what is asserted to the contrary, and I boldly maintain, for I am irresistibly borne out by facts, that under the best and most judicious treatment, and certainly under treatment of average excellence, dissolutions may occur, sometimes so suddenly that you have not time to act; more frequently in a gradual manner, so that you see the patient sinking slowly, by little and little, into the grave. Now, in cases of this kind, when the patient is sinking gradually, I am not sure that transfusion might not be proper, even though the ovum were still in the uterus; but certainly such cases are not adapted to the splendid success of the operation, for so long as the womb is unemptied, the bleeding may return, and the blood may be lost again as soon as it is injected: but when the uterus has been emptied, and the hæmorrhage has been stopped, (and of all the cases these are the most common,) then, under the conditions stated, the syringe should be tried, provided the case be obviously desperate without it—provided too, you feel conscious, that, lying in the situation of the patient, you would wish the essay to be made on your own person. The operation once obviously necessary, beware of delaying it too long—beware of subjecting yourselves to the painful mortification of seeing your patients perish at the entrance

of the port—sink at the very moment when you are at length prepared with the very operation which might have saved them. From six to ten ounces of blood will probably be found sufficient to turn the wavering balance in our favour. From one or two friends, males in preference to women, this supply may be obtained; a large injection is not desirable; reaction of a lively kind will sometimes come forward on the subsequent day. Adhere to these rules, and you cannot wander far from the line of duty; and let me ask now, where is the folly—where the enthusiasm of all this?

EVACUATING THE UTERUS.

Of all means for stopping the discharge of blood from the uterus, the most effectual by far is the evacuation of its cavity, either by taking away the child, removing the placenta, or discharging the liquor amnii, according to the circumstances of the case. Although, however, that by so doing you may, in ordinary cases, generally arrest the further discharge of blood, or at all events so far diminish the discharge that it becomes no longer dangerous; yet those who reflect will observe, that in mentioning this practice I did not lay down any rules which may enable you to decide in what cases you ought to interfere with your manual practice, and in what cases you ought to refrain. From laying down those rules I then purposely abstained; for I thought they would be better understood if given in another part of the subject; and to this part we are now arrived.

ON THE PROPRIETY OF DELIVERY.

On conversing with your obstetric friends, or on reading some of our best obstetric authors, such as Denman, for example, or Burns, you will find, as usually happens, that by different practitioners different indications have been marked out, by the intimations of which they endeavour to decide, at any given time, whether it be proper that they should deliver the woman by manual opera-

tions, or whether they should leave her to her own resources, confiding entirely to those other remedies which I have already exposed at large. In determining about the delivery, there are some, not unskilful practitioners, who are guided mainly by the measure of the blood discharged, and by the effects the discharge produces. Called to a woman labouring under copious flooding, if they find her approaching to a state of asphyxia, they are anxious to open the uterus as fast as possible, abstracting promptly afterwards both the child and the placenta; but if, on the other hand, they find that the patient is vigorous, and that the measure of the blood lost is by no means copious, from manual operations they refrain. Nor is this rule without its recommendations; with one capital defect, however, it is justly chargeable, as it directs us to deliver in those cases of asphyxia in which the disturbance of the clots is death!

In determining, again, whether they should deliver or not, there are other accoucheurs who consider the effects produced by the discharge of the liquor amnii; and if the liquor amnii have not been discharged, and the hæmorrhage be proceeding, they rupture the membranes, and if the flooding continue, although the water have been evacuated, they take the child away; and, in many cases, this may be found a very excellent rule. In determining whether the child should or not be abstracted by the hand, many are guided by the relaxation of the parts, and the facility of delivery, if they find that the vagina is thoroughly relaxed, and that the mouth of the uterus is open—large as a crown piece, for example—delivery being so easy, they think it may be well to introduce the hand into the uterus, and to bring away the child, the placenta, or whatever may be lodging there. But, on the other hand, if under large floodings they find that the softer parts are rigid, an occurrence not common—or if, as more frequently happens, the mouth of the womb be shut altogether, or not broader than a sixpence, they refrain from interfering, laudably fearful lest, by thrusting the hand into the uterus, they should lacerate the softer parts. Again: By the age of the pregnancy, many

practitioners are guided: and this rule has the advantage of being one of very easy application, for the period of gestation may generally be ascertained. Now, in the latter months, say the last three or four, under dangerous bleedings, their general practice is to discharge the waters, or, as soon as possible, to carry the hand into the uterus, and bring away the ovum; the relaxation produced by the bleeding, generally facilitating this; while, in the earlier months, say the first three or four, as women of ordinary health and strength rarely sink under the floodings, they refrain altogether from manual operations, and confide in other means for suppressing the bleeding, or in deobstruents, of which the most valuable is, perhaps, the ergot.

In determining respecting the propriety of manual delivery, Rigby has recommended that we should be guided by the situation of the placenta, and if the placenta is lying over the mouth of the womb, whether partially or completely, the hand, he says, should be carried up into the cavity of the uterus, and the child should be brought away. Now this, as a general rule, is certainly correct, and to it, I believe, all experienced accoucheurs adhere. On the other hand, if the placenta is not lying over the mouth of the uterus, either partially or completely, we are advised by Rigby to content ourselves with the discharge of the liquor amnii, a beautiful obstetric operation, which in these cases usually renders the condition of the patient secure.

Beware of being deceived by the rule, (if rule it can be called,) which has deceived many, I mean that of waiting for the pains in flooding cases. The silly rule is the title by which I would designate it; and I use the expression, though quaint, under the hope that it may become fixed upon the mind, and may, by the caution it intimates, prevent your being misled. In cases where large quantities of blood are coming away from the uterus, the womb becomes paralytic; the pains which were commencing, leave the patient, and the larger the bleeding the less the pain, more especially in the latter months. Understand, therefore, if the want of pains is to be considered at all, that it is rather to be

considered as an indication to interfere than to refrain ;* for you have not, I trust, forgotten, that till the womb is evacuated, the woman is never secure ; and unless manual means be adopted, if the pains and uterine efforts are wanting, in the latter months especially, how can the ovum come away. You are called, perhaps, to a case in which the blood comes largely from the uterus ; you ask the patient, and properly, whether she feels the uterine pain. No, is the reply. Will you then act upon the silly rule ?—will you tell the patient, come what may I can give no manual assistance, because you have no pain ! None, I hope, will be guilty of such folly. In flooding cases, the truth is, with the pains you have very little to do ; it is with the flooding—it is with the danger, that it is your duty to contend, and from them, if possible, the woman must be rescued, whether there be pain or not. A woman sitting quietly in her apartment, being seized suddenly with a large eruption of blood from the womb, a practitioner, specious enough, but of small experience in these matters, was promptly called to her assistance. Wo be to the woman under these circumstances, who is deceived by an exterior. Have you any pain ? was the question. No, was the answer. So, acting on the silly rule, without even examining whether the placenta was lying or not over the mouth of the uterus, the practitioner went his way. The flooding continuing he was summoned again, and again he acted on the silly rule ; there being no pain, he still determined that nothing could be done ; so he went home, and went to bed, and went to sleep !—how one envies such philosophical composure ! But we bear the dangers and misfortunes of others with truly admirable resignation. In the middle of the night his repose was broken by the tinkling of his bell, the noise of his knocker, and the clamour of voices—a third summons had arrived : to the house of

* In the most dangerous hæmorrhages, there is no pain whatever, or none of consequence, and patients have often died, or been brought into the most imminent danger, that is, into situations from which it was scarcely possible for them to recover, whilst the practitioner was waiting for the accession of the pains of labour.—*Dr. Denman's Midwifery*, 7th edit. p. 280.

the patient, therefore, he went a third time, and then he found her dead!—with the child in the uterine cavity, and the placenta lying over the mouth of the womb, the parts so relaxed and open that the abstraction of the ovum would have been a very easy task. Beware of the silly rule. In general, to die is no jest—nor is it a jest to die even by the kick of an ass.

RULES REGULATING MANUAL INTERFERENCE.

Having said thus much respecting the rules and principles by which, in flooding cases, practitioners endeavour to ascertain whether they ought or not to interfere manually in the delivery, I proceed in the next place to describe briefly some plain rules by which you might be enabled to decide this nice and important point. Not that I hope, in laying these principles before you, to reduce your practice to maxims so correct, definite, and sufficient, that adhering to them as to the rules of arithmetical operation, you cannot err; but this I persuade myself, that keeping within the influence of these maxims, with the help of a little common sense and common experience, you cannot run out eccentrically into the more extravagant errors.

Remember, then, that in floodings, whether earlier or later, but more especially in the later floodings, if the patient be lying in a state approaching asphyxia, all manual operations are in general improper—disturb the clots, and the patient dies. Watch, therefore, nor venture to resort to the use of the hand till the return of the strength, and the copious or dangerous renewal of the bleeding, may render the operation at once necessary and more secure. Remember, further, that if you are called to floodings of the first, second, or third month, although from such flooding often repeated, one miscarriage following another, the health may suffer severely, yet with an ordinary share of vigour in the patient, notwithstanding all our alarms, death but rarely occurs; and, therefore, manual operations not being necessary, should be rejected. It may, indeed, be sometimes advantageous to empty the uterus by means of one

or two fingers. This I do myself, in part, because my hand is small; and in part, perhaps, because I may have an overweening confidence in my manual skill. You, however, I strongly dissuade from this practice, till you have been formed by experience, to the higher and nicer parts of obstetric operations. But to proceed. When called to floodings of the latter months, in which the patient, not in a state approaching asphyxia, still retains her vigour, remember, in the third place, that it becomes your duty to ascertain by examination, whether the placenta lie or not over the mouth of the uterus. Now if, the placenta covering the mouth and neck of the womb, whether partially or completely, you cannot deliver by turning, you may, perhaps advantageously puncture the membranes when accessible; but if, on the contrary, turning may be accomplished, then by this operation, the ovum ought to be promptly brought away; not that this practice is wholly unattended with danger, but that, under the given circumstances, it is, on the whole, the best we can adopt. Remember, lastly, in latter floodings, when the placenta is not lying, whether partially or completely, over the mouth of the uterus, that as soon as the flooding becomes dangerous, the liquor amnii should be discharged, and although the continuance of the flooding may now and then demand the operation of turning afterwards, yet in the majority of cases, such a necessity but rarely occurs; so that to this beautiful operation, you may safely venture to confide.

For the sake of humanity, allow me again to caution you against the silly rule. For the sake of humanity, allow me again to remind you, that from whatever cause the flooding arises, whether in the earlier or the latter months, before or after the birth of the child, before or after the birth of the placenta, so long as the woman is lying in the state approaching to asphyxia, the disturbance of your hand is death. Ah, how I commiserate those unsuspecting but ill-fated victims, who are destined to perish by your forgetfulness of this caution! At this moment live the women who must sink under this mal-practice. Not to introduce the hand into the uterus in any case, till the pregnancy is advanced beyond the sixth

month, is a good general maxim, though not universally applicable. Not to introduce the hand into the uterus before the sixth month of pregnancy is completed—not to pass the hand into the womb, unless the disk formed by the dilatation of the os uteri be as broad as a crown piece, are both of them good general principles of practice, and ought to have their influence; but they are not universal. When the woman is utterly dead, the child may be abstracted notwithstanding. In alarming floodings, it is often safer for your reputation to have another opinion.

SECTION XIII.

PRETERNATURAL LABOURS.

The cases of preternatural parturition, in a view to our remarks upon them, may be commodiously separated into two orders, namely, those in which the operation of turning becomes requisite, in order to bring away the child, and those cases in which this operation is not required. I shall commence with the simpler cases,—those, I mean in which turning is not necessary to the child; then of the eight extraordinary difficulties in preternatural presentations, and, in a more distant section, of those cases requiring the operation of turning.

The preternatural cases not requiring the operation of turning, consist principally of those here demonstrated,—the presentations of the feet, the presentations of the breech, and those presentations which, of mixed nature, partially partake of the character of both.

FOOT OR CRURAL PRESENTATIONS.

When the feet of the child are lying over the centre of the pelvis, the presentation is made out with certainty only after the os uteri has been thoroughly expanded, and the membranes have been broken, and the liquor amnii has been discharged. If at this time you examine with a moderate degree of attention, the feet, naked

under the touch, may be recognized with facility, unless, indeed, with all-powerful ignorance or negligence you confound the hands and arms with the legs and feet, to which when swelled they bear some resemblance. Even before the disruption of the membranes, and the complete expansion of the os uteri, if you make an examination during the absence of pain, when the membranes readily recede under the touch, although perhaps the disk of the os uteri do not exceed the surface of a shilling;—if one or two fingers be passed into the os uteri, the feet of the child may, I believe, be frequently detected; from examinations of this kind, however, it is better to refrain, lest the membranes be prematurely torn.

When you have ascertained the feet are lying in the mouth of the uterus, you next proceed to determine the proper moment at which the manual assistance of the delivery ought to be interposed —a point this of the utmost importance. Mere manual operations are easy enough; a mere novice in obstetrics may often with facility abstract the fœtus under crural presentations; but to determine the exact moment at which this assistance should be given, requires a nicety of judgment; and you will find, that by different teachers and practitioners, different rules are prescribed.

Some practitioners there are who take their indications from the laxity of the softer parts, and the openness of the os uteri; and if they find that the mouth of the womb is wide open, and that the softer parts are thoroughly relaxed, so that they feel satisfied that no resistance will be opposed to the passage of the shoulders or the head, they then lay hold of the legs, and draw down and bring away the fœtus as speedily as may be; and, on the whole, this rule is by no means to be despised. In general, where the mouth of the womb is expanded, and the softer parts are relaxed, the child, under the foot presentation, may be safely brought away.

By Denman and others, we have been advised, in these cases of crural presentation, to take the indications for manual interference from a very different circumstance; I mean the elevation of the breech. For when the breech is lying out beyond the external parts, they lay hold of the legs, and accomplish the delivery; but

when the breech is lying above the brim of the pelvis, they wait until the natural efforts have pushed the nates to the outlet. The reason of this rule is twofold; in the first place, it is said that where the breech has passed the outlet of the pelvis, the head and shoulders of the child will generally be found to come away with facility; and secondly, so long as the breech is lying above the brim of the pelvis, so long the umbilical chord will not be subjected to pressure; and so long, therefore, without danger to the child, you may wait, so as to allow of its further descent. When the breech is pushed beyond the external parts, and the chord is compressed in the vagina, unless the child be promptly abstracted, it will probably die suffocated, much in the same manner as if, after delivery, you were to wrap it up in a blanket, or to throw it into the water; and hence the necessity of a prompt abstraction from the pelvis.

There is yet a third indication by which some determine the moment of interference in crural presentations, and that is, the condition of the umbilical chord. If the chord pulsate strongly, it is said, we may wait, and trust to the natural efforts; or at all events, if we give any assistance at all, that assistance may be administered with much gentleness and little activity. If, on the other hand, the pulsation of the umbilical chord is becoming obscure, if it is interrupted for a time, the child being still living, though in danger, then it is said, we should promptly extricate the fœtus, otherwise the circulation being weak, and pressure on the chord continuing, the flow of blood along the umbilical vessels may be interrupted so long, and so completely, that the life of the child becomes extinct.

For myself, however, as on former occasions, I would recommend you to take the indication of delivery not from one of these circumstances singly, but from a combination of them. Called to a crural presentation, before you lay hold of the feet, and begin to draw down, ascertain, by a careful examination, whether the os uteri is open, and the softer parts are relaxed or not. If the mouth of the womb is closed in great measure, or if the softer parts are

unusually rigid, you had better not draw down, for doing this, you will find, when you have got away the feet, that the head and shoulders cannot be abstracted, or should you extricate them, overbearing all resistance, you will bruise and lacerate the softer parts, and perhaps detach the head from the body. On the other hand, if you find the softer parts are thoroughly relaxed, so that they yield in every direction under the pressure of your finger, or if you find the mouth of the womb wholly or in a great measure open, so that the passage of the head and shoulders is not opposed, you may then be considered as so far justified in having recourse to manual assistance. I would not, however, have you lay hold of the legs, and draw down merely because you may find the os uteri expanded, and the softer parts relaxed. I would advise you further to observe the rule already prescribed by Denman and others, which is, that the manual operations ought to commence if the nates are lying at the outlet of the pelvis; and further, that they ought not to be attempted provided the nates are at the brim, because in midwifery, unless there is a clear necessity for it, manual interference is improper; and this necessity does not exist when the breech is lying in the upper part of the pelvis, as the umbilical chord is not subjected to pressure, and neither the mother nor the fœtus incur much risk.

In determining when you should give your assistance, in a delivery of this kind, I would recommend you further not to neglect the state of the umbilical chord, a circumstance of considerable importance. If you find it pulsating strongly, you may wait a little longer, even if the nates are beyond the external parts, for they may come down somewhat lower, and the delivery may be further facilitated; but if you find the pulsation interrupted, then, as it is clear the action of the heart is disposed to cease, the sooner the fœtus is brought away without injury to the mother the better.

These are the principal considerations, then, to be carefully revolved in mind before you lay hold of the feet and extract. Beware of laying hold of the feet and drawing without reflection, merely because those parts are laying within reach; before you

draw, ascertain that the os uteri is expanded, and that the softer parts are thoroughly relaxed. Before you draw, let the nates be pushed down to the outlet of the pelvis, or a little beyond it; and where the umbilical chord is pulsating strongly, be less prompt to interfere, recollecting that it is necessary to be more speedy in your operation, if the pulsation be disposed to cease.

METHOD OF GIVING ASSISTANCE.

The method of giving assistance in crural presentations is exceedingly simple; and, indeed, if you adhere to the rule of not interfering too soon, you will rarely find any difficulty. If the feet of the child present, and the abdomen is lying upon the back of the pelvis, you may assist in the extraction of the child as follows: the nates lying in the outlet of the pelvis, or beyond the external parts, you may wrap a handkerchief or napkin round the limbs, laying hold with the interposition of this texture as the grasp becomes more secure. Your hold thus obtained, you draw down, swaying the child a little from side to side, forward and backward, or obliquely, according as the one or other movement facilitates descent; in so doing, being very careful not to injure the perineum. When the trunk of the child is passing the pelvis, you may slide up one or two fingers, first on the one side, and then on the other, promptly, but not with hurry; and if you find that one of the arms (a rare accident) is disposed to descend with the body, taking the hand, you may draw the arm forth, and lay it flat and close against the side. If you neglect to perform this operation, the arm may start out at an angle over the brim of the pelvis, obstructing the descent of the child; or should the difficulty be borne down with impatience and violence, fracture or contusion may be produced. Further, (and I consider this hint to be of no small importance,) when you are drawing the thorax through the cavity of the pelvis, I would recommend you again to slide one or two fingers into the pelvis, to feel for the arms, and to take care to press them, as far as may be, upon the promontory of the sacrum; for it sometimes

happens, when the child is descending, that one or both arms become fixed behind the head between the occiput and the symphysis pubis, so firm an obstruction being produced in consequence, that you are labouring, perhaps, for ten or twenty minutes before you can get the arm away.

With this precaution, then, having at length brought the axillæ to a level with the external parts, the arms being deposited in the back of the pelvis, you will find that you can extricate them easily enough, nor must this operation be neglected. In many cases, indeed, if the pelvis be large, and the head small, the arms and the head might be brought away together; not, however, without difficulty, for thus combined, they occupy much room, as my apparatus demonstrates, a corresponding delay and compression of the softer parts being produced. In general, therefore, it is better to extricate the arms before the head, and for this purpose, the axillæ being brought down to a level with the external parts, you throw the body thoroughly out of the way, placing it in the attitude most favourable for the introduction of the fingers, and the intended descent of the arm; and then laying all the four fingers if practicable, if not, one or two only, on the bend of the elbow, you bring down the arms resolutely, but without violence, with a sweep over the face. Be careful to lay your fingers into the bend of the elbow; for if you plant one or two fingers on the middle of the humerus, there will be a risk of fracture,—at this early age produced by slight causes. Having got one arm down, again, by a similar operation the other arm is, in turn, extracted, nor does it matter which of the two be first extricated; time, however, must not be futilely wasted by indecision, nor must you amuse yourselves by attempting the extraction first of one arm, then of the other: remember the apologue of the frogs—while you are fooling, the child is dying. Usually, when the arms have been extricated in the crural presentation, provided you have observed the rule of waiting till the os uteri is wide open, and the softer parts are thoroughly relaxed, and the nates have been pushed to the outlet, the escape of the cranium becomes easy; now and

then, however, if the pelvis is small, or the head large—or if you have unwisely begun to operate, when there has been some little rigidity of the softer parts, in abstracting the head there may be some difficulty. Now your first object, in these cases, should be to acquire a power over the positions of the cranium, and for this purpose with both hands bearing on the shoulder, you put one finger (if practicable) on either side of the occiput, and with one or two fingers of the other hand, you depress the chin. If the head is in the brim of the pelvis, the occiput should lie toward one side, and the face toward the other, so that the long length of the head may correspond with the long diameter of the superior aperture; the chin of the child, where this may be accomplished, being brought upon the chest; so that of the three longer axes, the shortest may bear on the long diameter of the brim, the head in this position occupying least room. This effected, draw down in a line tending from the navel to the coccyx—that is, in the axis of the superior aperture, swaying the head however a little from before backwards, till it approach the outlet, when the face should be laid on the sacrum, and the occiput on the pubes, the chin still resting on the chest, so that the long measures of the head being again put into correspondence with the long diameters of the aperture, the cranium may emerge commodiously.

THE CHILD'S ABDOMEN IN FRONT OF THE PELVIS.

In crural presentations, we sometimes find that the abdomen of the child is placed in front of the pelvis, instead of lying on the back; and there are two ways in which the case may be conducted. First, without changing the situation of the abdomen, *mutatis mutandis*, you may extricate the fœtus, according to rules already prescribed.* On the whole, however, I think that you will find that the fœtus does not descend so commodiously when the abdomen is lying anteriorly, as when it is placed on the back of the pelvis; and, more especially in this position, much difficulty is to

* See p. 286.

be apprehended in abstracting the arms, shoulders, and head. And hence, in crural presentations, when the abdomen lies anteriorly, it is on the whole deemed better to throw the belly of the child to the back of the mother, as soon as the operation can be performed, and on different occasions this may be attempted. Thus you may endeavour to place the abdomen on the back, after you have drawn the head and arms into the cavity of the pelvis, but you will find it is very difficult to accomplish it at this time, as the head and arms become impacted: or you may attempt this operation as soon as you have laid hold of the feet—succeeding sometimes, though you may fail not infrequently, in consequence of not possessing sufficient command over the body of the child within the uterus. As on so many other occasions, so here, the turn will be best accomplished when the thighs make their appearance, the nates lying just below the superior aperture, and the head, shoulders, and body above. As soon, therefore, as the nates approach the outlet of the pelvis, the thighs lying within your grasp, the turn should be attempted; for this purpose, laying hold of the thighs close upon the outlet with the left hand, and spreading on the back when practicable, the fingers of the right, you draw the child backward upon the sacrum, so as to bring the axis of its body nearly on a line with the axis on the brim, (always cautious, however, lest you injure the perineum,) and preparation thus made by the co-operating of the two hands, with gentleness, yet resolution, you change the situation gradually, as the parts may bear transferring, the abdomen of the fœtus over the side of the pelvis from the front to the back.

ERRORS IN THE MANAGEMENT OF CRURAL PRESENTATIONS.

In the management of the crural presentations, the following are the principal errors against which you ought to guard. The mistake of the arm for the leg,—the extraction of the fœtus, without previously ascertaining whether the moment of interference is arrived —the neglecting to turn the abdomen upon the back of the pelvis

—the forgetting, when one arm is disposed to descend with the trunk, to lay this arm flat along the flank of the child. You may, too, err, as the head descends, in suffering the arms of the fœtus to become impacted between the occiput and the symphysis pubis —or in using such force as may contuse or tear the softer parts, or fracture the humerus of the fœtus, or the clavicle, or the vertebræ of the neck. *Festina lentè* should be your rule: hurry is inadmissible; a cautious haste is proper. In general, when the chord pulsates strongly, you may proceed more leisurely; when feebly, more promptly. To the security of the mother, the life of the fœtus must always, if necessary, be sacrificed. If there are pains, so much the better; but do not, when once the chord is under pressure, delay the delivery, by awaiting the pains, for the death of the child will be the result of procrastination.

BREECH PRESENTATIONS.

In preternatural cases, you will sometimes find the breech is lying on the centre of the pelvis, on the whole, a case more favourable than the preceding, as the child is oftener born alive under the presentation of the nates than when the feet present. When the breech of the child presents, even before the membranes are broken, if you are skilful in examination, you may form a probable opinion of the presentation, by carrying the fingers to the os uteri during pain, waiting with the fingers in the os uteri till the womb relaxes, and then through the yielding membranes examining carefully the characters of the nates. Early examinations of this kind, however, I do not recommend. They lead to early interference with the membranes, and might, with rudeness, occasion a premature disruption—very undesirable in cases of this kind, because, for reasons already assigned, in preternatural labours, the rupture of the involucra should be delayed as long as may be. Certainly, the best time for making out this presentation is later in the labour, when the os uteri is expanded, and the membranes have been ruptured, and the liquor amnii has been discharged: lying naked under

the touch, it may then be felt with facility—its roundness, its softness; the cleft between the thighs, the genitals, the anus, and portion of the thighs. In male children, you will feel the scrotum generally like a fluctuating bag. In presentations of the nates, the meconium frequently comes away.

ON MANUAL INTERFERENCE.

The nates presenting, you are not hastily to infer that manual interference is necessary. Nor are you rashly to thrust the hand into the pelvis to lay hold of the presentation, or to thrust up the blunt hook or forceps, or to have recourse to any artificial measures—as usual, a meddlesome midwifery is bad: interference is justified by inexorable necessity only; and in general, the same powers which detrude the head in natural labour, will also, and perhaps with greater facility, push the nates to the outlet of the pelvis; in these cases, therefore, a principal duty of the accoucheur is to wait: put your hands into your pockets, and not into the vagina. *Pazienza*, the familiar ejaculation of the Italian, may be properly adopted by the accoucheur. Some practitioners, when the nates descend, are accustomed to place one or two fingers over the bend of the thigh, right and left, alternately operating as with a hook, carefully drawing during the pains; a practice in which perhaps there is little harm, if cautiously effected; but really, on the whole, adhering to the general rule, you had better abstain altogether, unless interference be obviously required. By the natural and unaided efforts then, the nates may generally be pushed upon the outlet, and when this has been accomplished, as the chord is liable to compression, assistance becomes necessary. For this purpose, grasping the hips, co-operating with the pains, you may draw carefully down; and, as you draw, (the abdomen of the child lying on the back of the mother,) you carry the loins of the fœtus forward, and towards the *mons veneris*, so that the legs may of themselves drop forth, when the case becomes footling. As a general rule, it is good not to pull forth the legs, indeed not

to meddle with them at all, but to leave them, as here, to drop forth spontaneously; for fractures are to be feared.

THE ABDOMEN SITUATED ANTERIORLY.

It sometimes happens, under the breech presentation, that instead of lying behind, the abdomen is situated anteriorly, or to the one or other side, all which is easily ascertained by examining the situation of the thighs and genitals. Now when the abdomen is lying in front, or in the lateral position, on the whole, it seems to be a good practice, as soon as may be, to throw the abdomen of the fœtus on the sacrum; for in this position, as observed already, the head and shoulders will be more easily extricated.

This rectification may often be accomplished without difficulty; and the proper moment for attempting it, is when the nates have reached to the external parts. A rectification, when the nates are at the brim, I would not recommend, because to effect it then, you must carry the hand into the uterus; an operation to which, as you know, a good accoucheur is exceedingly averse. Neither should I advise you, before rectification, to wait till the feet are escaped from the pelvis, for when the shoulders are in the cavity, the arms frequently become impacted between the bones of the pelvis, and the head, and the whole mass becomes so firmly fixed, that the turn cannot be effected. For the purpose of rectification, perhaps, the most favourable moment is, when the nates are pushed thoroughly down to the outlet, and the hips begin to appear. Grasping the part with ease at this time, by little and little, with well-mixed gentleness and resolution, you endeavour to transfer the abdomen to the back of the uterus, and failing in this attempt, you take the case as you find it, throughout the parturition, suffering the abdomen to lie in front. But to proceed.

MANUAL ASSISTANCE.

As the head of the child is not always expelled by the unaided

efforts of the uterus, so also the descent of the nates may be obstructed, more especially if the breech be large, or the pelvis small; so that the aids of the accoucheur become necessary. Of the various helps to which we may have recourse in these cases, one of the simplest consists in the use of the fingers, as a blunt hook. Into the bend of the thigh one or two fingers are inserted, and drawing down, you co-operate with the pains, performing the operation alternately on either side, right and left, till the nates at length reach the outlet of the pelvis. To co-operate with the pains is of the utmost importance; without their help you will draw with little effect. If you have not power enough with the finger, you are advised to make use of the blunt hook; an instrument which, like an ignorant accoucheur, has no feeling for the mother, or her offspring, and to which therefore I am exceedingly averse. In careful hands, indeed, it might be of service; but in hands coarse and rough it may prove a most destructive weapon, even tearing the limb from the body. Should this instrument be necessary, let two fingers be placed over the fold of the thigh, and, under directions of these fingers, pass the hook into the same situation, drawing down afterwards, as always, with mingled gentleness and firmness, so as to bring forward the hip somewhat: this accomplished, you operate on the other side in the same manner, alternately acting on either hip, till the nates make their appearance at the outlet, careful always to avail yourselves of the co-operation of the pains. Preferable, however, to this method is the abstraction of the child by means of a handkerchief, repeatedly tried, and which I find, on the whole, to succeed very well, though it requires some dexterity to use it. For this purpose take a handkerchief (if silk it is preferable), and sliding it up, on the outer surface of the hip and thigh, pass it over the bend of the thigh, and bring it ultimately down afterwards between the limbs, adjusting it so that it may lie in the fold formed by the limb and the abdomen, not resting on the middle of the femur, lest it occasions fracture. The handkerchief applied to the one in this manner, in the same way a handkerchief may be

applied to the other, and then the two together, giving a complete command of the parts, co-operating with the pains, you may draw down the nates to the outlet. There is yet a fourth mode in which the descent may be assisted, and that is by means of the forceps, as explained in a former place. Taking one of the blades of this instrument, you cautiously slide it over the flank of the child, afterwards with caution and apposition applying to the opposite flank the other blade, in these cases securing the nates with the forceps, just as in ordinary cases you might seize the head. If you use the forceps with violence—ferocious, atrocious violence—you may inflict much injury, damaging the abdominal viscera, breaking the osseous structure of the pelvis, for you have choice of mischief; but if you proceed with gentleness, you may proceed with safety, the security and success of the instrument turning entirely on the way in which it is employed.—*Toujours dangereux sinon meurtrier pour l'enfant*:—and so certainly it is, M. Capuron, unless very gently and carefully employed.

But it happens sometimes, when the nates are very large, or the pelvis is very small, that none of these modes of delivery will succeed. The fingers, the blunt hook, the handkerchief, the forceps, all have been tried without success. In this difficulty, what is to be done? Why, in cases of this kind, and in these cases only, you are justified in sliding up the fingers, and bringing down the feet, exchanging the presentation of the nates for the crural. I have said it is in these cases only, where you cannot bring down the breech otherwise, that you are justified in having recourse to this operation; for, as a general practice, though adopted by some, it should, I think, be reprobated for two good reasons; first, because more children are born alive under the breech, than under the crural, presentation; and secondly, because where, in this way, you bring down the feet, it is necessary you should carry your hand into the cavity of the uterus. Now, over and over again, not however too often, I have told you that such practice is to be condemned; and if, in defiance of warnings, any one of you still addict himself to these malpractices, let him take the consequences:

on his head be her blood! my hands are free, whatever befal the patient. Do not draw down the nates unless dangerous symptoms require it, or unless the womb have been in action for twelve or twenty-four hours after the discharge of the liquor, or at all events till it is perfectly evident that the unassisted efforts of the uterus are inadequate to accomplish the descent. If the chord pulsate strongly, the child is in no danger; if there has been no pulsation for an hour, it is dead. In neither case need you accelerate the birth. If the pulsation of the chord begin to fail, this is an argument for interfering, provided, without the smallest risk to the mother, the nates may be brought away.

ERRORS IN THE MANAGEMENT OF BREECH PRESENTATIONS.

The grand errors to which you are obnoxious in the management of these cases are, I think, the following: making a careless examination, you may confound the nates with the facial presentation, like my friend, whose instructive error I formerly recorded;—meeting with a breech presentation, you may deem it your duty to draw the breech towards the outlet, without further consideration; remember that this practice is erroneous, and that, in most cases, the breech will descend of itself, without the help of the obstetrician. To draw down the legs without need, converting the presentation of the nates into that of the feet, is another great error against which you have been forewarned; remember the risk of lacerating the genitals, and the danger of destroying the child. To use force in the delivery is a very fatal error—*arte, non vi;* contusions, lacerations, fractures, death, such are the results of force; a disposition to violence is your evil genius, and woe be to the woman whose accoucheur is haunted by it.

SECTION XIV.

MIXED PRESENTATIONS.

Among the preternatural cases, we may sometimes meet with mixed presentations, and on those I shall next remark. Sometimes

one leg only presents, sometimes the knees; but if you thoroughly understand the management of the breech and the crural presentations, according to the rules just prescribed, those cases of mixed character are very easily managed. The knees presenting, suffer the uterus to act of itself; and the legs descending, the feet will protrude,—what was a presentation of the knee becoming crural, so that no peculiar practice is required here. If the presentation is of a single leg, I believe, on the whole, your best practice will be to wait, as in the breech case, giving a fair trial to the natural efforts, which will most probably push the nates to the outlet of the pelvis; you may then grasp the hips, as in the presentation of the nates, and the rest of the delivery may be easily accomplished.

SECTION XV.

EXTRAORDINARY DIFFICULTIES IN PRETERNATURAL CASES.

In the abstraction of the child, under the crural presentation, it sometimes happens that unusual difficulties occur, when the abdomen, or the arms, or the head, are brought through the pelvis; and to the consideration of these difficulties I shall now proceed.

ENLARGEMENT OF THE ABDOMEN.

From air the abdomen is sometimes enlarged considerably, the bowels being tympanitic; rarely however, without a putrescence of the fœtus, indicated, perhaps, by the desquamation of the cuticle and other changes of those parts which lie under the eye. Lowder once met with a case in which the peritonæum of the fœtus contained a gallon, and I have a fœtus whose abdomen contained two or three pints, that had accumulated in the urinary bladder.

Meddlesome midwifery is bad. When the abdomen is enlarged, it does not follow that active operations are necessary. Though the fœtus in Lowder's case contained a gallon of water, it came

away unopened; the pelvis may be large, the powers may be great, the fœtus may be yielding; co-operating with the pains, careful not to lacerate the perineum, (the part most in danger) carrying the fœtus from the sacrum towards the abdomen of the mother; humouring, leading, you get the child away. When, however, the pelvis is small, or the parts are rigid; or the abdomen bulky in the last degree; or the pains are feeble; reduction of size may become requisite. If there be dropsy, the swelling must be punctured: if inflation, perhaps the abdomen must be laid open more extensively; but accumulated gas can, I conceive, but rarely require the operation. That a child is dead, we may presume when the chord is flaccid and cold for an hour or more without pulsation; that it is dead, we may infer with certainty when the body is begun to decay. In the general, with dead children only can it be justifiable to lay open the abdomen when the enlargement is gaseous. The blood chills and curdles at the thought of tearing out the intestines of a living fœtus. By the people of England—the censor and monitor of nations—wild beasts are caged, but worse than these, the accoucheur, meddlesome and violent, yet responsible to none, has been unwisely let loose upon society, with all his instruments of destruction about him.

THE POSITION OF THE ARMS.

When bringing the child into the pelvis, you ought to be very cautious to keep the arms in the back of its cavity, and as near to the face of the child as may be. Where this rule is neglected, however, and sometimes from other causes, the arms may become fixed in the pelvis, and most frequently between the symphysis pubis and the head. In difficulties of this kind, it ought to be your first endeavour to extract those arms in the ordinary manner,—the different parts of the operation, however, being performed with more than ordinary nicety and energy; thus you bring the axillæ to a level with the external parts; you throw the body thoroughly out of your way,—an operation of much importance, at the same time

giving it that position which may favour the descent of the arm athwart the face. Then placing all your fingers on the arm, about the bend of the elbow; for in so doing, you obtain a forcible bearing there, provided the obstruction is not unusually great; you may bring down the arm with tolerable facility. But what is to be done in those more difficult cases, where attempts of this kind fail? Why here, I conceive, the only remaining resource is, to lay open the cranium with the perforator, when the arms will become liberated by the collapse of the bones. This operation, however, can never be necessary, till you have ascertained by repeated, well-directed attempts, that extrication by the fingers is impracticable. This operation, too, can never be necessary till the child is already dead,—the death being easily ascertained by the coldness, flaccidity, and, above all, the total cessation of the pulse in the chord, which lies immediately under the touch. To perform this operation, take your instrument, the perforator,—unfortunately of too easy use,—and planting two fingers on the occiput, in the way of a director, perforate the cranium; and afterwards separating the blades, enlarge the opening as much as may be. This accomplished, passing the crotchet into the cranial vault—moving the instrument in every direction, lacerate the membranes and pulpify the brain; so that, soft as panada, it may readily issue at the opening; when you will generally find, on pulling with the crotchet, that the head descends without previous abstraction of the arms: though on the whole, perhaps, it is better, pursuing the general practice,—first to extricate the superior extremities, and then to bring away the head.

ABSTRACTION OF THE HEAD.

In the abstraction of the head, in these cases, sometimes unusual difficulties occur, divisible into four classes; those, I mean, in which the obstruction arises from an unfavourable position of the head; those cases in which it is produced by a slight deficiency of room in the pelvis; those cases, in which the deficiency of room is more

considerable; and those cases, lastly, rare in British and well-conducted midwifery, in which the head is pulled away from the body, the cranium lying detached in the cavity of the uterus.

Where the pelvis is small, or the head large, or the practitioner is unskilful, it sometimes happens that the abstraction of the head is attended with much difficulty in consequence of its unfavourable position. In speculation, cases of this kind might be multiplied *usque ad nauseum*—but, in practice, they may be reduced to three principal varieties, with all of which you ought to be acquainted. When the head is at the outlet, the face and occiput lying on the sides of the pelvis, the chin may lodge on one set of sacro-sciatic ligaments, and the occiput on the other. In cases of this kind, if the pelvis be large, or the cranium small, or the uterine efforts frequent and powerful, the child may escape notwithstanding; but if the pelvis be small, and the head large, not understanding the nature of the difficulty, you may go on pulling till you actually tear the head from the body; whereas, if you turn the face into the hollow of the sacrum, and the occiput to the symphysis pubis, drawing the chin a little downward and forward upon the chest, the whole difficulty vanishes at once, and the head passes easily enough. Again, when the head is at the brim of the pelvis, it happens sometimes that the chin of the child lies over the symphysis, and the occiput over the promontory; the long length of the head lying over the short length of the brim; so that, unless these lengths be greater than ordinary, the head cannot be brought away. Understanding the nature of the difficulty (easily ascertained by examining the position of the body, which lies through the outlet, under the eye of the operator), to remove it, in some cases, is by no means difficult, provided the accoucheur be resolute and dexterous. Grasping the body with the left hand, and then conveying the abdomen of the fœtus gradually to the back of the pelvis, acting on the head through the intervention of the neck, you endeavour to turn the chin to one side. In doing this, however, as the tender compages of the neck may suffer from contusion,

if the bearing there be too forcible, it is better, if practicable, to lay the fingers of the right hand on the side of the cranium, and with well directed pressure there, to assist the movement of the face to the side, the two hands mutually co-operating. Should rectification, however, be impracticable by gentle means, you may then endeavour to abstract the head by raising the occiput, and depressing the chin upon the chest; so that, of the three longer axes of the head, the shortest, little exceeding four inches, may be brought to bear upon the short diameter of the brim. In this position, if the pelvis be capacious, the head may descend, with the face throughout the labour upon the symphysis pubis; or, if delivery cannot be accomplished in this manner, you may then lay open the cranium at the occiput. This tremendous and heart-sickening operation, however, can never be necessary in these cases, till the fœtal life is extinct. Thou shalt do no murder. These words cannot too often tingle in obstetric ears.

The passage of the head is sometimes obstructed in consequence of your not drawing in the axis of the pelvis, when the cranium is at the brim; and as this is an error which you are very likely to commit when off your guard, I am the more anxious to impress it indelibly on the mind. The head may be in a position favourable enough to the passage of the superior aperture; the occiput lying on one side of the pelvis, and the face upon the other; but if the head be large, and the pelvis small, and you are seated near the feet of the woman, consoling, encouraging her, of course, in drawing the child, you urge it downwards and forwards on the symphysis pubis. Now, under these circumstances, if the head be small, or the pelvis large, the cranium may pass notwithstanding; but if the head be large, or the pelvis small, you will find the head cannot be brought away. You are perplexed, and not without reason: an ignorant midwifery is a comical tragedy; the whole difficulty is of your own making, it arises from your drawing out of the axis of the brim. Quit the feet and approach the loins, draw in the axis

of the superior aperture downward and backward towards the coccyx, careful not to injure the perineum, and the head will come away easily and safely enough. An unlucky case!—an unfortunate case! Like the two Amphytrios in the comedy, Mis-fortune and Mis-management are so like each other, that their nearest acquaintance cannot always distinguish the one from the other.

In bringing away the head of the child, again, you have sometimes to contend with difficulties at the brim, arising most frequently from want of room between the front and back; to the consideration of which we will next proceed.

Eight or ten crural presentations, with deficiency of room at the brim, have fallen under my notice,—the want of space being ascertained in these instances, not by nicely measuring the pelvis, but by the detention of the head at the superior aperture; notwithstanding the position was favourable and a full abstractive force was employed. When the feet are presenting and the head is lying in the brim, the body being thrown out of the way into a commodious position, a dexterous operator might, I have no doubt, apply the longer forceps or even the lever to the head of the fœtus, and draw down with great effect. Steel, however, like the nerves of a rude accoucheur, is apathetic, and has no sympathies. The steel of the instrument-maker is sometimes as fatal as the steel of the armoury. In difficulties of this kind your instruments are not in general needed, and therefore I conceive ought not to be employed. The delivery in many cases may be effected as follows:—Availing yourselves to the utmost of your knowledge of the forms of the head and the pelvis respectively, agreeably to principles so often stated, you place the head at the brim, with the face and occiput in the sides of the pelvis and the chin upon the chest; careful to draw in the axis of the brim, that is, in a line extending from the navel to the coccyx.

To secure the command of the head when practicable, you place the two fingers on the chin, the rest of the hand bearing on

the shoulders and chest in front—while the other hand, resting on the shoulders and chest behind, you pass a finger as high as may be on either side the occiput, obtaining that bearing on the child which you require. The child so secured, you request an assistant to take place at the bed side, near the loins of the patient, and, with the interposition of a cloth, grasping the body of the fœtus, to draw obsequiously under your direction. These preliminaries observed, when a pain occurs you draw down in co-operation,—perhaps swaying the body a little from front to back, careful of the perineum, however,—till the head, brought to its proper bearing, you say to your coadjutor, stop—lie on the pull—let us suffer the head, under moderate compression, to mould itself—let us wait for another pain; look at the countenance—count the pulse—reflect:—after pausing in this manner for one or two minutes, during a pain, if there be any, you draw as before, advancing the head a little further, and again pausing, with the same caution as before, allowing the head to become further moulded and compressed. And proceeding in this manner, pulling at one moment, pausing at another, you gradually work the head through the brim, when further difficulty does not usually occur. As the head may slip suddenly through the brim, be prepared to relax as suddenly when pulling, or the head may dash through the outlet and tear the perineum. Decapitation will be the effect of sudden pulling or jerking; but if the cranium be a little softened by putrefaction, you may, without rupturing the neck, exert in a gradual manner a force so great that the vertex opens and the brain escapes. These higher degrees of force, however, in the general, are neither safe nor justifiable; the safety of the mother is paramount, and is better secured by the use of the perforator. The birth of the child, though not to be hurried, must not, however, be needlessly procrastinated, as the chord is under pressure and death must ensue. Under the best management, most of these children are still-born.

LAYING OPEN THE HEAD.

Where the pelvis may be highly contracted, the abstraction of the fœtus must be attended with difficulties still greater, to be surmounted by laying open the cranium,—the operator proceeding in the method before described. When the head is laid open and the brains have been pulpified, frequently the fœtus descends with facility, the cranial bones becoming collapsed. Notwithstanding this reduction of bulk, however, the descent of the head may still be impeded, when it becomes necessary to observe the following cautions:—Make the opening into the cranium as capacious as may be; by the action of the crotchet, diligently employed, let the cerebral mass be pulpified with more than ordinary care; in drawing, place the basis of the skull parallel with the symphysis pubis, and, which you may easily do, bring down the occiput as the most depending part. The cranium consists of the facial bones and basis, with the bones which form the upper part in a state of collapse; though thus reduced in size, these remains of the head, when placed with the basis parallel with the plane of the brim, nearly fill the aperture and pass with some difficulty; but it drops readily through the pelvis when the basis is placed parallel with the symphysis. If the basis lie against the symphysis, the face being the part most dependent, the facial bones and neck, a large mass, must pass the contracted pelvis together; but if as advised, and as indeed you will find most easy, the occipital bone be drawn down by the crotchet, the facial bones will pass the pelvis alone, the occiput and neck of the child descending through the contracted pelvis in one mass, of bulk by no means considerable. Before you operate, the death of the child may be known by the continued want of pulsation at the root of the chord, not to mention the desquamation of the cuticle, and the putrescence of the limbs; and I may repeat a remark made in a former page, I mean that it never can be necessary to perform this horrid operation while the fœtus is alive.

DECAPITATION OF THE FŒTUS.

The decapitation of the fœtus is not, I think, a common occurrence in well-managed British midwifery; but, in a few rare cases, in general perhaps ill conducted, the head becomes detached from the body; and this constitutes the fourth difficulty of which I proposed to treat. To get the command of the head, is in these cases the principal difficulty; and different instruments are contrived for this purpose. The courtly St. Amand, I think it was, contrived a net to inclose the head when in utero. Spreading it over your fingers, you carry it into the cavity of the uterus, if you can; in doing this, you avoid bursting the womb or vagina, if you can; there is always danger, and here you have choice; then, having got thus far, you are to lay the cap over the child's head, if you can; ultimately, by means of this invention, abstracting the head, if you can. This inauspicious impedimental,—"if you can," throughout the operation meets and embarrasses you at every turn. The rats, in council, resolved that some measure should be taken to secure them from their arch enemy; an orator, garrulous and much applauded, conceived it would be advisable to append to her neck a bell,—silver and chased of course, and of a form at once classical and elegant;—aye, if you can, exclaimed a quadruped Phocion of the assembly, and demolished the orator.

Different instruments for extracting the head have been contrived by Levret, Smellie, and others, but the forceps by Gregoire, is preferable to either. Bearing on the firm margins of the foramen magnum occipitale, his instrument, properly applied, gives a secure hold of the head; nor do I think that the annexation of some two or three vertebræ to the head, would preclude the introduction of the blades, nor, would it be difficult, if necessary, to pull these vertebræ away by means of a proper instrument.

A meddlesome midwifery is bad. When by mismanagement or otherwise, the head becomes detached from the body, the unaided efforts of the uterus will sometimes push it away; and, therefore unless the contracted state of the pelvis show that such hope is

vain, these efforts should be fairly tried. When, however, the detached head is to be abstracted by the accoucheur, he may first endeavour to fix it in the brim of the pelvis by well-directed pressure from the hand of an assistant, applied above the symphysis pubis; and then taking a large strong perforator, he may either enlarge the foramen magnum, or make a large opening through the occiput, abstracting the brain at the aperture, afterwards drawing down by the crotchet,—the head readily descending after its bulk has been reduced. Should pressure on the uterus above the symphysis be insufficient to fix the head firmly, we must then obtain command by means of one or other of the instruments just demonstrated.

TRANSVERSE PRESENTATIONS.

When neither the superior nor inferior parts of the child are lying over the centre of the brim, the head, I mean, or the nates, the knees, or feet, the fœtus lying across the pelvis, further difficulties arise, to the consideration of which we will next proceed.

ESCAPE OF THE CHILD FROM THE UTERUS.

In Burn's excellent work, I find reference to a very extraordinary case, in which the womb and abdominal coverings becoming torn open at these apertures, the child was spontaneously expelled, the woman ultimately recovering. More frequently, when the birth of the fœtus is obstructed, the uterus gives way, the fœtus escaping into the peritoneal sac, lying there for the rest of life, forty or fifty years, for example, becoming converted into a mass of bone, and occasioning little further inconvenience, except that which results from its bulk and weight. To Dr. Cheston, a very distinguished practitioner, a case of this kind occurred. The woman lived subsequently forty or fifty years. After death, he found that the fœtus was ossified; and in the Museum of the College of Surgeons, under the direction

of the very able and obliging conservator, Mr. Clift, this presentation may now be seen.

In transverse presentations, it still more frequently happens that the uterus disruptured, the child escapes into the peritoneal sac, and is brought away through the pelvis, by the operation of turning. Carrying his hand into the peritoneum, through the lacerated opening, the accoucheur, careful not to lay hold of the intestines, seizes the feet of the child, and draws them over the centre of the pelvis. A case very similar to this has fallen to my own care; it was not, indeed, a transverse, but a vertex presentation; the pelvis was narrow, spontaneously the womb gave way. My hand was carried through the opening in front of the neck of the uterus opposite to the bladder (the bladder being uninjured). Cautiously and slowly the feet were drawn down, the child was abstracted dead, but the mother ultimately recovered. That there was a rupture of the uterus, and that the child had escaped into the peritoneal sac, was without doubt. I felt the contracted womb; I felt the intestines; I felt the large pulsating arteries; I felt the edge of the liver; and this during the progress of my hand towards the feet, which lay near the ensiform cartilage: nor, though curious, is the case by any means singular.

When the presentation is brachial, there is yet another way in which the fœtus may pass, occasioning but little anxiety to the accoucheur; for the pelvis being large, the fœtus small, the womb active, and the fœtus under six months of age, the child may be pushed away without interference of the accoucheur. Understand, however, clearly, that where the fœtus and the pelvis are both of standard size, you cannot succeed by this method of abstraction. Fracture of the arm, and disruption, I have seen in consequence of rude attempts to bring away the child in this manner, and this too, by the fair and gentle hands of a female accoucheur.

INDICATIONS FOR RELYING ON THE NATURAL EFFORTS.

The only cases in which you ought to confide the delivery to the

natural efforts of the uterus, are those cases where you perceive obviously, from examining, that the child is coming down into the pelvis; examining the first time, you observe a small descent; examining a second time, you find it descended a little further; examining again, further descent is observed, the fœtus advancing with every pain.

There is too another principle from which your indication may be taken—I mean the age of the fœtus, ascertained by the "calculation or reckoning," as it is called, and by the dimensions of the protruding member, allowance made for that enlargement which results from compression and intumescence. In general, if the pelvis be of standard capacity, if more than six months old, the fœtus cannot be transmitted under the brachial presentation; if less, it may pass. Pelves, however, may exceed or fall below the standard dimensions, and the rule must, of course, be modified accordingly.

EVOLUTION OF THE CHILD.

When the child is lying transversely, it is worth our knowing that evolutions sometimes occur, and more especially in brachial presentations; a truth, for the knowledge of which we are particularly indebted to a very amiable and very excellent man, I mean Dr. Denman.* Under this evolutionary descent of the nates, Denman supposed that the arm ascended, but Gooch, a practitioner full of talent, has shown that, in some cases at least, the arm scarcely rises in the uterus at all. For myself, after being present at two or three spontaneous evolutions, I am persuaded that in most, if not all cases, as Gooch as suggested, the arm remains at the same, or nearly the same elevation, pushed a little to the side of the pelvis, while the body of the fœtus, relaxed and softened sometimes during life, more generally in consequence of extinguished vitality under strong and repeated uterine effort; first,

* Of the first testimonies that prove the possibility of this evolution, consult *The London Medical Journal*, vol. v, for 1785; and the *Journal de Médecine de Paris*, pour Avril et Septembre 1785; and many cases since published.

the thorax of the child, then the abdomen and flank, ultimately the hip and breech are urged through the brim; the parts, not without incurvation of the softened body, successively following each other into the pelvis. Observing these "spontaneous evolutions," as he significantly called them, and unwilling to interfere without need, Dr. Denman advised that, in arm presentations, we should always confide the delivery to the natural efforts, abstaining from the introduction of the hand into the uterus. When, in conformity with this opinion, in several cases, these presentations were trusted to the unaided efforts of the uterus, in many cases, no doubt, the expected evolutions did occur; but in some, perhaps I may say many cases too, the evolution failed, and turning became requisite. To this may be added, that, under spontaneous evolutions, the children were almost invariably born dead,—nine out of ten, for example, or nineteen out of twenty. For the purposes of practice, the fact itself is sufficient, and it constitutes some objection to Denman's recommendation; but it may not be amiss to add, in the way of explanation, that the death of the fœtus is rather the preparative than the effect of the evolution; in order that the fœtus may be evolved, flexibility is necessary, and this flexibility, in general, does not exist, unless the child is wholly, or in great measure, dead. Now, on both those accounts, because the fœtus is so often born dead, and because there is a fear that the powers of nature should fail her, as a general practice it is improper to confide delivery to the spontaneous evolution; but if the tendency to evolution be shown, by your feeling the descending ribs or abdomen, or if you have made attempts to turn the child without success, either from want of skill, or from the insurmountable difficulties of the case, then, indeed, this mode of delivery should, I think, be fairly tried. I was called once to a case in the neighbourhood of town, where two or three accoucheurs of talent had attempted to turn the child, but could not succeed, and, on trying myself, I failed too. Under these circumstances, we deemed it prudent to wait; and, in the course of two or three hours afterwards, the child came away by the spontaneous evolution.

ORDINARY METHOD OF DELIVERY.

In the transverse presentation, however, the ordinary method of delivery is by means of the turning, to which I have so often referred; and in different ways this operation may be attempted. Laying hold of the cranium, we may endeavour to bring the head over the centre of the pelvis; or, laying hold of the breech, we may bring down the nates; or, laying hold of the knees or legs, we may draw down by these parts; so that the operation of turning, may be divided into three varieties: the turning by the head, the turning by the breech, and the crural turning. Of these three varieties, the cranial turning is the safest for the child; because, if we can bring the head over the centre of the pelvis, there is no danger lest the umbilical chord be compressed, and the child is born in the usual manner. Though desirable for the child, however, this form of turning is unsafe for the mother, because difficult for the accoucheur; for the head, large, rounded, and slippery, escapes from the hand, and the repeated endeavours to grasp it are not without danger of laceration. Next to the crural turn, is the version by the nates: and as I have told you already, more children are born alive under the breech presentation than the crural. In the breech presentation, the lower limbs lying on the abdomen, there is a groove formed between the thighs, in which the umbilical chord lies, and is secure from pressure. Now when you introduce your hand to turn the child, perhaps the nates constitute the first part on which your fingers fall, and this part you may bring over the centre of the pelvis. Like cranial turning, however, that of the nates is, on the whole, not easy for the accoucheur, and hence though safer for the fœtus, it is less secure for the mother, and, as a general practice, ought not to be adopted. When we turn by the feet or knees, the umbilical chord is exposed to continued and fatal pressure during the passage of the head and shoulders; yet, notwithstanding this objection to the crural operation, and though in some anomalous cases we may, perhaps with advantage, turn by the nates or

the cranium, yet, on the whole, this method of operating by the feet is to be preferred.

CÆSAREAN OPERATION MAY BE SOMETIMES NECESSARY.

In transverse presentations, it has been proposed to bring away the child by the Cæsarean operation, and after what I have seen of the difficulties and dangers arising from these presentations, I would frankly acknowledge that cases do now and then occur in which I conceive it would be less painful, and on the whole not more dangerous to the mother, to have the child taken out by the Cæsarean operation (improved as it may be hereafter,) in preference to any other mode; but if we once admit the obstetric principle, that the Cæsarean operation may be performed in transverse cases as a substitute for turning, to the abusive adoption of the Cæsarean incision by the rash and adventurous, there would, I fear, be no end, and the greatest mischief might ensue. Against such use of the operation, therefore, in the present state of knowledge, I feel it a duty to raise my voice. In transverse presentations I cannot allow that the Cæsarean incisions are ever justifiable, and the man who, under such circumstances, rashly performs them, would render himself awfully responsible for the result. Ye men of genius, with minds formed, not merely to talk about the profession, but to improve it, never shrink from your duty for fear of the blockheads; formidable as they may appear at first onset, if left to themselves they will soon collapse into their natural insignificance. Remember, however, that firmness and rashness, though approximated, are as different from each other as vice and virtue, and that from the reproaches of our own conscience, it is no cowardice to shrink.

Mr. Scott, a very intelligent practitioner of Norwich, met with a case in which the woman recovered, although the os uteri was torn off and came away from the vagina. For reasons stated at large in the Physiological Researches, I feel persuaded that the division of the os uteri would not necessarily prove fatal; nevertheless, as a remedy (I mean a normal or general remedy,) in cases of obstructed

transverse parturition, in the present state of experience, it ought, I think, to be reprobated, as both dangerous and inefficient. If an incision were made, on introducing the hand, the opening would most probably become enlarged by laceration; and even though you passed into the womb with facility, the main difficulty would still remain, namely, the conveyance of the hand along the body of the uterus to the fundus, where the feet commonly lodge.

ON THE PROPRIETY OF EMBRYOTOMY.

In transverse presentations, I have never yet had occasion to remove the child from the uterus by embryotomy, having always found hitherto, that, with patience and management, delivery could be otherwise effected. Having, therefore, personally but little knowledge of the operation, I forbear copiously to enlarge on it, though a few remarks may be allowed.

In performing embryotomy, it should, I conceive, be our first endeavour, from accurate observation externally and within, to ascertain, as clearly as may be, the position of the fœtus. This point obtained, we may attempt the abstraction of the child in two ways, by decapitation, I mean, or disruption of the different cavities. For opening the cavities, I suppose the best instrument is a long large perforator, in the arm presentation, the most common, to be introduced at the thorax, the viscera being afterwards removed at the opening, so as to make room for the introduction of the hand and the seizure of the feet. Although, however, a fœtus may be removed in this manner, I suspect that extraction by decapitation, when this may be accomplished, is decidedly to be preferred; a practice first recommended by Hoorne, and recorded, I think, by Heister. I should prefer myself, for this purpose, a semilunar knife with cutting concave edge, mounted on a stem, firm yet flexible, so that, in operating, the curve might be accommodated to the situation of parts. Over the neck, this instrument is to be fixed, and then by drawing resolutely, but rationally, the head is to be detached from the body; the body of the fœtus being first abstracted by the arm, and the head removed from the

uterus separately afterwards. These operations, calculated to fill the feeling mind with disgust and horror, can, I conceive, under no circumstances be necessary, unless the fœtus be dead; and it would be still more satisfactory to operate when putrescence is begun, as this would facilitate the dissolution of the junctures. In brachial presentations, the putrescency is known by the state of the arm, ascertained the more easily as it lies under the eye of the operator. Cases of that kind ought not to be undertaken by the tyros in midwifery, a remark which I am led to make, as our young soldiers are sometimes too ready to beard these difficulties, and precipitate themselves head-long and ill-armed into the breech.

PROBABLE EFFECTS OF NON-DELIVERY.

You will ask me, perhaps, in concluding the subject, how it is that the transverse cases terminate, when committed entirely to Nature; the accoucheur, forbidden by the patient, or being incapable of accomplishing the delivery, forbearing to interfere. When the child lies across in the pelvis, it so rarely happens that these cases are committed to Nature, that we have really little opportunity of knowing their natural termination; but it is highly probable that, in some few cases, the women would die undelivered; while in others, perhaps most cases, the fœtus, softened by putrefaction, would come to pieces in the cavity of the uterus, or be pushed away by a spontaneous evolution, the mother ultimately recovering, or sinking in consequence of lacerations and contusions, exhaustion, or the like.

SECTION XVI.

ON TURNING.*

In turning, as in most of the obstetric operations, it is a point of no small importance to determine aright on the proper moment

* The operation of turning was understood by the antients: Hippocrates advised the head to be delivered first; and Celsus maintained that by the feet after the child was dead. Version by the feet is now generally preferred.—*Ed.*

In antient times it was the custom, in every kind of labour, except those in which the head

of interference; for, like our repartees, our obstetric operations must be exactly timed, to produce their effect. Entering, therefore, on the consideration of this important operation, I may commence by making some observations upon those indications which enable the practitioner to discriminate here.

DIFFERENT INDICATIONS.

By some it is asserted, that turning ought never to be attempted, unless the os uteri be widely expanded, or, at all events, relaxed in such degree, that it may readily dilate under the pressure of the finger; nor is the rule to be despised. Generally, when the mouth of the womb is wide open, the hand may be introduced with safety; and this being the case, the sooner it is passed into the uterine cavity the better; while, on the other hand, if the os uteri be rigid, or if it be shut in great measure,—the disk not larger than that of a shilling, for example,—the introduction of the hand by dilatation is unsafe, if not impracticable.

By some practitioners, again, the indication for turning is taken from the laxity of the softer parts; and if the os externum, internum, and vagina, are all of them tense and unyielding, so that the entrance of the hand, perhaps of large size, would be attended with bruising or laceration, we are told to refrain; whilst we are advised to introduce the hand, even though the os uteri be undilated, provided the softer parts, thoroughly relaxed, yield under the pressure of the fingers; nor is this rule without its excellence: for when the parts are rigid, the hand certainly ought not to be

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originally presented, to endeavour to return the part presenting, and to bring down the head, and if this were found impracticable, directions were given to bring the child away by the feet, or in any manner the situation would allow, or the exigencies of the case might require. But we learn from Ætius, who lived probably about the fifth century, that Philomenes, whose writings, except those preserved by Ætius, are now lost, discovered a method of turning and delivering children by the feet in all unnatural presentations; and this method, with some alterations and improvements in the operation, has been practised ever since his time in those cases, now considered, only capable of delivery by turning.—*Dr. Denman.*

introduced; but where they are thoroughly relaxed, with proper caution, a gentle operator, with a hand of a small size, may often securely enter the genital cavity; and we may be told, perhaps not without show of reason, that the sooner he operates the better.

There are some practitioners who lay their principal weight on a third indication, I mean the condition of the membranes; and if they find that the membranes, unbroken and still full of water, are pushing through the mouth of the uterus, they refrain from turning, considering that so long as the water is retained, there is no risk lest the child become incarcerated in the uterus, so as to prevent the access of the hand. But if, on examination, they perceive that the membranes are lacerated, and the liquor amnii away, then, without much regard to the laxity of the parts, or the expansion of the os uteri, they are anxious, as speedily as may be, to perform the operation. Now, of this rule, the latter part lies open to decided reprobation. Admitting, as those who have experience must do, that after the discharge of the water an early extraction of the child is desirable; we must however admit too, that so long as the os uteri is shut, and the parts are unyielding, dreadful lacerations may result from rash attempts to introduce the hand. With respect to the former division of the rule, that I mean which declares that it is not necessary to introduce the hand so long as the membranes are untorn, and the liquor amnii is retained, to it I do not much object; because I agree, that whilst the liquor amnii is not discharged, there is no danger lest the fœtus becomes compressed and incarcerated, and there is no danger, therefore, lest the access of the hand should be debarred.

For myself, the rules which I observe in discriminating the proper moment for commencing the operation of turning, and which, useful in my own practice, I recommend to yours, are the following:—I lay it down as a principle, in which I think every practical man will agree, that provided the operation of turning may be performed without more than ordinary risk of bruising, tearing, or other injury, the sooner it is executed the better. If, then, I deem the operation safe and necessary, I do

not needlessly delay it an hour—a quarter—I had almost added a minute, or a second; and this, more especially, as before hinted, if the membranes are broken, and the liquor amnii discharged; because, while we are delaying, the womb is generally becoming more active, and more contracted, the dangers and difficulties of the operation continually thickening in consequence. Indelibly, therefore, let this principle be impressed on your minds. Never turn without need, never rashly have recourse to the operation, without considering whether it be or be not safe; but if you are fully satisfied that turning will not be attended with more than ordinary danger, and if you are satisfied further, that there is no reasonable hope that the child may come away in any other manner, the sooner the operation is performed the better.

But you will ask me perhaps here, when are we to consider that the introduction of the hand is unattended with greater danger than ordinary; or, to give the question in a more practical manner, when are we to consider that the danger of turning is no greater than we are justified in imposing? Why, I consider that the hand may be introduced with such degree of safety, as may justify the operation, provided you find the os uteri to be as broad as a dollar; and provided you find too, on pressing in different directions, that the softer parts are thoroughly softened, the patient, perhaps, being the mother of many children, or relaxed by copious floodings. The rule then may be given in a few words, as follows:—In ordinary cases, if the mouth of the womb be as broad as a crown piece, and if the softer parts, be relaxed thoroughly, the introduction of the hand is not exposed to greater risk than usual; there seems to be no circumstances preclusive of the operation, and the sooner you commence the better.

ATTENTION TO THE STATE OF THE BLADDER, &c.

Before turning is attempted, the bladder should be evacuated. This, in general, it may be, by the natural efforts. If, however, the

urinary organs be in such a condition that the patient cannot discharge the urine by the natural efforts, provided but little water be collected, the catheter is unnecessary; but if, on making investigation above the symphysis, you find the accumulation is large, the catheter may be introduced.

Unless the rectum be loaded I should dissuade you from the administration of injections in the way that some have recommended. The intestine, indeed, they clear, but they also stimulate the uterus, and bring on the pains which every one experienced in these cases will be solicitous to avoid.

POSITION OF THE PATIENT AND YOURSELF.

In different postures* the patient may be placed, when you are going to perform the operation of turning; but though you need not always turn under the same position, for ordinary purposes you will find it most convenient to put the woman in the usual obstetric posture, on the left side, close upon the edge of the bed-frame, with the shoulders forward, the loins posteriorly, the knees upon the bosom, and the abdomen towards the bed. Nurses, as formerly observed, are apt to place the patient with the shoulders posteriorly and the loins in front,—a position exceedingly incommodious for the operation under consideration.

As to your own posture, you will find it convenient sometimes to kneel at the bed-side, a pillow being provided, and sometimes to

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* The best position in which to place the woman is on the side, according to British and American writers; but the back is preferred by the French, and the pelvis should rest on the edge or the foot of the bed.—*Dr. Ryan.*

There have been many different directions and opinions respecting the advantages of particular situations, especially that of turning the patient upon her knees. But as our aim, in the choice or preference of these, is merely to obtain the free and most convenient use of our own hands, the position of the child remaining the same, however the woman may be placed, the common situation will generally be found most convenient. Yet as that situation which suits one practitioner may be awkward to another, and as in the course of the operation changes may be expedient, every practitioner must make them when they appear necessary to himself.—*Dr. Denman.*

sit in a very low chair, your position varying as the operation proceeds.

POSITION OF THE UTERUS AND FŒTUS.

Respecting the position of the uterus and the fœtus, and especially of the feet of the child, you ought to have clear ideas before you commence the operation. In a preceding part I observed to you what I now repeat, that the uterus, in the end of pregnancy, lies entirely above the brim of the pelvis, occupying about two thirds of the abdominal cavity; the abdominal coverings and loaded bladder are before it—the intestines and other viscera are above and behind it—and the womb leaning forward, its axis lies parallel with a line stretching from the coccyx to the navel; the fundus pushing forth beyond the ensiform cartilage, and the mouth, seated at the brim, is inclining toward the lower extremity of the sacrum. Nor must we forget the ordinary position of the fœtus, placed commonly in these cases with the shoulder over the os uteri, the head on the cervix, and the feet in the fundus, with the loins and lower limbs carried along with the fundus uteri towards the front of the abdomen, the thorax, head, and arms, lying behind. Do not neglect these hints. To acquire ideas as correct and distinct as may be respecting the position, both of the fœtus and the uterus, is of the greatest importance in this operation.

ASCERTAIN THE POSITION OF THE FEET.

Before we commence the operation of turning, we ought to ascertain with nicety the position of the feet,—whether they are in the front, or back of the uterus, at the left side or the right; points best determined by examining the presenting part. And as the arm case is the most common, and as it is unfortunately the most difficult of management, on this case I will demonstrate the method to be observed. Let us suppose, then, a brachial presenta-

tion, the arm lying forth, beyond the external parts; we are by examination to ascertain the position of the feet, in order that we may reach them and turn. For this purpose it should be observed, that when the arm is extended, and the hand is placed intermediately between supination and pronation, the palm of the hand takes the direction of the abdomen, and the back of the hand the direction of the loins, the thumb lies towards the head, and the little finger towards the feet. Well, now, applying these principles to a supposed case, the palm of the hand lying to the sacrum, I know the abdomen of the child, with its legs, is on the back of the uterus; the thumb lying to the right, I know that the head is to the right; the little finger placed to the left, I know the feet are to the left also; and thus, without inspection, merely by paying a little ordinary attention to the presentation, I am enabled to ascertain that the feet are lying on the back of the uterus, and towards the left side, which is precisely their position. To repeat then: before you commence the operation of turning, consider what is the bearing of the uterus itself; consider what is the position of the child; and, more especially, consider what is the position of the feet. This accomplished, you need no preceptor to admonish you which hand is to be preferred. Knowing the situation of the child, and the feet, together with your own method of operating, you will discover, on a moment's reflection, whether the right or left hand be the more commodious in any individual case under care. If you think you will be able to reach the feet more readily with the left hand, by all means let this be employed; if otherwise, employ the right. Without intending to prescribe any fixed rule, I may remark, that the woman lying on her left side, the usual position, you will generally find the left hand more subservient, if the feet are in the back of the uterus, while the right may prove commodious, provided they lie in front. Some practitioners always turn with the left hand, and some always with the right; but from the reflections just made, it is obvious that you ought to acquire, if possible, the dexterous use of both.

DIVISION OF TURNING CASES.

After a good deal of observation on the operation of turning, I have been induced to divide the turning cases into those in which it is easy, those in which it is difficult, and those few cases in which it is impracticable, either for a time, or permanently, so that you are obliged to resign it altogether.

SECTION XVII.

ON CASES OF EASY TURNING.

If you adhere to the wholesome principle formerly announced, and commence the operation of turning as early as the safety of the patient may admit, you will, I believe, in general, find it of easy execution; the woman is as yet unexhausted, the softer parts are relaxed, and the vagina and womb are free from inflammation and tenderness; the cavity of the uterus, capacious and uncontracted, admitting the ready approach of the hand of the operator to the feet of the child, and allowing of an easy evolution afterwards.

CHOICE OF THE HAND.

In operating in these easy cases, it should be your first office to make choice of the hand with which you mean to act; and knowing, as before advised, the situation of the feet, you speedily determine which of the hands may most readily reach them, and may prepare it accordingly.

In the Gallery of the Louvre, I once saw a painting of the Feast of Belshazzar—*magnifique*, of course—in which the Divine hand was graced with a ring and ruffle. I have heard of a French accoucheur, of finished exterior, who lost in the uterus a very valuable jewel; to our ingenious and lively neighbours it is better

to leave "*ces gentillesses*," and should you make use of ornaments, it may be as well to remember that there are occasions when they are better away.

STEPS OF THE OPERATION.

The hand then chosen, take off the coat, remove the shirt sleeve, abstract your rings, and with cold cream or lard, best fitted for the purpose, lubricate abundantly the arm, with the back of the hand and knuckles, avoiding the palm and inner surface of the fingers, as this is the part with which you lay hold of the child. Having thus prepared the hand and arm, you throw the fingers into the conical form, and pass them through the os externum upon the promontory of the sacrum, being very careful not to lacerate the perinæum. The passage of the knuckles occasions the principal pain and danger. The risk and distress are greater if the woman have not borne children before. The transition may be facilitated by using the fingers as dilators. With mingled firmness and gentleness the operation should proceed. When the knuckles have cleared the os externum, you find the whole hand in the cavity of the vagina, and it becomes your next office to enter the uterine cavity; for which purpose, again giving to the fingers the conical form, slowly entering the uterine cavity, you pass the mouth of the womb, always in great measure dilated before the operation can be properly begun. If the membranes have been broken, and the liquor amnii have been discharged, the hand readily enters the cavity of the ovum; but operating early, you will sometimes find that the membranes are not yet ruptured, and to enter them laceration becomes necessary. Whatever is worth doing at all, is worth doing well. Let this part of the operation, though simple, be carefully executed. When the membranes become tense, under the action of the uterus you have the most favourable opportunity for breaking open the cyst. Be careful to put the hand into the cavity of the ovum, as the interposition of the hand between the womb and the external surface of the membranes might give rise to flooding,

by detaching the placenta; throughout the whole of this part of the operation, beware of vaginal and uterine laceration.

Suppose all these measures have been carefully executed; that the cyst has been opened, that the hand has been insinuated; that the os uteri has sustained neither contusion nor laceration; your hand being passed thus far above the brim of the pelvis, and lying in the uterus, you may promptly, tenderly, press forward towards the fundus, so as to bring the brawn of the arm into the vaginal cavity, preventing by this plug the escape of the waters, if they are not already discharged. Your hand lies perhaps amidst the waters; or if the womb be lax and capacious, the hand may be moved about with facility, though the waters have been discharged. Knowing the region of the feet, advance, during the absence of pain, directly to this part of the uterus, usually the fundus, slowly or rapidly as the parts may bear, very careful not to lacerate the womb or vagina,—remembering that at this moment a thrust of the hand is contusion, laceration, destruction, death. The third stage of the operation completed in this manner, and the hand approximating to the feet, in general the arm lies in a line stretching from the umbilicus to the coccyx, the bend of the elbow approaching the key of the pubic arch, the hand lodging in the top of the uterus, and the brawn of the arm taking its place in the cervix uteri and vagina. At this part of the operation, pause for a little—repose yourself, and reflect. Preparation thus being made, the fourth stage of the operation commences with the seizure of the feet, you being careful to ascertain clearly that they are the feet, and not the hands; and further, they are both the feet, and not a foot and hand together, mistaken for them. Having made sure of the feet, grasp them as you please; but you will find it not inconvenient to place two fingers, the first and second, on the back of the legs, so that the fore finger may rest above the projection of the heel, the thumb and two remaining fingers lying on the legs in front. In this way you may secure a pretty firm hold of the legs; the hand not occupying much space. Having then in this, or any other mode more commodious, acquired a firm hold, slowly,

smoothly, and without jerking, you draw down, throwing the abdomen of the child upon the back of the uterus; so that at the end of the operation, the legs hanging forth, you have converted a transverse presentation into a presentation of the legs, the front of the fœtus lying upon the sacrum, so that the arms and head may be easily got away.

The legs brought down in this manner, the head and shoulders must be extricated, a part of the operation which may require delays, as the intromission of the hand, of small compass, may have been accomplished with facility and safety, although the parts are too rigid to give passage to the head and shoulders, more especially if bulky. Before the head and shoulders are abstracted, therefore, examine the softer parts, and if they are lax enough to transmit the child without injury to either, let this part of the labour be completed immediately; but if there is a rigidity of the vagina, or a partial closure of the os uteri, so that immediate delivery becomes obnoxious to contusion, fractures, or lacerations; you must wait. While the chord pulsates, the fœtus is in no danger; if the beat of the chord is languishing, danger may be apprehended. Remember, however, that the safety of the mother is paramount,—come what may, her person is to be preserved unhurt; this is a pre-eminent maxim of British midwifery; and if this require that the delivery be procrastinated, however fatally to the fœtus, the birth must be suspended. In our own families, the life of the child would never be put into competition with that of the mother; nor can we err here in adhering to the maxim, equally admired by the saint and the philosopher, to be found alike in the writings of Confucius, and in records more venerable:—Whatever ye would that men should do unto you; that do ye unto them.

THE ERROR TO BE AVOIDED.

The grand error to which you are obnoxious, the error against which you have been cautioned so often on other occasions, is, the use of too much force,—*arte, non vi;* ferocious, atrocious violence, is to be exploded from midwifery. Contusions, inflammations

lacerations, fractures, decapitations,—these are the tremendous consequences resulting from this error,—consequences at once fatal to the mother and the child. Laceration of the womb, laceration of the vagina, extensive laceration of the perinæum,—one or other of these with certainty will occur if you operate rudely, and now and then perhaps when turning is performed with the nicest care. Those make a mock of turning who have never seen its dangers; it is at best a fearful operation.

SECTION XVIII.

ON CASES OF MORE DIFFICULT TURNING.

Though always more or less dangerous, the operation of turning may often be accomplished easily enough, provided it be performed sufficiently early, and circumstances conducive. Hence you will sometimes hear your obstetric acquaintance triumphantly exclaiming, "for my part, I always turn without any difficulty,"—a declaration, by the way, which evinces not their superior skill, but their small experience in the nicer and more dangerous parts of practice. In consultation especially, we sometimes meet with cases of turning,—embarrassed at once with difficulties and dangers; the body of the uterus is constricted about the fœtus; the mouth and cervix are more or less firmly contracted around the presenting part; the passages are swelled, inflamed, and dreadfully irritable; the patient, wearied with exertion, and desperate through suffering, cannot be persuaded to lie at rest upon the bed; and thus, sometimes, though rarely, a case is created which might try the nerves and the muscles of even those minions of obstetric fortune, to whose superlative skill all difficulties give way.

PRELIMINARY CONSIDERATIONS.

Called to cases of this kind in the middle of the night, it should be your first care to rouse your drowsy faculties and to consider with your associate the difficulties which you may have to encounter.

A French author somewhere asserts, that there has been more wit in Europe since coffee was introduced. In cases of difficulty and drowsiness, a basin of strong tea is not without its utility,—if green and hot, it is a sort of tenth muse, and has, I am persuaded, in modern times, excited thoughts, less sparkling perhaps, but not less judicious, than the inspirations of those much-vaunted draughts of Helicon, or of the still more poetic cup of coffee and champagne, which

> "Chatouillant les fibres des cerveaux
> Y portent un feu qui s'exhale—en bons mots."

In cases of turning, dangerous and difficult, you will sometimes find the patient in a state of excitement, and at others collapsed from extensive laceration or contusion, not always recollected by your predecessor when giving an account of the previous occurrences. Before, therefore, you turn, examine carefully the general condition of the patient; look at the countenance; investigate the pulse; consider the pains;—if the pains are ceasing, if the pulse is one hundred and forty, if death is in the face—a strong expression, which you may hereafter understand,—from one cause or another, extensive and fatal injury has been inflicted, and your prognosis must be given accordingly; but if the countenance though flushed is animated; if the pulse, firm and round, remains about one hundred and twenty in the minute; if the efforts of the uterus are repeated and violent;—the energies are still unbroken, and much may yet be accomplished.

MEASURES NECESSARY BEFORE THE OPERATION.

Before you proceed to the operation of turning in cases of this kind, you should prepare the passages for the introduction of the hand by relieving them from the inflammation and irritability. Sixteen or twenty ounces of blood, on an average you may take away in this view. From eighty to one hundred drops of the tincture of opium—for we give the larger doses in those cases—may also be administered with advantage; and with the decoction of poppies or warm water, (the decoction of poppies being prefer-

able, however,) the softer parts may be soothed; after which you often find that the parts sustain the passage of the hand, though previously they could not bear a touch. Before you engage in manual measures, take means for the relaxation of the womb, its mouth and body; for from the constriction of these, the principal difficulty is to be expected. For relaxing the genitals, the tobacco clyster would, I have no doubt, be found of all remedies the most effectual; and much it is to be regretted, that its effects are so dangerous. Of all relaxants the most powerful—it is of all relaxants the most perilous; and although I can readily conceive certain anomalous cases in which its use might be justifiable, yet in the present condition of my information, I have not courage to recommend it to your employment, even in those higher difficulties now under our consideration. In puerperal hospitals the warm bath might, I conceive, be used with advantage, the patient being kept there till deliquium approaches. From the excitement of the bath, a flooding might by some perhaps be apprehended; but a previous venesection would diminish the risk of this; or should an eruption occur, it would prove rather beneficial than otherwise. A very effectual relaxant is the abstraction of blood from the arm, say to the amount of twenty or thirty ounces; or rather in such quantity as may give rise to deliquium. That the relaxant has great power, is sufficiently shown by what takes place in placenta cases; for in those cases where three or four pints of blood have been lost, the hand may in general be carried up with perfect ease, the uterus passive and unresisting, yielding before our pressure. In a dozen cases or more I have had occasion to operate myself, and never do I recollect to have met with any considerable resistance to the entrance of the uterus. It is much to be regretted that large bleeding, or ad deliquium, is a very rough remedy, the latter perhaps not wholly without its dangers; one, therefore, which becomes justifiable only when the emergency is pressing.

Though the womb is an involuntary muscle, there seems to be no doubt that it may at length relax in consequence of becoming

weary, so that in the morning of the day, you are unable to introduce the hand; while in the evening, perhaps, it enters the uterine cavity with facility. Although, therefore, the first effect of delay is an increase of the difficulties of the operation, the ultimate consequence may be a facilitation of it, so that it really seems better either not to procrastinate at all before you turn, or else to procrastinate as long as may be. The risk of spontaneous uterine disruption, and the protracted pains and anxieties which are the results of this delay, constitute the principal objections to it as a general practice. Nevertheless, in those cases in which bleeding, bathing, and other remedies, have been tried without effect, this measure may be thought of; a measure which may recommend itself to the most inert accoucheur, as it simply requires him to sit still.

To relax the womb you may give opium by injection or otherwise, in large doses, eighty or one hundred drops of the tincture, for example, or a proportionate quantity of solid opium, the remedy deserving a fair trial. Of the atropa belladonna, I have had little experience. It is asserted that the extract, if rubbed on the upper part of the vagina, will relax the os uteri; but till further observation, I cannot pledge myself to the truth of this opinion. A scruple I myself once applied to the mouth of the uterus in a case of dysmenorrhœa, no ill consequences ensuing. Beware of an overdose.

Such, then, are different expedients to which you may have recourse, in order to relax the uterus before you attempt an introduction of the hand—the belladonna? the larger doses of opium; the weariness of the uterus; the abstraction of large quantities of blood from the arm; the warm bath; and most effectual of all, though most unsafe, the tobacco clyster.

Not to bewilder you, however, with a multiplicity of remedies, it may be well to remark that of these remedies, there are two on which I rely, in my own practice, and these two are the abstraction of blood, and the administration of opium. Twenty or thirty ounces of blood I usually abstract from the arm, giving, too, eighty or one hundred drops of tincture of opium;

and if that quantity do not produce the desired effect, I repeat smaller doses of twenty or thirty drops, administering these until some indication of its effect become apparent,—intoxication, drowsiness, or a diminution of the uterine efforts and pains.

DIFFICULTIES ATTENDING THE OPERATION.

The woman then prepared in this manner, you proceed to the manual part of the operation, of great nicety, requiring a mixture of tenderness, firmness, and no small share of dexterity in the use of both hands. The passage of the os uteri, will be the first difficulty with which you will have to contend; the hand being opposed by the contraction of the womb, about the presentation, and it may be that you operate for fifteen or twenty minutes before you make a safe transition into the uterine cavity: for this be prepared. Beware of impatience and violence. Beware of lacerations. Have mercy upon the patient; again, I say, have mercy upon her. Remember, that a thrust of the hand here is as fatal as a thrust of the bayonet. Wounds more dreadful are not inflicted in the field of battle. When the hand is carried through the os uteri, you may find it necessary to repress a little the presenting part,—to push the fœtus back hastily and extensively is fatal; you must not even think of it; you will tear the vagina, lacerate the uterus—do both perhaps—how easily too—but can you afterwards, repair them? To repress the presentation, however, a little, an inch, for example, so as to allow the fingers to pass, may be allowable because necessary. Even this repression, however, is always more or less dangerous, and it is best to attempt it when there is no pain. Your hand in the cavity of the uterus, you have not yet obtained your victory; the great difficulty still remains; I mean the access of the hand to the feet of the child, during which you have to contend with the following obstructions. When the womb is contracted about the body of the fœtus—your hand is much incommoded; it becomes numb, cramped, partially paralytic, and unfit for service; and under the pain which you feel, perhaps drops of

perspiration make their appearance on your forehead. Throughout the previous parts of the labour, while your patient was alone the sufferer, you have borne her pains with stoical fortitude, or a truly christian-like resignation, but you now begin to sympathise—a feeling heart is certainly an honor to its possessor. Well, in this condition, you feel for that part of the uterus which is the most roomy, and there depositing your hand, you repose for a few minutes, careful not to stir the fingers lest contractions of the uterus, and compressions, should again be produced.

When performing the operation of turning, you have to contend with a second difficulty,—I mean those occasional contractions of the womb which are denominated the pains; contractions which are exceedingly apt to be produced, when you attempt to make progress towards the feet. Now if the contractions are slight, and rare, you need not interfere. In such cases, it is sufficient to lie quiet during the pains, endeavouring to steal forward afterwards, when the uterus relaxes. Should the womb, however, be angry, and the pains more frequent and violent, more opium must be administered; twenty or thirty drops every quarter of an hour, until its further operation become obvious, or till the uterine irritation be subdued.

In these turning cases, you will sometimes meet with a third obstruction, consisting in a circular contraction of the middle of the womb, dividing it, as it were, into an upper and inferior chamber, part of the fœtus lying in both. In passing this sphincter, if you proceed with gentleness, resolutely, yet cautiously, taking time sufficient, to judge from two or three cases of this kind which have fallen under my notice, you will generally find that the hand may, on the whole, be passed with tolerable facility and safety; but beware of force.

Thus then, yielding or encountering the difficulties which oppose your progress, stealing forward when the womb relaxes, reposing when it acts; the hand extending flat upon the fœtus; the knuckles never elevated needlessly as you bear forward, lest the uterus be torn by them; at length you reach its fundus. Now,

at the time when the hand is in the fundus uteri, the brawn of the arm lies in the pelvis, the hand bearing forward beyond the ensiform cartilage, and the arm below resting upon the sacrum and perinæum, which you must be careful not to lacerate. If your person be slender, little difficulty will be experienced here; but should you carry much muscle, obstruction may arise, the pelvis being too small to give ready admission to the arm—I mean the bulkier part of it, nor can this difficulty be effectually removed; though your operations may be facilitated, and that too materially, by the copious use of cold cream or lard; or you may send for another accoucheur, who enjoys the necessary physical aptitudes. Women, in choosing their practitioner, should give a preference to those who are of effeminate make; and I feel the more satisfaction in giving this advice, injurious to none, because I know it won't be taken.

Such, then, are the principal difficulties which embarrass the operation of turning: the bulk of the arm; the circular constriction of the uterus; the occasional spasms; the general and permanent contraction of the womb; the constriction of the os uteri. The rigidity of the passages I forbear to mention, for if you operate at the proper moment, it will rarely obstruct you. Through all these difficulties, perseveringly, resolutely, patiently, composedly, without violence, and successfully at last, you struggle at length to the child's legs, and happy you are to feel them. Do not confound the arms with the feet,—an error to which you are obnoxious, when the nicer sensibilities of the hand have been impaired by compression. If both legs are seized, the child will turn more easily. If you can grasp one leg only, let this be brought down; often you may turn by one leg; but should it be necessary to draw down the other, the access to the second will be facilitated by the descent of the first. Should the seizure of the leg be impracticable, I would recommend you to lay hold of the knees, gradually working your fingers towards the feet. If you are tantalized and baulked, by coming within touch but not within grasp of the feet, so that you can feel but not seize them, you may sometimes overcome this difficulty by changing the position of the

patient. The woman turning round slowly, while your hand is in the uterus, by this movement, without further trouble, the feet may be brought among your fingers; so that under this simple manœuvre, although you cannot carry the hand to the feet, you may sometimes carry the feet to the hand, and this without much difficulty. If, however, by none of these measures the feet or knees can be reached and seized, withdrawing the hand, you may pause till you have recovered your strength a little, after which the attempt may be repeated with the same hand, or you may send for another accoucheur. By one or other of these expedients, in most instances you succeed in obtaining firm hold of the fœtal legs; and this accomplished, you draw them slowly into the pelvis, ultimately bringing them forth through the outlet, so as to convert the transverse presentation into the crural. In drawing down the fœtus, let the abdomen be thrown upon the back of the uterus and pelvis, as, under this situation, the shoulders and head will be most easily extricated. It is not by sudden or violent efforts, but by a steady gentle bearing, that the child should be brought down. When, in position, the transverse presentation shows a disposition to enter the pelvis together with the legs, the fœtus descending doubled, you may secure the legs by the instrument now exhibited, or by tying a ribbon round one or both ancles, drawn forth for this purpose; and then, cautiously pressing the presentation a little upward with one hand, while you bear forth the legs with the other, you cause the fœtus to revolve upon an imaginary axis, the original presentation passing of consequence from the mouth of the uterus, and the loins and legs descending in its place. From the demonstration here given, you may perceive that in this operation the child is not thrown back upon the uterus, so as to extend and endanger the laceration of the womb or vagina; though it revolves upon its axis, its elevation remains unchanged, or, if changed at all, it descends.

When the pelvis is narrow at the brim, space is sometimes wanting there, to give passage to the hand when grasping the feet; the mass formed by the two in conjunction being too bulky. This

difficulty may be surmounted by withdrawing the hand, after having seized the feet with the crural forceps; or, if you secure the feet, by placing two fingers, the first and second, upon the leg above the heel, the two remaining fingers and thumb being placed in front over the instep, the bulk of the hand may sometimes be reduced to so small a compass in this manner, that the transit of the brim may be accomplished.

One other difficulty I have met with in drawing down the legs, arising from the breech becoming seated over the front of the pelvis, above the symphysis pubis. In these cases, let the nurse, while you are drawing, press steadily and firmly between the brim of the pelvis and the navel, urging the fœtus towards the promontory of the sacrum; and the breech becoming dislodged, the legs will afterwards descend with facility, the delivery being completed afterwards as in ordinary crural presentations.

REQUISITE QUALIFICATIONS.

Composure, perseverance, gentleness, patience, experience, great manual dexterity, and a thorough knowledge of the bearings of the fœtus, womb, and pelvis, are requisite in the accoucheur who manages these cases. Lacerations constitute the principal danger; *arte, non vi;*—of more sudden violence beware: and take care, too, that you are not enticed by degrees to the use of too much force, wheedled onward by the delusive and dangerous, and continually successive expectations, that one ounce more pressure will bear down the obstruction. Ah! this one ounce—only one ounce more—it is this, I fear, which often kills the patient!

SECTION XIX.

ON CASES OF IMPRACTICABLE TURNING.

But what is be done in those cases, of rare occurrence, in which the operation of turning cannot be effectuated? Why, if dangerous

symptoms demand immediate delivery, embryotomy is, I imagine, the only remaining resource ;* but so long as no dangerous symptoms press, we may wait, with a reasonable hope that the fœtus will be expelled by spontaneous evolution. Two cases of impracticable turning I have seen, both terminating in this manner.

If spontaneous evolution be obviously begun, turning should not be attempted ; if the fœtus is under six months old, the natural efforts may be trusted, and will frequently expel it ; if under your attempts to turn, you feel any fibres giving way, whether in the womb or vagina, withdraw the hand immediately. The body of the womb sometimes yields, but more frequently the back or front of the vagina near the bladder, or promontory of the sacrum. It is much to be regretted that we are in possession of no plain indication, enabling us to decide with precision, when our attempts to turn ought to be relinquished as dangerous. The yielding of fibres vaginal or uterine, is a good monitory sign ; but it is to be wished that we had some less dangerous indication.

SECTION XX.

AFTER-MANAGEMENT OF FLOODINGS.

Having completed my remarks on preternatural labours and on turning, I shall now speak of the after management of those

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* In these cases, the infant being alive, the Cæsarian operation was formerly proposed and practised. When the child is dead, as it soon is by pressure, it has been pulled down by the breech, by Pen, Smellie, Giffard, and others; and the vertebræ separated by Hamilton and Perfect; and the thorax eviscerated by J. Clarke. In cases of arm presentation when turning cannot be accomplished, F. Ramsbotham divides one or two ribs, eviscerates the chest and abdomen, having perforated the diaphragm; the body collapses, and may be expelled by the process of spontaneous evolution; or should the pains cease, the crotchet should be fastened on the spine or pelvis, so that the breech may sweep the sacrum and perinæum: he saw this practice successful five times. Douglas, of Dublin, recommends the extraction of the breech, in imitation of spontaneous evolution; and Lee is of the same opinion. Velpeau loudly condemns this practice, and proposes in its stead the Cæsarean vaginal operation, whether the infant is living or dead ; a practice which no man who wishes to save the life of the mother, is justified in adopting.—*Dr. Ryan's Midwifery, 3rd Edit.* p. 533.

floodings on which I have already entered, with the view of preparing the way for the subject of *transfusion*.

DO NOT HASTILY LEAVE YOUR PATIENT.

When discharges of blood from the uterus have, in a great measure, subsided, you ought not too hastily to leave your patient. Though not frequently, yet it sometimes happens after these floodings have been arrested, that spontaneously, or in consequence of some movement of the patient, the flooding is unexpectedly renewed; or it may be, although the discharge of the blood have been stopped, and the patient have rallied somewhat, yet that she again sinks; to rally and sink again, until ultimately she dies. When the flooding is stopped completely, and the discharge has been sparing, to remain with the patient is scarcely necessary; but it is advisable when the blood has been lost in large quantities, to continue with your patient for some time afterwards—from four to six hours for example,—a longer or shorter period, according to the degree of apparent danger.

MAKING THE PATIENT COMFORTABLE.

When the floodings have been arrested, you will be asked by the nurse, and those around you, whether the patient may not be put into bed and made comfortable, an expression which every Englishman so well understands. Now, if the loss of blood be small, and the patient have thoroughly rallied, to putting to bed, as it is phrased, there can be no obvious objection; but recollect, for it is most important, that where there have been large effusions of blood, such as we were formerly engaged in considering, to put the patient to bed would be an operation of no small danger. On a former occasion it was observed to you, that I have seen one patient perish, in consequence of being moved too soon after the bleeding; and more than once after very large bleedings, I have seen a great deal of vascular commotion produced, not without alarming symp-

toms, merely by lifting a woman from one side of the bed to the other,—and this, notwithstanding the hæmorrhage had been stopped for three or four hours. For myself, when women, having bled very profusely, are reduced to a state approaching to asphyxia, it is my custom to direct that the patient remain twelve or twenty-four hours as quiescent as may be; I had almost added without stirring hand or foot. While she is lying in this state, napkins may be placed about her, to protect her person from the wet and soil, and to contribute, as much as possible, cautiously, however, to her comfort; were you to disturb the patient much, even by performing these small offices, death itself might, in extreme cases, be produced by a renewal of the bleeding, or a sudden commotion of the vascular system.

BEWARE OF SECRET BLEEDINGS.

If hæmorrhage is going on externally, in the general it cannot be overlooked; the patient tells you that she feels the blood trickling or running away; and, if she lie near the edge of the bed, sometimes it bursts forth so copiously, that you hear it fall upon the floor. It sometimes, however, happens, that unobserved hæmorrhages are going forward internally: blood clots over the mouth of the uterus; the uterus becomes dilated in consequence of accumulations in the uterine cavity. All this may be overlooked by the accoucheur. Nor must it be forgotten, that, when a woman is lying in the middle of a very large bed, a sort of hollow may form in the middle, in consequence of her lying there; and in this hollow, unperceived, a considerable quantity of blood may now and then accumulate. After large floodings, therefore, recollect that hæmorrhages may be going on unmarked, the blood sometimes accumulating in the centre of the bed, and still more frequently lodging in the uterine cavity, danger stealing on the patient in silence and unknown. Watch, therefore, otherwise you may now and then approach the bed-side and find your patient dying, or approaching to a state of asphyxia. The external hæ-

morrhages, or those in which you have an accumulation in the bed, are easily detected. Sitting by the bed-side, and asking how the patient feels, you learn, perhaps, that her strength seems as if it were going from her, and that she perceives the blood running, and, on examination, you observe that faintness is approaching; symptoms which, in common prudence, lead to an inspection of the bed, when the bleeding is easily detected. Nor is there a difficulty in making out an internal bleeding; lay your hand upon the abdomen, above the symphysis pubis; feel for the uterus; grasp it, and should it be small, as the head of the full-grown fœtus, then there is no blood in its cavity; but, should you find it large as the womb at the seven months, and further, on compression, should clots of blood come gurgling away, then there is no doubt that internal hæmorrhage has taken place.

PRESSURE ON THE ABDOMEN.

After smaller losses of blood, as at other times, it seems proper enough to bind up the abdomen, (by Gaitskell's bandage, for example,) though this is less necessary, so long as you are seated at the bed-side, and grasping the womb with the hand. But when the eruption of blood has been copious—with a view of securing the contractions of the uterus, and thus preventing the return of the hæmorrhage, we ought to compress the abdomen with more than ordinary care. After a bandage has been applied, the uterus grasped by the interposed hand, may be kept in the contracted state, when the case is more pressing; or, in less urgent emergencies, the bandage may be used with the interposition of a pillow over the abdomen in front, if you wish to increase the pressure, and, in this manner, the closure of the uterus may be rendered more sure, and the internal bleedings may be prevented. Externally to the dress, or over the body linen, the bandage may be put on; the less disturbance the better. It is useful to apply these bandages before the delivery takes place, when they may be easily tightened afterwards.

APPLY NAPKINS TO THE GENITALS.

I am accustomed, and to you I recommend the practice, to apply clean napkins to the genitals even after the hæmorrhage has ceased; removing and inspecting these napkins occasionally. If there is no blood on them, or but little, it is clear that copious hæmorrhages cannot be going forward; more especially if, before inspection, we have made any pressure on the uterus, so as to urge forth any blood that may have accumulated there; on the other hand, if we find a broad red stain, with clotted blood upon the napkin, that the flooding is prone to return, there can be little doubt.

NOURISHMENT.

If a hæmorrhage is arrested, you may be asked, by the nurse and friends, whether it is not proper to administer nourishment? Now, if you find the patient is improving, the limbs warming, the lips reddening, the pulse enlarging, the frequency of the cardiac beat diminishing, the energies of the mind reviving,—in such a case it is wise to let well alone; I would dissuade you from interfering much with nourishment, for nourishment taken into the body where women are much reduced from the loss of blood, will, owing to the debility of the digestive organs, probably be of little benefit. But, if the woman is sinking lower continually—gradually subsiding into the grave—in order that nothing may be left undone, nourishment should, I think, be administered. From the first, the bleeding ceasing, moderate quantities of nourishment may be given; to solids the patient may have a disgust; from the state of the œsophagus, she may not be able to swallow them; at all events, in this exhausted condition, she may be unable to chew them well; but milk, broth, eggs prepared in any way, if soft, may be recommended. From three to six ounces of liquid nourishment may be thrown into the stomach every three or four hours especially if it seem to agree.

HEAD-ACHE AND DIARRHŒA FROM PROFUSE HÆMORRHAGE.

When large hæmorrhages have occurred, you will sometimes be surprised to see the rally which is effected in the course of four-and-twenty hours. The pulse, it may be, is sunk below one hundred; the cheeks are slightly reddened, the energies considerable. On the other hand, however, if the discharge of blood have been large, and if the woman is of that sort of constitution which cannot sustain itself against the hæmorrhage, various symptoms are likely to manifest themselves in the course of the first two or three days, of which the following may deserve your notice:—For women to have a great deal of head-ache, is by no means uncommon, and with it is joined a certain lightness, aggravated when the head is raised from the pillow, the symptoms, according to Dr. Haighton, not being relieved by leeches and blisters, remedies which, from his dissuasion, I have been induced not to essay. My valued relative imagined, not without good reason, that the cephalic symptoms arose from the want of blood in the vessels, and conceived that they would therefore be most effectually relieved by nourishment introduced into the stomach.* For some time, for a week or a fortnight for example, this *cephalalgia*† may be continued; but, though somewhat alarming on account of the lightness attending it, it seldom terminates in any serious cerebral attack. With irritability of the alimentary tube, the patient is occasionally assailed; vomitings sometimes, and still more frequently purgings. This diarrhœa, if moderate, may do the patient but little injury; but should it prove, as it not unfrequently does, both obstinate and copious, under the

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* For the violent and pertinacious head-ache, and other nervous complaints, which follow profuse hæmorrhage, and sometimes continue for many weeks, it will be of great service to procure two or three stools every day previous to the exhibition of bark, or other tonic medicines, though the patient be pale and in a weak state. For the present relief of head-ache, cold applications to the temples, as white of egg, mixed with powdered bay salt or crude sal ammoniac, always keeping the legs and feet warm, will sometimes be of service, as will also occasionally all the nervous medicines in common use.—*Dr. Denman's Midwifery*, 7th edit.

† Cephalalgia:—From κεφαλη, *kephalē*, the head, and αλγος, *algos*, pain.

purging the patient may be carried off. An atonic, fretful, allied perhaps to aphthous inflammation of the mucous membrane of the stomach and the bowels, terminating in excoriation, I suspect to be the proximate cause of this disease; and I look upon it as produced by general ill health, the result of the inanition; this inflammation, or inflammatory erythism, as in the nose, the lungs, or urethra, producing an excitability of the part. Opium, chalk, aromatic confection, hæmatoxylon, dry diet, and the removal of the patient into the country as soon as possible, are the best remedies. Dry diet and change of air have sometimes the best effects. For a considerable time before his death, the Epicurus and Lucian of his age—Hume, the historian—laboured under a diarrhœa, which ultimately destroyed him; yet it is remarkable, that, for health or business, having occasion to make a journey southward from the Tweed, he found more apparent relief from this excursion than from any other remedy. It was with the knowledge of this fact upon my mind, that I tried the effects of removal in a pertinacious and formidable diarrhœa, occurring after flooding, under my own care—*Remedium anceps satius quam nullum.*—Though the experiment was, perhaps, not without its danger, and the patient was reduced to the last degree of debility, she was put, by my advice, into an invalid carriage and sent to Stamford-hill, so ill, that her apothecary became her attendant, as it was doubtful whether she would reach that place alive; yet although, with little or no benefit, we had been trying all the more effectual remedies while she remained in town, and in Bishopsgate too, a part of the metropolis, perhaps, not the most unhealthy, in the course of a few days after her arrival at the Hill, the diarrhœa of itself ceased, and a full impression was left upon my mind, that the journey and the change of air were the remedies to which her recovery was to be referred.

WEAKNESS.

Of course, after these large eruptions of blood from the uterus the patient becomes very much reduced in her strength. Now, for

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plete resuscitation, by transfusion, sunk under an effusion into the chest and pericardium. I had received (more gratifying to me than any other remuneration) the thanks of the friends; two very beautiful children, in the lisping and imperfectly formed articulation of childhood, attempted too to stammer out their thanks; when, two or three days afterwards, the hydrothorax showed that it had been gradually stealing upon its victim, and after a short struggle, she sank. There were extensive old adhesions in the chest, the consequence of severe measles in earlier life.

ERRORS TO BE AVOIDED.

I shall now close the remarks which I have to offer generally on this tedious, but very important subject of flooding, by pointing out some three or four errors, which, in moments of negligence, you are likely to commit, in the hope that I may guard you against them. In the first place then, in the earlier months of pregnancy, where you have eruptions of blood from the uterus, if you think you are possessed of more than ordinary manual skill, you may, perhaps, feel an inclination heedlessly to thrust your hand into the uterus, in order to abstract the ovum; now, I have told you already, that although, in the earlier months, where the accoucheur is very skilful and circumstances are very favorable, there may, it is true, in individual cases, be an advantage in bringing away the ovum, by the introduction of the hand into the vagina, and of one or two fingers into the uterus, yet as a general practice, it is to be condemned. Unnecessary manual interference, therefore, in the earlier months, is an obstetric error, against which you ought to guard. Remember, however, that in the latter months you may fall into another great error of the opposite kind; I mean the neglect of the delivery where the operation really is necessary, an error which may prove the destruction of the patient. In obstetrics generally, the rule is to err, if you must err at all, on the side of indolence,—allow me the expression. Err rather by not interfering where assistance is necessary, than by pragmatically and unneces-

sarily interfering where help is not required; for delivery being a natural process, the occasions in which you may interfere needlessly are endless; but in general midwifery, the cases in which you may err, by refraining from interference when really required, are few. Nevertheless, feeling as I do, that this is a most wholesome principle, I very cordially agree with Denman, that, in flooding cases, of the latter months especially, we have an exception to the rule. The cases are so dangerous, and so much depends upon the practitioner, and more especially upon the emptying of the uterus, that, in these cases, I would more willingly pardon the over-active than the inert. Above all, when floodings occur in the latter months, I would caution you against delaying the delivery too long, when delivery is really required. And, if you attend to the general rules which have been laid down on this point, I think you cannot wander far from the right path.

There is yet another error against which you would do well to guard, and that is, the use of too much violence and hurry in conducting the delivery. In flooding cases, when delivery is required, there is not only danger, lest you abstain from the delivery too long, but there is danger also lest having abstained till your patient appear to be on the point of sinking, you then, anxious to deliver her while breath remains, proceed with a rapidity or violence which may bruise, tear, destroy. Now, therefore, while your consciences are clear, before it is too late, I caution you against this formidable error—beware of delaying the delivery too long; but if, unfortunately, delivery have been long delayed, beware, too, of using a force and promptitude of extraction greater than the parts may safely bear. In scientific midwifery violence can have no place.

But again: I have told you that there are cases, and, indeed, I may say on the whole, many and most important cases, where, after great discharge, the patient is lying in a state approaching to asphyxia; now, in these cases, you may fall into the error of sitting down at the bed-side without reflection, to disturb the clots, whether by examinations or by the introduction of the hand into

the uterus or the vagina. Remember, however, I beseech you, what was observed before; if, by operations of this kind, you break up the concretions and renew the hæmorrhage, under this renewal, the woman will most probably sink. Against such a careless excitement of the bleeding, therefore, be, I entreat, upon your guard; consider again, and then reconsider the rules prescribed in a former place. If the bleeding of itself recur copiously, it may be necessary to operate; but so long as the discharge is arrested, wholly or in great measure, unless the patient be rallied thoroughly, refrain from manual operations. Perhaps it may be hereafter found in some of these cases, that transfusion may be performed with advantage before the delivery, and of this operation I now proceed to speak.

SECTION XXI.

ON TRANSFUSION.

The operation of transfusion I take to be of so much importance to mankind, that, having made it the subject of much thought and experiment, I seize with pleasure the opportunity of treating the topic more at large.

PROGRESS OF TRANSFUSION.

The general idea of transfusion, it is probable, has occurred to many in former times; and I am willing to believe, that it might not be unthought of by those mighty masters of antiquity, who, first discovering the principles of things, to us who have followed them on the face of our planet, seem to have left only the less splendid honour of exploring those tracts of knowledge which they originally pointed out. It is, however, certainly to modern industry that we are indebted for bringing this operation into notice. Lower, in our own country, and Denys, among the French, towards the middle of the seventeenth century, first demonstrated its practica-

bility, by observations on the human body, and experiments on brutes; nor, should I deem myself without blame, had I omitted to mention their names. To men of this kind I conceive it is—to men who not unsuccessfully make it their ambition to contribute discoveries in art and science to the general fund of human knowledge—that an age or country owes, in no small degree, its lasting splendour. The mass of mankind seem hitherto to have been scarcely capable of distinguishing who are, or are not, their friends. Hemlock, or the cross, has too often been their reward; while the general ear has been wearied with the applauses of those, who, without honest principle, for their own aggrandizement only, have wielded the brute force of the species. But the age for this modish and destructive folly, has, I trust, already begun to pass away. Now that personal interests have vanished, who, among civilized nations, cares, in present times, to applaud a Jenghis—or a Nadir—or any other unprincipled devastator of days gone by—brute favourites of fortune—but scourges of the species, or, if you will allow a bolder figure, the destroying angels of the East. As knowledge steadily advances, these men of mere violence will, I trust, appear before their brethren, the rest of the species, in their true characters; while the names of Socrates, of Plato, of Euclid, of Archimedes—shall I add it—of Timoleon, the Liberator, with still increasing veneration and applause, will, I persuade myself, descend to the latest posterity of that mankind whom they have benefitted. But, to return.

If I have myself any claim, however small, to rank among the supporters of transfusion, it lies entirely in this: that, undeterred by clamour or scepticism, I have made it my endeavour, again, to bring the operation into notice; and to show further, by experiments on animals, and observations on the human body, that transfusion, as it is called, may be performed by the help of a syringe, under the use of which, human blood, of the kinds used, alone fit for the operation, may be infused into human veins. In the original operation, brute blood was employed; but this, at least, if taken indifferently, from animals, and injected in large

quantities, is fatal. For the original operation, the presence of some animal in the bed-chamber was necessary ; what then was to be done on an emergency? A dog, it is true, might have come when you whistled, but the animal is small ; a calf, or sheep, might, to some, have appeared fitter for the purpose ; but then, it could not run up stairs. In this condition of it, the operation, little more than a name, was great in its danger, but of small advantage in those very cases of sudden bleeding, in which it seemed to be most required.

Notwithstanding the sneers of his comic countryman, who placed him among the clouds, it was the just boast of Socrates that he had brought down philosophy from her airy speculations, into the commerce of mankind ; and much it is to be wished, that some able and long-lived experimentor would do the same kind office by physiology. To me, on weighing the considerations before enumerated, the great desideratum in transfusion appeared to be, that, being brought from our lecture-rooms, to which it had so long been confined, it might, in some improved form, be rendered safer, and more serviceable at the bed-side of the patient. Now, although it was evident that transfusion might be promptly (perhaps, however, not safely) performed, by means of a tube simply, provided the artery of a bystander could be laid open ; yet, it seemed that a more ready mode of rendering the operation practically useful was by adapting to its performance the use of the syringe ; and with the hope, in the end not disappointed, of accomplishing this point, I was first led into the following train of investigation :—

THE BLOOD OF ONE ANIMAL MAY BE SUBSTITUTED FOR THE BLOOD OF ANOTHER OF THE SAME SPECIES.

That the blood of one animal may be substituted for the blood of another animal, of the same species, is a principle which has been placed beyond the shadow of a doubt. Repeatedly, as others before me, I have drained the dog till it lay in a state of apparent death, the blood ceasing to issue even from a tubule inserted into

the carotid towards the heart, the circulation, therefore, being entirely arrested. The animal being, in this condition, (apparently dead,) I have transfused from another dog, and found, where the operation has been well performed, that the dog, which seemed to be irrecoverable, has soon after arisen from the table, as if it had experienced a resuscitation from the dead. It is true, indeed, that for two or three days a little cachexia, or ill health, hung about it; but, in the course of a few days more, the animal seemed to recover itself completely, becoming as well as before the operation was performed.

THE BLOOD OF ANIMALS OF A DIFFERENT SPECIES UNSUCCESSFUL.

By many it has been imagined hitherto, that, in the operation of transfusion, the blood of one genus of animals may be indifferently substituted for that of another genus; the blood of the sheep, for instance, for that of the dog; the blood of a calf for that of a man; a doctrine which I had myself imbibed. Accordingly, in some of the first experiments which were made, and which, as far as we can learn, were by no means very successful, the blood of the brute was substituted for that of the human body: but it was first suggested to me by one of my own esteemed and respected pupils, Dr. Locock, that the blood of one genus of animals might not perhaps, with impunity, be substituted indifferently for that of another genus. Draining dogs of their own blood, he supplied them from the sheep; and found that, though the animal was resuscitated for a time, the blood of the sheep circulating in the veins, and performing the office of the canine, so that the dog was able to run about the room, yet in the course of ten or twenty hours, I speak from memory as to the term, the animal invariably died. Read his inaugural dissertation, published at Edinburgh a few years ago: it is well worth attentive perusal. Consentaneous experiments, to be found at large in the "Researches," I have myself made with the human blood. From five dogs I abstracted their own vital fluid, and, by means of a proper instrument, introduced the human

blood in its place; of those dogs one died on the table; two or three lived for a few hours, then sinking; and one surviving for four or five days, expired, after many cachectic symptoms. So that, it seems, from experiments of this sort, that the blood of one genus of animals cannot, in large quantities, be substituted indifferently for the blood of another, without occasioning the most fatal results. Hence, eminently rises a necessity for the employment of the syringe, as this enables us in human hæmorrhages to use the human blood; for, even though a horse or a sheep were at hand in the chamber, it is very doubtful whether the blood of that animal would save a woman when sinking from bleeding, and I am sure it would be dangerous to try it.

BLOOD MAY BE TRANSMITTED THROUGH A SYRINGE WITHOUT MUCH DETERIORATION.

That blood may be transmitted through the syringe as through the heart, without becoming unfit for the purposes of life, I satisfied myself long ago, by a variety of experiments, made previously to the occurrence of the cases already before the profession. Deterioration it suffers, it is true, but not such deterioration as may render it unfit for the animal body. Several dogs I have drained so, that they lay in a state of asphyxia—in truth, appearing to be altogether dead. Dogs thus prepared, I have replenished by the use of the syringe with blood from other dogs, and they have done as well as if transfusion had been performed by means of the tube. It has not been in a few, but in many experiments that I have found this result; and how could I multiply experiments too much on a subject so important? Who that venerates reason, and has the love of mankind on the heart as well as on the tongue, will dare to tax such physiology as brutal?

OTHER EXPERIMENTS.

To convince myself more satisfactorily, another scheme of expe-

riments was made, varying in circumstance, yet turning on the same principle, of which the following is a rude idea :—

Directing towards the heart a tubule inserted into the femoral or carotid artery, and the corresponding veins, I placed near to these tubes a cup, in communication with a proper apparatus; then allowing the blood to rush from the artery into the bottom of the cup, by means of an instrument called an impellor, figured in my "Physiological Researches," I absorbed this fluid into the barrel of a syringe, and returned it to the veins, so adjusting the return to the eruption from the artery, that more than an ounce of blood was never allowed to accumulate in the cup of the syringe at one time. To omit less decisive observations in some of these experiments, the operation was carried on for twenty or thirty minutes together, the blood rushing from the artery during the whole time, so that all the blood in the body of the animal must have passed the syringe, and this too repeatedly, the dog, however, not appearing to suffer materially in consequence.*

From experiments like these, I convinced myself that in the dog, at least, blood may be transfused by the syringe, without becoming unfit for the purposes of life; nor was it, therefore, I conceive, with enthusiasm or rashness, that I first came to operate upon the human body, but with a mind rationally prepared to the best of my power, by previous reflection and experiment. But reasonable and irrational ardour are not always easily distinguishable, and zeal or enthusiasm are terms which derive their application, not so much from our reason as from our prepossession and prejudice in relation to those things to which they are applied.

MODE OF PERFORMING TRANSFUSION.

There are different ways in which transfusion may be performed; and I shall first briefly state to you the method approved now by

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* Given at large in the "Researches," Pathological and Physiological, by Dr. Blundell; also in the Medico-Chirurgical Transactions.

experience, and which, perhaps, for general purposes, may at present be deemed the best. And first, then, the operation may be executed by means of a well-constructed two ounce syringe, air secure, made of brass, tinned internally, not offensive with oil, of course perfectly clean, and to be used in the following manner:—One or two bystanders (males flow more copiously than females) being in readiness to supply the requisite quantity of blood, the arm of the patient should be prepared as follows: taking a scalpel, at one cut, if tolerably dexterous, you lay bare the bleeding vein, which opens on the eye under the knife, the patient being so far from suffering in this part of the operation, that frequently she is not aware that it has been done. The vessel manifesting itself, you take a short curved probe, which you slide beneath it at the lower extremity of the incision, with a well-sharpened lancet, laying open the vein to the extent of about a line, that is, one-eighth of an inch; afterwards introducing, cautiously, at this orifice, the tubule of the syringe, so as to satisfy yourselves that when you operate the entrance will be easy; at this time perhaps, a little blood oozes out. This preparation made, you bind up the arm of the person who is to yield the supply of blood, laying open the vein in the usual manner, but making the orifice rather free. In a conical tumbler, of large diameter, the blood may be conveniently gathered; and into the syringe, previously washed and warmed by transmission of water milk-warm, the blood is to be absorbed from the point of the tumbler through the long tubule, in such manner that, although the whole of the blood is not to be taken up lest the air should be drawn in, not more than a dessert spoonful is to be allowed to accumulate at once in the bottom of the vessel; in truth, it is not in the glass, but in the barrel of the syringe that the blood should collect. This tubule should be long enough to throw the barrel of the syringe above and beyond the brim of the tumbler, so that it may be completely out of the way. That it may enter the vein more easily, the end of the tubule may be bevelled, like the tea-pot spout.

Two ounces of blood from the arm being absorbed in this

manner, holding the syringe vertically with the tubule above and the handle of the piston below, you slowly urge the piston onward, till, together with all air, about a dessert spoonful of blood has been expelled; and then closing the nozzle by the apposition of the tip of the finger, lest the piston descending by its own gravity, fresh air should be absorbed, you give the instrument the horizontal direction, and proceed to insinuate the blood into the vein. On approaching the arm of the patient perhaps you find the orifice obscured by the blood; touch the vein with a sponge, and the aperture may be seen as clearly as the letter of a book. At this time an assistant may gently press the vein, where it lies across the probe, which will intercept a further exudation, for the circulation is so low that it is easily arrested. These preliminaries premised, without trepidation, with that calm and measured movement of mind and body, the result, not of mere animal spirits, but of that confidence which arises from a mind well prepared, you proceed to deliver the blood, cautious not to interpose unnecessary delay. For this purpose, the tubule being insinuated into the vein, to the extent of half an inch towards the heart, it is your next office to infuse the blood into the vessel, and very nice and critical is this point of the operation. What the heart in women or men might bear in a state of vigour I do not know, but reduced as it is in these cases, feeble as the limb which refuses to sustain them, it cannot support a sudden influx of the blood. To infuse too slowly is an error no doubt, for, while lying in the syringe, the blood every moment is becoming more and more deteriorated; but to inject too rapidly is a still more fatal error: gorge the cardiac cavities, and the patient may perish as suddenly as if shot through the heart; it is, therefore, with moderate velocity that the blood should be infused, and most cautiously when the collapse is great. In pressing forward the piston, from moment to moment, fix your eye on the countenance, and if all is well, then proceed more boldly; but if the lip quiver, or the eye-lid flicker, or if there be restlessness or vomiting, though these are not fatal symptoms, yet it is better to suspend your operation until they subside, as in the present state of our information

there is good cause for alarm; and let me add, that after waiting in this manner, you must not return to the injection, until you have procured a fresh supply of blood. If the first two ounces load, it is better to wait a few minutes, say six or eight, before more is injected; but if these first two ounces are well received by the system, proceed immediately to inject other two afterwards, waiting for eight or ten minutes, till the whole have duly circulated over the body, and, in some measure, at least, have renewed its vigour; under the extremes of weakness, this caution becomes especially necessary. Sixteen ounces of blood for the female system is a large measure—eight or ten are more sparing; four or five may, in delicate cases, turn the scale in our favour. If our object is simply to save life, the smaller quantities must be injected; if to restore vigour, the larger. Whether we transfuse or not after floodings, re-action is apt to come on next day. The entrance of a single bubble of air, though not fatal, is always to be deprecated. Inflammation of the vein is a neat topic of declamation; after the danger is blown over, listen with decent attention; till then you have not time to think about it—Antipater, and the myo-machia, may cross the classical mind. If the blood dribble from the arm which supplies you, or if it be slightly coagulated, it is unsafe, if not wholly unfit, for use. Wash the syringe between each injection. Watch the arm lest it inflame afterwards. If the respiration be stopped, it is, I fear, in vain to transfuse; if respiration is at its last gasp, the hope is small—a sudden influx of two ounces would, I think, certainly destroy in these cases. Would the heart bear, at proper intervals, doses of half an ounce? If the respiration be steady, you are almost certain of success. The best syringes I know of are those of Laundy, Weiss, Reid, and Scott. Laundy's are made according to my own whim; of course I think them preferable. Transfusion from artery to vein, perhaps even from vein to vein, might be accomplished by tubule simply; could you, however, obtain readily those who would supply you in this mode, the arterial transfusion especially would require caution; if the heart were very feeble, an impetuous influx would destroy.

TRANSFUSION NOT WITHOUT ITS DANGER.

Against this operation it may be urged, as against most operations, that it is not without its danger; and it may be so. But this is no reason why we should lay it aside, if in any case it be necessary; for, in truth, every operation of surgery has its danger. As, then, every operation we perform is attended with more or less danger, unless it be proved, which it cannot, that the injection of blood is attended with more surgical danger than ordinary, why should we urge this in a solitary manner as an objection against transfusion? Again, it is sometimes objected, that the operation may be needlessly performed: and it may be so. How often will you, in the course of your practice hereafter, give medicine, with no advantage to your patient, though it may be with some advantage to yourself. How often is venesection performed needlessly? How often has lithotomy been performed needlessly? How many legs have been taken off, where, if the patients had been under better surgery, they would still have had their limbs? Why, then, are we to bring this as a solitary objection to the operation of transfusion? If you transfuse too copiously, you may take the blood out again, but when you overbleed in inflammation, what will you do? It may be said again, that the operation may sometimes prove unavailing, and so it may; for he would be a bold man indeed, who would venture to affirm that this, or perhaps any operation, ought always to succeed. You amputate a limb, but sometimes the patient dies. You perform venesection, yet the inflammation proceeds notwithstanding, and destroys the patient. So that if you candidly weigh in your minds the arguments that are raised against transfusion, you will find that they are objections which do not lie singly against this operation, but against surgery at large,—nay, against the whole of the medical art itself; sometimes not without danger, sometimes used without need, and sometimes not producing any obviously beneficial effects, and yet, after all, so well calculated on the whole, for the advantage of mankind, that no people, civilized or barbarous, are entirely with-

out it. Why, then, I ask again, are these objections urged alone against transfusion? Is it apathy, is it the trouble of learning, is it negligence of reasoning, is it that unnamed and acknowledged feeling which devours itself—a very Proteus in the variety of decent garbs which it assumes?

After all, among the members of a liberal profession, like that of medicine, I persuade myself that these objections, even when urged without due candour, arise, at bottom, from no unworthy motive; perhaps from an honest conviction of the essential uncertainty of our art, and the risk, which there must be, of incurring new dangers, while we are flattering ourselves that we are the discoverers of new remedies.

> ——————— "Audi
> Nulla unquam de vitâ hominum cunctatio longa est."

The more the discussion, the more objection and defence the operation has to undergo, the better. If it be grounded in error, let it perish; if in just principles, it must survive; a remark, indeed, which applies to philosophy generally. From the most violent conflicts of opinion, truth has nothing to fear; though long to us, to her a thousand years are but as one day—a point—a nothing in the eternity of her duration. Oppressed, amongst us, beneath the chaos of human follies and errors, she must, she will emerge unhurt at last—unchangeable as her Author. By the mere force of durability, she must ultimately stand alone—solitary amid the wreck of those perishable materials, by which, for a time, she is overwhelmed—"and the ark floated in the midst of the waters." To her, the living spirit of philosophy—immutable, immortal, infinite, eternal truth—to her, parent of all knowledge—fountain of light, to her may be addressed, without perversion or hyperbole, the sublime apostrophe of the poet—

> "The stars shall fade away, the sun himself
> Grow dim with age, and nature sink in years,
> But thou shalt flourish in immortal youth,
> Unhurt."

When on the subject of transfusion, I should be guilty of criminal injustice were I to forget to mention with applause the names of Doubleday and Waller. Their exertions stand in need of no commemoration from me, but I may be allowed to remark, that, whatever advantage may be hereafter derived from this operation, to them mankind will be largely indebted for it. Through evil report and good report, they have laboured devotedly to uphold and practise it; and, I trust, that in the approbation of the public, and that complacency of feeling which arises from the consciousness of not having ill deserved, they may, hereafter, find the full remuneration of all their exertions.

SECTION XXII.

ON THE DIFFERENT SUBSTANCES WHICH ESCAPE FROM THE UTERUS IN THE EARLIER AND MIDDLE MONTHS.

My remarks on floodings generally being brought to a close in a former part, I proceed to enlarge a little on those different species or varieties of flooding, which you are likely to meet with at the bed side, dividing them into those which are occurring in the first three or four months of pregnancy, and those which make their appearance in the last three or four,—the earlier and later floodings, as they may be called.

Before, however, I enter on the consideration of the earlier floodings, it may not be amiss, on the very threshold of our subject, to premise a few observations on the appearances of those substances which, in this part of gestation, are found to come from the uterine cavity.

MODES IN WHICH THE OVUM IS EXPELLED.

I may observe, then, at the outset, that rarely, yet occasionally, the whole ovum is expelled from the uterus entire; in shape and bulk like a pullet's egg, containing a cavity of appearance imme-

diately to be described, with liquor, and sometimes a fœtus not bigger than the garden bean. More frequently, however, disruption precedes the expulsion of the ovum, the parts of which escape in succession; and first the liquor escapes, and then the embryo, if this be not already vanished, to be followed ultimately by a fleshy mass,* which constitutes the most important part of the whole structure. In this fleshy mass, when washed and immersed in clear water especially, you find a hollow of bumpy (tubercular) surface—smooth—polished—invested with a semitransparent glistening membrane of pearly appearance, through which the dark red of the structure over which it lies, may be obscurely seen. With this fleshy mass, which at first glance resembles a clot of blood, membrane is marginally connected, floating in the water, and forming, in the entire condition of the ovum, a part of the cavity in which, as in the hollow of the egg, the embryo is lodging.† Now for the ovum to come away in a third manner, is by no means very uncommon; the fœtus it may be, being first expelled, or not appearing at all, while the secundines follow by pieces, one portion after another, till the whole is discharged from the womb. To those who are accustomed to inspect the ovum of the earlier months, if the structure be in ordinary condition, it is by no means difficult, on examination, to determine whether a part only, or the whole, be away; but those practitioners who have paid but small attention to these matters, are liable to deceive themselves with the persuasion, that the uterus is completely evacuated, when, in reality, a part of the ovum still remains in its cavity. The embryo is so small at this early period, and the secundines are so large, that, at first glimpse, one half of them seems proportionally of bulk more than adequate to the fœtus. Beware, therefore, of falling into error here—beware of presuming that the uterine cavity is empty, when a portion of the secundines still remains; for

* Well exhibited by a preparation in Dr. Blundell's Museum.

† In the earlier months the fœtus is of very small size, compared with the bulk of the secundines: so that the fleshy mass, with which the embryo is in connexion, may be as large as half the hand, when the embryo itself is no bigger than a single joint of the little finger.

this portion lodging in the hollow of the uterus, may keep up the drainings as effectually, as if the ovum lay there entire. Again, the ovum, composed of two parts, the one the fœtal portion, made up of the embryo, enclosed in a delicate membranous bag, covered with a fine shag; the other, the maternal, consisting of the fleshy mass, which, in good measure, encloses both the embryo and its receptacle, corresponding with the placenta of the full-grown ovum of nine months. Now, it sometimes happens, that the fœtal part of the ovum is expelled alone on one day, while the placenta, or remaining portion of the ovum, escapes from the uterus a length of time afterwards, an interval of uncertain duration, sometimes of a few hours, sometimes of a few days, being interposed; the woman during the whole term having all the symptoms of miscarriage, as, by the presence of the placentar portion of the ovum, the distention of the uterus is kept up. Now, in cases of this sort, you are more exposed to deception, because, the embryo, with its membranous cyst and liquor amnii coming away, has to the inexperienced the appearance of a complete ovum: the inexperienced only, however, can be deceived in this manner; for if your eye have been accustomed to the inspection of miscarriages in the earlier months, the want of the placentar part of the structure must appear obvious at once.

SOMETIMES MORE THAN ONE OVUM.

For women to conceive of three, four, or five ova at once is very rare; but the occurrence of twins is by no means infrequent. Now, in miscarriages, sometimes a single ovum may come away, another, or the greater part of another, still remaining behind in the cavity of the uterus. Not to mention that we now and then meet with cases in which, together with a healthy ovum, there forms in the womb a fleshy mass, (a mole, as it is popularly called,) in which no traces of ovum are discernible, the whole of the ovum being expelled, and this mass remaining behind in the uterus, and, as in ordinary miscarriage, keeping up the discharge of blood. In

difficulties of this kind the prudent and very circumspect practitioner, the Volpone of his profession, will probably soon detect the nature of the case; but those who are rash, or have seen little, may be again deceived, inferring, with too much certainty, a thorough evacuation of the uterus, because a complete ovum has come away. The error, not of speculative nature, is to be deprecated in a practical view; for the bleeding from the uterus continuing, yet not being understood by the practitioner, it is probable that he may not have recourse to the more judicious means for its suppression. When the case is ambiguous, examination is the only diagnostic on which we may with certainty rely.

AMBIGUOUS TRACES OF THE EMBRYO.

In miscarriages, it is by no means uncommon to see no traces of the embryo; dead, perhaps, and dissolved, in the liquor amnii, like sugar in water, or food in the gastric juices. Occasionally we find parts of the embryo only, the head more especially; and it well deserves commemoration, that now and then the embryo dying, and melting perhaps in the second month, the secundines are retained, and continue to grow till they acquire the bulk of the same parts in a nine-month ovum, so that, to the astonishment of the unpractised, there at length issues from the womb a large placenta, with its membranes and water, without the fœtus, which might be supposed to tenant them. When, too, the ovum dies in the earlier months, it may be retained to the close of pregnancy, the fœtus, without growing or decaying, remaining quietly in the cavity of the womb till, in the seventh or eighth month, perhaps, labour pains occurring, the ovum is at length expelled, but not of the bulk which, from the age of gestation, we should have anticipated. Hydatids sometimes form in the ovum, and, if I may be allowed the expression, devour it; sometimes a part only becoming converted into their substance, so that they lie embedded and concealed in the placentar structure; sometimes the whole—or,

with the exception of a few vestiges, the whole—being consumed, so that in place of the ovum, nothing but these animalcules remain in the uterus. Sometimes they form a cluster large enough to fill a wash-hand basin, or a vessel more capacious; sometimes they are altogether of much smaller bulk. Much bleeding accompanies their expulsion when their growth has been great, nor is the flooding always sparing when their bulk is much smaller. While adverting to the changes which the ovum undergoes before its expulsion, I must not forget to remind you of those shapeless masses, membranous or solid, before mentioned. Of these it may be observed further, that sometimes there are several, more generally they are single; like the ovum itself, they vary much in their bulk, sometimes not larger than the pullet's egg; occasionally large as the fist, the child's head, the child itself, or even larger than this. Masses like these may give rise to symptoms similar to those produced by ordinary miscarriages, and they are best managed on the same principles as other flooding cases.

CONCLUSION.

And thus much then respecting the different substances which escape from the uterus in the earlier and middle months. The various points worthy of attention are well illustrated by a series of preparations in my collection.*

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* For one preparation of the ovum I am indebted to my friend Mr. Sterry; you will see it entire, in size and form, like the fowl's egg; another preparation also of the earlier weeks, at first glance presents an appearance like a clot of blood, and shows how needful it is to order the nurse to preserve, for the inspection of the accoucheur himself, all solid substances which may pass from the vagina, in order that he may decide whether or not the ovum be come away.

A third preparation shows the interior of this apparent clot, and exhibits excellently well the various characters of the cavity in which the fœtus lodges; the smooth membrane, the bumpy (tubercular) surface, with its glistening, pearly, yet livid red colour. There are also specimens of the fœtal portion of the ovum, only a few weeks old; consisting of a bag covered with fine shag, filled with water, in which the embryo floats. On careless, or inexperienced inspection, such substances may seem to form entire ova, but in truth they constitute but a small part of the whole structure. In some of the glasses you will see the fleshy

SECTION XXIII.

OF FLOODINGS IN THE EARLIER MONTHS.

When floodings occur in the earlier months, if the patient is robust and strong, and full of blood, and if she be left in a great measure to her own resources, the practitioner prescribing on general principles for occasional symptoms, she will in general do well; and very satisfactory it is to the young accoucheur to remember this, as, like an anodyne, it may soothe and tranquillize the mind when he is sitting at the bed-side of a patient. Without, however, meaning to alarm you needlessly, it is proper to remark, that women do not always recover, even in the earlier months, and certainly not always in the middle parts of pregnancy, when the discharges become larger, more especially if the patient have flooded much in preceding miscarriages, and have thus been much reduced in blood and flesh. Under these earlier bleedings, in some few instances, women sink from inanition, and still more frequently, when they escape with life, the tenour of the general health becomes greatly impaired, so that for months or years together, they labour under the cachexia produced by bleeding; dying, perhaps, at last, of hydropic, enteric, or other affections. As, therefore, sometimes, though rarely, they are attended with danger, and as they always impair the health and create much uneasiness

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masses, big as one-third or one-half the hand, and which consist of the fleshy parts belonging to the preceding. I have a fœtus of the size of three months, which remained in the womb till the seventh. Also an amorphous mass, which came from the uterus after a four-month ovum had been expelled, and the miscarriage was supposed to be complete—much bleeding attended. You may observe a fine cluster of hydatids, which came from the uterus, as you may know by their being all of them like grapes appended to a stalk; you may see the remains of the ovum on which they have been feeding. At small expense you may make for yourselves preparations of the substances which come from the uterus, and I recommend you, when in practice, by all means to do this, as it is desirable that these appearances be well known to the accoucheur. From ten to fifteen glasses would probably contain all the specimens your practice might require. As you examine the different preparations in the museum, do not omit to notice the smallness of the fœtus in the earlier months, and the largeness of the secundines with which it is connected.—*Dr. Blundell.*

and anxiety to the patient and her friends, the different varieties of earlier flooding are well worth the study of the accoucheur; and I proceed, therefore, to remark on them.

RAPID AND TARDY MISCARRIAGES.

Of miscarriages in the earlier months, there are some remarkable for the rapidity of their progress; in the morning the patient is well; in the evening, after a fright, long walk, or after the ordinary bustles and fatigues of her establishment, sometimes, too, without any obvious cause whatever, she is suddenly seized with an eruption of blood from the uterus; fainting follows—then a rally—then pain—then expulsion of one of those substances just demonstrated; the process, perhaps, being completed in the course of one or two hours. The evacuation of the uterus is followed by a contraction of its cavity, and a cessation of the bleeding, the patient recovering completely in the course of a few days, so that scarcely a trace of the accident remains. Of all the forms of earlier flooding, this is most to be desired. More generally, however, it happens in a way more harassing to the practitioner, that the expulsion takes place in a gradual manner; induced, as before, by some imprudence, or arising, it may be, without any obvious cause. At first, perhaps, a few ounces of blood are lost, and then the patient, keeping herself cool and composed, the hæmorrhage ceases, returning, however, when she rises, and begins again to stir about; and thus it may be, bleeding at one time, and free from hæmorrhagy wholly or in great measure at another, she gradually sinks into a state of inanition, becoming pale, cold, fainty, so that she is compelled at last to confine herself to the sofa or the bed. Meanwhile, as the bleedings proceed, pains begin to form, cutting, grinding, sawing, at first, then forcing, and, beyond all further doubt, parturient; and more blood flows from the uterus, and sooner or later, the contained substances come away under the forms before described. Days, weeks, sometimes one or two months, or more, may be occupied by this process, and the total quantity of

the blood lost may be large, the constitution suffering much in consequence, and, in some few cases, death itself being the result.

PARTIAL EVACUATION OF THE UTERUS.

There is yet a third variety of hæmorrhage well deserving of notice, I mean the hæmorrhagy, whether rapid or tardy, under which you have merely a partial evacuation of the uterus. A woman is seized, perhaps, with an eruption of blood from the womb, and a substance mistaken for the ovum comes away, so that you are assured by your predecessor in the case that the uterus must have been thoroughly evacuated. Notwithstanding this, however, you learn that the hæmorrhagy does not cease, and, from this time, it may be for weeks together, the patient is more or less liable to discharges of blood from the uterus, and by and by there issues from the womb an offensive odour, as if something were decomposing there. When the uterus is in this way partially emptied, there may be a retention of half the ovum; there may, too, be a retention of a twin, an accident, however, which in these cases I never myself witnessed; or, as before observed, there may be a retention of some fleshy mass in the nature of a mole lying in the uterus, and keeping up the bleeding; and this I have myself seen. Now in these perplexing cases, the grand point is to decide, whether the womb is empty or not—and to this end, when floodings prove obstinate, you should always bear in mind the recollection, that it is to something retained in the uterine cavity, that this obstinacy is most probably to be ascribed; nor should you suffer yourselves to be lightly driven from this opinion by the declaration of those who have preceded you in the management of the case. A suspicion of this kind, prepares the mind for further investigation. In midwifery, as in medicine generally, too much faith is a fault. Doubt—investigate—the more the better—truth here has no fears. Well, then, suspecting that the ovum is partially retained by the uterus, if the health be much shaken by the continuance of the bleeding, you must of course determine this very important point.

Now, that the womb is not emptied you may sometimes know by examining the ovum which has been expelled, and finding that it is not complete; and if you have been in the habit of examining preparations of this kind, and particularly if you have been in the habit of making them, as recommended, acquiring an experienced eye, you may sometimes decide at a glance whether or not the ovum be complete, and, therefore, whether, without retention of any part, the whole of it have been expelled from the uterus.

Again, you may further judge, whether or not some substance be retained in the uterus, by ascertaining whether, after the reputed evacuation of the contents of the uterus, the patient have still remained obnoxious to floodings, cutting or forcing pains, or those smells offensive to the sense, resulting from animal decomposition. Now, if there is a pertinacious discharge, and if, more especially, with this discharge, pains or fœtor are concurring, there can, I think, scarcely be a doubt, that there is something still remaining in the cavity of the uterus. Should the urgency of the case, however, demand decision, and should the point still remain in doubt, provided your hand be small, and your manual skill considerable, you may generally at once determine the question by the introduction of the fingers into the uterus,—an operation, however, not without its dangers, to which, therefore, you ought not wantonly to have recourse, and from which, in the commencement of practice, it is better to refrain. In performing this operation, as the vagina is very relaxed, the left hand, if small, may be gently deposited in its cavity, and then the bladder being empty, you may place the right hand over the uterus above and behind the symphysis pubis. This done, the first and second finger of the left hand being passed onward from the vagina, up to the very fundus of the uterus, which, by the counter pressure of the right hand, is cautiously pushed downward and backward upon their tips, the cavity may be examined without any difficulty. Should you find a solid substance in the uterus, you may, at the time, take it away. Though, in the earlier months, you may pass your hand into the vagina, you must not even think of passing the entire hand into

the uterine cavity. I had almost added, that the very thought is enough to bruise and tear the parts. If you are, from former experience, fit to perform the operation which I have been describing, you will find no difficulty in executing the different parts of it. Without the safety, or, at all events, the entire future health of the patient demand the operation, it ought not to be done. It is an evil, justifiable only when a remedy for one still greater. If you want skill, have recourse to some one more dexterous. Dilators of the os uteri, and extractors to remove the ovum, have been contrived; they are more likely to do harm than good. Iron has no feeling for you or for the patient.

CONTINUED HÆMORRHAGE AFTER EXPULSION.

There is one other variety of flooding in the earlier months, which it may be well to mention here; I mean the flooding which continues after the womb is in reality thoroughly emptied, of which I have seen several instances. In the third month, perhaps, the whole ovum comes away; but, instead of shrinking in the ordinary manner, the womb still remains very large—very lax—very vascular; the patient, of consequence, continuing obnoxious to the bleeding. It is by examination only, as before explained, that this case may with certainty be made out, by passing into the uterine cavity two of the fingers of the left hand, and counterplacing on the fundus uteri above the symphysis pubis the fingers of the right, the condition of the womb may be clearly ascertained. Remember, however, what was before stated, that to internal examinations of this kind you ought never to have recourse, unless the life or future health of the patient require them. Generally, in the earlier months, women will do very well, provided you let them alone. And thus much, then, respecting the more interesting varieties of earlier flooding. The rapid, the tardy; the flooding, in which some portion of the ovum, or some other solid substance, is retained in the womb. And the floodings, lastly, in which, though the uterine cavity is empty, the hæmorrhage continues

nevertheless; the womb being large, lax, and full of great vessels, with its vascular orifices unusually relaxed.

MANAGEMENT OF THE EARLIER FLOODINGS.

After the general observations already at large premised, the management of the earlier floodings may be compressed into few words. If a woman, in the earlier months, is labouring under a flooding of one or other of the four varieties, no obvious danger attending, the less you actively interfere, the better. The patient should be a-bed, quiet and cool; the bowels should be opened, the system, if feverish, should be refrigerated; and cold should be applied topically, and in larger doses, perhaps, lead should be administered, or the vagina should be obstructed, provided the discharges, copious and pertinacious, seem to require it. But if you find your patient labouring under a discharge more copious and dangerous, and if there is reasonable cause for believing that life, or the tenour of her future health, may be in danger, practices more vigorous than those just enumeratcd may be required. In these rarer exigencies, besides the remedies ordinary in such bleedings already detailed at large, it behoves you to consider whether you may not have recourse to some of the deobstruents formerly commended, (ergot for example,) in order to accelerate the expulsion of those substances lodging in the uterine cavity, keeping up the discharge. The ergot I have sometimes tried, according to the rules formerly prescribed, and with the greatest advantage. From idiosyncrasy, or other causes, should the ergot remain inert, it would, too, be for consideration, whether you might not manually interfere, emptying the uterus by that action of the fingers, already explained. Such interference, however, be it remembered, is always an evil. Violence will bruise, tear, and kill. To remove the ovum, however, when it lies not in the womb, but the vagina, is often both safe and proper, in both varieties of flooding. Yet, when the bowels are open, often of itself it comes away.

I will not suppose it necessary to remind you, that in the latter floodings, when the woman, without further discharge, lies in a state approaching to asphyxia, to disturb the clots by manual operations may be death. I should despair of teaching you prudence and caution, could I imagine that this principle, so lately pressed home upon the attention, were already effaced from the mind; and yet I have my misgivings: memories are sometimes aqueous. Remember, that even in earlier gestation, if the woman have lost much blood, and if she be in a state of deep fainting, it is unsafe at this time, in any way, to disturb the clots. Let her lie and rally. Assist her by other means than manual operations about the vagina. Transfusion may be necessary. Then, when she is thoroughly established, when the bleeding shows a disposition to return, when, the womb being empty, the drainings of blood still obstinately continue, vaginal operations may be proper enough.

In continued drains from the uterus, when emptied of its contents, besides the more obvious and general practices, there are two deserving especial notice—mercurial action, and the injection of the uterine cavity. Though not, I trust, besotted with an overwrought opinion of the powers of this valuable mineral, I think some cases have fallen under my notice, in which, whatever its action, the cessation of the drainings might be reasonably attributed to a mercurial action in the system. Do not, however, I entreat you, without reflection, headlong, go and salivate your patients. A slight soreness of the mouth is all I would recommend, and this as an ultimate remedy. It would be better for the personal charms, and, I am sure, sometimes better for the health of our patients, if some of our blue pill and calomel were converted into looking glasses.

The injection of the uterine cavity with astringent fluids, I learned entirely from my valued relative Dr. Haighton. Its due performance requires an accoucheur; for it is not into the vagina, but the womb, that the fluid should be thrown. Twice, or oftener, in the day, the fluid may be thrown up. Begin with a scruple of alum to a pint of water, increasing the strength according to the

effect produced. The blood is sometimes consolidated in the uterus by the action of the alum, and may, to the great alarm of the patient, be expelled with pains like those of parturition; and for this, she should be prepared. Though not prepared to assert that this practice is wholly without danger of inflammation, I never, myself, saw any serious ill consequences resulting. Women are now living who have, I think, been preserved by this remedy; but it should not be used without need. The fluid must be injected gently,—remember the communication with the peritoneum by means of the Fallopian tubes. Injections of cold water into the vagina and rectum are sometimes of great use.

ERRORS IN MANAGEMENT.

The grand errors which you are likely to commit in managing the earlier floodings, are, I think, the following. When tyros, and young soldiers in midwifery, you are apt to be too soon intimidated by the sight of blood. Perturbations are always undesirable in a practitioner; be it remembered, of the earlier bleedings, that they generally do well; that thought is an excellent anodyne. Again, if rash and resolute, you may fall into a second error, in some measure the result of the preceding; that, I mean, of needlessly thrusting your hand into the vagina, and your fingers into the womb. Remember, I have told you, nor can I reiterate it too often, that you never can enter into the womb without risk; and who, of common humanity, will incur that risk unless overborne by a paramount necessity? Now, in floodings of the earlier months, such necessity but seldom exists; of consequence, but seldom are your active manual operations required. It may, it is true, be sometimes necessary to use the hand; but a meddlesome midwifery is bad. Beware. Remember the principles formerly prescribed. The use of instruments to dilate the mouth and neck of the uterus, or to take away substances from its cavity, I dislike; in a young accoucheur, it is certainly an error. That dilatation of the os uteri can never be proper, I dare not assert. Now and then the finger

may be used as a dilator; now and then the forceps may be used to take away the substance contained in the uterine cavity; but these anomalous cases are so rare, that, not to bewilder the mind, it is wiser, perhaps, to consider them as nothing. Beginners, at least, and such I address, ought not to be perplexed with them; and on the whole, for you, I think, it is better to take the chance of evil arising from the rejection of these practices, than the chance of the still greater evil which may result from their adoption; for the cases in which these practices may be needlessly and injuriously attempted are innumerable; but those in which the rejection of them may be attended with ill consequences, are indeed few. A meddlesome midwifery is bad. To suppose the uterus to be empty when it is not, is another grave error. Recollect the diagnostics stated already to you, and you may, I think, generally keep clear of this mistake. Nor, perhaps, is it unnecessary to guard yourselves against an error the converse of the former—that of imagining, because the bleeding is pertinacious, that something must necessarily be retained. In the more doubtful cases—time or examination must decide.

SECTION XXIV.

OF FLOODINGS IN THE LATTER MONTHS

Those large eruptions of blood, which sometimes take place from the uterus during the latter months of pregnancy, I am accustomed to divide into three kinds; those, I mean, in which the floodings are connected with the situation or implantation of the placenta, over the mouth of the womb; those floodings, again, in which you have large quantities of blood coming away from the uterus, without the placenta being so situated; and, lastly, those large discharges from the uterine cavities which follow the birth of the fœtus, and either precede, or come after, the abstraction of the placenta. Now, of these three species of floodings, we shall treat in order.

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months, it seems the ovum is confined merely to the body of the womb, the neck forming no part of the general receptacle in which it lodges. The placenta, therefore, placed during these months over the neck of the uterus, lies undisturbed; but during the two or three months, in the end of pregnancy, the cervix uteri gradually dilates itself, so as to form a part of the chamber tenanted by the fœtus; and the consequence is, that the neck of the womb dilating to receive the ovum, while the placenta is not equally expanded, a movement of one surface over the other, slow, indeed, but certain, is produced. Now, in consequence of this movement of surface upon surface, there is an opening of those vessels, numerous and large, which pass from the uterus to the surface of the placenta; the blood, of consequence, rushing from the uterus largely, and without visible cause, the discharge depending on nothing extrinsic, but upon those internal changes which must necessarily take place. Again: when the efforts of parturition come on, the entire ovum is pushed down towards the vagina, as in ordinary labours—the placenta, which lies over the os uteri, of course descending foremost.* With every effort of parturition, therefore, the placenta comes forward more and more, and becoming, of consequence, more and more detached from the uterine surface, additional vessels are successively laid open, each disclosure being accompanied with a further discharge of blood. Thus, in these floodings, we have not only, at first, a spontaneous eruption of the blood, but sometimes also a return of the gushes with the pains, both of them symptoms very characteristic of the disease.

These, then, are the more important symptoms which characterise this disease: the placenta covering the mouth of the womb,

* In some instances, before the orificium uteri can be sufficiently opened to admit of turning, the whole cake will actually be disengaged and protruded; but the separation and expulsion of the placenta, previous to the birth of the child, is, for the most part, fatal to the mother: though some cases have occurred where the woman has been saved by nature; the pains being so strong, that the child has been forced down, with the placenta before it.—*Dr. Hamilton's Outlines of Midwifery*, 4th Edit.

Mr. Chapman relates an extraordinary case of the placenta expelled four hours before the birth of the child. Perfect relates somewhat similar cases. Dr. Merriman also speaks of a like occurrence.—*Synopsis of Difficult Parturition*, 4th Edit. p. 126.

partially or completely, large hæmorrhages, dangerous both to the mother and child, are apt to occur; these floodings often arise spontaneously, and without obvious cause, in the latter months; and when the pains supervene, the ovum begins to descend, and, at this time, the gushes of blood, instead of being diminished, are apt to return with every effort. After all, however, these symptoms merely create a suspicion of the real nature of the case.

MODE OF ASCERTAINING THE SITUATION OF THE PLACENTA.

The only certain mode of ascertaining that the placenta covers the disk of the os uteri, is by examination very carefully instituted; and wherever this situation of the placenta is suspected, examination should be had recourse to, as soon as it may be made. Performing this operation carefully, we find a fleshy mass lying over the mouth of the womb, covering it completely or partially; and if we are in the habit of feeling the placenta, (and I would recommend all persons commencing practice, to acquire a knowledge of its tangible properties, by handling every placenta which may come in their way,) we may readily enough determine on examination, whether that fleshy mass be, or be not, the placenta. If, however, being inexperienced, you suspect that what you suppose to be placenta, may in reality be nothing more than a clot of blood, taking a small portion of it between your fingers, you had better carefully detach it; making an examination of it afterwards by immersion in pure water, when the placentar characteristics may be easily discriminated from those of a clot of blood. In the outset of your practice, take every opportunity of contrasting the one with the other; readiness of discrimination may be of great use to you here. To conclude, then. When, in the seventh or eighth months, you find a large discharge of blood occurring spontaneously, and when, after these large discharges, gushes are found to recur with every pain, you may venture to surmise, from these symptoms, that the placenta is lying over the os uteri; that such is certainly its situation, can be made out by examination only, and the sooner it is instituted the better.

GENERAL RULES FOR DELIVERY.

Assured then, that the hemorrhage proceeds from the situation of the placenta over the os uteri, provided the woman be in a state nearly approaching to asphyxia, and provided, too, as generally happens, the bleeding is arrested, do not interfere, let her lie quiet, forbearing to disturb the genitals by manual operation, for I repeat, if you hastily introduce your hand into the uterus at this time, you perhaps produce a renewal of the discharge, which would most probably destroy the patient.

If on the other hand, you are called to a case in which, the placenta lying over the os uteri, there is not, however, this great reduction of strength, so that the woman does not lie, as it were, half dead, remember the general rule is, that you should introduce your hand into the uterus as soon as you safely may, and that you should abstract the child by the operation of turning. On this point there can, I presume, be no difference of opinion among competent judges, at least in the present state of knowledge; so that the mind is not here, as sometimes, distracted or disturbed among a variety of practices, all of which may have nearly equal claims to its adoption. Thus, then, lies the general rule: provided you find the placenta lying over the disk of the os uteri, so as to cover it partially or completely, the hand is to be introduced into the uterus, and the child is to be abstracted by turning, without the delay of a moment, as soon as the operation may be performed with safety.

Now the hand may be safely introduced, or, at least, it may be introduced with that degree of safety which justifies the operation, provided the softer parts are thoroughly relaxed, which, in these cases, they almost always are, in consequence of the bleeding; provided, further, the os uteri* is beginning to open itself a little;

* The os uteri will be found in one of the following situations; first, but little opened and very rigid; second, but little opened, yet disposed to dilate; third, opened to some extent but very unyielding; fourth, opened to the same extent, but soft; fifth, fully dilated.—*Dr. Dewees' Midwifery*, p. 439.

becoming, for instance, broad as a half crown, (for the urgency of the danger would justify our not waiting a wider dilatation,) and provided, lastly, the woman be not in such a state of asphyxia, that if you disturb the parts, so as to cause the discharge of an additional cupful of blood, dissolution may be expected to ensue. Under such conditions, therefore, the sooner you operate the better. But, on the other hand, if the os uteri be closed, if the softer parts be rigid, and if the patient lie in a state approaching to asphyxia, WAIT. Wait, in the first place, where the patient is in a state approaching to asphyxia, proceeding to the operation when the patient rallies. Again, where there is a rigidity of the softer parts, of the os uteri, I mean, or vagina, wait, proceeding to the delivery as soon as the laxity of the parts will allow. In thirty, twenty, nay, sometimes, in ten minutes, or less, a relaxation will sometimes suddenly occur; remain, therefore, with the patient, and let your examinations, though gentle and prudent, be frequent, unless asphyxia forbid. That you ought always to wait, because the disk of the os uteri is smaller than a half crown piece,* I am not sure. When experienced, dexterous, and cautious, you may sometimes dilate and deliver notwithstanding; but keep the fear of laceration always before your eyes, and while young in practice, beware. In the general, I may remark, that you should remain at the bed side; never quitting the patient till she is delivered; be watchful too; be vigilant: the waves are high and the winds are abroad—while you are sleeping, the bark is sinking. Save, or your patients perish.

MODES OF TURNING IN THESE CASES.

In these cases, the child is to be abstracted by turning, and this

* In order that the performance of the operation may be as little perplexing as possible to the practitioner, and as little hazardous to the mother, it is necessary that there be a certain degree of softness and dilatability in the uterus; but this dilatability is not always to be judged of by the actual dilatation or openness of the part; for sometimes, in hemorrhages, the os uteri will be very dilatable, very capable of being dilated by art, though it hardly seems sufficiently open to admit a single finger.—*Dr. Merriman.*

may be accomplished in different ways. The placenta completely covering the mouth of the uterus, in the first place you may carry your hand through this aperture, at the same time making an opening through the placenta, so as to penetrate both simultaneously, enlarging the opening sufficiently to admit the introduction of the hand into the uterine cavity, where you may lay hold of the child's feet, and bring it away by the operation of turning. Or, again, and this is the second method of operating, passing the os uteri, you may advance the hand between the placenta and the uterus, until, with as little disturbance of the parts as may be, you reach the edge of the placenta, where the cyst, containing the liquor amnii, may be felt. This point accomplished, you enter the cavity of the ovum by lacerating the membranes, advancing afterwards to the feet of the child, and, as before, abstracting it by turning. Now, like all other things, these two obstetric practices have both their advantages and their evils; for, as it was wisely observed by the ancients, every thing has two handles, though we commonly see but one. If you enter the uterus by rupturing the membranes, I think, on the whole, there may be a fairer chance of preserving the fœtus; I say there may be, for of this I am not certain. But, probably, under this mode of procedure, in consequence of the detachment of the placenta, a larger discharge of blood during the operation will occur; while, on the other hand, if you dexterously enter through the os uteri, at the same time perforating the substance of the placenta, you may, perhaps, detach the placenta less extensively from the surface of the uterus, and secure the chance of a smaller discharge of blood, though the laceration of the capillaries of the umbilical vessels, occasioned by the disruption of the placenta, may possibly endanger the child. More experience, however, is wanting in these matters; at present we must, in speaking of them, interject those dubitatives, which form an essential component of most medical opinions. For myself, I make my election between the two modes of performing the operation, upon the following principles:—If, arriving early, I find the patient is not much reduced by bleeding,

I do not scruple to enter through the membranes, having, I presume, a fairer chance of saving the child in this manner, and, under the conditions given, not being afraid of the loss of an additional cupful of blood; but, as frequently happens in placentar cases, the woman is so reduced, that the loss of a few additional ounces of blood may sink her, then I prefer entering the cavity of the uterus by penetrating the placenta, because the bleeding may be less, and the security of the woman may be greater; and, in British midwifery, the safety of the mother, in every point, is made paramount to every other consideration whatever.

Here then is, in brief, a statement of those peculiar practices, which these very important and very dangerous cases, of all others the most important and the most dangerous, are requiring. When the placenta is implanted over the os uteri, so as to cover the disk of it partially or completely, the first office of the accoucheur is to ascertain the precise situation of the placenta—certainly known from careful examination only—to be suspected, however, when, in the seventh or eighth month, you find large bleedings without obvious cause, while gushes of blood accompany every effort of the uterus. This point ascertained, the practice to be adopted is the following:—If the woman seem to be at the point of death, and the hæmorrhage be stopped, you must not disturb the genital parts at that time, even by making examination, but, without neglecting other important practices, you must wait till she dies or rallies, operating if she recover herself, provided the bleeding return and require it. If, on the other hand, the patient is not in this sinking condition, without the needless delay of a minute, you are to deliver as soon as you safely may, and you may with that degree of safety which in such emergency justifies an operation, provided there is not a state of asphyxia immediately approaching, and provided the softer parts are tolerably relaxed, and the os uteri is a little open. If there be a rigidity of the softer parts, as sometimes, especially when you are summoned to the case early, by no means leave the patient, even though you may not be able to introduce the hand, but make your examination every five or

ten minutes, and introduce your hand as soon as the parts may admit. In performing the operation, if anxious to save every drop of blood, perforate the placenta, afterwards, as you enter the ovum, dilating together the os uteri and the aperture in this viscus; but if the woman be strong, you may then, in general, enter by passing between the womb and ovum to the edge of the placenta, rupturing the membranes and turning the fœtus as before explained. When the woman cannot be delivered there may be an advantage in discharging the liquor. This might sometimes be done by puncturing the placenta, care being taken not to detach it in so doing. When the membranes are felt over the os uteri, the placenta giving it but a partial covering, the waters, under such circumstances, may be easily discharged. These practices deserve consideration. From a very sensible friend, Mr. Greenwood, of Horslydown, I first learnt them.

ERRORS LIKELY TO BE COMMITTED.

The grand errors which you are likely to commit in cases of this kind, are the following:—You may begin your operations too early, when the softer parts are rigid, and, by forcing up the hand, you may, I conceive, bruise and tear and destroy the patient, though, on the whole, it must be admitted that of this there is not much danger, as in placentar cases the parts are generally relaxed. Again, in these cases you may lose the patient by delaying the delivery too long, for you may wait till the woman is so much reduced, that she dies either before the operation can be performed, or as soon as the fœtus is taken away. By the expectation of pains, you may also be misguided—misled by that silly rule which you will recollect I formerly denounced. The placenta lying over the mouth of the womb, you may have pains it is true, but the floodings may be so copious that the womb becomes, in a great manner, paralysed, and while you are waiting for the pains the patient may die. Violence you may commit in performing the operation—atrocious violence—in obstetrics, the sin which can-

not be forgiven. If you are too urgent in forcing the hand into the vagina—if you are too rough in dilating the os uteri,—and this is almost the only case in which it is allowable to dilate the os uteri,—look at my preparations, and mark the effects. The dangers of asphyxia I have already pointed out. Sitting down at the bed side, without the pause of reflection, you may proceed headlong to perform the operation, when the patient is so reduced already, that the loss of two or three ounces more of blood will sink her; and what is the result of this? why, before you have got your hand into the uterine cavity, jactitation, heaving, gasping, and intolerable oppression, may seize on the patient, and, perhaps, before you can deliver the woman, she perishes.*

SECTION XXV.

FLOODINGS IN WHICH THE PLACENTA IS NOT OVER THE OS UTERI.

It frequently happens in the latter months of pregnancy, that you have large eruptions of blood from the uterus, though the placenta be not implanted over the mouth of the uterus; and this absence of the placenta from the mouth of the uterus is to be ascertained, in the more dubious cases, solely by very careful examination. That the flooding is not occasioned by the situation of the placenta over the mouth of the womb, may be reasonably

* By consulting Dr. Blundell's Museum, the reader may see the preparations with which Dr. B. illustrates his Lecture on this subject. In one preparation you may see, first, the natural situation of the placenta, which coheres to the body of the uterus; secondly, the neck of the womb, forming a sort of appendix to the body, as yet not dilated so as to constitute a part of the general receptacle for the ovum. The fœtus is about five months old. The dilatation of the cervix uteri will occasion spontaneous bleeding.

In a second preparation, you may observe the lower part of the uterus, consisting of the neck and mouth; over the os uteri the placenta is placed. The woman from whom it was taken was not delivered, because she had no pains; the practitioner was an admirer of the *silly* rule, and the consequence was her death.

In a third preparation, you may see the os uteri beginning to open; the neck of the uterus forming a part of the general receptacle for the fœtus. Now it is when the cervix uteri makes its transit from the undilated to the dilated condition, in the seventh or eighth month, that the detachment of the placenta and the bleeding is produced.

suspected when the bleeding is not spontaneous, but clearly referrible to some exciting cause, a fright or a fall, for example, though these eruptions may sometimes occur without being preceded by any obvious accident to which they may be attributed. That the flooding is independent of the situation of the placenta over the os uteri may, too, be shown in some cases by the freedom of the patient from those large gushes of blood during the pains, so frequently occurring when the placenta is implanted over the mouth of the womb. These diagnostics, however, are presumptive merely; understand, clearly, that the only certain mode of deciding whether the placenta is or not lying over the mouth of the os uteri, is by careful examination.

IMMEDIATE DEATH FROM FLOODING.

Under various forms it is, that these floodings manifest themselves, when the placenta is not deposited upon the mouth of the womb. In the seventh or eighth month, for example, the patient may die suddenly, with symptoms very similar to those of ruptured aneurism; and on laying open the body after death, two or three pints of blood may be discovered within the cavity of the uterus, and this, too, although there have been no external bleeding. On this variety of flooding, however, I forbear to dwell; it is of rare occurrence, and, in the present condition of knowledge, scarcely admits a remedy.

OF THE FLOODING DURING LABOUR.

In the latter months, when the placenta is not lying over the mouth of the womb, floodings of a different kind, more frequent though not common, are found to occur. Perhaps the woman is in strong labour, and the liquor amnii has been discharged, and the head of the child is descended into the cavity of the pelvis, and a sudden eruption of blood takes place in the middle of the labour. In cases of this kind, if the discharge is not very abun-

dant, and the head of the fœtus is not advancing with unusual tardiness, the less you interfere the better. Puzos, a practitioner of Paris, used to recommend the urging forward of the pains by making pressure on the os uteri, perinæum, and back of the vagina, which, as he imagined, had the effect of stimulating the uterus and of multiplying the efforts. Of this practice I have had but small experience; contusions would be the result of a rough administration of it. If it really possess the power imputed, and effectively accelerate the birth of the fœtus, it would, with due gentleness and caution, be well worth a trial in the more copious floodings of this kind; but, after all, I incline to think that other practices may be more advantageously adopted, with a view of stimulating the efforts of the uterus; and of these it is my design to treat at large hereafter, when on the subject of lingering labour. The ergot appears to be especially indicated. If, again, in the middle of the labour the bleeding takes place, and that too in quantity which is dangerous; should the head be above the brim, you must introduce the hand, and bring the fœtus away by the operation of turning; but should the head be below the brim of the pelvis, you may introduce a lever, or a pair of forceps, abstracting the fœtus in that manner. So that the practice here is very simple; so long as the discharge is not dangerous, it is unnecessary to interfere actively with your manual practice, but if the discharge is so abundant that life seems to be thereby endangered, unless, as before explained, asphyxia forbid, manual operations become necessary; if the head of the child be below the brim, the lever or forceps may be used; if it be above the brim of the pelvis, the hand must be introduced into the uterus, and the child must be abstracted by the operation of turning, already considered at large; the evacuation of the uterus in these cases being the only effectual mode of putting a stop to the discharge.

OF THE FLOODING BEFORE LABOUR.

If engaged in large consultation practice, as it is called, some-

times, and, indeed, not uncommonly, you will meet with flooding cases where the placenta is not placed over the mouth of the womb, and where the labour, perhaps, is not as yet begun, the patient being attacked with copious bleeding, at a time when the membranes are unbroken, and when the os uteri is wholly or in great measure closed. Now in cases of this kind, if the discharge be unattended with danger, you need not actively or manually interfere. Let the patient lie a-bed; let her be kept cool and quiet; if there be a slight fainting, let it be encouraged; and refrigerants may be of use; and turpentine and lead may be given; and cold may be applied topically; in a word, to check the bleeding, you may have recourse to all the various practices already recommended. If, however, as not infrequently happens in those bleedings, you are alarmed for the safety of the patient, you may then be justified in having recourse to manual practices; and if, then, the placenta is not upon the mouth of the uterus, and if the liquor have not as yet been discharged, then it seems to be agreed that the preference is to be given to that beautiful operation, which consists merely in the rupturing of the membranes, and the discharge of the liquor amnii. For this purpose, the hæmorrhage continuing, pass a finger or two to the membranes, then take a female sound, (if bluntly pointed, all the better,) and, carrying this through the membranes, tear them a little, so as to discharge the water. Rigby, who first recommended the practice in this country, and who has all the merit of originality, tells us, I think, that in as many as sixty cases, he found this operation sufficient to arrest the discharge, or, at all events, to diminish it so much, as to secure the patient from danger. Merriman,* in his very excellent Synopsis on Midwifery, states that in nearly thirty cases of uterine bleeding in the after months, he found this operation alone sufficient effectually to check the discharge. Now the danger of the cases considered, this success is splendid. Nor have I in my own practice found reason to doubt the efficacy of

* See foot note †, page 332.

the remedy. Your practice, therefore, lies here within a very narrow compass, easily administered, efficaciously operative. The placenta not lying over the mouth of the womb, and the os uteri being shut, provided the discharge be not very large and dangerous, you do not interfere with the membranes, but wait, at least for a time, to see whether the bleeding will not cease of itself: but if the discharge continues, so that you are alarmed for the safety of your patient, even then you ought not, without reflection, to thrust your hand into the uterus; for, in general, it is sufficient merely to rupture the membranes; an operation, than which none in midwifery is more easy, and in this way discharging the fluid of the ovum, you more or less completely arrest the discharge. The operation is beautiful, simple, and effectual.

THE WATERS DISCHARGED AND THE HÆMORRHAGE CONTINUES.

The placenta not lying over the os uteri, it now and then happens, that, notwithstanding the discharge of the liquor amnii, the flooding still continues. Now, in cases of this kind, provided the patient's life appear to be in danger, the only remaining resource is, to bring away the child by the operation of turning;* for of the remaining means for arresting the bleeding, the most powerful is the thorough evacuation of the uterus. If the softer parts are rigid, if the os uteri is shut and unyielding, if the patient is in a state approaching to asphyxia, so that it is necessary to wait till she rally, you must refrain from interfering; remain in the house—abide in the bed-chamber; be patient—be vigilant; and when your patient has rallied somewhat, make an examination, to know whether the hand can yet be introduced with safety; and if from the laxity of the softer parts, and the dilatation of the uterine mouth, it seem evident that turning may be safely executed, let the hand without delay be carried into the cavity of the uterus, for the sooner the fœtus is abstracted the better.

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* Mauriceau, Dionis, La Motte, Mesnard, Heister, Puzos, Pasta, Kok, Leroux, Baudelocque, and Dewees recommend the same.—*Dr. Ryan.*

ERRORS TO BE AVOIDED.

The following are the principal errors which you are apt to commit in the management of those floodings in which the placenta is not lying over the mouth of the uterus, and they well deserve a little consideration. The neglecting to ascertain whether the placenta is, or not, lying over the mouth of the womb, is a capital fault, for your whole practice must turn upon that knowledge; if the placenta is lying over the mouth of the womb, one kind of practice becomes proper; if it is not so situated, another. The trusting too much to medicinal treatment, to the exclusion of manual interference, is another great error in the management of the latter floodings. In the general, as I have observed on preceding occasions, the best accoucheurs are those who interfere the least with the fingers or hand; but if there be an exception to that rule, that exception lies in the management of these flooding cases of the latter months, where, owing to the danger arising from the larger discharges of blood, practices prompt and efficacious are peremptorily required. Denman, a cautious and experienced practitioner, remarks, that if we are to err in those cases, we ought rather to err on the side of promptitude than procrastination; adding, if I remember right, that it is rather a sign of wisdom than of officiousness, to show a readiness in those cases to discharge the liquor, or to deliver by the hand. Again, if you have not seen much of flooding cases, you are liable to be alarmed at the quantity of blood that is discharged, being induced, of consequence, to carry your hand into the uterus, when, perhaps, it would have been a better practice to have confided the suppression of the bleeding to the rupture of the membranes, an operation at once safer and more easy. Further, the delivery of patients in a hurry is a great error; it is more than an error, it is a crime. Into this crime, in unguarded hour, you may be seduced, if you have delayed too long the delivery, when really required; anxious to save your reputation and your patient, you accelerate, you bruise, you tear, you destroy. I now repeat what I observed

once before: in obstetrics, a thrust of the hand into the uterus may prove as fatal, and will generally produce a more extensive wound, than the thrust of a bayonet. The waiting for pains is an error which you may commit. Where there are large floodings, the womb may be paralysed; nor should you, therefore, if symptoms require it, be deterred from manual interference, merely because the pains are wanting. The absence of pains, if it proves any thing, rather proves the necessity of obstetric assistance, because it proves that the natural efforts are inadequate to the expulsion of the fœtus.*

SECTION XXVI.

ON AFTER-FLOODINGS.

By after-floodings, you are to understand, those discharges of blood which take place subsequently to the expulsion of the child, before or after the birth of the placenta.

FLOODINGS FROM RETENTION OF A PORTION OF THE PLACENTA, OR FROM A CLOT OF BLOOD.

After the birth of the child, we sometimes meet with large discharges of blood from the uterus; and these discharges may either be produced by the presence of a portion of the placenta, which has been left behind in the womb unperceived by the accoucheur, or, without such retention of the placenta, they may now and then be occasioned by the lodgment of a clot of blood. That a part of the placenta is retained, we may suspect, if pains like those of labour occur; if, too, the discharges from the womb are fœtid, and if the bleeding have stopped and made its appearance again, perhaps some three or four days after delivery; and this suspicion once excited, provided circumstances require, an examination may be made, when, if there is any thing in the uterus, it will most pro-

* See Foot-note *, page 355.

bably be found lying in the mouth of the womb. The treatment of these cases may be dismissed in few words. So long as the symptoms are not pressing and dangerous, and they generally are not in cases of this kind, so long it is not necessary that the practitioner should manually interfere. The various remedies prescribed on a former occasion, may, if you please, be tried; and among others, the ergot of rye, or you may throw saline injections, or cold water into the rectum, or other means may be used to urge the contraction of the womb. But should the bleeding become obstinate, so as to place the life of the patient in danger, you would then be justified in throwing astringent fluids into the uterus; a drachm of alum, for example, being dissolved for this purpose in a quart of water; or if there was any substance in the uterine cavity, you might find it necessary to put your hand into the vagina, your fingers into the uterus, so as to bring away that substance, by the removal of which, in many instances, the hæmorrhage would become promptly arrested.

FLOODING WITH VOMITING.

Dr. Haighton, my valued predecessor, described a species of flooding to which women of peculiar constitution are sometimes liable; I have never seen a case of the kind myself, whence I presume, that it is not of very common occurrence. In these cases, a sudden pain is felt in the region of the uterus, with concurrent vomiting and flooding; soon it ceases, then recurs, and this, too, repeatedly, till the woman, at length, loses so much blood, that her life is endangered, or perhaps she perishes. These bleedings do not in general, assail the patient immediately after the birth of the child, but occur, perhaps, an hour or two after the expulsion both of the fœtus and its placenta. It appears, too, that there is a tendency to a repetition of these floodings in subsequent labours; so that if a woman have had an attack of this kind after one delivery, in her future labours she ought to be watched for an hour or two, with more than ordinary care.

INTERNAL AND CONCEALED HÆMORRHAGE.

A more common, a more important, perhaps, I may say, a more fatal variety of these eruptions, is of a third kind, distinguished by a title familiar to most obstetric ears; I mean that of internal bleeding. Now in these hæmorrhages, a clot of blood forms over the neck of the womb, and the hæmorrhage proceeding, the blood accumulates unobserved* in the cavity of the uterus. To this case, on account of its importance, I have already had frequent occasion to advert. A pint or two may, in this manner, accumulate in the cavity of the uterus.

Not unfrequently, too, we meet with a variety of after-flooding, though different in pathology yet analogous in practice; I mean a concealed hæmorrhage in the bed. A woman lying in the centre of a large bed, two or three pints of blood accumulate about her, forming a sort of pool there; the patient, perhaps, being so enfeebled, that she does not direct your attention to it, and seems sometimes, to overlook it herself. In this, as in cases of internal bleeding, dissolution has been a frequent consequence. The accoucheur is, perhaps, in a room adjoining that of the patient; he is suddenly summoned to her apartment, and, on reaching the bedside, he finds her dying, or dead; for on such occasions, women are sometimes very suddenly hurried from us.

When blood accumulates in the bed, this is readily detected by raising the coverings. If the blood collect in the cavity of the uterus, this also may be easily ascertained by examination. Laying the hand upon the uterus externally above the symphysis pubis, instead of finding the womb round, hard, and not bigger than the head of the fœtus, you feel it, perhaps, large as the adult head, yielding under pressure, and, not without gurgling, it discharges large quantities of blood, fluid or coagulated.

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* The knowledge of these cases should warn you, always after delivery to press the hand on the abdomen, and if you find the uterus contracted, hard, and like a full grown infant's head, you may rest assured there is no room for internal bleeding; but if the womb cannot be thus felt, there is great danger.—*Dr. Ryan.*

EXTERNAL HÆMORRHAGE.

Of all the after-floodings, however, by far the most common is the external bleeding. Sometimes preceding, sometimes following, sometimes accompanying the abstraction of the placenta. Large quantities of blood may be discharged. If the woman lie near to the edge of the bed, you hear, or see the blood as it pours upon the floor. This gushing is followed by asphyxia, or a state approaching to it; and from that time onward, frequently there is no further gush, but merely a draining—a few ounces of blood coming slowly away. In these cases generally, if the woman have not lost much blood, she rallies in the course of four or six hours, sometimes very rapidly. Sitting at the bed side, doubtful whether the patient will recover or not, you find her rising and sinking, to rise and sink again repeatedly, still, upon the whole, gaining ground on her complaint; so that at the end of four or six hours, you have the satisfaction to pronounce her to be, in great measure, secure from danger. But if the constitution be of that kind which ill sustains the loss of blood, or if the discharge be very great, then the woman may die; and she may either die suddenly, say in a few minutes, or, which is more frequent, she may live for one, two, or three hours after the first large eruption of blood, so that you have an opportunity of performing the operation of transfusion.

These hæmorrhages, let me add, usually supervene within about twenty or thirty minutes after the delivery of the child; so that, as some one has remarked judiciously enough, they occur not infrequently just about the time when the accoucheur is washing his hands, being on the eve of quitting the apartment of the patient, pleased to think that his duties are completed. Of uterine hæmorrhage proving rapidly fatal, you will remember, I have spoken before.*

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* See "Uterine hæmorrhage sometimes rapidly fatal," p. 314.

SECTION XXVII.

TREATMENT OF COPIOUS AFTER-FLOODINGS.

In a view to their management, various as these floodings are, they may be commodiously divided into two kinds; those, I mean, in which the discharge is sparing, and those in which the eruption of blood is at once abundant and dangerous.

NECESSITY OF UTERINE CONTRACTIONS.

If you are called to a case in which, after the birth of the child, a great deal of blood has been discharged from the uterus—should asphyxia threaten, and should the bleeding be arrested—in conformity with principles already frequently enforced, beware of manual interference.* I have observed already more than once, and, in consequence of its importance, I reiterate the remark, that whenever women are reduced to the lowest ebb, in consequence of large losses of blood, to disturb the genitals, unless with the utmost caution, is always more or less dangerous; for in consequence of this disturbance, the bleeding may be renewed, and asphyxia may ensue, and death. If, however, the system have recovered some share of vigour, and the flooding show a disposition to return; or if, as not infrequently happens, you are called to floodings in which, though the discharge have been copious, still on examining the patient you feel satisfied nevertheless that there is no immediate danger, manual assistance then becomes proper enough; and one of the first measures to be taken is, that of endeavouring to secure the contraction of the uterus. When explaining the nature of floodings, I observed to you, that the principal mean which nature employs to arrest the discharge of blood from the uterus is, the contraction of those muscular fibres which enter so largely into its composition. The womb contracted, its muscular fibres are shortened; they press upon all the blood-vessels which are disposed and buried among them, and under this contraction, they

* See "Management of floodings in the asphyxial state," p. 340.

close up the vascular orifices which open upon the uterine surface, much in the same manner as if they were tied by so many ligatures. Hence, then, in after-floodings, though not negligent in other practices, we ought to give our main attention to this contraction of the womb, the best security against a further discharge. To excite the uterine contractions, by some we are advised to carry the hand into the cavity of the uterus, moving it about there; an operation which, I believe, requires to be performed but rarely; an operation, also, to which I am exceedingly averse, being always unwilling to carry the hand into the uterus unless there be an inexorable need, for lacerations may now and then occur. There are others, again, who think they can secure the contraction of the womb by binding the abdomen; a practice by no means to be despised. They put a broad bandage round the abdomen, interposing a pillow between the abdomen and the bandage; then, drawing the bandage as tight as may be, so as to occasion a pressure on the abdomen in front, they endeavour, in that manner, to prevent the enlargement of the womb, and, in so doing, they at least prevent an accumulation of blood there. In the very beginning of the labour, this bandage may be applied, and if this precaution have been taken, it will be easy, without disturbance, to draw it tighter after the birth of the fœtus; and this practice is not to be neglected. To mere bandaging, however, you ought not to confide. On tightening the bandage, be not forgetful, too, to interpose the hand, and, grasping the uterus, (to be felt through the abdominal coverings,) compress, shampoo it lightly, and roll the hand over its surface, careful in so doing not to occasion much pain. Distinguishing the womb in this manner through the coverings of the abdomen, grasping it, shampooing it, and rolling the hand over its surface, you may, I conceive, in general, stimulate its contractions as effectually, and much more safely, than if you were to introduce your hand into its cavity.*

* Dr. Clarke, of Dublin, recommends constant pressure, by the nurses, for six hours, lest dilatation should return after contraction, which is a frequent occurrence.—*Dr. Ryan's Midwifery.*

CONDITION OF THE UTERUS AFTER DELIVERY.

The four conditions* in which the uterus may be found after delivery, I would here have you call to mind; and further to remember, that of those conditions, if you find the womb thoroughly contracted, round and hard, then, provided it permanently remain so, flooding will rarely, if ever, ensue? if, moreover, you find it round and hard, yet occasionally softening, in general your patient is secure, though not so certainly as when the uterus is in the other condition. If the womb be contracted, but permanently soft and pulpy, or if you find it uncontracted altogether, under these circumstances there is great danger lest the flooding should be renewed, and of course the patient remains insecure.

FLOODING AFTER THE PLACENTA IS REMOVED.

The management of the placenta is of the first importance in after-floodings, and the following rules relating to this point are not without their use:—In after-floodings, if the placenta have been removed, you ought by all means to ascertain whether the whole have been taken away; and, further, whether, in this abstraction of the placenta, the womb have not been inverted. It sometimes happens, in the hurry and tumult of a flooding, that, in drawing down the placenta, the practitioner draws down the womb too, inverting it the more readily because, perhaps, it is relaxed and paralysed by the eruption of the blood. Now should you draw forth the uterus beyond the external parts, so that it lies between the limbs, the inversion can scarcely be overlooked; but if, in consequence of the inversion, the womb have been drawn down into the vagina merely, the inversion may then remain unnoticed; and, in this way, bleedings may be sustained, the cause being unknown.

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* See "State of the uterus after delivery," p. 252.

FLOODING FROM A PORTION OF THE PLACENTA REMAINING.

In the hurry and tumult of a flooding, when abstracting the placenta, you may bring away a part only, leaving, unawares in the uterus, one-half, one-third, or a still smaller portion; of which accident I have myself seen several instances. Now, retentions of this kind give rise sometimes to floodings, and this too not only when the larger portions are retained, but the smaller also; and I strongly suspect, that much inconvenience may be now and then occasioned by portions of the placenta not larger than the hand of a new-born infant; so that in those floodings which occur after the placenta has been removed, it becomes of no small importance to ascertain, whether or not the whole have been abstracted. That no portion of the placenta is left behind, you may ascertain, by taking the placenta which has been removed, laying it out upon a napkin, and carefully ascertaining whether its structure be entire. Doing this, if one part of the placenta is absent, you easily discover it; and if the whole be there, you see it at once.

INVERSION OF THE UTERUS.

When inversion of the uterus is suspected, the best mode of ascertaining this is, by laying the hand above the symphysis pubis, when, if you can feel and grasp the uterus in its natural situation, it follows that no inversion has taken place; but should you not discover the uterus above the pubes, or, on examining the vagina, should you find the womb lying within, and forming a tumour, soft, round, and large as the fœtal head; or should you find the uterus, as before observed, lying forth between the limbs, the inversion becomes evident enough. Polypus, or efflorescent excrescence, must not be confounded with inversion of the uterus; the sudden appearance, however, of these, after delivery, is rare. When inversion is detected, the sooner the womb is reduced the better; but, of this we may treat hereafter.

FLOODING BEFORE THE PLACENTA IS REMOVED.

In after-floodings we are sometimes called to cases, in which the bleeding has occurred after the birth of the fœtus, the placenta still remaining in the cavity of the uterus. Now, in these cases, if the woman be lying in a state approaching to asphyxia, the flooding being arrested, it is unwise to interfere manually; but if the case is of the ordinary kind, and though the flooding be copious, the symptoms are not very pressing, the received practice seems, on the whole, to be a good one, and the sooner you remove the placenta, the sooner the womb will contract, and the sooner the hæmorrhage may be expected to cease. With respect to the management of the placenta, therefore, our practice may be comprised in few words. In the general, where there is flooding after delivery, we remove the placenta as soon as may be; leaving it undisturbed, where we apprehend the woman might faint, and die under renewal of the bleeding. But if the placenta have been abstracted already, before the case comes under our care, then we are anxious to satisfy ourselves that inversion of the womb has not taken place, and that no portion of the placenta has been separated by laceration.

THE EMPLOYMENT OF REFRIGERANTS.

Under large eruptions of blood from the uterus, the woman lying in a state approaching to asphyxia, cold in all her members, refrigerating applications* to the central parts are scarcely requisite; though, in conformity with popular feeling, and the prepossessions of friends, napkins moistened with vinegar and water, or water simply, may be administered in a manner formerly recommended. But if, under a continuance of the after-floodings, the surface is warm, the pulse distinct, and the vascular action lively—a condition of the patient by no means common in these cases—then

* See "Observations on cold applications, in flooding cases," p. 328, and p. 342.

the ordinary refrigerating applications become proper enough, and ought to be used with diligence and effect. For this purpose, procure a large body of very cold water, adding to it a pint or two of vinegar, then, folding a napkin, so as to form a surface large enough to cover the central parts in front, or posteriorly, either besprinkle it plentifully with the fluid, or drench it, afterwards wringing it partially dry. The napkin thus prepared, lay it on the lower part of the abdomen; and, having done this, apply another napkin in the same manner to the loins, changing those napkins as often as the surface acquires warmth, every two or three minutes for example, or oftener as may be required. In very warm weather, and in warm climates, even ice when accessible has been recommended, but of this I have no experience. Cold water may be injected into the rectum, and I know not that any ill effects would result from this practice, well calculated to excite contraction of the uterus. I have seen some of my obstetric friends dash a cup full of water over the abdomen; while others have taken the hearth brush, always at hand, and dipping it into the refrigerating mixture, they have showered the water upon the abdominal surface, by means of this homely instrument. Bladders of cold water are sometimes placed under the axilla. Ice has been introduced into the vagina, not, however, without the risk of freezing and mortification; and, certainly, by these or other means, a strong impression may be made upon the system, and so far, therefore, they properly recommend themselves to our attention; but, for general use, the most convenient method of refrigeration is by means of the napkin, as before stated; and, if you wish to produce a sudden and brisk impression on the body, after refrigerating the napkins, you may throw them promptly upon the parts in front or posteriorly. That the application of cold assists in suppressing the hæmorrhagy, seems to be proved by experience; and, without refining in our speculations, the fact alone is sufficient to evince the fitness of the practice under the conditions before laid down. Should you ask me to explain the manner in which the application of cold proves effectual in suppressing the bleeding, I should

reply, that it operates most probably, in two modes; first, by lowering the action of the vascular system, as we all know that cold will do; secondly, by producing a sudden impression on the skin, which seems, by sympathy, to occasion a contraction of the uterus; for, I think, I have myself observed, when a wet handkerchief has been suddenly applied to the lower parts of the abdomen, that, immediately afterwards, on placing the hand beneath the handkerchief, the womb soft before, may be felt round and firm and hard, as if a prompt contraction had been produced by the sudden refrigeration.

FAINTNESS AND ASPHYXIA.

In large bleedings, after the birth of the child, you will find your patient generally more or less prone to faintness and asphyxia, and as the management of these symptoms will occasion you no small share of solicitude, you had better study them before you are called upon to act. Now, in these cases, unless immediate death threaten, you need not be in great haste to resuscitate the patient; for you all, I presume, by this time, are aware, that when the vascular action is depressed, the blood has greater tendency to coagulate, and close up the bleeding orifices; that under this lowered action, there will be a smaller chance of the detachment of the obstructive clots; that a small quantity of blood flowing through the uterus in a given time, even though the orifices of the vessels remain open, only a small discharge may take place; and, on all these accounts, therefore, that syncope, wisely intended by nature to put a stop to the bleeding, ought not to be interrupted. In the very first case of this kind which may fall under your care, alarmed by the collapse, you will feel a disposition to stimulate your patient, but against this error I forewarn you; as long as the faintness is not dangerous, so long let it continue; and, in the general, in these cases, the syncope is rather alarming than dangerous. On the other hand, however, if the collapse produced by the inanition is extreme, and if there is danger lest

the syncope, characterised by symptoms formerly enumerated,* should terminate in asphyxia and death, it then becomes necessary by stimulus, or other means, to sustain the vascular action. For this purpose, as I have told you already,† the domestic stimulus is perhaps the best: and spirit may be given in quantities of two or three table-spoonfuls at once, pure, or with an equal quantity of water, every ten or twenty minutes, according to the effect it may produce. That the spirit is in action we know, if the patient become garrulous and intoxicated; that it excites the vascular system we know, if the pulse rises; and, in all cases, if you find the spirit in operation, so that the asphyxia gradually yields, the further administration of it may be suspended. It is, according to the effect produced, that this stimulus must be given. If you give merely a few table-spoonfuls, in this condition of the system, you will find that it produces but little effect; the stomach is half dead, and moderate doses of stimulants are of little avail. I have found it necessary to give half a pint of spirit, and even more; and this too, to young women, in the course of two or three hours, the tendency to asphyxia being very strong. While administering this, you will put your patient in a position fitted, as far as may be, to prevent the asphyxia, with the head depressed, and the limbs raised by means of pillows. The patient, however, must, on no account be stirred much, to obtain this position; but if, by chance, she is lying near to the side of the bed, let the head fall down over the edge, and gently raise the lower limbs, so as to keep the blood as much as may be about the brain; for, while the blood circulates there, asphyxia, I conceive, cannot occur. Nor, while treating of the means for preventing asphyxia, must I forget to mention, that nourishment should be given, though there is little hope of its being well digested. Beef tea, bread and milk, preparations of eggs, and so forth, to the amount of half a pint, may be administered; and of these, eggs and bread and milk,

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* See "The immediate precursors of dissolution," p. 315.

† See "Observations on the use of stimulants," p. 325, p. 346.

have the advantage of being very readily prepared. If the patient is obviously sinking, the principal remaining remedy is transfusion.

PLUGGING THE VAGINA.

That plugging the vagina is always improper in after-floodings, I am not prepared to assert; in obstinate drainings it may be of service. Be careful, however, that no internal bleeding occur under the use of this remedy; and this will be best prevented by grasping the womb with the hand.

RECAPITULATION.

Here, then, are the leading practices to be recommended in those alarming collapses, which are the consequence of after-floodings. If the faintings be slight, you need not actively interfere; but, if the faintness be very deep, and approaching to asphyxia, then stimulate; place the woman in such a position as may keep the blood about the head; administer nourishment, and, no other hope remaining, provided you possess the requisite dexterity, perform the operation of transfusion.

AFTER MANAGEMENT OF THE PATIENT.

While you are pursuing these practices, of course you will be most anxious to know whether you are gaining ground, and whether or not the hæmorrhage be suspended. In after-floodings, after the first gush, there is not usually a copious discharge of blood, but a small drain from the vascular orifices is apt to continue. Now it is of no small importance to know whether this flux from the womb be arrested or not; and this may be best ascertained by clearing the genitals, and applying a clean napkin below the part on which the patient lies, and against the orifice of the vagina. If you find, after an application of two or three minutes, that the napkin is not stained at all, or that the stain is small and pale, then, provided you have felt

and grasped the uterus, so as to expel any blood that may have accumulated there, you may rest satisfied that the bleeding is wholly, or in great measure, arrested. A converse inference of course you will draw, provided the bloody stain be extensive and deep.

When flooding is arrested, bind up the abdomen very firmly, with as little disturbance as may be. Gaitskel's bandage may be of service; between the abdomen and the bandage, a pillow may sometimes be interposed with advantage. In these cases of large bleeding after delivery, you will be led to consider whether you may or not quit the apartment of the patient after you have put a stop to the discharge; and, on this point, therefore, some comment becomes necessary. Most women do well under after-floodings. These bleedings are generally more alarming than dangerous: remember this, for it tends to tranquillise, and may allay needless perturbations. No woman, however, is thoroughly secure after a large and dangerous flooding, till she have survived the first gush for four or five hours, though the continuance of life after the gush, for two or three hours, must be looked upon as in a high degree encouraging. In small bleedings much precaution is not necessary; but when much blood has been lost, it is requisite that some one should remain with the patient for three or four hours at least after the flooding is arrested.

After large floodings, you ought not to move the patient: let her remain in a perfectly quiet condition for twelve or twenty-four hours, being secured as much as possible from moisture or whatever else might tend to her discomfort. I state to you again, that by yielding to the entreaties of the patients or their friends, and suffering a removal of the body from one side of the bed to the other, the women themselves making no exertion, but being lifted like the dead, I myself in two cases occasioned such a disturbance of the vascular system, that I really thought they would have expired. One case I know, in which the woman did die; the practitioner left her an hour or two afterwards, the nurse suffered her to sit up; the bleeding was renewed, jactitation came on, and the woman ultimately perished.

TREATMENT OF SPARE AFTER-FLOODINGS.

After delivery, it is by no means uncommon to have more sparing bleeding; floodings in which not more than half a pint, or a pint of blood, is discharged. In bleedings of this kind, the active practices, just enumerated and explained, are not required, a much simpler method of managemgnt being found to answer very well, and which may be comprised in few words. In these after-floodings of the more sparing kind, you may draw the curtains, sprinkle the floor, diminish the fire, tell the patient to restrain her tongue, often very garrulous after delivery; take away the placenta with usual caution; lay the hand on the uterus, and grasp it; apply a little cold water; have a little patience, and the hæmorrhage is over. Do not let me alarm you needlessly. Do not needlessly have recourse to vehement practices. Remember that, in recommending these, I have been treating of those after-hæmorrhages in which profuse quantities of blood are coming away from the uterus. Most after-hæmorrhages are more alarming than fatal. They are not, however, to be despised.

ERRORS TO BE AVOIDED.

There are some errors, which if you are inexperienced and inattentive you will be likely to commit, in the management of after-floodings. In the hurry of extracting the placenta you may invert the uterus without perceiving it; you may, too, carry your hand into the uterus without need, a practice to which I am decidedly averse. When the blood gushes away externally, you cannot fail to observe the flooding; but where there is a discharge of blood internally, or into the middle of a large bed, you may overlook it. Watch, therefore, and beware. It is of great importance to keep the womb thoroughly contracted, by laying your hand upon the womb and grasping. A capital error, therefore, may be committed, and will, I fear, be committed by some of you, that, I mean, of not securing the contraction of the uterus. Examine yourselves on

the very first case which may fall under your care, and see whether you have not neglected the state of the uterus altogether. The leaving the patient too soon is a great error; five or six hours you should remain with her after a dangerous discharge of blood has been stopped. This is not necessary in ordinary cases, where merely a few ounces of blood have come away, but, after the more copious bleedings, it is a very necessary caution.

SOME WOMEN PECULIARLY LIABLE TO FLOODINGS.

Some women there are, from idiosyncrasy, peculiarly liable to bleeding, and very undesirable patients they are; the probability being that they will ultimately die under your hands. Hence it becomes a question in cases of after-floodings, whether we can use any means of prevention. Now, as I am in general called to cases in which the flooding is commenced before my arrival, I have had very little opportunity of seeing the effect of any preventive practice, and cannot, therefore, from my own experience, enlarge upon this topic. When there is a tendency to bleeding, Denman and others have recommended that you should not accelerate the birth of the child. After the head has been expelled, you ought not to draw forth the shoulders and abdomen. The womb, by its own efforts expelling the fœtus, it will contract more completely, and less bleeding therefore is to be looked for when the placenta becomes detached. When the child is about to come into the world, or when it is just born, a gentle stimulus may be given, and notwithstanding any little increase of the vascular action which it may occasion, the stimulus seems to be of service, by assisting that uterine contraction on which the prevention of the bleeding is mainly dependent. When there is a proneness to flooding, we are advised by Denman to maintain the patient in the sedentary posture, when the fœtus is about to pass into the world; as it is supposed that in that position there is a less tendency to bleeding than where the patient is lying at this time, in the usual manner. The leaving the placenta in the upper part of the vagina is another preventive

recommended by some practitioners. It is supposed that the lodgment of the placenta in the neck of the uterus, or the upper part of the vagina, will induce a better condition of the womb, and operate as an effectual preventive of flooding. And, indeed, pursuing the rules formerly recommended for managing the birth of the placenta, you will find yourselves in conformity with this practice; for it has been observed already, that in commencing your obstetric career, in ordinary cases, before you abstract the placenta, you ought to be content to leave it in the genital cavity for fifty or sixty minutes after the expulsion of the fœtus.

SECTION XXVIII.

ON LABORIOUS LABOUR.

Although, in all cases, the use of instruments contrived for the extraction of the fœtus, is to be looked on as a great evil, yet in labours of difficulty or danger, it sometimes happens, that the use of these instruments occasions a smaller evil than that which would arise from the commission of the labour to the unassisted efforts of nature. In these cases, and these cases only, it is, that the employment of instruments becomes justifiable, and to the consideration of these cases, the laborious labours, as they are denominated, we will proceed; commencing with the consideration of the more important accidents to which, in this variety of it, delivery becomes obnoxious, whether during parturition or afterwards. And first, let us give our attention to those accidents which occur, more especially, during the delivery.

RUPTURE OF THE TRACHEA OR BRONCHI.

It is not frequently that a disruption of the larger air tubes occurs in the progress of laborious parturition; yet this accident is sometimes observed, the trachea or bronchi giving way. After much exertion, the neck and face swell; from the hurrying of the

circulation, an erythematous flush of the integuments is produced, and at first glance the patient appears to labour under a sudden attack of erysipelas; the flatulent nature of the swelling manifesting itself on making an examination, by the usual crepitus perceived on compressing, and lightly shampooing the skin with the tips of the fingers. Should emphysema occur, delivery is desirable. To retain the breath and force down, is likely to aggravate the disease, so that the emission of the voice may be recommended. After delivery, if I may judge from the single case* brought under my notice, the aperture, seldom capacious, heals spontaneously, and without inflammation the air is absorbed.

VASCULAR AND CARDIAC LACERATIONS.

In labours, protracted and violent, the vascular system may give way; nor is the patient always of plethoric habit. Sometimes the smaller parts of this system, sometimes the more capacious, are burst, and the blood may escape into any of the three great cavities—the head, chest,† or abdomen.

Though not a certain preventive of vascular or cardiac laceration, the abstraction of blood from the arm seems to be the remedy more especially deserving trial. It is not always with repletion, nor under the more violent efforts of the uterus, that these disruptions occur; nor is there, in general, a previous warning; they are,

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* The patient under my care, (a stout Irishwoman,) disposed to clamour and to make violent efforts, was, in a former labour, attacked with the laceration, recovering on both occasions without a single bad symptom. The second time, she was delivered by the help of the long forceps.—*Dr. Blundell.*

† After a most laborious labour, a young lady, suffering a very severe pain, the fœtus suddenly burst into the world; but at the same moment the blood began to gush from the lungs, and speedily the patient was suffocated. A woman, of a system by no means plethoric, after uterine hæmorrhage, neither very violent, nor very long continued, suddenly fell back upon the bed and expired. On inspection afterwards, the mouth of the womb was found to be dilated to the breadth of a dollar, the shoulder presenting, and the right ventricle of the heart was laid open to the extent of one or two inches, as if it had been wounded by the knife, and the pericardium contained an ounce or two of blood. When the heart bursts, a very small bleeding seems to accompany the cessation of its action. To a very sensible friend, Mr. Bryant, of Kennington, I am indebted for this case.—*Dr. Blundell.*

however, to be apprehended, more especially if the system is full of blood, and if the uterine efforts are violent. Delivery seems to be clearly indicated, when these ruptures are reasonably apprehended; and though the abstraction of blood from the arm is by no means a certain security against laceration of the heart or vessels; yet, in prudence this remedy ought to be tried. Voluntary urging, in these cases is undesirable. The calmer the patient is, the better.

RUPTURE OF THE GENITALS.

Under laborious labour, sometimes the genitals give way in the upper part of the pelvis, the body of the womb yielding occasionally, and still more frequently the neck or vagina. Longitudinal lacerations are not common; in general, the rending is transverse, and lies opposite the promontory of the sacrum, or the symphysis pubis, the regions most obnoxious to laceration. Frequently, the rent is carried completely through the peritoneum, so that the hand might be carried up among the intestines; occasionally, the rent penetrates to the peritoneum without passing through it, the inner textures, vaginal or uterine, alone giving way; nor am I fully convinced that these lacerations, when seated in the upper part, are much less dangerous than the preceding. The fœtus may be expelled by the same effort which lacerates the uterus, as in one case which fell under my own notice; or the genitals yielding, the head may remain impacted in the pelvis, the body alone, of the child, lying forth through the opening into the peritoneal sac; or, lastly, and most frequently, the womb or vagina yielding, the whole fœtus, with its secundines, may pass through the laceration, so as to lodge among the intestines.*

Variously, and not always with just blame of the obstetric attendants, these lacerations of the genitals may be produced; sometimes by rude attempts to introduce the hand, sometimes by the ill-directed introduction of the forceps or the lever, sometimes

* See a cast in Dr. Blundell's Museum, shewing the fœtus so situated.

by the rash and rapid abstraction of the head, and sometimes by the long-continued and violent, but unavailing, efforts of the womb to expel the fœtus, the uterus tearing under its own exertions. The symptoms and treatment of lacerations after they have occurred, we will consider at large on some future occasion, confining our observations, at present, to the prevention of this tremendous accident. Lacerations may be sudden, no premonitory symptoms preceding, so that we have not always an opportunity of taking precautionary measures; yet, now and then, the accident is foreshown more or less, distinctly, by the violence of the uterine efforts; and, above all, by unusual, and, as it were, unintelligible pains. "The cramp," the patient exclaims, and suddenly the womb gives way, or stabbings or cuttings, unusually severe, are felt for some minutes, before the laceration in the region of the rent. In a scientific midwifery, violence has no place; you, therefore I trust, will never lacerate the genitals, by the clumsy use of the lever or the forceps, by a hurried abstraction of the head, or by coarse and forcible attempts to introduce the hand into the womb or vagina. Sometimes, however, without this manual violence, the womb yields spontaneously, nor do I know any certain mode of preventing this, except by the abstraction. It is much to be regretted, that we possess, at present, no certain and timely indication, by which the accident may be foreknown. A rending sensation, and a sudden collapse of the strength, with a small discharge from the womb, are sometimes the first manifestations by which the laceration is indicated, so that there is no room for a preventive practice; nor may it be amiss to remark here, that, when disruption has occurred, the case, though dangerous, is not hopeless; and that the abstraction of the child by turning, may be looked on as a principal remedy.

LACERATION OF THE PERINEUM.

Among the accidents of laborious labour, laceration of the perineum, together with the parts adjacent, deserves especial commemoration. More rarely the head has forced its way through

the lower extremity of the rectum and anus, the vagina yielding posteriorly. In some few cases, the perineum dilating greatly under the pressure of the cranium, an aperture has been forced between the genital fissure and the anus, the child leaving the pelvis and passing through the opening. In most instances, however, the perineum gives way, in consequence of the fissure enlarging towards the anus; sometimes directly and extensively, so that the sphincter ani is torn, the anus and genitals of consequence forming but one aperture. Now and then, however, the perineum yields obliquely, the rent being carried down on one side of the rectum, so that the intestines escape; and very frequently, whether direct or oblique, the laceration is of small extent only, perhaps not exceeding half an inch or an inch. When the rents are of small extent they occasion but little inconvenience; when the intestine is involved in the injury, the retentive powers which restrain the fæces, lost for a longer or shorter period, are perhaps never thoroughly restored. When the laceration is carried downwards obliquely to the side of the anus, the power of restraining the contents of the bowels remains.

Rude attempts to introduce the hand—the rapid abstraction of the head by embryospastic instruments—or the sudden eruption of the cranium from the pelvis, under the natural efforts, at a time when the perineum is unprotected by the obstetrician: these are the principal causes of laceration; and now and then, perhaps, the rent may be occasioned by the descent of the fœtal shoulders, when broad. If many children have been born before, lacerations are less likely to occur, as a rigidity of the part met with in first labours, especially if advanced towards middle life, seems to be a principal cause disposing to this accident. Bleeding from the arm; fomentations to the genitals; protective support of the perineum, with directions that the patient should not, by bearing down, further the progress of the head, are the best preventives of the accident; and, though often urged to do so by friends about her, the patient should not force voluntarily, when the head is at the point of emersion, and the perineum is in danger of giving way.

Dangerous distention is easily ascertained by feeling the part. As, however, the whole subject will be considered more largely hereafter, I forbear, at present, from further remark.

LARGE ACCUMULATIONS OF URINE.

In laborious labours, the urethra is liable to be more or less obstructed, and large accumulations of urine in the bladder may arise in consequence. Inflammation of the cervix vesicæ, swelling there, perhaps spasmodic constriction of the upper part of the urethra, and the compression of this yielding duct between the head of the fœtus and the front of the pelvis, are the most probable causes of these obstructions. The less the patient drinks, and the more she perspires, in these cases, the better. When the bladder is full, I have often perceived it through the abdominal coverings, forming a large tumour, to be felt distinctly in the front of the abdomen lying over the uterus. By cautiously bearing the fœtal head from the front of the pelvis, and passing along the urethra a catheter flattened and small, the urine may now and then be drawn off; but in laborious labours, when there is real difficulty, the catheter sometimes cannot be passed up. If the urine cannot be withdrawn, the delivery must be accomplished artificially, provided the accumulation is becoming so large as to endanger the bladder, and, in general, retention of the urine indicates much pressure, and the risk of slough, and is an argument for delivery.

When the efflux of the urine is prevented, lacerations of the bladder may occur. Sometimes the body of the bladder gives way into the peritoneal sac posteriorly; sometimes the urine forces its way out in front, so as to become diffused in the cellular web externally to the peritoneum; and, in some cases not the least frequent, the back part of the neck of the bladder gives way into the vagina. If the urine be diffused in the cellular web, lying between the front of the bladder and the abdominal coverings, the case must, I suppose, be deemed desperate; if the water escape from the bladder behind, so as to collect within the cavity of the

peritoneum by withdrawing the urine, washing out the peritoneum with the proper cautions; and, tying up the aperture formed by the laceration, judging from experiments upon animals, I conceive that the life of the patient might now and then be preserved. From a successful case under the care of my friend, Mr. Gaitskell, of Rotherhithe, I infer, that where the neck of the bladder is burst open behind, the part will sometimes close up, provided a catheter be worn for a few weeks. In the case to which I have alluded, the closure was very remarkable and certain. The same practice failed in a second case, where however, the rent was less extensive. The laceration of the body of the bladder is occasioned by the accumulation of urine, and prevented, therefore, by evacuating it, whether by the catheter or the natural efforts. The disruption of the neck arises from the gathering of the water in the bladder, joined with some descent of the neck towards the outlet of the pelvis. In this state of the parts, on entering the pelvic cavity, the head divides the bladder, as it were, into two chambers, one lying above the brim in front of the abdomen, the other below and behind the symphysis pubis. On the latter chamber, as the head advances, whether under the action of the instruments or of the natural efforts, great pressure is made, and by this pressure, the bladder may be torn open, the urine issuing in a sudden gush. From the sloughy openings of the cervix vesicæ openings of this kinds differ widely; in the former there is loss of substance, in the latter disunion merely; the former openings, perhaps, never heal, the latter sometimes.

When urine accumulates behind the symphysis in the neck of the bladder, this part bearing down before the head, the bladder should be emptied with great care, and much attention is sometimes necessary to effect this; sometimes the catheter cannot be introduced, or if it be passed into the bladder, a complete evacuation of the urine cannot be obtained without compressing the bladder exteriorly, by first laying the hand on the abdomen below the navel, and afterwards pressing the cervix where it prolapses behind the symphysis pubis. In these cases, of course the head must not be brought forward too rapidly by the lever or the forceps. These

lacerations of the bladder are all of them rare. In general the bladder should be kept empty in all labours. Little drink; much perspiration; spontaneous discharge of the urine; the catheter; are the principal means of securing this advantage. The flat catheter recommended by Dr. Ramsbotham, an excellent practical accoucheur, is an useful instrument. Force is always improper, when the catheter is employed. Apertures occasioned by the catheter in the back of the cervix vesicæ, or still more frequently of the urethra, I have myself seen. By gently pushing back the head of the child, room may sometimes be made for the admission of the instrument.

CONTUSIONS AND MORTIFICATIONS.

Dreadful contusions and mortifications are apt to occur in laborious labours, nor are they in consultation practice infrequent. From the rude action of the hand, from violent efforts to abstract the head with embryospastic, or other instruments, from frequently repeated, but unavailing, labour pains; and above all, from impaction of the head in the cavity of the pelvis between the front and back; the locked or incarcerated head, as it is called, extensive mortifications, sweeping all round the upper or inferior part of the vagina, may be produced. If these sloughs are superficial, affecting the inner membrane only, they are less dangerous, though adhesions, contractions, and indurations of the vagina are too often the ultimate result. If the labia pudendi or surface of the perineum be injured internally in this manner, the patient generally does well; but if the sloughs lie above and penetrate deeply, death at the end of a few hours, or a few days, is not infrequently the result, the system giving way under collapse, or should the patient escape, the bladder or rectum are not uncommonly, laid open into the cavity of the vagina, in consequence of a detachment of the sloughs. Of the management of these sloughs, when produced, I may take occasion to treat hereafter, confining my remarks at present to the preventive treatment. The more common causes of

them, already stated, are the rude pressure of the hand, the violent use of instruments, and the pressure exerted by the fœtal head, whether above or below the brim of the pelvis; and it is important to recollect this, in order that you may be on your guard against them. A frequent pulse by no means generally implies the risk of slough; but, on the other hand, while the pulse between the pains remains below one hundred and ten, I think the patient is tolerably secure. I am not prepared to assert, that the contusion producing slough, never occurs without collapse of the strength; but in general, an incipient failure of the powers gives us an useful intimation of the bruising of the parts. Many women, if the head remain above the brim of the pelvis, may do well, although they have been in strong labour for more than twenty-four hours after the discharge of the liquor amnii; but in long protracted labour there is always danger, even when the fœtus lies free in the false pelvis above the brim, the pressure being occasional only; I mean during the pains. When the head is down between the symphysis pubis and the sacrum, so as to become incarcerated there, and compress permanently the parts between the front and back of the pelvis, and this, too, for hours together, five or six, for example, women may suffer little notwithstanding; but wherever the head is locked up in the pelvis in this manner, there is always reasonable cause for apprehending that fatal contusion and slough will occur, unless the cranium be promptly liberated; for in these cases the pressure is not occasional merely, but continued; not slight, but very forcible; the bladder and rectum being completely obstructed by it, the bladder especially, and the bones of the fœtal cranium becoming displaced. It is much to be wished that some experienced practitioner could discover for us a rule by which we might determine with precision the moment when contusion, likely to terminate in these formidable sloughs, is commencing; for such a rule has not yet been formed. I may, however, observe in general, that when the pulse is not permanently rising, nor the strength failing, nor the labour protracted beyond twenty-four hours of strong exertion after the discharge of the waters, if the head be above the

brim, nor more than three or four hours if it be locked loosely in the pelvis, nor more than half an hour or an hour, if more firmly locked, then the patient is secure against slough; but, if the converse of these conditions occurs, sloughs are to be apprehended. And let me add, too, more simply, that a pulse of one hundred and ten, and vigorous powers, are a plain and valuable indication of security, and that you have good cause for alarm and vigilance when the pulse rises, and the strength begins to fail, and the countenance acquires an expression of anxiety, and there is that aspect which leads the practitioner to remark, that "the patient appears very much worn."

INFLAMMATION OF THE CERVIX UTERI AND VAGINA.

In laborious labour it sometimes happens, that inflammation commences in the substance of the cervix uteri and vagina, the rectum and bladder, perhaps, being more or less involved in the disease. A crust of buff upon the blood, an unusual tenderness of the parts between the pelvis and navel in front, and a permanent frequency of the pulse, are perhaps some of the most decisive characters of this accident. Venesection and delivery may be looked upon as the most effectual remedies. Fomentations, leeches, laxatives, and similar remedies may be proper after delivery, but of these I shall speak hereafter.

EXCITEMENT IN THE PATIENT.

During easy parturition sometimes, but more frequently under violent efforts, the pulse rises permanently to one hundred and twenty in the minute; the heat of the surface increases; the tongue becomes browner; the face is flushed, as in typhus fever; the cry of the woman is sharper and more frequent, and she shows herself impatient of her pains, irascible, morose, and perhaps at length delirious. All these symptoms may vanish on delivery; or after parturition is completed, they may continue, terminating at

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consequence of compression and contusion of the brain; frequently, the form of the cranium is altered; generally, the scalp is much swelled. Pressure on the chord within the womb, may also, sometimes, occasion a still birth. No still-born child ought, in these cases, to be rashly pronounced irrecoverable. The diligent and effective use of the resuscitants, can alone enable us to determine whether restoration be practicable; for it well deserves remark, that fœtuses subjected to the higher degree of compression, are sometimes unexpectedly revived; while, in other instances, our attempts to resuscitate, though actively urged, are wholly ineffectual, although, from the slightness and short continuance of the pressure during the labour, we have entertained sanguine expectations of success. Artificial respiration, and the warm bath, are principal remedies here, and the means ought to be in readiness.

SWELLING OF THE LABIA PUDENDI, ETC.

The labia pudendi, and the parts about the anus, sometimes swell greatly in laborious labours; the probable cause of this intumescence is, obstruction of the vessels above, thereby occasioning an effusion of blood into the cellular substance.* Delivery is the

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* Sometimes, but very rarely indeed, one of the labia becomes suddenly and enormously enlarged, either towards the conclusion of labour, or immediately after delivery, from an effusion of blood in the cellular membrane of that part, and in a short space of time after the appearance of the accident, the skin bursts from the violence of the distension. It occasions very great pain, yet one most important part of it is, the surprise it occasions and the alarm it gives, when it is not well understood. But I believe it is void of danger, not having seen or heard of any dangerous consequences from it, or ever found any thing necessary to be done, but to wrap the tumified part in a flannel wrung out of warm water and vinegar, and, on the discharge of the coagula, which should not be hastened, to dress the sore with some soft liniment. It is remarkable, that the labium always bursts on the inside, as if it were mere mechanical distension; and, as the pain is sometimes violent, and the patient full of apprehension, it will be expedient to give a proper dose of the tinctura opii in some cordial.—*Dr. Denman's Midwifery.*

The labium becomes tumified to such a degree as to oppose the passage of the infant, the evacuation of the bladder and rectum, and the tumour formed by it is of a black colour. The swelling extends to the bladder and rectum, and terminates in abscesses, which may prove fatal. The *treatment* consists in incision of the labium, evacuating the coagulated blood, and plugging the vagina to prevent hæmorrhage.—*Dr. Ryan's Midwifery.*

best remedy for it. These swellings indicate pressure, and ought always to awaken vigilance.

SECTION XXIX.

EFFECTS OF LABORIOUS PARTURITION.

After labours that are laborious, the woman sometimes recovers, as readily as if, during the delivery, nothing extraordinary had occurred. It does, however, occasionally happen, and that, too, where the labours have been managed with the best possible care, that a variety of morbid symptoms are manifesting themselves, more especially during the first few days; and to the consideration of these symptoms, and their treatment, we shall now proceed.

SWELLING AND SLOUGHINGS.

After parturition has been accomplished, whether by the use of instruments or otherwise, if the labour have been laborious, much swelling of the external parts, the labia pudendi and its adjuncts is by no means very unfrequent; and this may be accompanied with sloughs—sloughing of the inner surface of the perineum, or sloughing of the inner parts of the labia themselves. These sloughings and swellings, the result of compression and contusion, are best treated by fomentations and poultices; and the oil of turpentine seems to be of service, in accelerating the separation of the sloughs. Of course, the general state of the health will require attention. On tow, the oleum terebinthinæ may be applied to the mortified parts, pure, or mixed with two parts of the oleum olivæ.

SUPPURATION WITH HECTIC FEVER.

After laborious labours, suppuration may take place within the pelvis, and matter to the amount of four, six, eight, or more ounces, may collect externally to the vagina and peritoneum in

that cellular web which is interposed between the viscera below the brim. Much irritation of the hectic kind supervenes; there is sickness, and incrustation of the tongue; and purging, and sweating, and wasting, and a pulse of one hundred and twenty, thirty, or even forty in the minute, the symptoms altogether assuming a very alarming appearance. In the course of a few days after the delivery, the woman may die; or where the symptoms are less violent, the cysts in which the pus lodges may give way, the matter escaping variously, by the rectum, vagina, and, perhaps, the urethra itself. To detect the matter in these cases, may not always be a very easy task; throbbings, shiverings, irritation, hectic, and careful examination internally, are, perhaps, the best diagnostics. Cases of this kind must be managed on general principles; an ascertained accumulation of matter, may justify the use of the abscess lancet.

COLLAPSE.

After laborious cases, the system sometimes gets into a state of collapse—the result of that extensive bruising, to which I referred in a former part. If the symptoms of collapse are not very considerable, the patient may rise out of them at the end of a few weeks, recovering not so much in consequence of any remedy that may have been applied, as from the gradual restoration of the contused parts under their own healing efforts. If, on the other hand, the collapse be very considerable, the body cold, the countenance fallen, the perspirations clammy, the pulse one hundred and forty, or more, in the minute—the manner of the patient giving indications of debility and oppression, then any treatment, even the most powerful diffusive stimuli, will, I fear, be found of very little avail; and your patient will go on sinking till she die, perhaps, at the end of twelve, or twenty-four, or thirty-six, or, at most, eight and forty hours after the time of her delivery. I have known death from this cause occur, as late as the tenth day.

INFLAMMATION OF THE ABDOMINAL VISCERA.

After laborious labours, a good deal of inflammation may sometimes hang about the abdominal viscera, and more especially those viscera which lie in the vicinity of the pelvis; and if you examine internally the os uteri, and parts adjacent, or the vicinity of the navel externally, the inflammation manifests itself by tenderness on compression; and this, too, where the bowels and bladder have been thoroughly evacuated, so that no overcharge of those organs can be the cause of the uneasiness. Together with all this uneasiness of the parts in the vicinity of the pelvis, there is a crusted tongue, and a pulse of one hundred and twenty, sometimes one hundred and thirty or one hundred and forty; though, in these cases, the pulse, I think, does not ordinarily become very frequent. In some instances, the inflammation may be seated in the peritoneum—being, however, in general, circumscribed; more generally, the peritoneum appears to escape, and the substance of the uterus and vagina, or the cellular web lying externally to the vagina, and other pelvic viscera, is the seat of the inflammation. It is satisfactory to know, that these inflammations generally do well, provided suppuration do not occur, and this is by no means very frequent. Violent practices are uncalled for, and improper. Do not confound the disease with puerperal fever; thirty or forty leeches, say thirty on an average, should be applied above the symphysis pubis. Now and then, instead of the application of leeches, blood, to the amount of sixteen ounces, may be abstracted from the arm; laxatives, refrigerants, and the antiphlogistic regimen for four or five days, will commonly be found to overcome the symptoms. Of the remedies enumerated, leeches are my principal reliance; and when the patient has a moderate share of strength after the leeches, I am accustomed to lay on three poultices in succession, each for two hours, so as to encourage the bleeding; the poultices should be large, warm, and soft.

PUERPERAL IRRITABILITY.

Again, after laborious parturition, the patient is affected with a certain puerperal irritability, not without its danger; and this occurs sometimes even in women of the most placid temper. To this irritability I have taken occasion to advert in a preceding part,* for it occasionally commences before the delivery is completed. Anxiety, agitation, susceptibility, perhaps morosity, are very strong characteristics of the affection, and the head and face are hot, and the pulse is frequent; one hundred and twenty or one hundred and thirty in the minute, with a certain smartness and quickness of the beat; the sleep at night is broken; the dreams are wild; and sometimes a disposition to delirium appears; the patient talking at random; the mind in the severer cases becoming altogether disordered. When, as more generally happens, the symptoms for three or four days together do not rise above the level here given, they gradually subside, the patient ultimately recovering. The chamber may be cooled and darkened; twenty or thirty leeches may be applied to the temples, perhaps repeatedly; the scalp may be shaved, and the head may be thoroughly refrigerated by cooling lotions, and bladders charged one-third with ice; the temperature being moderated by the interposition of one or more folds of flannel, if necessary. Relaxation of the bowels; opium, in the larger and more tranquillising doses: perhaps digitalis, in measure sufficient to operate on the system, may be found of service. Leeches seem, on the whole, to be preferable to cupping or venesection. A given quantity of blood taken away by leeches, reduces vascular action more decidedly, and acts more effectively on the body at large, than the same measure when abstracted by cupping or the lancet. In cases of this kind, it is desirable to get the milk into the breast, and to keep it there; for when phrenitic attacks occur, the milk sometimes disappears suddenly; an accident always to be regarded with some apprehension. When bleeding

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* See observations on "Excitement in the patient." p. 482.

has been premised, and the skin is disposed to perspiration, the effect of larger doses of opium is sometimes very satisfactory. I have seen a sweat break forth upon the whole body, the pulse descending from one hundred and thirty to ninety, or one hundred in the minute. A diaphoretic may be combined. The pulvis ipecacuanhæ cum opio is no inconvenient formula. When the irritability is purely hysterical, with quiet and patience, it usually passes away; gas, tears, groundless apprehensions, and a cloudy mind, among other characteristics, will be found of much use in the diagnosis here.

RIGORS, WASTINGS, SWEATINGS, ETC.

Rigors, wastings, sweatings, vomitings, purgings, and aphthæ of the mouth, may occur after laborious labours, the pulse rising to one hundred and twenty or one hundred and thirty in the minute, and the strength collapsing. In cases of this kind, I suspect there are often inflammation and excoriation of the inner membranes of the stomach and bowels, than which, with the exception of slough, nothing more certainly destroys the vigour of the system. Bear this in mind, when contending with these affections, and take your measures accordingly. Aromatics, chalk mixture, opium, extract of hæmatoxylon, you may give more or less abundantly, according to the effect produced, as in similar attacks, occurring after floodings; and I should recommend you, if the purging continue in spite of all your efforts, to remove the patient into the country, as soon as may be. A rising ground is to be preferred. I have seen the most obstinate purgings give way under the change of air. Should the weakness of the patient require it, an invalid carriage may be used during the journey, and a medical friend should accompany her. Solid food is less likely to keep up the diarrhœa than liquid aliment.

RETENTION OF URINE.

In some instances, the patient is sometimes affected with retention of urine, which, in general, need not alarm. Two or three times

a day the catheter may be introduced; for the less the bladder is loaded, the better. These retentions are the result of inflammation, intumescence, and perhaps some little spasm about the neck of the bladder. You will find them accompanied, too, with those inflammatory abdominal symptoms which I have been describing. Leeches, fomentations, and the catheter, are the best remedies. An abscess near the urethra may prevent the flow.

WEAKNESS OF THE BLADDER.

After laborious labours, again, weakness of the bladder is by no means infrequent. The patient may retain the water well enough before parturition, but after delivery this power is lost; it drips from her continually, and this independently of any solution of continuity by rupture or slough. Sometimes the contents of the bladder will come gushing away under efforts of the abdominal muscles. For months or years this incontinence may last, but more generally, unless the contusion of the bladder have been considerable, this weakness does not last for more than a few weeks. Of the method of managing these cases I shall hereafter speak at large; suffice it, at present, to observe, that much aqueous beverage, and frequent ablution of the vagina by the syringe and tepid water, are principal remedies. Blistering above the symphysis pubis, or on the lumbar region, deserve a fair trial, when the case becomes chronic.

RUPTURE OF THE BLADDER.

In laborious labours, if you have not been attentive to the evacuation of the bladder, it now and then happens, that the back part of the body gives way, making an opening into the vagina direct, two or three fingers, perhaps, being admissible at the opening.

Emptiness of the bladder is the best security against these accidents, not of common occurrence; if, however, unfortunately they take place, the best method of treating them is by introducing the

catheter into the bladder, and keeping it there, a sheep or bullock's bladder being attached to the lower extremity, so as to collect the water. I know of one case in which a very extensive laceration occurred, and where, by this method of treatment, the aperture healed completely, so that the woman, though the retentive powers were weakened, could, on the whole, retain pretty well the contents of the bladder. In this case there was a legal investigation, and I examined the woman more than once, as you may suppose, with no small care: and though, on the first examination, I could with ease introduce both fingers into the cavity of the bladder, where the catheter could be felt naked, yet, on investigating some weeks afterwards, I found the aperture closed so perfectly that scarcely a trace even of cicatrix could be detected.

SLOUGHINGS OF THE VAGINA, ETC.

Where there has been a great deal of pressure in laborious labours, whether from the abuse of instruments or other causes, sloughing may occur, the vagina or rectum being laid open of consequence. When slough of the cervix vesicæ is forming, the patient, at first, is incapable of passing her urine, so that the catheter becomes necessary; after a few days, however, you have the satisfaction to learn, that the water flows under the natural efforts; but no long time afterwards, you are mortified to hear that the retentive power of the bladder is lost, the water at the end of a week or two dripping from the vagina continually. About this time there comes away something which is said to be a piece of skin, and, when washed, immersed in water, and examined, it is found to consist of a portion of the bladder and vagina. Examination at this time detects an aperture in the bladder, sometimes small, but occasionally large enough to admit one or two fingers. The method of preventing these sloughs I have already stated; I have told you already that you should never permit a woman to be in labour too long, especially when the pulse is rising; that you are never to allow the urine to accumulate too largely; and that,

more especially, when using the instruments, you are always to have the dread of contusion, lacerations, and slough before you, being on your guard against too much force. When the sloughing of the bladder occurs, I am sorry to say we are not at present in possession of any effectual remedy for it. You should attend to the general health of the patient, in order to give the healing powers fair play; but, without denying the possibility of closure, I may be allowed to observe, that I never saw a single case, and I have been called to many, in which the aperture has been completely healed; a great reduction of its dimensions is sometimes observed, so that there is scarcely room for the passage of a catheter, but, almost invariably, a fistulous communication remains. By means of the actual cautery, this might sometimes be healed, but the practice is rough.

A slough of the rectum is known by the escape of the feculent matter; happily this accident, more dreadful than the mortification of the bladder, is of much less frequent occurrence. Now and then, however, it does take place in country practice, as well as that of the metropolis, and several cases of this kind I have examined in this Hospital. By ligature, in some cases, and in others by an operation similar to that for hare-lip, a closure of the aperture might, I conceive, be accomplished; and I the rather mention this, because the complaint is so exceedingly distressing, that every thing, not unreasonable, may be fairly recommended to relieve it. In the course of time, the edges of the aperture become callous; solid fæces may then be retained.

PRESSURE ON THE NERVES.

In consequence of a laborious labour, a good deal of pressure is sometimes made on the nerves, the obturator, and great sciatic especially. The trunk of the obturator nerves lies much exposed, immediately below the brim of the pelvis, liable, therefore, to forcible compression when the fœtal head is coming away. As to the great sciatic nerves, their origins are seated on the sacro-iliac synchondrosis,

being of course much exposed to compression, if the head is large or the pelvis is small. Now, in laborious labours generally, the nerves do not suffer, or, at most, very slightly; perhaps, as the head descends, the woman exclaims, "the cramp," and she requests some person to rub her limbs; by and by the birth is completed, and after delivery the pain is felt no longer. In some cases, however, of rarer occurrence, the nervous structure suffers so severely that the patient remains more or less paralytic for months after her delivery. It is a satisfaction, to know, that though the nervous structure does not possess self-healing power, of rapid operation, nevertheless it is not so destitute of that restorative energy as some have imagined. Nerves divided by the scalpel will re-unite, as was well shown by the experiments of Haighton. After labours followed by numbness and weakness of the limbs, recovery may occur, although it requires a length of time, for example, several months, for the purpose.

SECTION XXX.

ON THE USE OF INSTRUMENTS.

When the birth of the child is obstructed, whether from the rigidity of the parts or from the bulk of the fœtus, or from the unfavourable position in which it lies, it becomes necessary occasionally, though but rarely, to have recourse to artificial means of delivery; and these artificial means are reducible to the following, as the principal—premature delivery, the Cæsarian operation, and obstetric instruments; and we will first give our attention to instruments, always a great obstetric evil, but not always to be avoided.

INSTRUMENTS IN COMMON USE.*

The different instruments received into modern practice are

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* Formerly the fillet was used as an obstetric instrument. It was usually a single band, and intended to be fixed upon or beyond the head of the child detained in its passage through

the tractor or lever, the forceps, the perforator, and those instruments which are in use connected with the perforator, the crotchet, the blunt hook, and the craniotomy forceps. Into two classes these dreadful instruments may be divided, those, I mean, which are designed to bring away the child by reducing its bulk, and those again which are intended to abstract the fœtus without injury either to the mother or her offspring; the latter may be called the embryospastic* instruments, the former the embryotomic.†

EXAMINE WHAT IS THE STATE OF THE PATIENT.

When you are called to a case requiring the use of the embryospastic instruments, that is, to speak in plainer language, the tractor or the forceps, long or short, before you engage in your operations I would advise you to examine what is the state of the patient. In some cases, the woman is in a state of collapse; she has been bruised and lacerated before you entered the chamber, and

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the pelvis, for the purpose of extracting the head. Fillets were constructed of silk, cotton, linen, or leather of divers kinds, strengthened or rendered more commodious for application, by the addition of cane, whalebone, wire, or very thin and narrow plates of iron, variously braided and worked together according to the judgement of the contriver. The manner of applying the fillet was, by conducting it with the finger, or an instrument contrived for the purpose, to some fixed point, as the chin, or round the circumference of the head of a child, as high up in the pelvis as could be reached; then, after twisting the two ends together, to acquire a firm hold, we were taught to extract, in a proper direction, with all the force the fillet enabled us to use, or the necessity of the case might require. The advantages expected to be derived from fillets were many, but experience has fully proved that a fillet of any kind could not in many cases, be either safely or effectually applied without much difficulty and trouble, that when applied, it was very apt to slip; that when it remained fixed, it was often inadequate to the purpose of extracting the head; that it created new difficulties, or added to those which before existed, by changing the direction of the head disadvantageously; and that the injury done to the mother or child was not in proportion to the hardness of the materials of which instruments were constructed, but according to the force or violence with which they were used. For these and perhaps various other reasons, fillets of every kind gradually declined in estimation, and they are now wholly neglected. *Dr. Denman's Midwifery.*

* Embryospastic. From εμβρυων, *embruōn*, a fœtus, and σπαω, *spaō*, to draw forth.

† Embryotomic. From *embryotomy*, εμβρυων, *embruōn*, a fœtus, and τεμνω, *temnō*, to cut.

perhaps you are summoned to the bed-side only to see her die; I have already pointed out the symptoms by which these fatal injuries may be known. In other cases, the patient is in a state of inflammatory excitement, particularly where the accoucheur has properly called for assistance in good time; the skin is hot, the tongue white, the pulse is high; and when you take away a pint or more of blood, you find it cupped and buffed. In some cases, too, those especially which are under your own care from the first, the woman is still vigorous, and quiet, and placid, when the necessity for instruments is brought under deliberation. In all these three conditions your patient may be, after a laborious labour,—composed, excited, or exhausted; nor ought you to commence the use of instruments till the state of the system has been determined. If there is excitement, bleed.

When you make your examinations, which you should always do before you have recourse to the embryospastic instruments, in some instances the patient bears with them well enough, but in others not so, the parts are inflamed, and swelled, and irritable, and will not sustain the slightest touch. In these cases, bleed from the arm to the amount of sixteen ounces, more or less; foment the softer parts, and administer, if you please, thirty or forty drops of the tincture of opium, or a corresponding quantity of Battley's anodyne; and in this manner, as in the case of turning, you may prepare the parts for the operation.

STATE OF THE SOFTER PARTS.

When you are thinking of using the embryospastic instruments, again, before you operate, ascertain clearly what is the state of the os uteri, vagina, and softer parts. If you find these parts are rigid, you must not even think of using the forceps or lever; the very thought is almost sufficient to bruise, lacerate and destroy. But if, as more generally, you find the os externum and the os internum wide open, and the softer parts completely relaxed, contraction of the bones being the cause of the deficiency of room, you are so far

justified in having recourse to the operation. Remember this, I entreat you: if the mouth of the womb is shut, and the external parts are rigid, abusing the tractor or forceps, you may destroy the patient; but if, on the other hand, the womb is open, and if the softer parts are relaxed, and the head is down among the bones of the pelvis, then the lever or forceps may be applied with the fairest prospect of advantage.

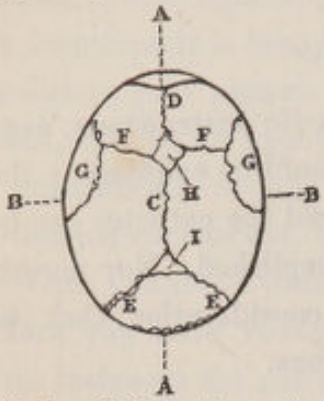
EMPTY THE BLADDER.

Again, before you apply your embryospastic instruments, even where the parts will allow it, the bladder should be emptied by the natural efforts, or the catheter, provided indeed the catheter can be introduced, for this is not always to be accomplished. Nor must it be forgotten, when instruments are under consideration, that the loaded state of the rectum may require enemas.

ASCERTAIN DISTINCTLY THE POSITION OF THE HEAD.

Before instruments are applied, in general, the position of the head ought to be made out, and with great precision. Instruments, the forceps especially, you never can manœuvre well, unless you first ascertain with nicety the bearing of the head. Without this knowledge, indeed, you may use the instruments, and you may bring away the child, not, perhaps, without an overweening self-complacency; but after having seen a great deal of operative practice, I am persuaded you never can operate scientifically unless the position of the head be first ascertained. When you have acquired sufficient dexterity by practice, the place of the head may be made out, by bringing the patient near to the edge of the bed, (where she ought always to lie when these instruments are used,) by lubricating two fingers of the left hand, (generally the most convenient,) and by passing those fingers up to the womb as far as may be. Proceeding in this manner, you feel the child's head; and by the roundness, the softness, the fontanels, the rising of the parietal bones,

not to omit the hair upon the scalp, the vertex presentation may be known. The presentation thus made certain, you may distinguish the situation, too, by passing your fingers along the sagittal sutures. At the one extremity of this suture, you find the little fontanel, a triangular shape, of small size, and with three sutures concurring at the other extremity; you detect the great fontanel, of large size, diamond shape, and with a conflux of four sutures, the frontal, the sagittal, and the two legs of the coronal. There is one part of the head only, where four sutures meet, and that is the great fontanel, H; there are several parts where three sutures meet; hence it requires more tact to discriminate the little fontanel, I. Where the little fontanel is, there is the occiput; where the great fontanel is, there is the face, so that in this manner you make out the situation of the different parts of the head, with tolerable facility. And again, by observations upon the ear of the child, the observations on the fontanels may be confirmed. Unless there be an extraordinary want of room, two fingers may be passed between the symphisis pubis and the head, and there you will find the ear of the child; this, therefore, indicates the face and occiput to be situated towards the sides of the pelvis. If you can feel the flap of the ear, your inference becomes still more complete, for, care being taken not to double this part, the flap always lies towards the occiput, and the other or anterior part towards the face. Thus then, under the vertex presentation, the most common of all, and that, therefore, on which I have enlarged the most fully—by the hair on the scalp—by the roundness—the softness—the fontanels, the sutures, the ear, you may easily make out the position of the head; and this knowledge is peremptorily necessary, if you wish to operate with instruments in a dexterous and scientific manner. Instruments are excellent in gentle and judicious hands, but most destructive if they fall into the hands of the violent and ignorant.



Where there is a presentation of the face you may sometimes be

compelled to have recourse to instruments; and, I apprehend, the presentation of the face will be easily made out, for you, I am persuaded will be able to distinguish the mouth from other apertures, though I have not always met with those who possessed discrimination enough for this distinction. To the touch of the face, in the new born child, its eyes, its nose, its mouth, and all its various features, your finger should be accustomed; and if you familiarise yourselves with the feel of these parts, there can be no difficulty in making out the presentation and situation also.

I repeat it, then, before you attempt to introduce an instrument in laborious labours, sit down tranquilly, considerately, and repeatedly, if necessary, at the bed-side, indeed, as often as the investigation may seem to require; and then make out by examination, to your thorough satisfaction, what is the position of the fœtus, for this knowledge is peremptorily necessary to the dexterous administration of instrumental practice. Having ascertained this point before you proceed further, find out the nature of the difficulty with which it may be your lot to contend. In general, when deliveries are laborious, the obstruction arises from one of three causes, rigidity, disproportion, or an unfavorable position of the cranium. Whichsoever of these causes may be in operation separately, or in conjunction, in the case under care, should be thoroughly investigated.

POSITION OF THE PATIENT, ETC.

When instruments are to be used, it is proper to place the woman in a convenient position—that position being selected which may be the most commodious to yourself. Now, some may prefer the sedentary posture, some the recumbent; some that the woman lie on the right, some upon the left; these things are relative to the habits of the operator, and to dispute about them is useless. For myself, I generally place my patient on the left side, close to the edge of the bed, with the shoulders forward, the loins posteriorly, the knees bent towards the bosom, and the abdomen facing a little downward. Nurses are in the habit of putting a patient

in a position just the reverse of this; I mean with the loins anteriorly, and the shoulders behind. Keep clear of the bed-post. If your patient wish to bear with her feet against the bed-post, she may be indulged in smaller difficulties; but, in using the forceps, especially as you proceed with the delivery, you will find the post in your way. In laborious labours, you must also choose your own position by the bed-side; in general I kneel myself, and have a chair in readiness; so that if fatigued, I may sit down; this precaution I should advise you also to adopt.

RECAPITULATION.

These then are the principal steps to be taken, before you use the embryospastic instruments; place yourself in an appropriate position; let the woman be placed in the position you prefer, close to the edge of the bed, so that the pelvis may lie under the hand; ascertain, moreover, what is the nature of the difficulty; ascertain too the position of the child, and do not blindly pull down with the instruments, without this previous knowledge; let the bladder be emptied, and the rectum, too, if necessary; let the softer parts be fomented and relieved from any great irritability; if the patient is in a state of collapse, be on your guard, because she may die immediately after or before the delivery; if she is merely in a febrile state, or in good general health, be watchful still, though she may be expected to do well. Generally, before you use the embryospastic instruments, it is proper to take away fourteen or sixteen ounces of blood. Always it is absolutely necessary that the parts should be relaxed thoroughly, and that the dilation of the os uteri should be complete.

SECTION XXXI.

OF THE LONG FORCEPS.

The long forceps from end to end, measures about fourteen inches; and, when properly applied at the brim of the pelvis, it

lies obliquely, with its point directed towards the navel, and its shank upon the perineum. By a distinguished surgeon of the last century, Leveret, I mean, the long forceps were laterally incurvated; so that by this curvature, on placing the forceps in the pelvis, the handles are thrown forward from the sacrum, and the perineum is more secure. Forceps, both straight and incurvated, I have repeatedly used: and after some experience of both, I decidedly prefer the straight. The lateral curvature may protect the perineum somewhat, but its most certain security is derived from the prudence and gentleness of the accoucheur. The blades of the long forceps, in the method of using them hereafter to be recommended, may be applied to different parts of the head; as, however, they are more generally laid over the forehead and occiput, it is to these regions of the cranium, that they are, with the greatest nicety, adapted. Unless the blades be elastic, absolute adaptation can, I conceive, never be obtained; for while the form of the instrument remains unchanged, that of the head itself varies. Smellie's lock is decidedly the best; the lock should be loose, so as to admit a conjunction of the blades, although they are not brought into exact apposition with each other; for, in applying them to the head, this apposition cannot always be obtained. The instrument should be strong, and free from points or edges. Cleanliness renders it desirable that the forceps should not be coated with leather. I do not like to see an elegant pair of forceps. Let the instrument look like what it is, a formidable weapon. *Arte non vi,* may be usefully engraved upon one blade, *Cave perineo* upon the other.

CASES MOST FREQUENTLY REQUIRING THE LONG FORCEPS.

There are various cases, in which the long forceps are used; but, as it is my object always, to simplify my observations as much as may be, I shall confine myself on this occasion, to that case in which the use of them is most frequently necessary, and which, properly understood, will enable you to

comprehend their management in all other cases. The cases, of all others the most frequent in their occurrence, consist of those laborious labours in which the child's head is detained at the brim of the pelvis, the face lying to the one, and the occiput to the other side; a large head, a narrow pelvis, and other causes impeding the descent,

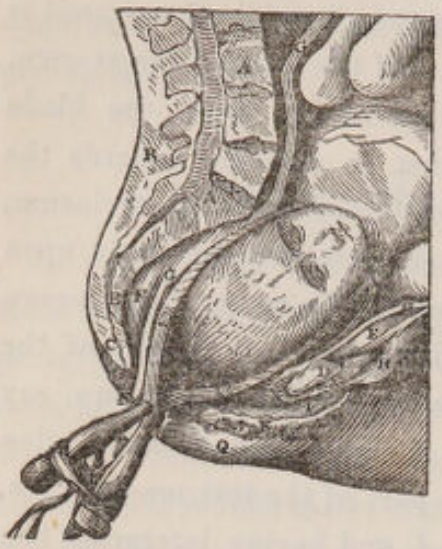
INTRODUCTION OF THE INSTRUMENT.

In cases of this kind, having warmed the forceps, not displaying them in the room, or holding them openly before the fire, but plunging them for this purpose into water of a proper temperature, or, grasping the blade in the hand, you prepare it for introduction. Now, if the forceps are straight, you may first introduce either blade indifferently; but if it have a lateral curvature, select your blade, so that when introduced, the concavity of it may lie towards the symphysis pubis, and the convexity towards the sacrum, the shank of consequence receding from the sacrum. The blade being selected, take the handle of it in your right hand, and then slide up one or two fingers of the left into the cavity of the uterus, so as to interpose those fingers between the cervix uteri and the child's head; an operation which, if you are fit to use the long forceps, you may very readily perform. That, in this stage of the process, it can never be proper to carry the whole hand into the pelvis, I will not venture to assert, but in general this measure is needless, and being needless you will readily conceive, that it is highly improper, as there is a risk of lacerating the vagina. Having, then, interposed two fingers between the cervix uteri, and the child's head, and this on the side of the pelvis; for in the side it is that the pelvis is generally most roomy; you pass the blade of the instrument upon the fingers, and recollecting the aphorism *arte non vi*, with the utmost tenderness and gentleness, not forgetful that you are operating on the softer sex, and that a single rude thrust may pass the blade through the vagina, often asking the patient if you give pain, you very gently work the blade

of the instrument along the side of the pelvis, where it ordinarily meets either the face or the occiput of the child, over which it glides and lies. Now here let me remind you of what was before stated, I mean that the head being at the brim of the pelvis, the basis of the cranium lies above and anteriorly, while the summit is placed below and towards the coccyx, and the point of the sacrum. In accordance, then, with this position of the head, the blade must be placed; that is, the point must be directed towards the umbilicus, and the shank must bear backward upon the perineum, when the instrument will be found, to lie very commodiously upon the head. The first blade being placed in this manner, you secure it in this position with the thumb and the two last fingers of the left hand, afterwards insinuating the two remaining fingers, say the first and second, so as to prepare the way for the introduction of the second blade. To pass up this part of the instrument, take, as before, the handle in the right hand, and having interposed the fingers between the child's head and the cervix uteri, and towards the back of the pelvis, so that the back of them lies near the sacro-iliac synchondrosis, pass the second blade along the fingers in the back of the pelvis, till you get it about half way to its destination. Having thus passed half way towards its destination along the back of the pelvis; you work it with gentleness, carrying it in a lateral direction, till you have transferred it completely from the back to the side of the pelvis; and then you carry it high up, so as to lay it over the child's head, the point being directed towards the umbilicus, and the shank being carried backward upon the perineum, in such a manner, that the two blades are brought as near as may be into apposition with each other.

Of the two blades, first introduce that which lies below in the left of the pelvis; for you will find on trial, that in this mode the junction at the lock will be most easily accomplished. And here, perhaps, you will ask me why, in introducing the second blade, I do not carry up the instrument, first along the side of the pelvis? The truth is, this may sometimes be done commodiously enough, but unless the pelvis of your patient lie close upon the edge, the

bed furniture under this method of introduction frequently lies in the way; an inconvenience which you may avoid, by first sliding the blade, as directed, along the hollow of the sacrum, care being taken to keep clear of the aperture leading to the rectum.



When then, in this manner, with the utmost gentleness, slowly, and without affected rapidity, the blades have been applied to the head, I lock them; careful in forming the junction, that neither the linen of the patient, nor the perineum, are intercepted by the joint. If any portion of the perineum is included when you are locking the blades, the woman exclaims "you are cutting me," when, of course, it becomes necessary to separate them immediately, to unite them afterwards with more caution. When the lock is completed, you may then, if you please, tie the handles by means of a riband, taking care, however, not to draw the ligature too closely, lest you should occasion the blades forcibly to grasp the cranium, so as to compress the brain and kill the child. Draw the ligature with that degree of tension only, which will give the blades their bearing on the head; which is all the pressure the case requires.

CO-OPERATE WITH THE NATURAL EFFORTS.

Having applied your instrument, before you proceed to abstract the fœtus, recollect the two aphorisms already mentioned—*arte non vi*, and *cave perineo*. And having duly prepared the mind, by

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Illustration:—Shews the situation of the blades of the forceps when properly applied and secured; A, the os pubis of the left side; B, the remaining part of the bladder; C, the rectum; D, the mons veneris; E, the clitoris, with the left nympha; F, the corpus cavernosum clitoridis; H, the left labium pudendi: I, the anus; K, the perineum; L, M, the left hip and thigh; X, the meatus urinarius.—*Smellie*.

considering how requisite it is that you should be very gentle, and how great are the injuries which you may inflict by rudeness and violence, proceed. And here be it observed, as we enter on the next step of the operation, that if there are no pains, which sometimes in the worst of labours there are not, you must draw down in the absence of the uterine action; but if the woman have her efforts every five or ten minutes, instead of making the operation entirely artificial, you ought to wait and co-operate with the pains, often rather leading the head into the world, than pulling.

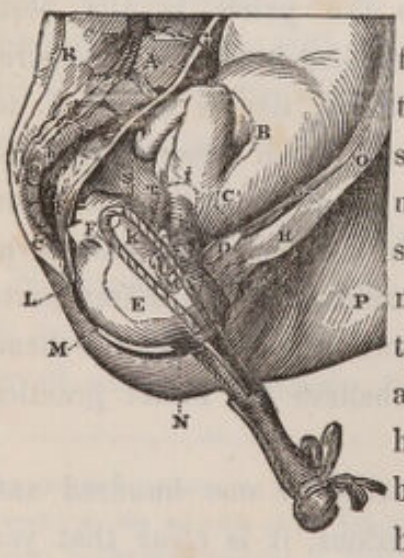
IMITATE NATURE.

Even where pains are wanting, although you cannot co-operate with the natural efforts, yet I would advise you to imitate Nature, the fruitful mother of all the arts. Do not in these cases continue pulling without intermission, till you have got the head through the pelvis, but make an effort, and then pause for some four or five minutes; again make another effort, and again pause, and proceed in this manner, till you gradually work forth the head; not forgetting, during the intervals of cessation, to examine the pulse, and to observe the countenance. The smallest force which may bring the head through the pelvis is the best. Those who have been engaged a great deal in difficult labours, may now and then venture on the higher degree of effort, to be conceded only to such as have had much experience; but in general, I would advise you not by any means to use the greater force; for if you do, the child is generally still born, and by contusion, fatal injury may be inflicted on the softer parts of the mother. If gentle efforts are insufficient to bring the head easily through the brim of the pelvis, I believe the better practice is to have recourse to the perforator.

If the pulse be one hundred and twenty or one hundred and thirty, before you commence your operations, it is clear that you cannot, from counting the beats, take an intimation whether the softer parts have or not sustained injury; but if, before the forceps be applied, the pulse is under one hundred in the minute, then,

should contusion be produced by your efforts with the instrument, the rise of the pulse will indicate it. Without a rise of the pulse, contusion, I am inclined to think, rarely occurs, and if you find the pulse mounting from one hundred and ten to one hundred and twenty, twenty-five, thirty in the minute, it is always proper to beware. After every effort with the forceps, therefore, count, waiting two or three minutes, so as to allow the beats to subside after muscular exertion, and count completely round the circle. If you find it below one hundred, no serious injury has been inflicted; if the frequency is encreasing, although it do not necessarily follow that serious injury has been inflicted, yet the existence of contusion becomes probable, and further efforts must not be made without much further consideration. In using the forceps, I am myself careful never to neglect, between the efforts, this examination of the pulse. In drawing with the forceps, the instrument not infrequently slips from the head, this perhaps being rather an advantage than an evil, as it may preclude too much extractive force. It is easy to replace the instrument, and repeatedly, if necessary.

ABSTRACTING THE HEAD.



In abstracting the head with the forceps, you will find it an advantage to swing the instrument a little from side to side, giving it an oscillatory movement; sway the instrument extensively, and you will lacerate the perineum; it is only a confined motion that may be safely tried. Many efforts are not usually required; if when the head is detained at the brim, it cannot be brought through the superior aperture by five or six pulls, it may be better

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Illustration:—In the above wood-cut, the os externum is shown open, the occiput low down from below the pubes, and the forehead past the coccyx, by which both the anus and

to resign the attempt altogether, wholly or for a time. An imaginary line, stretching from the umbilicus to the coccyx, is the line in which the cranium passes the brim, and in this direction, on the whole, the forceps, however, bearing a little forward from the perineum, the embryospastic force should be applied. At this time the perineum must be guarded with solicitous care.

On using the long forceps, according to the rules here prescribed, the cranium will frequently be found to descend with facility, more especially if the uterine efforts co-operate. When, however the coarctation is more considerable, the abstraction of the head may not always be safely accomplished. Therefore, in these cases, if immediate delivery be necessary, you must have recourse to the perforator, but should this not be requisite, you may withdraw blood--watch the patient, and wait a few hours, when the head, becoming moulded by the uterine efforts, and descending lower in the pelvis, under a second essay of the forceps, the fœtus may be safely brought. Thus, in the evening of the day, I have seen a living fœtus abstracted by the forceps where no prudent use of the instrument could have withdrawn it in the morning. The cranial bones of the fœtal head are connected by cartilage, and the cranium in consequence becomes capable of readily changing in form and diminishing a little in bulk, the principal adaptation being obtained by the marginal lapping of the one parietal bone over the other, and by some little advance of the os occipitis, which may get forced beneath the edges of the ossa parietalia.

By these measures, with gentle embryospastic effort, co-operating with the pains, or imitating the pains, swaying the instrument a little from side to side, abstracting on the whole in a line stretching from the navel to the perineum and coccyx, very careful not to

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perineum are stretched out in form of a large tumour; S T represent the left side of the os uteri. The dotted lines demonstrate the situation of the bones of the pelvis on the right side, and may serve as an example for all the lateral views of the same; A, B, C, H, the outlines of the os ilium; D, E, F, the same of the pubis and ischium; M, N, the foramen magnum.—*Smellie.*

lacerate the perineum, not repeating the efforts too often, nor using a force too great, you gradually bring the head forth through the brim; and when once you are passed the superior aperture, you generally find the further progress of the delivery easy; for, it is at the brim alone, most frequently, that the narrowing exists. Now, when the cranium is at the outlet, some, inconsiderately, proceed with the extractive efforts, promptly bringing forth the head, but, at the same time, lacerating the parts, and laying the rectum and genital fissure into one opening. This is one of the nicest parts of the delivery. The vessel may strike and founder, in the entrance of the port. At this time, therefore, different practices may be adopted, and we may withdraw the instrument, and commit the birth to nature; or we may continue the application of the forceps to the head, gently assisting the descent with the instrument; or removing the long forceps from the face and occiput, we may lay the blades over the ears, or we may use the lever, or the short forceps, as hereafter demonstrated. For myself, when the head is at the outlet, if the immersion require assistance, I generally retain the long forceps in their original situation, over the face and occiput, supporting the perineum with the hand, and gently leading the head, towards the mons veneris, very careful not to lacerate; but if, as is generally the case, the natural efforts are fully adequate to complete the delivery, after the passage of the brim, I then remove the forceps, and merely sustaining the perineum by manual pressure, trust to these efforts. Should the forceps be used in this stage of the delivery, I advise you to hold the handles by the thumb and a single finger only,—a useful hint that you are not to employ too much force. As the head emerges, the face becomes turned upon the hollow of the sacrum; this turn you ought to encourage, for by means of it the long diameter of the head is brought into correspondence with the long diameter of the outlet.

THE GRAND ERROR IS USING FORCE.

The grand error you are apt to commit, in using the long

forceps, is force. In violent hands, the long forceps is a tremendous instrument. Force kills the child, force bruises the softer parts, force occasions mortification, force bursts open the neck of the bladder, force crushes the nerves—beware of force, therefore; "*arte, non vi.*" Other errors, too, there are, against which I beseech you to guard. You may use the forceps without need; you may try to use it when the parts are rigid, and the os uteri not fully expanded; you may attempt to apply it, without knowing the position of the head; you may oscillate the instrument too extensively from side to side; you may draw without intermission, instead of imitating the pains; you may close the handles too forcibly by the hand or ligature; you may hurry the head through the outlet; you may neglect to throw the face towards the sacrum; you may forget the perineum; you may fail to conduct the head, when it emerges towards the abdomen and the mons, by drawing it too much upon the perineum.

SECTION XXXII.

OF THE LEVER.*

The next instrument, the use of which I shall mention, is the tractor or lever, an instrument excellent, and of great effect in dexterous hands. If skill and judgement are wanting, even the tractor may inflict dreadful injuries; but, in such hands, still greater mischief may be expected from the long forceps; to you, therefore, I recommend its use as the safer instrument of the two, possessing as it does, in an eminent manner, the advantages of portability and ready application.

VARIETY OF LEVERS.

By different practitioners, in different times, a variety of levers have been contrived; but one of the best that I know of, and that

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* Otherwise called the Tractor or Vectis.

which, I believe, is generally allowed to have its excellencies, is the lever which was used by the late Dr. Lowder, resembling somewhat a single blade of a pair of forceps, whence it is often called the *single blade*. Its length should be about fourteen inches. For the convenience of the pocket, it may be composed of two parts, separating in the middle, and uniting by a screw joint, which is secured by a small catch or spring, the handle of the instrument should be large and roughened and larger at the end, to yield a more effective grasp. The shank should be strong, for I have heard of its breaking short during in operation. I think it is as well, provided you are going into the country, to have two blades; one with a bold curve, the other less incurvated. The lever, with the milder curve, introduced more easily, is liable to lose its hold; the bolder curve is introduced with greater difficulty; but when once applied to the head, it keeps its place with greater tenacity, and enables you, therefore, to use a more effective effort.

CASES IN WHICH EMPLOYED.

The cases in which the lever may be employed are various, and I might bewilder you by relating many; but as with the long forceps, so here, in a view to practical information, I think it convenient to confine my remarks to a single case only, for this case, comprehending in itself all the general principles of management, will enable you to understand the method of manœuvring the lever in all the other cases where instrumental help may be required. Now the case in which I propose to demonstrate the use of the lever, is that in which I have already been demonstrating the use of the long forceps, and which among the laborious labours, is of all others the most common in its occurrence; that labour, I mean, in which the cranium is detained at the brim of the pelvis, in consequence of a want of room between the front and the back.

MANAGEMENT OF THE INSTRUMENT.

By different teachers and different practitioners, you will find

that different rules are laid down for the management of this instrument. Of these, however, the best, in my judgment, are those of Lowder, as improved by my friend Mr. Gaitskell.* I would

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* *Mr. Gaitskell's Observations on the use of the Lever or Vectis, and the best Mode of applying the Instrument.*

The vectis should be thirteen inches in length, one half to form the handle, the other the curve. The handle should be made of hard wood, rendered rough for the purpose of obtaining a firmer hold, and made to screw on and off. When the instrument is made with a hinge handle, it is very inconvenient to introduce; therefore this construction of the instrument should never be adopted. *First*, The os externum and internum should be perfectly dilated and relaxed, the amnion waters discharged, and nature allowed to exert her own power before art steps into her aid. *Secondly*, The urinary bladder and rectum should be both emptied, either by nature or art, before the introduction of the instrument, for the purpose of removing the obstruction which a full bladder occasions, as well as of protecting adjoining viscera from mechanical injury. *Thirdly*, The patient should be placed in a proper position: on the left side is the best, with the breech close to the edge of the bed, and the knees drawn up to the abdomen. *Fourthly*, The position of the fœtal head should be exactly ascertained, that the long axis of the head may be adapted to that of the pelvis. It should also be borne in mind, that the long axis of the upper brim of the pelvis crosses the lower one at right angles; when, therefore, the woman is on her side, the long axis of the upper brim is vertical, and the long axis of the lower horizontal. By discovering the anterior fontanel, it will not be difficult to make out where the forehead of the fœtus is placed, and by this may be marked all the other relations of the different axes of the head, and their correspondence with those of the pelvis. *Fifthly*, The instrument should be well greased with soft pomatum or lard, the woman placed in a proper position, the fœtal head correctly made out, and the urgency of the case such as to justify the employment of an artificial power. The preliminaries being settled, the next thing is the safe introduction of the instrument. To do this with facility and safety, the Accoucheur should kneel on a pillow by the side of the bed, and introduce all the fingers into the vagina as far as the brim of the pelvis at the side of the sacral promontory (either right or left, according to the situation of the occiput). As he passes up the instrument, the fingers should be gradually withdrawn. The instrument is now to be pressed up into the cavity of the uterus, being careful that it is in the inside, and not on the outside, gliding it over the parietal bone till the screw part of the handle presses on the fourchette of the os externum. This attained, the handle should now be held firmly with the right hand, while the index and middle finger of the left, fixed about two inches from the screw part within the vagina, become a fulcrum. On this fulcrum or point of support, the instrument is made to move from the sacro-iliac symphisis, toward the hollow of the ilium, by the action of the right hand on the handle. In this way it describes the section of a circle, and glides on to the occiput. Should the occiput point to the right ilium, the left hand must be employed; if to the left ilium, the right hand must be used. When a labour pain takes place, the Accoucheur should gently aid it by drawing down in the line of the axis of the pelvis, *i. e.* in an imaginary line directed from the umbilicus through the centre of the axis of the pelvis. In this way the occupit is depressed while the chin approaches the child's breast, and its head is reduced to the smallest compass, and is thus enabled to pass through the cavity of the pelvis. As soon as the occiput is brought so low as to press on the perinæum, the instrument should be withdrawn, and re-introduced

advise you by all means to make yourselves well acquainted with these rules, for, to me, they appear on the whole excellent. When you are about to use the instrument in Lowder's mode, the rectum should be cleared, if necessary, and the bladder should be evacuated; the woman too ought to be placed upon her left side, near the edge of the bed, with a bearing of the feet upon the

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with the usual precautions. The object now in view is to place the instrument over the face of the child. To effect this, the hand must be passed up, as at first directed, to the right or left sacro-sciatic symphisis, according to the situation of the face. When the instrument gets above the brim of the pelvis, a finger or two must be inserted by the side of the instrument, and pressed on it till it passes over the forehead on to the face, so as to embrace the chin. An imaginary line drawn through the centre of the child's mouth, ear, and occiput, is the present situation of the instrument, and quite the reverse of what it was before. The Practitioner has nothing now to do but to draw down during the time of pain, increasing his power according to the degree of resistance. The mechanical turn of the head, viz. the face of the child to the hollow of the sacrum, and the occiput to the arch of the pelvis, generally takes place spontaneously during the descent of the head, though sometimes, but not one in a hundred, this mechanical turn of the head wants watching; the face should turn forward, and the occiput backward.

Having concluded my observations on the use of the vectis, I shall now enumerate the various ways in which this most valuable instrument may be abused. *First*, An attempt to introduce the vectis before the external parts are properly relaxed, and the os uteri fully dilated, or the amniotic fluid discharged. *Second*, An incautious mode of passing the instrument, so as by the violence and wrong direction to rupture the parietes of the uterus. *Third*, The employment of an extracting power, without bearing in mind the different axes of the pelvis, and position of the fœtal head in relation to those axes. *Fourth*, The passing the instrument on the outside of the uterus instead of within its cavity. *Fifth*, The use of power without waiting for natural pain, so as to make a labour completely artificial. *Sixth*, The keeping a constant pressure on the fœtal head in the interval of the labour pains, which endangers the life of the child, by compressing the funis, and stopping the circulation of the blood. In this way, I firmly believe, the destruction of many children during parturition is accomplished by the vectis. When the waters are discharged and the cavity of the uterus lessened, the funis falls on the face like a coiled rope, and is exposed to the hazard of mechanical compression. To prevent this accident, I never use the instrument but during a pain; and when the pain ceases, I raise the instrument about half an inch from the face to prevent the destruction of the child.

From these observations, it therefore follows that the vectis is an instrument in surgery—of which midwifery is a branch—which is dangerous or useful according to the hand that uses it, and the head that directs it; and it may be said of it, as of every other instrument, and of every other remedial agent employed in the various departments of medical science, that it is neither a safe nor a beneficial means of aid, unless it becomes such in consequence of its judicious and discriminating employment. The excellent observation of Boerhaave, "Nullum ego cognosco remedium nisi quod tempestivo usu fiat tale," is as applicable to the use of obstetrical instruments as to any substance employed in the practice of physic.—*London Medical Repository, No.* 119, *November*, 1823, *p.* 379, 380, 381.

posts, and the softer parts should be thoroughly relaxed, and the os externum et internum should be open; and, in a word, all those preliminary and precautionary measures should be observed, which were enumerated when we treated of the long forceps.* Before you use the tractor, too, you should have a clear reason for doing so; so that if any body should enter the room and ask you why you are going to use the lever, you might be able to give him a good and sufficient answer: because there is a contraction of the brim of the pelvis; because there is a bearing on such and such a bone, so that without assistance the cranium cannot descend. Moreover, you cannot use the instrument with science, or safety, unless you have ascertained clearly what is the position of the head; and if your skill is such, that you deserve to be entrusted with the lever, you will be able, with proper examination, to make out this position with ease.

Let us suppose then that these precautionary measures have been taken; let us suppose the parts to be lax, and the rectum and bladder to have been emptied, and the posture of the woman to be commodious, and the position of the head to have been ascertained, the face, for example, lying to the left, and the occiput to the right side of the pelvis, and let us suppose, too, the deficiency of room and the nature of the obstruction, have been clearly proved and detected,—under such conditions how are we to use the instrument.

When you are going to introduce the lever, the head being at the brim, you had better first pass up all the four fingers of the left hand, and taking care that you do not lacerate the parts, of which there will be but little risk, if they are thoroughly relaxed, you may interpose those fingers between the side of the occiput and the sacro-iliac synchondrosis, and this with a view of preparing the way for the insinuation of the blade. This point accomplished, you may then take the instrument with your right hand and glide it up between the fingers and the side of the occiput, as usual—*arte, non vi*—with the utmost gentleness, taking

* Pp. 495, &c.

five or ten minutes for the introduction, if necessary, recollecting that the end proves every thing, and that if no injury be inflicted and the patient do well, it matter little whether you occupy ten minutes or ten seconds with the introduction, for although a needless tardiness is to be condemned in instrumental practice, hurry is more dangerous than delay. In this manner then, having placed the blade upon the side of the occiput, you withdraw your fingers and lay hold of the shank at the screw, that is, at the centre of the instrument; and still grasping the handle of large size with the right hand, you manœuvre the instrument a little, so as to bring it over the back of the occiput, into the side of the pelvis. At this time the tractor takes the position of the long forceps, lying over the back of the head, with the shank behind and the point advanced; in a word, on a line—which stretches through the middle of the superior aperture from the umbilicus to the perineum, and thus the blade, bearing firmly on the occiput, you have great power over the head.

The instrument, then, being applied in this manner, you grasp the handle with the right hand, and the middle of the shank with the left, and by the co-operation of the two, pressing down upon the cranium, you support a steady bearing upon the occiput, without, however, resting on any part of the mother as a fulcrum; for the instrument ought to be used, not as a lever but as a tractor. Having secured the head in this manner, you wait for a pain; and when the uterus is in action, you draw; sometimes, even drawing a little when the pains are feeble; for by drawing, the strength of the pains may occasionally be increased. The head advancing, and the pain ceasing, pause, do not suffer the operation to be altogether artificial, but co-operate with nature, and the pains recurring, draw again; and thus by repeated efforts, sometimes two or three only, sometimes twenty or thirty, you bring the head down through the brim into the cavity of the pelvis, at the same time depressing the occiput, when, very generally, the whole of the difficulty is overcome. The head being, in this manner, by the first step of the operation, brought down into the cavity of the pelvis, at the

close of it we usually find the chin lying on the chest, and the head, of consequence, occupying but little room; for it is an excellence in the tractor, that it not only draws down the head, but that, depressing the occiput, it at the same time brings the chin upon the chest, so as to put it into the position most favourable to transmission.

In making these efforts with the tractor, remember that the smallest force adequate to your purpose, is the best; that a judicious and well-managed gentleness, is peremptorily requisite; and that death will ensue from violence; after every effort, therefore, as in using the long forceps, you ought to look at the countenance, and count the pulse, ascertaining, in this manner, whether you are or not inflicting injury on the softer parts.

When the head is in the pelvis, the natural efforts will frequently expel it, and therefore, as in using the long forceps, it may often be better to commit the birth to the natural efforts. I will suppose, however, that the natural efforts are inadequate for this purpose; in this exigency, it becomes proper to give further assistance with the tractor, changing altogether the position of the instrument. For this purpose, first carry up two or three fingers of the left hand over the face of the fœtus, interposing them between the head and the bones upon the back of the pelvis near the synchondrosis, where the face usually lies; then taking your instrument in the right hand, glide the blade over the face of the child, carrying it so high that the fenestra, by which I understand the opening in the middle of the blade, may admit the chin, the limbus resting upon it. Having accomplished this, withdraw your fingers, and lay hold of the shank at the screw joint as before, and giving a lateral movement by the co-operation of the two hands, so change the position that the shank lies over the ear, the screw which is in the middle being in a line with the vertex, and the point of the tractor still resting on the chin, the instrument lying over the side of the cranium like one of the blades of the short forceps. Well, now, in this way having obtained a very secure hold of the one side of the cranium, planting two fingers,

the first and second, on the other side, you lay hold of the shank with the thumb and two remaining fingers, and grasp the head as securely as if within a pair of forceps. The pains coming on, you then draw down without violence; after every effort, as before, counting the pulse; and moreover, in drawing the head down, you must be careful to direct it as much in the axis of the outlet as may be, conducting it towards the mons and from the perineum; for by so doing, you greatly diminish the risk of lacerating this part.

ERRORS LIABLE TO BE COMMITTED.

In using the lever, the following are the errors which you are liable to commit: you may introduce it before the softer parts are thoroughly relaxed, and before the os externum and internum open: of this error, contusion, laceration, and death may be the consequences. Again, when the head emerges from the outlet, in an unguarded moment, particularly if, as frequently, the head be large, you may tear the perineum so as to lay the genital fissure open into the anus. Further, you will observe, that the lever is to be used in two modes; being applied over the occiput, when the head is at the brim, and over the sides when it is at the outlet; hence another error which you may fall into, I mean the applying the lever without considering the situation of the head, whether it be at the brim or the outlet of the pelvis; and unless this be ascertained, assistance cannot be administered with this instrument in a scientific manner. The using continual extractive force, without waiting for the pains, is another great error which you may commit. Here, as on so many other occasions, the stoical maxim, *sequere naturam*, is excellent,—act up to it, as far as may be; first, because occasional efforts are less likely to injure the woman, than continual extractive force, and secondly, because the instrument may prove, in good measure, powerless, without the assistance of the pains. When you are not drawing down, to continue bearing with the blade upon the cranium is another error. If you have a fold of the umbilical cord

between the head and the instrument, by a continual bearing on them, you may interrupt the circulation and destroy the child; and even if you have not, continued and strong pressure may so far injure the brain, that it comes into the world still born. Remember, therefore, when you are drawing, that it is during pain only that the effort should be made, and that when the pain ceases, the tractor should be a little raised from the cranium.

SECTION XXXIII.

OF THE SHORT FORCEPS.

Provided you have dexterity enough to make use of the long forceps, it will rarely happen that you will find it requisite to have recourse to those that are short. When the head of the child is so low down in the pelvis, that it lies within the reach of this instrument, in general it will be found, that no assistance of the instrumental kind is required; and I have observed already, that without a peremptory necessity, instruments are not to be used at all; and even in those few cases where there is, at the outlet, such deficiency of room, or other obstruction, as to impede the passage of the child, and to render it necessary to have recourse to instrumental assistance, should the long forceps be rejected, you will find that the instrument already commended, the vectis, or tractor, is sufficient to abstract the fœtus, so that in this case also the short forceps is not required. On this account it is, that it has rarely happened that I have had recourse to the short forceps. In some cases, and especially to those who are unskilled in the use of the tractor or long forceps, they are however not without recommendation. This instrument is distinguished from the longer forceps by its brevity, whence it is denominated the short.

In some cases the blades of this instrument may be applied, and with advantage too, over the face and occiput, in the way I shall hereafter demonstrate; the instrument, however, has been formed

to lie upon the sides of the head, the lock being in apposition with the vertex, and the point with the chin, while the ears lie in the fenestra—the head, in short, being enclosed by the forceps. Accordingly, if the head be of the standard and ordinary make, the short forceps, when so applied to the cranium, fit exceedingly well.

DIFFERENT KINDS OF SHORT FORCEPS.

Of the short forceps, different varieties have been recommended by different practitioners, but I forbear to enter into long disquisitions on this subject, as the properties of these many varieties may be better understood by examining the instruments themselves. On two or three kinds I shall, however, offer a few remarks.

CURVED SHORT FORCEPS.

Dr. Hamilton, the able obstetric professor of Edinburgh, has proposed a pair of forceps, of which I can by no means in candour approve. To omit the consideration of the shank-hinge, the forceps, is formed with a lateral curve, in the manner of the long forceps. This lateral curve, even in the long forceps, I am, on the whole, inclined to condemn; and, therefore, though I am provided with both instruments, in the long forceps most used in my own practice, the shanks are not incurvated, but straight. We have all, however, a different tact in operating; and to some I can readily conceive, that the curved long forceps may be preferable to the straight; yet, granting this, without the proofs of arguments that are not come to my hearing, I never can allow that the short forceps derive any advantage from the lateral curve, which seems to me to render them less commodious. The object of curving the forceps laterally, is said to be that of protecting the perineum, by carrying the shanks of this instrument forward from this part towards the thighs. Now, to consider this a little: if

the head is at the outlet of the pelvis, the face lying in the hollow of the sacrum, and the occiput lodging under the arch of the pubis, you apply the straight short forceps on the head, with the lock to the vertex, and the point over the chin, the whole length of the blade stretching across the sides of the head and the ear, and you will find, that when your instrument, though straight, is properly applied in this manner, there is no approximation of the shanks to the perineum, so that the protection of the lateral curve becomes useless, the part being in no danger from the instrument. On the other hand, apply the curved forceps in the same case, and it is true the shanks recede a little further from the perineum; but the perineum was cleared before, and this additional retreat, wholly unnecessary, is no additional security. Or to take another case: we will suppose a case in which the head is at the outlet of the pelvis, or near it, the face lying to the one, and the occiput to the other side; and we will suppose further, that you apply the short forceps, straight in the shank, and draw down according to the rules which I shall presently prescribe. Why, when the head is in this situation, if the blades be placed in the usual position over the ears, one lying against the pubis, the other against the sacrum, you will find that the shanks rest but little on the perineum; and even if they bore towards the perineum more forcibly, under this application of the instrument, Dr. Hamilton's curve will not carry the shanks from the perineum. Now to call into question the superiority of the curved shanks over the straight forceps, I will ask, what is the effect of the lateral curve? Does it protect the perineum? No; it merely carries the handles of the forceps down to the side of the pelvis: from the perineum it does not remove the shanks one iota. So that to me it appears, the lateral curve, always more or less incommodious, is of little or no advantage to the perineum, whether the instrument be placed in the front and back of the pelvis, or on the sides. The short forceps, with lateral curve, therefore, I decidedly disapprove; if you use this instrument at all, give a preference to the straight.

STRAIGHT SHORT FORCEPS.

Now, of the straight forceps, there are two forms which I think deserve your approbation, though much nicety in the shape of the instruments, is really not of much importance. The two forms of the forceps are those of Dr. Orme, and those of my predecessor Dr. Haighton, a man to whom I owe every thing that is good both in precept and example. Dr. Orme's forceps are to be commended for their exact adaptation to the sides of the head, and are formed with the blade of the fenestra so narrow, that the opening will scarcely admit the fore-finger. The main defect chargeable upon this instrument is, that when laid over the side of the head in the usual manner, the limbus* enlarges the cranium, where, if instruments really be required, it is generally already too large; I mean over the protuberances of the parietal bones. Now Dr. Haighton's instrument has the advantage of a large fenestra, the limbus being made a little thinner; so that the protuberance of the parietal bones lying in the fenestra on a level with the blade, or even projecting a little beyond, there is no addition of bulk over the protuberances. If there be any defect in Haighton's forceps, it consists in the breadth of the blades, which is so great, that they are not very easily passed up through the genital fissure, and it has been complained of in this respect; but it is to be recollected here, that you are never to use this instrument, except where the softer parts are thoroughly relaxed, when the blades will pass with facility; if the softer parts are rigid, so that the introduction may be attended with difficulty, you ought not to use them at all.

THREE CASES, PRINCIPALLY REQUIRING THE SHORT FORCEPS.

The cases in which you may use the short forceps, are principally the three following: first, those cases in which the head is

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* The bar of iron forming the blade and containing the fenestra.

at the outlet of the pelvis, the face lying in the hollow of the sacrum, the sagittal suture bearing on the perineum, and the occiput lodging under the arch of the pubes—the position of the head, in ordinary labour, when the fœtus is upon the point of entering the world. The second case, somewhat different from the former, is that in which the head is descended to the outlet of the pelvis; but where the face is lying forward upon the symphysis pubis, the occiput and vertex bearing on the perineum and sacrum, and where, owing to the great pressure upon the perineum and parts adjacent, there is great obstruction to the passage of the head. The third case, of intermediate character, is that in which as before, the head lies in the cavity of the pelvis, but the face is lying towards the one, and the occiput towards the other side, that turn or partial revolution of the cranium which precedes delivery, and places the occiput under the arch of the pubes, being as yet unaccomplished. Under all these three positions then, the cranium being descended into the cavity of the pelvis, the use of the short forceps may be required;—when the face lies in the hollow of the sacrum; when it lies forward, and when it lies to the one or the other side.

MANAGEMENT IN THE FIRST CASE.

There is nothing easier than to use the short forceps in the first and simplest of these cases; where the head is at the outlet of the pelvis, and the face is in the hollow of the sacrum, and the occiput lies out under the arch. The accoucheur taking one or other blade of the short forceps, for if there be no lateral curve, choice is unnecessary, he passes up two of the fingers of his left hand between the vagina and the child's head, on the left or under side of the pelvis, so as to feel distinctly the ear, always of ready access when the head is thus low down in the pelvis. This preparatory measure taken, he then, with the right hand, gently insinuates the blade between the fingers and cranium, placing the point over the chin, and the lock over the vertex, the position of which parts

he has previously ascertained. Well, in this manner, with the utmost gentleness, having placed the blade on the head, he keeps it in that position with the thumb and two fingers, while he interposes the other last two fingers, the first and second, I mean, of the left hand, between the vagina and cranium in the right or superior side of the pelvis; and, as before, with the right hand, he carries up the second blade in apposition to the former, the lock being apposed to the vertex, and the point to the chin, and the two blades being placed in correspondence with each other, so as to secure the head. Thus, then, the head being secured in this manner, and care being taken to include no portion of the perineum, the practitioner waits for pains, if there be any expectation of them, and then recollecting the perineum, which is on the stretch and in danger of laceration, he leads the head forward a little, pauses, examines, and observes the pulse and countenance; afterward, as pain recurs, with caution and gentleness repeating his attempts. Here let me tell you to beware of pressing the head too forcibly between the blades, lest you crush the head and bruise the cerebral mass; make no pressure upon the head, except when drawing. Abstract the head gradually, by little and little, and in making the effort, be very careful to draw towards the symphysis pubis and the thighs, so as to keep clear of the perineum as much as may be. The grand danger to be apprehended is, the laceration of the perineum; hence, for the sake of security, it is sometimes necessary to inspect the part, but this is rare.

MANAGEMENT IN THE SECOND CASE.

The second case admitting the use of the short forceps, is that in which the head is at the outlet of the pelvis, with the face on the symphysis pubis, and the occiput on the sacrum, the sagittal suture bearing on the perineum. Now in this case, for the safety of the woman, I do believe you will often find it better to lay open the cranium, as the forceps may bruise, may tear; and after all, perhaps, you may abstract a dead child. But before

you have recourse to so dreadful an instrument, only not murderous, you should make every prudent attempt to liberate the child uninjured, whether by the lever or forceps. Applying the short forceps, then, in the same manner as before, with the lock on the vertex, and the point over the chin, thereby including the head, you draw down, careful, as you draw, to throw the chin on the chest, and to bear the occiput from the perineum and sacrum, and leading it as much as may be towards the thigh; all which may be very easily effected. Besides this method, however, there is yet another, in which the delivery may be accomplished, and that is, by rectifying the position of the head. Including the head, as before, in the forceps, you turn the face a little to one side, before you draw down; then, pausing awhile, you again turn the face a little more to the side of the pelvis, and draw, very careful of the perineum, until you gradually and safely work the face into the hollow of the sacrum. When the unfavourable situation is rectified, the head comes away easily enough, probably under the natural efforts, unaided by further instrumental assistance.

The grand error in this case to be avoided is, the making such pressure on the softer parts, when the head is abstracted, as may occasion sloughing or laceration of the perineum; more especially when the softer parts are greatly distended, or when the head is extraordinarily large; the fœtus too frequently dying in consequence of this pressure. For these reasons, I am not sure that it will not often be the wiser practice to sacrifice the fœtus at once, by laying open the cranium, as we may thus preserve the person of the mother from such formidable injuries.

MANAGEMENT IN THE THIRD CASE.

The third case in which I shall demonstrate the use of the short forceps, is that in which the head is at the outlet, as before, the face lying to the one, and the occiput to the other side. In a case like this, it is rarely necessary to use instruments at all; but want

of room, or a failure of pains, or a large and unexpected eruption of blood from the uterus may render the use of instruments necessary. In cases of this kind you may apply instruments in two ways. First, you may lay the forceps in the sides of the pelvis, over the face and occiput; after which you may gently place the face in the hollow of the sacrum, and the occiput under the arch; subsequently cautiously abstracting the head, with or without applying the forceps, in the usual manner, over the ears. Or, secondly, instead of operating in this manner, you may, if you please, apply the instrument from the first, in the ordinary mode, over the sides of the head, and this you should always do where you can, the blades being made to fit the head. If, however, you apply the forceps in this way over the ears, you must place one blade in the front of the pelvis, and the other behind, where the ears are lying, proceeding on the principles already laid down for the use of the instrument in the sides of the pelvis. For this purpose it may be convenient to introduce first the blade, which is to be interposed between the cranium and the front of the pelvis. Having properly secured the head, you draw down, and conducting the face into the hollow of the sacrum, gently, gradually, and with great care of the perineum, you deliver as before.

The turning of the face by mistake into the front of the pelvis instead of placing it on the sacrum, is a principal error against which you must guard in managing these cases. When you have secured the head, remember that you are to turn the face in the hollow of the sacrum, and afterwards abstract the fœtus in the ordinary way. Doing the reverse of this, you throw the occiput into the hollow, and thereby create the very difficulty before considered, and which it is so necessary to avoid. If you will give nature fair play, as you draw down, I believe you will generally find that the face will, of itself, turn round upon the back of the pelvis, or, at all events, that only small and gentle assistance will be required.

There is another error which you may commit in using the short forceps; most extravagant it is, and tremendous as extrava-

gant; I mean the introducing of one blade into the rectum and the other into the vagina, the intestine becoming enclosed between the blade and head. The error is possible, but is scarcely pardonable; and the man who is guilty of such enormity, ought to relinquish the name of an accoucheur.

SECTION XXXIV.

RULES FOR USING THE EMBRYOSPASTIC INSTRUMENTS.

The practitioner who has a moderate share of mechanical genius, who understands moreover, thoroughly, the process of examination, and who, as every obstetrician ought to do, has acquainted himself with the general obstetric anatomy of the pelvis, the child, and the softer parts in connexion with the pelvis, with the help of a little experience, can, I conceive, find but very little difficulty in using the embryospastic instruments. To mere dexterity in the use of these instruments, therefore, I would give but small praise. Nay, sometimes the most intellectual accoucheurs are, perhaps, the very men who are the least skilful in the use of these instruments; for never using them unless peremptorily required, and if not engaged in a consultation practice, they can have but very rare occasion to administer them. In truth it is not so much in the use of instruments, as in the selection of those cases in which the use of instruments is really required, and in the determination of the precise moment when we ought to interpose with instrumental help, that the judgment of the practitioner appears.

ON THEIR ABUSE AND NEGLECT.

The worst of consequences arise, no doubt, from the neglect or rejection of instruments, where they are really demanded by the nature of the case; bruises, sloughings, inflammations, suppurations, and the death of the mother, and the death of the child, may

all be the result; nevertheless, the cases in which patients may suffer because instruments have not been employed when they have really been required, are by no means frequent in their occurrence, and therefore it is impossible for men, in general practice, to err frequently even in abstaining altogether from the use of instruments in all cases. In truth, if you go down into the country, even without the lever and forceps, you may be in practice a considerable time before you find your need of them; though, as your circle of action enlarges, you are likely to feel the want of these arms at last. If you must err, then, take my advice, and err rather by the neglect or rejection of instruments than by their too frequent use, for the cases in which you may use instruments without need, are as numerous as the cases that may fall under your care, with the exception of the very, very few, in which these weapons are really required. In the common course of practice, great evil results from using instruments where they are not required: young men, who feel they have skill enough to manage these implements, sometimes feel, too, a prurient propensity to have recourse to their use. When, however, you lay your hand upon the tractor or forceps, remember that the accoucheur who is meddlesome may be guilty of occasioning laceration of the perineum, rupture of the vagina, compression and death of the child, inflammation of the abdomen of the mother, and many other fatal consequences, which I have myself had occasion to see; a list of offences, surely, sufficient to alarm the prudent.

KNOWLEDGE OF CASES REQUIRING THEM.

To individuals it is no doubt an advantage that obstetric instruments should exist, though to the sex at large it is, perhaps, an evil and a curse; for, if we were to take the aggregate of all the evil and all the good which results from the use of instruments, I do believe it would be found that the total evil has considerably exceeded the advantage derived from this artificial assistance. It is therefore of the utmost importance to you, not merely to learn to

use instruments, for if unskilful in using them, in a large town at least, you may often procure assistance; but it is of the highest importance, that you should, moreover, learn to know the cases in which the use of them is required, so that, whether you operate yourself, or choose to put in requisition the assistance of others, you may be able to select cases which are fitting, and to ascertain too the proper moment for action.

CIRCUMSTANCES UNDER WHICH SOMETIMES ALLOWABLE.

If an accoucheur of much experience, engaged in a very large practice, can administer the lever with great dexterity, I could pardon him for using this instrument occasionally to save a little time, provided he feel fully satisfied that he can operate without injury to the mother or her offspring. A sort of amnesty may, I think, be extended to the man who does this; yet, after all, the practice is not be commended; and, as to the administration of instruments pragmatically and officiously, and where any danger may result, we must all agree that it ought never once to be thought of.

So also, in consultation practice, you will sometimes be called to cases in which the friends are anxious; and the practitioner is worn out by harassment of many hours at the bed-side, with a mind full of perplexity; the patient herself, especially if she has been delivered by instruments before, is importunately desirous that instruments may be employed again. In cases of this kind I have myself, in some instances, had recourse to the forceps, and delivered the woman with safety; nevertheless, I have considered myself culpable for so doing. The mere desire of the woman, or of the accoucheur who has been previously in attendance, or of the friends themselves, furnishes no sufficient reason whatever why you should use the instruments, for life may be at stake, and you are not to recommend instruments in an adulatory manner, merely to flatter the feelings, but because, in reason, you perceive that they are peremptorily required.

When women are narrow in the pelvis, it sometimes happens that they have been repeatedly before delivered by the use of the lever or forceps; six or eight children, perhaps, having been born, all of them under instrumental practice. Now, if a skilful and forbearing obstetrician, one not meddlesome, have been in attendance upon the woman, that is a strong presumptive argument why you should use instruments again; but after all, it is only a presumptive argument, deserving to be considered as a make-weight in the scale, but nothing more. A woman may have born six children, all under the use of instruments, and yet the seventh may not require their employment, because the child, born prematurely, may be of small size; because, too, it may be one of twins or triplets; because from other causes, it may be unusually soft and small.

MEASUREMENTS OF THE PELVIS.

When engaged in practice, you will, no doubt, feel disposed to determine respecting the necessity for instrumental aid, by making your measurements of the pelvis. In the preliminary parts, I endeavoured to explain to you how the pelvis is to be measured;* nor would I have this measurement more especially at the brim, between the symphysis pubis and the promontory of the sacrum, to be neglected. Nevertheless, I have the satisfaction to tell you, and I say satisfaction, because the declaration implies a diminution of difficulties, that it is not by the nicer measurement of the pelvis that you are to decide upon those cases in which you are to use the embryospastic instruments. If the pelvis be contracted, or distorted in a high degree, you may often, on examination, ascertain, at once, that unassisted delivery is impossible; but, in general, when the tractor or forceps are proposed, the contractions are small. Now, in these nice cases; to determine within a line or two what is the measure of the pelvis, must often be a point of difficulty to the experienced, and not infrequently, beyond the skill of an ordi-

* See "Means of ascertaining the Kinds of Pelves," p. 17.

nary practitioner; and, moreover, if the pelvis be measured with unhoped-for exactitude, we must still remain in doubt as to the bulk of the head, which is very various. It is true, this enquiry might be ascertained by carrying the whole hand into the uterus; but then this is an operation of danger, and should never be had recourse to if avoidable. On these accounts therefore, although, certainly the examination of the pelvis ought not to be neglected, I should not advise you to take principally from these measurements the determination whether you will, or not, have recourse to instruments.

APPEARANCE OF DANGEROUS SYMPTOMS.

The appearance of any dangerous symptoms is sometimes adduced as an argument for the use of instruments, and I allow its force, provided the symptoms arise from the prolongation of the labour; and delivery seems to be the only effectual means of overcoming those dangerous symptons. If there is tenderness of the abdomen; collapse of the strength; irritability of the nerves; restlessness; a rising pulse, mounting from one hundred and ten to one hundred and twenty, thirty, or forty, in the minute, all these are certainly strong arguments for having recourse to instruments.

PROLONGATION OF THE LABOUR.

The mere prolongation of the labour, too, is certainly a reason, and a good one, for the use of instruments.* You should measure the term from the dilatation of the os uteri and the discharge of the liquor amnii, that being the epoch, or time, at which the heavier pressure begins to bear upon the softer parts; after which, therefore, this pressure is likely to become injurious. Now, it may be

* Drs. Hamilton, Burns, Oseander recommend an early use of instruments, and oppose the disciples of the school of patience, who would leave all to nature. Hamilton held, that twenty-four hours of real labour should elapse before we interfere; Burns is of the same opinion, when he says from twenty-four to thirty-six hours; while Denman thought we should operate after six hours. *Dr. Ryan.*

laid down as a sort of general rule, that no woman should be left in strong labour for more than twelve or twenty-four hours after the discharge of the waters; I say in strong labour, after the discharge of the liquor amnii, for if the water be not escaped, and no dangerous symptoms are apparent, it matters little whether she have been in labour for a week or a day; in the ordinary course of things, no danger need be apprehended. But if, after the discharge of the water, the woman have been in strong labour for twelve or twenty-four hours, she ought to be delivered on two accounts: first, because after fruitless labour for so many hours, subsequently to the discharge of the liquor amnii, it is unreasonable to expect that the natural efforts will expel the child; and, secondly, because where labour is suffered to run on beyond a certain time, even though no danger has yet appeared, of a sudden, sometimes, when all seems fair and smooth, the vessel strikes and founders; the pulse rises to one hundred and thirty or one hundred and forty in a minute, the countenance falls, and speedily, or in a few hours afterwards, the woman dies. In these cases there are usually extensive bruisings, and now and then very extensive lacerations, of the womb.

CONCLUSION.

The general indication which I have just gone through, I have not mentioned with the view that you may be guided by them, but rather to prevent you from being misled. The prolongation of the labour, and the attack of dangerous symptoms. I look upon as a valid argument in support of the use of instruments. But the convenience of the accoucheur, the wish of the patient or friends, the use of instruments in former labours, the measurement of the pelvis, are all inconclusive reasons, and will not alone bear you out in the employment of instrumental assistance. The rule, which, after as much consideration as I have been able to give the subject, and which I should recommend you to follow to the exclusion of all others, until you have found for yourselves

a better—is the following: if a woman have not been in labour for twelve or four-and-twenty hours after the discharge of the liquor amnii, and no dangerous symptoms are manifest, you ought not to interfere: Why should you? Why not wait? A meddlesome obstetricy is bad. But, on the other hand, if the patient have been in strong labour for twelve or four-and-twenty hours, or, independently of this strong labour for so many hours, if dangerous symptoms are apparent, to be relieved effectually by delivery only, let your tractor or forceps be employed; for although it be true, that the use of them is at all times an evil, yet, under these circumstances, to use them is a smaller evil than to refrain. If the case be of intermediate character, in which the arguments for delivery, or the contrary, may be so very nicely balanced, that, notwithstanding the rule prescribed, it may not be very easy to take your resolution. What then is to be done here? Why, in this dilemma, the degree of your instrumental skill should decide; provided you are skilful in handling instruments, make use of them if you please; but should you be wanting in dexterity, then give a fair trial to the natural efforts, and if they fail you, call in further assistance.*

SECTION XXXV.

ON CRANIOTOMY INSTRUMENTS.

Of all the obstetric operations, there is none, perhaps, more easily performed, than that of perforation; and many a life, I fear,

* Abundance of instances might be produced, of women, who from a hasty and improper use of instruments, have been placed in a state of the greatest possible danger, or have actually lost their lives, or have been left in a state of misery and suffering, worse than death itself. Nor can there be a doubt, that many children's lives have been sacrificed by premature interference with instruments. Now, surely, nothing ought to be more dreaded by every practitioner of midwifery, than the reflection that a loss of life, or a life of continual distress and pain, has been occasioned either to the mother or the child, by his impatience or want of caution. Yet, though it behoves us all to entertain a just dread of the improper use of instruments, it likewise becomes us to be careful, that this dread of instruments be not carried too far; for as much mischief may be done by delaying instruments too long, as by using them too soon. *Dr. Merriman.*

has fallen a sacrifice to this facility of execution. Of all the operations of our art, however, there is none more dreadful, not to say more awful; for call it embryotomy,* craniotomy,† cephalotomy,‡ or by whatever elegant term you please, in this operation a dagger is struck into the head of an innocent child, often still living, and the brains being reduced to a soft pulp, are suffered to escape at the opening. Much evil, and some good, arises in society, from not calling things by their right names. This practice, however, I am aware, grows out of the nature of man, and cannot be amended. Hellenize then, and Latinize, as much as you please, "*suave sonat,*" but never suffer a polished and classical appellation to bring before your minds an idea of this operation, divested of that salutary horror with which I conceive it ought at all times to be contemplated. Dreadful, however, as the operation is, the safety of the mother § sometimes peremptorily requires its performance.

INSTRUMENTS.

The instruments required for this murderous operation are, the *perforator,* to open the head and break down its contents; the *crotchet,* or *sharp hook;* the *craniotomy* forceps, of which it is sometimes convenient to have two pair; and the *blunt hook.*

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* Embryotomy:—From εμβρυον, *embruon*, a fœtus; and τεμνω, *temnō*, to cut.

† Craniotomy:—From κρανιον, *kranion*, the skull; and τεμνω, *temnō*, to cut.

‡ Cephalotomy:—From κεφαλη, *kephalē*, the head; and τεμνω, *temnō*, to cut.

§ It is an established obstetric rule, that no woman should die undelivered, and that attempts must be made to save her and the infant, or to save one at the destruction of the other. The last question, whether it was lawful to destroy one life to save the other? was submitted to the doctors of theology, at the Sorbonne at Paris, in the year 1648; who answered, that in this case, neither ought to be destroyed, nor assisted; and their decision was as follows;—"Nous sous signés Docteurs en théologie de la faculté de Paris, sommes d'avis que si l'on ne peut tirer l'enfant sans le tuer, l'on ne peut sans péché mortel le tirer; et qu'en ce cas la, il faut tenir à la maxime de St. Ambroise, *si alteri subveniri non potest nisi alter lædatur commodius est neutrum juvare.*" This is the doctrine of the Roman Catholic church at present. Another great objection to embryotomy, was, that the infant would be lost without baptism, but this objection was over-ruled by the Sorbonne doctors in 1773, who declared that baptism was valid, if the water touched any part of the infant's coverings. In this country, the obstetricians are generally in favour of embryotomy, whether the child be alive or not, as the more valuable life of the mother ought to be preserved. The French, German, and American accoucheurs are in favour of the Cæsarian operation. *Dr. Ryan's Midwifery.*

PERFORATOR.

The perforator, is designed to be passed through the child's head by a sort of semi-rotatory boring action, the same which you would adopt in perforating a piece of board with an awl; the aperture being enlarged afterwards by dilatation, for which purpose the blades, while lying in the opening, are separated from each other. One* of the first instruments employed for embryotomic perforation, was a pair of large scissors, recommended by Smellie, and after all, perhaps, if armed with shoulders, and committed to cautious and dexterous hands only, it is one of the best contrivances we can employ, for the cutting edge of the scissors has its advantages. Since the time of Smellie, however, the form of the instrument has been modified. The instrument now received into British practice opens and shuts like scissors, and, like them, is generally formed with a double point. But Mr. Lowdell, of Stamford Street, has, in my opinion, made a considerable improvement in the instrument, and this, too, very simply, by giving it a single point, so that it enters the head with more ease and expedition, rendering the operation safer to the mother, and more speedily extinguishing the remains of life in the child. To prevent the blades from entering the cranium too far, about one inch and a quarter from the point, they are formed with a check, or shoulder, beyond which they cannot be pushed.

Some perforators are made very light and elegant, qualities which I do not myself approve. A slight instrument, is apt to bend in the shank, or break; besides, a roughness of appearance well becomes the austere duties which it is designed to discharge. The instrument should be thick and strong enough in the shanks, for sometimes you have to open heads which are very firmly ossified; and where that is the case, if the head resists much, there is danger, lest the handles should give way. In choosing a perfo-

* Various perforators were proposed by Hippocrates, Avicenna, Mauriceau, Levret, Freid, Oulde, Simson, De la Motte, Smellie, and the Hamiltons; but the scissors perforator of Smellie, improved by Denman, is generally preferred. In France, a scalpel, bistoury, or trocar, is employed. *Dr. Ryan's Midwifery.*

rator, take care that the joint is very firm, otherwise, when the instrument is in action, disruption and dislocation may occur. It is better, too, that the blades at the joint should not touch each other laterally, in order that no part of the vagina may be inclosed and injured there. Except the point, all other parts of the instrument should be smooth and rounded.

CRANIOTOMY FORCEPS.

The ancient accoucheurs were possessed of an instrument called the *rostrum anatis*, which was, in effect, the craniotomy forceps. In the mutations of fashion, this instrument became obsolete, being superseded by the crotchet, till it was again introduced by my valued predecessor. After laying open the head, Dr. Haighton was accustomed sometimes to make use of a pair of *lithotomy forceps*, armed with teeth. Dr. Davis, of George Street, Hanover Square, who has bestowed a great deal of laudable exertion on the subject of instrumental obstetricy, has very much improved the ruder instrument of Haighton, not sufficiently powerful in less skilful hands than his own. The forceps of Haighton's contrivance has a great number of teeth on one of the blades; these teeth, however, being faulty, because they are too short and delicate, and apt of consequence to bend and wear away under corrosion, becoming thereby unfit to pierce the bones as intended. Corresponding with these dental processes, there are on the other blade, apertures into which the teeth are received, as in sockets; and thus, when the instrument acts as intended, they pass through the bone, giving a hold sufficiently secure. The instrument contrived by Haighton, and much improved by Dr. Davis, has been still further perfected by Mr. Holmes, of Old Fish Street, a gentleman who, to omit his other instruments, has produced the best pair of craniotomy forceps that I know of, and which I now always use. In his instrument there is no display of elegance, but it is large, strong, and very powerful, not liable when we are using it either to bend or break. Of this instrument, the grand perfection lies in the size and strength of the teeth. On one blade there are three large dentiform processes, very like the incisor of a rabbit, if I may be allowed to make such a

comparison; and in the other blade are three cavities in apposition with these, into which they pass, after thoroughly piercing the bones, so that there is no danger lest the forceps should slip away. Besides these processes, there are several which are smaller, designed to give you a hold of the scalp. To me, however, these smaller teeth, appear to be unnecessary, for if you have a good hold of the bone, the hold of the scalp, not of much importance, will also be secure. The three large chisel teeth constitute, in my opinion, the great excellence of Holmes's forceps.

CROTCHET.

A third instrument, generally used on the Continent, and in this country too, for the extraction of the head after perforation, and which, notwithstanding the contrivance of the craniotomy forceps, cannot, perhaps, be rejected from practice altogether, is the crotchet. This instrument, of curved shank, furnished with a large handle, and a hooked extremity, broad and bluntly pointed, is designed to be employed as a hook externally, or within the head, in the way I shall presently explain.

BLUNT HOOK.

Another instrument, not frequently required, however, is the blunt hook as it is called. Of this instrument I have to remark, that its shank ought to be strong, its handle large, its shorter arm not longer than necessary, to give a secure hold of the axilla and arm, or any other part on which it may be applied. Bluntness is another desirable quality, whence its name; a point is useless and therefore to be condemned.*

* The blunt hooks used for the extraction of the fœtus have not all the same shape; some represent a curve more or less open; others form with the principal branch of the instrument almost a right angle. The handle is commonly made of wood. The hook, bent at an acute angle, is destined to be applied in the hollow of the arm-pit, when the shoulders are retained in the pelvis, and the fingers cannot reach. It will also serve to extract the knees at the inferior strait; and it may be applied in the mouth to finish the extraction of the head, after turning a dead child. The rectangular hook is destined solely for the bend of the hip, in the breech positions at the inferior strait. M. Desormeaux thinks that the fingers will frequently serve instead of the blunt hook. *Dr. Ryan's Midwifery.*

SECTION XXXVI.

CRANIOTOMY IN CASES OF SLIGHT CONTRACTION.

Our remarks on the different instruments of embryotomy concluded, we will now proceed to consider the operation itself, dividing it for the convenience of observation, into two varieties, that, I mean, in which the want of room is inconsiderable, and that variety in which we have to act upon a pelvis contracted and distorted in high degree; and first of craniotomy, in those cases in which the contraction of the pelvis is less considerable.

INTRODUCTION OF THE PERFORATOR.

If the contraction of the pelvis be slight, and craniotomy be equired, those who are in the habit of using long forceps will probably have first made trial of this powerful instrument before they have recourse to the destruction of the child; and, if it so happen that the long forceps are still applied to the head at a time when craniotomy is proposed, it will be better still to leave the instrument on the cranium, as its operation may afterwards tend to facilitate both the operation itself and the subsequent abstraction of the fœtus. In such cases, I would recommend you to close the blades of the forceps as forcibly as may be, so as to torpify the feelings by producing a sort of coma, the handles of the forceps being afterwards tied very firmly. This done, in commencing the operation, you take the perforator in the right hand, and pass two or three fingers of the left hand up to the sagittal suture, feeling the suture, if possible, and in ordinary cases it may be readily felt. Well, then, conducting the instrument along the fingers, at length you reach the sagittal suture, great care being taken not to touch any other part, and by a semi-rotatory motion you very readily enter the cavity of the cranium. The cranium once entered, without the smallest delay, for the sooner the operation is accomplished the better, lay hold of the two handles of the

perforator, and draw them apart from each other so as to enlarge the laceration, a free opening facilitating the operation greatly. In order to prevent the instrument from escaping when the aperture is dilated, you ought to be very careful, on entering the cranium, to press the blades onward to the *shoulders* of the instrument, so as to bring these shoulders into contact with the scalp and cranial bones, when there will be no danger of its becoming displaced. In general, I believe, one laceration will lay the head open to a sufficient extent; if, however, you are not satisfied with the size of the aperture, you may introduce the instrument a second time, at some little distance from the first opening; and in the same way as before, enlarging by dilatation, you may lay the second opening into the first, forming what is denominated the *crucial laceration*. The great object which you seek here is a free opening into the cranium, and, in using the perforator, of this object you should never be forgetful.

IMMEDIATELY DEMOLISH THE BRAIN.

The head, then, being laid open in the above manner, with all practicable promptitude carry your instrument into the brain, and demolish its structure completely, so that if, unhappily, there be any life remaining in the child, all feeling may be destroyed at once. Let the demolition be complete—let the brain be converted into a perfect pulp. Feel what reluctance you may before you begin this terrible operation—the more the better—but when you have once begun, proceed promptly, without flinching—it is too late to look back. In demolishing the brain, it is desirable that you should break up the basis as early as practicable, for this part, I suspect, is more immediately connected with vitality. Cases have happened in which the cranium has been opened, and part of its contents have been removed, the child coming into the world alive, to look, as it were, into the face of the operator, and reproach him with his cruel ignorance, or negligence. The very image of these horrors is enough to make the blood curdle. Never lay the head

open, unless there be an absolute need for it; but when you do, when you must craniotomise, let all your operations be effectually performed.

ABSTRACTING THE FŒTUS.

When in this manner you have laid open the head and pulpified the brain, it next becomes your duty to abstract the fœtus. This you may sometimes accomplish with the long forceps; the instrument, however, being very liable to become displaced in consequence of a collapse of the bones, and this more especially if the resistance be considerable. If, however, the difficulty be small, the fœtal head may be abstracted in this manner without much difficulty; but if the long forceps lose their place, the head not descending, you must then have recourse to the craniotomy forceps.

Before you introduce the craniotomy forceps, I would have you ascertain with care what is the precise obstacle that precludes the descent of the head. Generally there is, in these cases, a small distortion of the pelvis; let this distortion, then, be clearly detected; commonly it lies near the symphysis pubis, or the acetabulum. Frequently, however, there is a mere want of room from before backwards, the symphysis pubis approaching the back of the pelvis, no distortion accompanying. Well, having ascertained the difficulty, slide up the first two fingers of the left hand; and, of these two fingers, place one within the cavity of the cranium and the other on the outside; and then adjusting the instrument with those two fingers, you lay one blade within the head, and the other externally, so as to get the cranial bones within the blades. Before closing the instrument examine very carefully, for you should not proceed with haste here, and satisfy yourselves that no portion of the mother is included between the blades. You had better ask the woman if you occasion pain, for in these easier cases you will give but little uneasiness if you operate neatly; the absence of pain being a further evidence that you are

not including any of the softer parts. Satisfied of this, you then close the blades very firmly, piercing the bones with the dentiform processes of the instrument, so as to render the hold secure. This step of the operation effected, you then draw down, co-operating during the pains, if there be any, as these will be found of great service. In drawing, too, it is desirable that the tending of the bearing should lie in a line stretching from the umbilicus to the point of the coccyx and the perineum, great care being taken not to injure this part, for, when you are bringing the head through the brim, this line may be considered, practically, as representing the axis of the upper part of the pelvis, and you must direct your efforts accordingly. The ordinary craniotomy forceps will frequently slip away; I should, therefore, recommend you to use those improved by Mr. Holmes; even the best contrived instrument may slip, bringing along with it the portion of bone to which it is fixed; a grave accident, because the edges and points of this piece of bone, if you are off your guard, may lacerate the passage. When, therefore, you are drawing with the craniotomy forceps, I would further recommend you to lay all the fingers of the left hand in the vagina, in apposition with the instrument, so that, should the forceps slip, your hand alone may suffer, the woman being protected. For the sake of the patient, and for the sake of your own hand also, I would advise you to abstract with caution, always prompt and in readiness to stop short in your effort should the instrument, or bones, seem disposed to give way.

You will now and then find the head lying so high in the pelvis, that it is no easy task to apply the instrument in any way over the bones; or if you do obtain a hold, the hold is marginal and imperfect, and the forceps are apt to slip away. Now your better practice here, is to have two pair of forceps, and this number I generally carry with me; and applying your first pair somewhat insecurely, you may still draw the head down a part of the way, though you may not be able to extract it altogether. Having accomplished this, you may then take the second pair of forceps, and drawing the bones down with the first instrument you may

bring the bones thoroughly within the gripe of the second pair, obtaining, in this manner, a firmer hold, which may enable you to act with power and effect. When the second pair of forceps has been applied, the first may be taken away.

In using the craniotomy forceps, all these minute points are well worth your attention: get a secure hold of the head with the instrument, and guard against its detachment by slipping; be prepared for the escape of the instrument, whether alone, or with a portion of the bones; draw down during the pains, in order that you may have the full advantage of the co-operation of the uterus; and, above all, take care when you apply the instrument, that you include the parts of the cranium only, and not a part of the mother also—a nicety not always unattended with difficulty, inasmuch as it is not always easy to distinguish what are parts of the child, and what are of the mother, more especially when the head lies high up.

ABSTRACTION BY THE CROTCHET.

The craniotomy forceps failing, you may endeavour to abstract the head with another instrument of no small power; and this other instrument is the *crotchet*, pretty generally known to obstetricians. Now this instrument, the crotchet, may be applied either externally or internally; and the latter being the safer, is, on the whole, the better mode. I cannot designate, or mark out to you, any one particular part of the head, as a bearing point, on which the instrument may be placed; but I may observe, that passing it into the cranial aperture with the right hand, and guiding it with the left, you may move it about till it fastens on some part either of the basis cranii, or of those bones which form the other parts of the receptacle for the brain. When you have, in this manner, secured a hold with your crotchet, of course there is always a danger, lest the instrument should slip away, either alone or with part of the bones, and therefore you are to pass your fingers into the vagina before you draw, placing the hand so as to receive

the point of the instrument if it slip, being continually on your guard against its slipping, and careful to stop promptly, when you find it disposed to give way. As in using the craniotomy forceps, so here in drawing, let the tendency of your effort be in the axis of the pelvis; ascertain what is the difficulty, if possible, and if there be any uterine pains, take advantage of their co-operation.

ABSTRACTION BY THE FINGER.

In cases where the crotchet* does not succeed in withdrawing the bones, there is yet a third expedient to be adopted; and that is the abstraction of the cranium with the fingers, by means of the scalp and the bones. If, as some are, you chance to be strong in the fingers, lay hold of the scalp or skin, which you may find hanging through the pelvis, and by this exert your extractive force. When thus drawn, the scalp, which is sometimes pretty firm, may have the effect of bringing all the bones together; and thus getting them all included within a small compass, you draw down with better success. I have seen an operator succeed in this way, where the craniotomy forceps had been previously tried with little avail. By one or other of these means, then, by the forceps or the crotchet, or the immediate action of the fingers; and especially where there is not much contraction of the pelvis, the head may generally be abstracted, and this frequently with little difficulty. Of these means, the fingers are the safest; and next to these, the forceps; the crotchet is powerful, but not without its dangers.

ON CASES OF DIFFICULT ABSTRACTION.

In the cases of slighter contraction of the pelvis, I would advise you, as your general practice, always to begin the extraction

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* Sometimes an extractor, in the form of pincers, is used in the place of the crotchet; or different *tire-têtes* have been proposed. The craniotomy forceps, at present used, are considered safer than these, and preferable to the crotchet. A kind of double crotchet, one blade going within, and another with prongs going without, has been proposed by Dr. Davis. *Dr. Burn's Midwifery.*

directly after you have laid open the head, and thoroughly pulpified the brain. Sometimes, however, you will find, on trial of all these modes of abstraction, that still the head will not descend; now what is to be done here? Bleed your patient, if in a state of irritation, according to her strength, and to the amount of ten or sixteen ounces; give her from thirty to sixty drops, not minims, of the tincture of opium, and let her first repose a little, afterwards taking her pains for a few hours; and, at the end of that time, you may find the head much lower in the pelvis, and, therefore, to be more easily brought away. You are not to despair, in this case, as if the delivery were impracticable. Violence, remember, has no place in scientific obstetricy; if you cannot succeed with gentle efforts, wait to see what nature may accomplish. You may the rather wait for the operations of our common preceptress and auxiliary here, because, when the head has been opened, and the brain has been pulpified and discharged, and the bones are become collapsed, in the general, a heavy and dangerous pressure on the softer parts of the mother will cease, and delay, therefore, is not likely to give rise to their further contusion and mortification.

OBSTRUCTION TO THE PASSAGE OF THE SHOULDERS.

After the cranium has passed the pelvis with difficulty, we sometimes meet with no small obstruction to the passage of the shoulder, more especially if the pelvic bones be more distorted and contracted than ordinary, or if the shoulders be unusually broad. Now this difficulty may be surmounted occasionally, by first laying hold of the remains of the head, and drawing down the shoulders as low as may be, and then, by the action of the fingers, abstracting the arms, a fracture of which is of small importance, as from the previous craniotomy, the child is utterly dead; and thus, in a manner, the arms come through the outlet of the pelvis before the shoulders descend, the difficulty, from the great size of the shoulders, being overcome. If, however, you cannot succeed in this way, you may take the *blunt hook*, and grasping the handle in the right hand, while,

with the left, you direct it into the axilla, you then, by means of the instrument, draw down the one axilla; afterwards in like manner, fixing it upon the other, and drawing this away, considerable effort being also sometimes required for this purpose. Should you, however fail with the blunt hoook, the only further effective expedient with which I am acquainted, is the detachment of the arm from the trunk, or the evacuation of the contents of the chest, the blunt hook, or a large perforator, being respectively the instrument best adapted to these operations. With dexterous practitioners, however, it rarely happens that measures of this kind are really required.

SECTION XXXVI.

CRANIOTOMY IN CASES OF CONSIDERABLE CONTRACTION.

In consultation practice, more especially, you will now and then be called upon to operate, where the pelvis is contracted in a very high degree; so that when the head is laid open, the abstraction may still be attended with no small difficulties. Now operating in these cases, in which the pelvis is contracted and distorted in the higher degrees, you must proceed on the general principles already prescribed, only with some little modification. If it is obvious, as it generally will be in those cases, that you must lay open the head at last, it is desirable that the operation should be early performed, in order that you yourself may be fresh and unexhausted; in order, also, that your patient may not be exhausted, or otherwise injured, before you begin to operate, so as to be worn out with the unavailing efforts of delivery.

OPEN THE HEAD FREELY.

When it is clear you are to lay open the head, you should be careful to open the head very fully, and to pulpify the brain very completely. This is necessary even in ordinary cases, but more

especially in those now under consideration, where, unless you have evidently opened the head and fully pulpified the brain, you will not have that complete collapse of the bones, so essential to a ready delivery, for parts of the brain will remain in the cavity of the cranium, and room must, of consequence, be lost. The brain then pulpified thoroughly, and the opening into the cranium being made as capacious as may be, you may then proceed directly to the abstraction of the head, taking advantage of pains if there be any. Should you however be unsuccessful in these attempts, then wait for ten or twenty hours if no dangerous symptoms forbid, and under the efforts of the uterus, the remains of the head may be pushed into the inferior parts of the pelvis, more within reach of your extracting instrument.

POSITION OF THE FŒTAL HEAD.

In all cases, but more especially if there be unusual difficulty, when you are bringing away the head, the position in which you place this part is of no small importance; and happily it is by no means difficult, but rather easy to place it in the position most convenient for transmission.

In cases where the cranium is laid open, and its contents are taken away, you may bring down the basis of the cranium parallel with the plane of the brim of the pelvis; but you will find here, that, in this position, the remains of the head, though small in bulk, still occupy much space in the pelvis. It seems, therefore, that if you bring down the basis of the scull parallel with the plane of the brim of the pelvis, advantage is lost; a position of the head more favourable, and very important it is that this should be recollected at the bed-side, is this: Place the basis of the scull parallel with the posterior surface of the symphysis pubis, and then much less room will be occupied by it. Further, when you place the basis of the scull in this manner, parallel with the symphysis pubis, it is not altogether a matter of indifference which part you draw down, as the most depending, whether the face or the ear, or the occiput of

the child, all of which may be brought down into the most dependent position, the basis of the cranium still retaining its parallelism with the symphysis pubis. If, for example, you draw down the face as the most depending part, you then, of course, have a simultaneous descent of the neck and occiput; but if the occiput is the part the most dependent, you will then have a combined descent of the face and neck forming together a mass of no inconsiderable bulk. The descent of the ear produces a sort of intermediate case, into the consideration of which it is unnecessary to enter.

Well, then, it is obvious, that if the neck and face of the child descend together, the mass transmitted will be larger than that produced by simultaneous descent of the face and occiput, and from all these considerations issues the following rule: when the cranium has been opened, and the brain has been removed, let the basis be laid against the posterior surface of the symphysis, the head being brought down under a presentation of the face, for, in this position, the remains of the cranium will occupy the smallest space in their descent. In difficult cases, you may facilitate the descent, by separately detaching the bones, as much as may be, before you bring the head away; and if you have been waiting some ten or twelve hours after the operation of craniotomy, you may find the parts softened a little by putrescence, and their connexions loosened, so that a detachment may be easily effected, and with the help of the forceps the bones may be very easily abstracted. Care must be taken not to injure the softer parts, when these bones are taken out.

RECAPITULATION.

Such then are the nicer points of this dreadful operation; few, indeed, but of great importance. Though craniotomy must be avoided if possible, yet, if early in the labour, it is perfectly evident that you must open the head; the sooner the operation is performed, the better. After the cranium has been opened, and the

brain has been pulpified, if the head do not come away easily, wait for a few hours—ten or twelve for example; then resuming your operations, place the basis of the scull parallel with the symphysis pubis, with the face below, so as to bring forth the head under a facial presentation; and then, if you can get away the bones separately, remove carefully as many of them as possible; for, in doing this, you not only reduce the bulk of the head, but facilitate greatly the escape of the pulpified brain.

SECTION XXXVIII.

OF THE SIGNS WHICH INDICATE THE NEED OF CRANIOTOMY.

If it be necessary, with caution, to decide in what cases you are to have recourse to the forceps or lever, it is still more necessary to decide with caution, what are the cases in which you may be justified in having recourse to the perforator; and I advise you always duly to investigate the point before you come to your determination, so that, upon reflecting afterwards, you may feel perfectly free from compunction and self-reproach.

PEREMPTORY NECESSITY SHOULD BE CLEARLY ESTABLISHED.

By some, perhaps, it might be contended, that we are never justified in having recourse to craniotomy, unless the fœtus be already dead, but this opinion is, I conceive, erroneous. With the dogmas of the divine,* it is not in my province to interfere, and I am glad of it; without, therefore, babbling about theology and syringes, I may be permitted to remark, that in British obstetricy, the life, nay, the preservation of the patient†, from the graver

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* The right or equity of taking away one life for the preservation of another, was the question, as mentioned in a previous note, referred to the Doctors of the Sorbonne: Peu, in his *Pratique des Accouchements*, has preserved their forms of statement upon this subject.

† In cases of dangerous parturition, the prerogative of deciding upon the life or death of the mother or child, was supposed by some to be inherent in the husband, to whose power of

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the embryospastic instruments; wait, do not murderously interfere, for, probably, the same favourable change may occur in your case, as took place in the instances I have mentioned. If, however, dangerous symptoms are manifest, and the need of embryotomy urgent, do not delay your operation.

IN FULL-SIZED AND CONTRACTED PELVIS.

We are told by some practitioners, that the perforator should be used, when the pelvis is contracted in a high degree, and that you ought not to use it, if the apertures are of full size. The rule is not to be altogether neglected. If the pelvis be so contracted, that delivery, without the perforator, is clearly impracticable, then the sooner you employ the instrument the better; but unless the case be extreme, so that the need of the perforator is obvious beyond all doubt, to use the perforator, merely because there is a want of room among the bones, would be a most criminal rashness. The truth is, that in those cases in which the pelvis is contracted in slighter degree only, you can seldom safely decide respecting the use of the perforator, from the mere measurement of the pelvis; first, because unless you are skilful in these inquiries, you may err in the measure; and, secondly, because if the head be small and soft, and the womb be active, the fœtus may come away unopened, notwithstanding the deficiency of room.* On the whole, therefore, although

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* Distortions of the pelvis may arise—
From *Rachitis* in infancy;
Malacosteon in more advanced life
Exostosis; and
Fracture, or dislocation of the bones of the *pelvis*.

From whichever of the above causes the deformity proceeds, the capacity of the *pelvis* will be so much intrenched upon, as to oppose an impediment to the passage of the child, not only in first, but in all future labours. Yet,

Sometimes the efforts of the *uterus* will be sufficient to force the child, with the head much compressed, through the deformed *pelvis*. Much, in such cases, will depend upon the smallness and compressibility of the head, and the strength of the pains. It becomes us, therefore, to be exceedingly cautious not to suppose, upon light and insufficient grounds, that the distortion is too great to allow the child to pass without the intervention of instruments;

I would not have you neglect to examine the capacity of the pelvis, yet, unless the contraction be extreme, I would recommend you not to rely on this measurement, in deciding whether you ought or not to have recourse to the perforator. Capuron relates two cases, in one of which the pelvis measured only three inches between the front and the back, in the other, not more than two inches and a half, the full capacity in a well-formed pelvis being of four inches. Both these women, however, according to Capuron, became the mothers of living children; and, from the whole account, we may draw this useful information, namely, that we ought never rashly to condemn the fœtus, merely because the pelvis of the mother is contracted; the fact should influence our judgment, but certainly ought not alone to determine it.

PREVIOUS OPERATIONS NO RULE.

You are not justified in laying open the head, merely because, in previous labours, the operation has been performed, and that too repeatedly. Suppose, for example, five or six fœtuses have all been destroyed in previous labours, the pelvis being confessedly narrow. A fact of this kind constitutes, no doubt, a presumptive evidence, that the operation may be again necessary, but the proof is not decisive; nor are you, therefore, justified in making use of the perforator, unless some stronger reason can be given. Various circumstances, in any subsequent delivery, may facilitate parturition. The labour may be premature, or though of full age, the fœtus may be softer, or much smaller than ordinary, and it may yield of consequence to the forceps or tractor, or even to the unassisted efforts of the uterus; so that, on all these accounts, it would be murder to perforate, merely because the operation had been performed repeatedly on the same woman before.

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and particularly, when there is a question about employing the *perforator*, an instrument always incompatible with the life of the child, we ought to weigh every circumstance very carefully in our minds, *and if possible procure the opinion of some other experienced practitioner*, before we determine upon having recourse to it. *Dr. Merriman.*

STATE OF THE FŒTUS.

Some practitioners, with laudable humanity, have maintained, that perforation ought not to be performed unless we have proof that the fœtus is dead in utero; and I do believe, that in many instances, it is not necessary to lay the head open till the fœtus has been subjected to so much compression from the action of the uterus that its vitality has become extinct. Unhappily, however, even if we accede to this rule, it will not be found of easy application, as we are not always able to decide, with absolute certainty, whether the child is dead or not. From the symptoms which I shall state in the next section, we may, indeed, sometimes ascertain the fact with a high degree of probability; but it often happens, that the child is dead without our knowledge, and frequently, when the fœtus has been pronounced to be dead, it manifests the signs of vigorous life, as soon as it has quitted the vagina. Should we, therefore, grant to the speculator, that the indication for the use of the perforator may be taken from the death of the child, we must still maintain that, in practice, the rule is exceedingly defective, inasmuch as it necessarily partakes of all that uncertainty which belongs to those symptoms by which the death of the fœtus is supposed to be indicated.

RULES FOR USING THE PERFORATOR.

Not to enter into critical enumerations of indications for the use of the perforator, of which I do not approve, I will now enumerate those which I employ in my own practice.

Before the perforator is used, I endeavour to be fully satisfied that the security of the life or person of the patient peremptorily requires the delivery; and I consider that the security of the patient demands delivery, with that degree of certainty which makes it our duty to operate, provided the head have made little or no advance, although the woman have been in active labour for six-and-thirty or eight-and-forty hours after the discharge of the waters; or pro-

vided, moreover, *however short the labour*, the symptoms of danger or damage, enumerated in a former part, and to be relieved effectually by delivery only, are beginning to make their appearance.

Again: satisfied that the perforator is necessary, I endeavour further to ascertain that the delivery is not to be accomplished either by the embryospastic instruments or the Cæsarian operation. If the delivery must at last be effected by the Cæsarian incisions, it must be admitted, on all hands, that craniotomy is unjustifiable, and I shall endeavour, hereafter, to lay down the principles by which we may determine this point. If the delivery may be safely accomplished without our embryotomic operations, by the mere use of the tractor or forceps; then of course, although the fœtus in these difficulties is frequently still-born after all, to craniotomise would be unjustifiable. The safety and practicability of delivery by the forceps or the tractor, in any given case, must depend, not only on the conditions of the delivery, but the dexterity of the operator; and, perhaps, the only certain method of determination in dubious cases, must be taken from our making the essay, gently, dexterously, resolutely, yet cautiously, and with great care, lest we should lacerate or contuse. Well, then, suppose delivery by the Cæsarian incisions to be unnecessary, and by the embryospastic instruments impracticable—suppose, moreover, that the safety of the life, or person of the patient, demand immediate delivery with that degree of certainty on which, in surgery, it is reasonable to act. Under these conditions, it seems to me, that we have made out a clear need for the perforator, and however revolting the operation may be, craniotomy becomes justifiable. Before you open the head, it is advisable to have a second opinion, as a check upon temerity. The former need of the operation, the contraction of the brim of the pelvis, and the death of the fœtus, may all be allowed to exert some influence over your decision; but, be it remembered, that from these considerations alone, your determination must not in general be taken.

SECTION XXXIX.

OF THE INDICATIONS OF THE DEATH OF THE FŒTUS.

When instruments become necessary, the perforator more especially, it is always desirable to know whether the fœtus be or not alive, and I will therefore proceed to remark a little on the diagnostics by which this point is decided.

DESQUAMATION OF THE CUTICLE.

You will sometimes find in labours, that the cuticle is coming away from the head in large flakes, an occurrence, however, by no means frequent, or if frequent, not, I think, often observed. Now, if you perceive the cuticle separating from the scalp in the same manner as it desquamates from dead bodies in the dissecting room, you may always suspect that the fœtal vitality is extinct. Though the desquamation of the cuticle, however, is a strong presumptive argument in affirmation of the death of the fœtus, it certainly is not demonstrative; for cases have been related, and, among the rest, one by Dr. Orme, in which the cuticle has separated, in consequence of cutaneous disease, the children being alive notwithstanding; so rare, however, are these cases, that I should feel disposed in practice to look on them as of no account, were it not that human life is at stake.

DISRUPTION OF THE CRANIAL BONES.

When the child is dead, I find in general that this may, after a time, be ascertained by the dislocation of the bones of the cranium, and their complete detachment from each other, so that the cranial contexture seems to be thoroughly broken up. In cases of this kind, you feel all the bones at liberty, and floating, as it were, in the mollified brain. Hunter used to compare the head in this condition, to a bag of shells. Mere mobility of the

bones without displacement, and solution of union, is no proof whatever of death.* Children on this evidence declared to be still, have, to my knowledge, begun to cry lustily immediately on entering the world. I repeat it, therefore, to demonstrate death, the bones must be detached and afloat.

CONDITION OF THE FUNIS.

By laborious and other labours, it sometimes happens, that the umbilical cord lies within reach of the fingers, descending along with the abdomen in the crural presentation, and, in presentations of the vertex, occasionally hanging down with the head. In these cases, when the cord descends, if its pulsations are distinguishable, we may certainly infer that the fœtus is alive, for this pulsation arises from the beat of the heart; but if the cord be cold, and brown, and flaccid, and destitute of pulsation, you may then, I think, be satisfied that the fœtal life is extinct. Remember, at the same time, that where the cord comes down, a temporary suspension of the pulsation for a few minutes may arise from syncope, and that such temporary suspension is no certain proof of death; no certain proof of that complete extinction of vitality, which renders resuscitation by the tracheal pipe or warm bath hopeless. By the condition of the cord, death is demonstrated in those cases only in which this part is found to be soft, easily torn, cold, and brown, or, for half an hour or an hour together, totally destitute of pulsation.†

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* The original connexion of the bones of the head is such, as to allow of their being pressed close to, or over each other, with safety to the child; yet when this has been long dead, and their natural connexion destroyed, they may sometimes be perceived to be quite loose and distinct. The loose state of the bones of the *cranium* is frequently such as to leave no doubt of the death of the child, as well as the abrasion of the cuticle or the falling off of the hair; but proofs of things self-evident are not wanted in practice, but such as will guide us in doubtful cases. *Dr. Merriman.*

† The entire want of pulsation in the navel string is conclusive, but the opportunities of examining it are comparatively rare. *Dr. Merriman.*

CONCLUSION.

Such, then, are the general indications* which practitioners look for to decide whether the child in utero be living or dead; but for my part, the three principal evidences on which I rely, in endeavouring to ascertain the decease of the fœtus, are, a desquamation of the cuticle, a complete solution of the connexion between the cranial bones, and for thirty or forty minutes together, a total cessation of pulsation in the umbilical cord. Of these three indications, to me it appears that the second will, in practice, be found of greatest value.

WANT OF MOTION IN THE CHILD.

By your patient, you may sometimes be told that the fœtus must be dead; for, "I have not felt it for a day or two." Now, be it remembered always, that the child may not be felt for hours, or days, or even for weeks together, and yet, nevertheless, it may be vigorously alive when born; certainly, so far alive, as to be resuscitated by the tracheal pipe or warm bath. Do not be deceived,

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* Besides these symptoms, others have been mentioned, appertaining solely to the mother, which have been looked upon as of some validity, in proving the death of the child; the chief of these are—

Vomiting;
Shivering;
Extreme languor and weakness;
Livid paleness of the countenance;
Discoloured and sunken eyes;
Noise in the ears;
Offensive smell of the breath;
Discharge of flatus from the womb.

But none of these can be admitted, as sufficient in themselves, to prove the death of the child; they ought to have their weight in determining the necessity of using artificial means, to expedite delivery, inasmuch as they evince the perilous state of the mother; but even then they ought to be very closely scrutinized before they are accepted as proofs of danger, since they have occurred, separately, in many women, who have been in no particular hazard. *Dr. Merriman.*

therefore, into a notion that the fœtus is dead, merely because it has not been felt in the uterus.*

WANT OF CEREBRAL PULSATION.

By some it may be supposed that the child is dead, in those cases in which you cannot feel the pulsation in the fontanel. This might be made a pretty subject for obstetric disputation; but when you are become more experienced in practice, you will not, I think, feel inclined to give much attention to this sign. If a child be prone to hydrocephalic, or affections of the convulsive kind, the pulsations of the fontanels may sometimes after birth be felt more distinctly than the beat of the radial artery; but, in health, even in vigorous children, the cerebral pulsation may not be clearly distinguished, and how can we then, in prudence, venture to infer the death of the fœtus, merely because the pulsation is indis-

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* The kind and degree of motion which may be caused by the child varies in different women, and at different periods of pregnancy. By some the child is scarcely ever perceived to move, and with others it is scarcely ever at rest, but it is often quiet a few days before, and in the time of labour. By the motion of the child its living state is ascertained; but the want of motion does not prove that it is dead, nor would it, for this reason, be justifiable to perform any operation, which might be injurious to it, if living.

Some pregnant women, even among those who have before had several children, have scarcely ever been able to perceive the motion of the child through the whole time of pregnancy, and have even attributed their bigness to disease; then the regular increase of size is a good proof of pregnancy and of the well doing of the child. Some have asserted that they have felt the motion of the child, though the event has proved that they were not pregnant. Others have not doubted of the life of the child, though, after its birth, there were certain marks of its having been long dead. In long and very severe labours, natural affection may be overcome by present suffering and distress, and women might conceal their knowledge of the motion of the child from the hope of a more speedy delivery, if they concluded, that the judgement of the attendant was guided by this circumstance. Every allowance must be made, and every consideration had for human nature, humbled by infirmities and misery, and under no circumstances whatever are kindness, resolution, and patience more required, than in long continued and painful labours. The fears and affections of friends will also warp their judgement; but our greatest tenderness and the propriety of our conduct will be shown, not by a compliance with requests and solicitations, but by following the dictates of our own reason and judgement; for we are not to be governed or alarmed by unfounded apprehensions of danger, but by its actual existence. *Dr. Denman.*

tinguishable at a time when the head is lying at the brim of the pelvis.

FŒTID DISCHARGES, ETC.

Again: a strong proof of death is taken from the issue of a fetid discharge* from the uterus, and yet you ought not to consider this sign as decisive, for these discharges are now and then observed when the child is alive. Nor is it a certain proof that the child is dead, when, under the vertex presentation, you find the meconium is making its escape, the discharge being detected by the stain which it imparts to the fingers; for although this

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* The putrefaction of the child would be an indubitable mark of its death, and might create a very offensive smell in the apartment in which the patient was confined; but every putrid child does not yield an offensive smell, and such smell may be occasioned by several other circumstances. If a child should die in the *uterus* from external injury, or any internal cause, and become putrid before the membranes of the *ovum* were broken, it would have a peculiarity of smell, but not that *fætor* which every animal substance emits, while it is in the act of putrefying under the influence of the open air. The *fætor* to which we now allude, can only appertain to a child which was living in the beginning of labour, and died in the course of it, after the discharge of the waters; and in such cases, when putrefaction does begin, it is commonly very rapid in its progress. The general smell of putridity in the apartment of a person in labour, is to be admitted with very great caution as a sign of a dead child; for if the room be small, or crowded with company, or long kept hot and uncleanly, or the common offices of life are performed in it, as is usually the case among people of the lower class, a similar effect would be produced as when the child is dead and become putrid.

The *fætor* here meant is also supposed to arise from the putrefaction of the child, and the ill appearance to proceed from a mixture of *meconium*, sanious, or other matter which might be supposed to flow from a putrefying child, with the common uterine discharges. But the appearance of these discharges naturally varies in different women, according to their constitution, and to the qualities of the waters of the *ovum*, in the appearance of which there is a very great difference. They become altered likewise by contingent circumstances, as the casual retention of the discharge, the mixture of a small quantity of blood, or slight inflammation in the parts, which in some cases give a strong scent to them, hardly to be distinguished from putrid *fætor*. With every appearance of the uterine discharges, children have been born living and healthy; and when they have been long dead, those have in many instances been so little changed, as not to raise suspicion of any harm having befallen the child, in the minds of very experienced men. The proposal of any operation which would be injurious to the child, if living, would not therefore be justifiable, merely on account of the smell or appearance of the discharges, without other collateral proofs of its death, or a conviction from other circumstances of the operation being absolutely necessary. *Dr. Denman.*

discharge,* in many cases, arises from death and paralysis of the sphincter, yet, in two vertical presentations, I have observed a discharge of the meconium, though the fœtus was vigorously alive.

STATE OF THE HEAD, ETC.

From an endematose, emphysematose, or other peculiar feel of the head,† it has been argued we may judge of the death of the child, but these symptoms are not to be relied on.

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* Should a child present with the breech or inferior extremities, the evacuation of the *meconium*, which is an absurd name given to the excrements first evacuated by the child after its birth, is one of the truest proofs of such presentation. But when the head presents, if the labour be very severe or tedious, the waters will be tinged of a greenish colour, or pure *meconium* may be forced away, and with such appearances, the child is often supposed to be dead; from a presumption, that if it were living, the *sphincter* of the *anus* would act with power sufficient to prevent any discharge. But by experience it has been fully and frequently proved, that a child may be born living, though the *meconium* had come away when the head presents; its evacuation proving no more than the weakness of the child, or the degree of compression it has undergone. The discharge of the *meconium* may also depend upon the quantity contained in the bowels, or some casual pressure upon the *abdomen* of the child. We may however, in general, conclude, when the *meconium* does come away in a natural presentation, that the state of the child is not void of danger; and for many years I never saw a child, presenting with the head, born living, when the *meconium* had come away more than seven hours before its birth. But at length, I met with a case, in which the *meconium* was discharged for more than thirty hours, at the end of which time, though the woman was delivered with the *forceps*, the child was born healthy and strong; and since that time I have had many equally convincing proofs, that the coming away of the *meconium* is a very doubtful sign of the death or dangerous state of the infant, whatever may be the presentation.

† In many cases in surgery, information may be gained, and the judgement assisted by what is called the *tactus eruditus*, or that faculty which enables us to perceive and discriminate by the touch, with greater accuracy than by any evident or describable marks. It has also been said, that we may decide in many doubtful cases, by the feel of the head, whether a child be living or dead. But as we know that in surgery, the most discerning and expert in this faculty are often mistaken, when they desert common evidences, so opinions formed on such ground would not authorize an operation to which they might be supposed to lead, in the question on which we are now speaking. For the integuments of the head of a child often become edematose to a considerable degree, from pressure in its passage through the *pelvis*; and sometimes emphysematose from a continuance or increase of the same pressure, when the child may, in all other respects, be perfectly well. If the integuments be squeezed into a smooth, round form, this is said to be unfavourable; but when they are corrugated, the tumefaction, though equally great, is thought to be of less consequence; the former being supposed to prove the absolute separation of them from the *cranium*, and the latter, that their attachment remains; but this difference is in many cases accidental. *Dr. Denman.*

COLDNESS OF THE ABDOMEN, ETC.

So also, coldness of the abdomen,* recession of the milk, flaccidity of the breasts,† and the mechanical weight of the uterus‡, are by some writers reckoned as indications worthy of attention.

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* When children die toward the conclusion of pregnancy, women not unfrequently complain of coldness of the *abdomen*, and, at the instant of their death, there is usually one violent shivering. But when women in labour speak of this coldness, there is not actually external coldness, but a sense of it felt by the patient. A supposition that a dead child is colder than a living one, is the principle which gives to this sign its chief importance. But whether a child has been dead for a short or a long time, it is generally found to be of the same degree of heat with the *uterus* in which it was contained, and it is even hotter than the *uterus* while it is in the act of putrefying. The principle being fallacious, the inferences must often mislead, and a child is not unfrequently born living, though the mother, before her delivery, complained of this coldness; which may be produced by some contingent circumstance, as the great heat of the room when she is in a profuse perspiration, or the sudden admission of cold air under the bed-clothes in winter. Little stress is to be placed on this sign alone, but, when accompanied with others, particularly a considerable diminution of size, it must increase our suspicions of the perilous state of the child, if not of its death. *Dr. Denman.*

† Should the child die when a woman is far advanced in her pregnancy, and before the commencement of labour, these signs are seldom wanting. But if they were to be offered as proofs of the death of a child destroyed by the severity of a labour, it would have been needful to have compared the state of the breasts at two specific times; first, on the accession of labour, when the child was living, and they might be turgid; and, secondly, in the advanced state of labour, when the child was dead, and they might have become flaccid. But as it is not customary to inquire into the state of the breasts before some suspicion is entertained of the death of the child, and as those of no two women, under any circumstances, exactly resemble each other, and as the milk is often secreted irregularly at different periods of pregnancy, all indications taken from the state of the breasts, or the secretion and quantity of milk, must be uncertain, and any judgement founded upon such indications, extremely liable to error; granting, however, that in some situations, they do become common or collateral proofs of the question we may wish to determine, especially in the latter stages of pregnancy, though not in the course of a labour. *Dr. Denman.*

‡ If a woman in labour, or in the latter part of pregnancy, should feel the *uterus* fall with a sense of increased or unresisted weight when she turns from one side to the other, or changes her position, it is often surmised that the child is dead; the bulk of the child being diminished, and all that resilition observed to exist in every living body being lost. But this sense or effect may often be explained in a more satisfactory manner from other causes, especially when a woman is in labour. Should, for instance, the waters of the *ovum* be suddenly discharged, the *uterus* will contract till it comes into contact with the body of the child; but the integuments of the *abdomen* not contracting with equal celerity, and the uterus wanting that support which they afforded when it was fully distended, must of course fall to whichever side the woman may turn. Should the waters be discharged slowly, or should the integuments of the *abdomen* contract speedily, or should the head of the child drop into the *pelvis* immediately after their discharge, there would not be this sense of unsupported weight, whether the

If the scalp is *emphysematous*, or the abdomen be tympanitic, this is a very strong presumption that the child is dead; and peritoneal tympanitis, easily discovered in crural presentations, is not very uncommon in its occurrence.

SECTION XL.

INDUCTION OF PREMATURE DELIVERY.

If a woman have been repeatedly delivered by the use of the lever, the forceps, or the perforator, the children being still-born, she may sometimes ask you whether there is any thing to be done in the way of preventing a repetition of this mournful operation, so as to facilitate her labour, or to preserve the life of some few of her children, or even of a single child? To this interrogatory, you may answer in the affirmative; for there is something very simple, and very effective, which may be attempted, and not without frequent success. And this something consists in the induction* of premature delivery; before the woman has reached the nine

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child were living or dead; because in one case the *uterus* would be held firm by the general contraction, and in the other, the child would be prevented from that kind of motion by its confined position.

When a child is diseased or dies in the latter part of pregnancy, the flaccidity and subsidence of the *abdomen* are considerable; but it is from a very great degree of these we are led to suspect either the death or wasting of the child, some subsidence being one of the natural changes which precede labours. From the appearance of some infants born alive, it is often evident, by the wrinkled skin, that they are less than they were some weeks before their birth, and the manner in which these changes are made, frequently shows, whether they died suddenly, or declined gradually. *Dr. Denman.*

* About the year 1756, there was a consultation of the most eminent men at that time in London, upon the morality and advantages which might result from inducing premature labour, in cases of deformity of the pelvis. The first case which was judged proper for the trial, fell under the care of Dr. M'Cauley, and terminated successfully. Since this time it has been very frequently repeated in England and elsewhere, and is now an acknowledged rule of obstetricy. *Dr. Dewees.*

Two methods have been proposed for the induction of premature delivery: first, by insinuating a finger within the os uteri, and gently dilating it, and detaching a part of the membranes from a portion of the cervix, in its immediate vicinity. This may also be done, by conducting within the os uteri a pair of ball-forceps, by slightly opening which, we gently

months, at the end of the fifth, sixth, seventh, or eighth months, for example, or even earlier in gestation. If our object in the induction be simply to facilitate the parturition, by urging the labour when the child is small in its size, flexible, and of easy compression, the sooner we perform the operation the better. But if our object be, as generally, to obtain a living child, then we ought not to induce premature delivery till seven months and a fortnight* of the pregnancy are completed; fœtuses born at this age, are frequently reared; but fœtuses born before this age of pregnancy, more frequently die than survive; their stomach and bowels are too weak to bear the milk; and with gastric, cephalic, or other affections, they are frequently carried off.

DIFFICULTIES ATTENDING THE INDUCTION.

There are difficulties with which you may have to contend, in endeavouring to save children by the induction of premature delivery. When labour occurs before the full term of nine months, not infrequently the children lie preternaturally; the number of preternatural presentations, in the opinion of some,

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and slowly dilate it, so as freely to admit the finger. This is better than the finger alone, and gives less unprofitable irritation. It ought to give no pain referrible to the uteri, but is productive of sensation, not amounting to pain, in the back. If we have not thought it prudent, to dilate at once the os uteri, so as to admit the finger, freely, to touch the membranes, we may repeat the dilatation gently, at the end of twelve hours, and then detach the membranes cautiously from the cervix uteri, by the finger. But for this purpose it will be necessary to have the hand introduced into the vagina. If this be not followed by indications of labour within three or four days, we must have recourse to the second proposal, namely, evacuating the liquor amnii, by piercing the membranes with a long narrow-pointed probe, conducted by the finger, or a canula, with a concealed stylet, the point of which is, after the canula is guided by the finger within the os uteri, to be barely pushed so far on as to pierce the membranes. Could the first always be depended on, it would be preferable to the second, as evacuation of the water is sometimes succeeded by spasmodic or partial contraction of the uterine fibres, and it also appears, that the circulation is more apt to suffer. It ought therefore always to be first tried. *Dr. Burns.*

* As the primary object is to preserve the life of the child, the operation should never be performed till *seven complete months* of utero-gestation have elapsed; and, if the pelvis of the mother be not too much contracted to allow of it, the delay of another fortnight will give a greater chance to the child surviving the birth. *Dr. Merriman.*

exceeding the natural. These preternatural presentations* are often the cause of still-birth; for if the arm present, or the presentation be of the feet or breech, or of mixed character, the contraction of the pelvis delays the birth of the head and shoulders, and the fœtus perishes in consequence of pressure on the cord, at a time when respiration is prevented, not to dwell upon the risk of fractures of the extremities, or ruptures and dislocations of the neck. Nor is the preternatural presentation the sole, though a principal difficulty. A woman may be wrong in her reckoning; she may suppose that she is seven months advanced in her pregnancy, when, in truth, she is not advanced beyond the sixth; or, it may be, that she may think her pregnancy is of eight months only, when, in reality, it is of nine; and the fœtus, of consequence, may be too large to make its way unopened through the pelvis. When, too, the labour has been frequently induced prematurely, the uterus sometimes forms a habit of spontaneously expelling the fœtus, and thus labour of itself supervening, before the close of seven months and a fortnight; the fœtus may be so young and feeble, that it has not strength for the rearing.†

It seems, therefore, that the induction of premature delivery, as a remedy for contractions at the brim, is not without its disadvantages; for remedies, like ourselves, have their defects as well as excellencies; but still, with all its faults about it, the practice is of great value; and there are now living in society, individuals whose heads have, in this manner, been preserved from the perforator.

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* Dr. Merriman advises, that before penetrating the membranes, it should be ascertained that the presentation is natural. If it be not, it may become so in a day or two. *Med. Chir. Trans.* vol. 3, p. 123.

† Dr. Merriman states, that out of 47 cases of premature labour, induced on account of distorted pelvis, 19 children have been born alive, and capable of sucking. *Med. Chir. Trans.* vol. 3, p. 123.

SECTION XLI.

ON THE CÆSARIAN OPERATION.*

In British practice sometimes, and on the continent more frequently, delivery being impracticable by the natural passages, the abdomen and uterus are both laid open by extensive incision, and the child is abstracted through the aperture; the operation being, I conceive, denominated, the incisory or Cæsarian, on account of the extensive use of the knife which it requires.†

To perform the Cæsarian incisions, as indeed most of the higher operations of surgery, some intrepidity is necessary, and some little share of intellect is required; but, as all the parts of the operation are brought fairly under the eye, their execution is by no means difficult. Before the incisions are made, the bladder ought, by all means, to be evacuated; and it is desirable, too, that the bowels, sometimes loaded in the end of pregnancy, be thoroughly cleared of their contents. Women possessing perhaps a larger share of passive courage than men, we may, I believe, generally trust to their fortitude; and I deem it, therefore, unnecessary to alarm by the use of bandages, though a steady assistant, of firm nerves, ought to stand on either side in readiness to secure the patient, should her resolution fail.

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* So called, because Julius Cæsar is said to have been extracted in this manner. *Dr. Hooper.*

From a passage in Pliny, we are to infer that the Cæsarian operation is extremely ancient, though no description of it is to be found in the works of Hippocrates, Celsus, Paulus Ægineta, or Albucasis. The earliest account of it in any medical work, is that of the Chirurgia Guidonis de Cauliaco, published about the middle of the fourteenth century. Here, however, the practice is only spoken of as proper after the death of the mother, and is alleged to have been adopted only at such a conjuncture in the case of Julius Cæsar. *Cooper's Surgical Dictionary.*

† There are three cases in which this operation may be necessary: 1st. When the fœtus is alive and the mother dead, either in labour, or the last months of pregnancy. 2nd. When the fœtus is dead, but cannot be delivered in the usual way, on account of the deformity of the mother, or the disproportionate size of the child. 3rd. When both the mother and the child are living, but delivery cannot take place, from the same causes as in the 2nd example. *Cooper.*

STEPS OF THE OPERATION.

Different operators may give a preference to different positions of the body; for myself, I should wish the patient to be quietly transferred to the edge of the bed, to rest there in the recumbent position, with the head and shoulders a little elevated, and the legs lying forth beyond the bedstead, so as to hang upon the floor. The body then being placed in the most commodious position, the surgeon, with a large sharp-edged scalpel, may make a longitudinal incision of six inches, through the abdominal coverings, in the inferior half of them below the navel—I mean, where there is choice to the left of the linea alba. This incision should be made on the inner edge of the rectus, the parts divided, in its progress towards the cavity of the peritoneum, being the integuments, the adipose membrane, the sheath of the rectus in front, the flesh of the muscle, the sheath of the rectus behind, and the membrane which gives a lining to the cavity of the abdomen. These incisions completed, the uterus is brought fully under view, of a dusky rosy tint; and through its substance a further incision of six inches is made, in correspondence with the former; the peritoneum, the muscle, and the membrane which invests the womb internally and secretes the catamenia, being the parts which are cut through. By this division of the uterus, the ovum being exposed, the accoucheur lays open the membranes by rupture, and reaching and grasping the feet of the fœtus, he abstracts it by turning, proceeding immediately to withdraw the other fœtuses, should there chance to be a plurality, and concluding this part of the operation with the immediate removal of the secundines. When the muscular fibres of the uterus are divided by the knife, they immediately retract. When the ovum is abstracted, the whole of the uterus collapses, and retreats into the pelvis, the intestines, under the expiratory movements, bursting forth at the opening; and the operator now completes the process, by replacing the viscera, removing the clots, closing the abdominal wound by suture, and afterwards covering the parts with some light and simple dressing. Sutures to the uterus have not been hitherto in general employed.

Agreeably to the suggestion of Lizars, a dexterous and intrepid surgeon, who by his graphic illustrations of anatomy has secured longeval reputation, the temperature of the apartment should be above 90° of Fahrenheit's thermometer, not many degrees below the temperature of the internal parts of the body.

EXTENSIVE ABDOMINAL INCISIONS NOT NECESSARILY FATAL.

The operation of Lizars has shown, that extensive divisions of the abdominal coverings are not necessarily fatal. In the hope of unlocking the abdomen for surgical operation, I have myself endeavoured to prove, that extensive divisions of the peritoneum are not, in general, followed by fatal results. A record of the facts and experiments on which this opinion is grounded, you will find in my physiological researches. Although, therefore, I would have you avoid an unnecessary division of integument in performing the Cæsarian incisions, I advise you to make them of the full length of six inches, as a shorter aperture would probably give rise to difficulty in the abstraction of the fœtus, without securing to the patient a countervailing advantage.

DIRECTION OF THE INCISIONS.

By some practitioners, we have been advised to place the Cæsarian incisions transversely, so that they may stretch between the linea alba and the sides of the abdomen. To omit, however, less weighty objections, to this method of operating, I may remark, that the transverse incisions must lead the scalpel into the side of the uterus, where the large vessels are seated, whence, after the completion of the operation, a fatal internal hæmorrhage is to be apprehended; nor must we forget, that by the transverse operation, the epigastric artery would be divided; so that, on both accounts, the longitudinal incision, generally adopted, seems, on the whole, to be the better of the two. Under those distortions of the pelvis, which create a need for the Cæsarian incisions, the uterus, usually thrown from its natural bearings, frequently lies so much to the right, or left, side of the linea alba, that the operator

is compelled to place his incisions accordingly. It has been observed, however, that where there is choice, we should rather make our incisions to the left of the linea alba than the right, because, by so doing, we avoid the risk of wounding occasionally the ligamentum rotundum *, and of hereby perhaps producing a troublesome venous hæmorrhagy. The linea alba expanding, in common with the rest of the abdominal covering, in consequence of the enlargement of the uterus, may become dilated to double its original width; the breadth, in the living woman, being sometimes very easily ascertained by her making an attempt to rise from the recumbent to the sedentary position; for the muscles at this time become as hard as a piece of cartilage, their inner margins, and the interposed space, may be examined without difficulty. In operating upon dogs and rabbits, I have frequently divided the linea alba with impunity. After the operation of paracentesis, the aperture through the linea alba, usually heals with facility. Surgeons, however, are not unreasonably averse from tendinous wounds being prone to mortification, and we are advised, therefore, not to place our incisions in the centre of the abdomen, but over the rectus muscle, near its inner edge, so as to include the muscular flesh in the wound; and thus bring into co-operation, during the subsequent healing, those active living parts of which the muscle is composed. Remember, then, the breadth of the linea alba; remember, too, the situation of the epigastric artery, and the large capacity of those arteries which lie in the sides of the uterus; and, in your anxiety to keep clear of the linea, take care that you do not get so far from the margin of the rectus that you incur the risk of injuring these parts. A pregnancy of nine months, I believe, doubles the breadth of the rectus; therefore be on your guard as to the situation of the epigastric.

Some might think, perhaps, that in removing the fœtus by the Cæsarian incisions, we ought to make the openings above the navel,

* The *ligamenta rotunda*, be it remembered, are composed of arteries, veins, lymphatics, nerves of a fibrous structure, united together by cellular membranes. *Dr. Blundell.*

instead of below. To this opinion, however, I can by no means accede; for, if we make the incisions above the navel, the intestines will protrude more copiously; the region of the placenta will most probably be divided, and, on the abstraction of the ovum, the womb, collapsing into the pelvis, will sink below our reach, disappearing beneath the intestines, which fall over it. Place the incisions, therefore, below the navel; and thus you may avoid these impediments.

APPLICATION OF THE SUTURES.

When closing the abdomen of animals, I have generally passed the suture completely through the abdominal coverings, so as to include the peritoneum; nor have I been led to suspect, that any ill consequences have necessarily resulted from this practice. In operating on the human subject, however, we are advised not to include the peritoneum in the stitches, and though I am not sure that much danger would result from the suture of this membrane, I deem it safer, in the present state of our knowledge, to observe the precaution recommended.

STERILITY SHOULD BE ENSURED.

In order to prevent future impregnation, if you intercept the contact between the semen and the rudiments, you ensure sterility. My reasons for this opinion are already published.* On the Continent, the same woman has been twice† subjected to the Cæsarian operation. Mr. Barlow's patient,‡ in this country,

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* Transactions of the Medico-Chirurgical Society for May, 1819.

† Simon relates sixty-four operations, more than a half of which had been done on thirteen women. Some of these had undergone the operation once or twice; others five or six times. There was one woman in particular, who had undergone it seven times, and always with success. *Mémoires de l'Acad. de Chir.*, tom. i. 4to.

‡ Dr. Hull expresses an opinion, that in this case the child had escaped through a laceration of the womb into the abdomen, enveloped in the secundines, and that Mr. Barlow merely

recovered, and might have become pregnant again. To preclude the possibility, therefore, of a second need for the incisions, before closing the abdomen, the operator, I conceive, ought to remove a portion, say one line, of the fallopian tube, right and left, so as to intercept its calibre—the larger blood-vessels being avoided. Mere division of the tube might be sufficient to produce sterility, but the further removal of a portion of the canal appears to be the surer practice. I recommend this precaution, therefore, as an improvement of the operation.

ON THE SUCCESS AND FATALITY OF THE OPERATION.

To the fœtus, the Cæsarian incisions are, it should seem, unattended with danger; though, in more than one half of the British operations, the children have been abstracted still-born: death, however, being rather attributable to the delay of the operation than to any effects produced by the operation itself. But although, in these cases, the danger to the fœtus is small, if any, it is admitted, on all hands, that the peril to the mother is extreme; and, without staying to declaim on the subject, it may, perhaps, be worth our while to consider, what are the causes from which the danger arises, and what are the means whereby they may be superseded or alleviated. That the British surgeons understand, as they ought to do, the use of their hands and fingers, will, I presume, be admitted by all; that they are, further, acquainted with those laws of the injured parts which, understood and brought into operation, constitute the best instruments in the armamentarium, can scarcely be denied; it is remarkable, however, notwithstanding these qualifications of our countrymen, that the success of the continent* has

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divided the membranes, when he fancied he had divided the uterus. See *Hull's Defence of the Cæsarian Operation, &c.* p. 72.

* There are, I think, histories of 23 cases, where the operation has been performed in Britain; but of these only one woman (Mr. Barlow's case) has been saved, but eleven children have been preserved. On the Continent, however, where the operation is performed more frequently, and often in more favourable circumstances, the number of fatal cases is much less. *Dr. Burns.*

greatly exceeded that of our own islands; and as we may not, I think in candour, impute this to superior chirurgical knowledge, we must look to other causes to which this foreign felicity may be ascribed. From the masterly work * of a man of great powers, it appears, that although but few women in this country have recovered from the operation, yet in those continental operations which have been put upon record, amounting in number to between two and three hundred, more than one half the women have survived. † In England, at the present time, through the liberty of the press, should an operation fail, it is not very likely to remain concealed; but during the preceding centuries, especially on the continent, the darkness and smallness of the printing-house afforded facilities for silence, of which the unsuccessful operator was very likely to avail himself, even when his intentions were by no means dishonest; and thus, without reproach to our very able neighbours, it may be presumed, that from the circumstances of society, the failures and the successes of this operation may not have been recorded with equal fidelity; ‡ not to add, that some of these operations, so called

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* According to Dr. Hull, we had, when he published, at home and abroad, records of 231 cases of this operation, 139 of which proved successful. *Dr. Hull's Defence of the Cæsarian Operation, &c.*

† It appears that this operation was performed 24 times with success, from 1750 to 1800, according to Baudelocque. It was also successfully performed by Lauverjat; twice on the same woman by Bacqua; once by Le Maistre, of Aix; once by Dariste, at Martinique; once by Vonderfushr, in 1823, at Daplen, in 1827, at Florence, and once each by the following persons: Bulk, Græfe, Leutez, Buren, and twice by Skenck. The operation has been frequently performed in these and other countries during the last few years. Baudelocque relates 63 cases of the operations, in 42 of which the women perished. Spregnel detailed 231 cases, 45 of which proved fatal; Hull narrated 231 cases, 92 of which terminated fatally. The only successful cases in these kingdoms, are one by Barlow, and one by an illiterate woman, which is well authenticated. The midwife here alluded to, was a Mary Dunnally. She operated with a razor, extracted the infant, and held the wound, while a messenger was dispatched a mile distant for some silk and tailor's needles, with which she sewed up the wound, and then smeared it with whites of an egg. The woman recovered in 27 days. The case occurred at Charlemont, near Dungannon, county of Tyrone, and was seen by Dr. King and Mr. Stewart, who gave an account of it in the First Volume of the Edinburgh Medical Essays. *Dr. Ryan.*

‡ In France, and some other nations upon the European Continent, the Cæsarian operation has been, and continues to be performed, where British practitioners do not think it indicated;

Cæsarian, have, perhaps, after all, been in reality of other nature. Moreover, should our planet meanwhile escape some of its former catastrophes, posterity will, probably, learn with surprise, some thousand years hence, what have been the opinions relating to these points, maintained by their predecessors. They may learn with surprise, not unmingled with indiscreet levity, that a large and religious body of their civilized forefathers had been of an opinion, not to be presumptuously touched, that if one of the children of our great Parent were permitted to perish in utero, without the administration of water and words, in consequence of an original and unexpiated moral taint, derived from our common ancestor, eternal perdition would very probably be its portion. Happy, however, as *we* are in another and a better system of opinions, *we* are not at all surprised to hear that by many, such a notion has been deemed both wholesome and tenable; and some tender mothers, who, with safety to themselves, might perhaps have been delivered by the natural passages, in this hope of securing to their children the baptismal advantages, have, with constitution on the whole healthy enough, been induced to submit, in preference, to an extraction of the fœtus, early in the labour, by means of the Cæsarian incisions.

BRITISH RULE OF OBSTETRICY.

Of British obstetricy, it is a fixed rule not to remove the fœtus by the Cæsarian incisions, provided it may be abstracted by the natural passages; and hence our operations have usually been performed on women of broken constitutions, the subjects of *mala-*

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it is also had recourse to early, before the strength of the mother has been exhausted by the long continuance and frequent repetition of tormenting, though unavailing pains, and before her life is endangered by the accession of inflammation in the abdominal cavity. From this view of the matter, we may reasonably expect, that recoveries will be more frequent in France than in England and Scotland, where the reverse practice obtains; and it is from such cases as these, in which it is employed in France, that the value of the operation ought to be appreciated. *Dr. Hull's Defence.*

costeon or *mollities ossium*, generally, if not always, of itself a fatal disease.* An able and resolute surgeon, Mr. Barlow, of Blackburn, had occasion to operate on a woman of vigorous habit, obstructed in consequence of previous fracture of the pelvis; and in this case, with which we have been favoured in his valuable essays,† the woman resumed her domestic occupation in the course of a fortnight afterwards. And hence, perhaps, without illiberal derogation from continental merit, the greater success of the operation beyond our seas may rather be attributed to the silence of the press, and to the misnomer of the operation; it may be, also, to the better condition of the patient, on whom the operation has been performed, than to any superior surgical skill exerted in its performance.

NATURE OF THE ATTENDING DANGERS.

The dangers which attend the Cæsarian incisions, so frequently destructive to those who are compelled to submit to them, are, I conceive, of various kinds, and may well deserve a little consideration from us. And first it may be observed, that the operation being alarming, the surgeon feels averse to urge its adoption, and the patient herself, terrified perhaps, can scarcely give her unforced consent till the collapse of her strength, and the protraction

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* Bearing on this point, Dr. Hull very truly remarks, "Who would be sanguine in his expectation of recovery under such circumstances, as it has generally been resorted to in this country, namely, where the female has laboured for years, under *malacosteon*, a disease, hitherto of itself incurable; where she has been brought into imminent danger by previous inflammation of the intestines, or other contents of the abdominal cavity; or been exhausted by a labour of a week's continuance, or even longer." Dr. Hull thus refutes the opinion of Mr. W. Simmons, that our ill-success was owing to climate, or some peculiarity in the constitutions of the females of this island. *Dr. Hull's Defence—Cooper.*

Dr. Dewees makes similar remarks with Dr. Hull, and plainly asks, "Is there not strong reason to believe, that were the same independence exercised by the surgeons of Great Britain towards the poor sufferers from deformity, the same fortunate issue would happen as in France and Germany, and as frequently? We are by no means of opinion, the failures in England, have been owing to climate—procrastination is the cause of the evil." *Dr. Dewees' Compendium.*

† Essays on Surgery and Midwifery, p. 355. Also related in The Medical Records and Researches, p. 154. 1798.

of the labour convinces her that there is no other hope. On both these accounts, the first especially, it frequently happens that contusion and exhaustion precede the operation ; the fœtus, too, being already dead, in consequence of the pressure to which it is subjected under the action of the uterus ; in a word, such irreparable mischief is sometimes done before the operation can be adopted, that if, by a fiat, as it were, the fœtus might be extricated, without incision, from the receptacle where it is incarcerated, it would then be too late to preserve either the mother or her offspring. Now this source of danger is the rather deserving of our consideration, because, by early operation, it may in good measure be avoided ; and, I think, we may lay it down as an axiom in operations of this kind, that if to be performed at all, they ought to be executed without needless delay, as soon as the cordial assent of the patient may be obtained.

If in the full flush and petulance of health, you were to receive a severe blow upon the abdomen, or if, from any other cause, the stomach or intestines were to become ruptured, with falling countenance and failing limbs, you would immediately take your stand in silence upon the brink of the grave, and there begin to consider of what clay you are made. And thus it is, that among the dangers of the Cæsarian operation, we must not omit to enumerate the narcotic effects resulting from injuries inflicted ; such as two wounds, each of six inches, and which it is necessary to make, at least in the ordinary modes of operating. By Sir Charles Bell we have been advised to make a small opening into the uterine cavity, afterwards dilating the orifice by the action of the fingers, in the same manner as the os uteri is sometimes laid open, when it becomes necessary to remove the ovum from the womb. This dilatation, as Sir Charles justly observes is likely to prove of more easy accomplishment, because the substance of the uterus is, perhaps, naturally of a somewhat obsequious and yielding kind, and it is not altogether impossible that this method of procedure may be found desirable, not only in those cases in which the placenta chances to cohere to that part of the womb which corresponds with the abdominal incision, but in every instance

in which the Cæsarian delivery is requisite. This proposal, however, requires reconsideration. Contusions and lacerations might not without reason be apprehended. By dilating in this manner, we should diminish the extent of the uterine incision.

For large bleedings to occur in consequence of the Cæsarian operation, it is not common;* yet when the placenta has been deposited on that part of the uterus which is divided by the knife, as the uterine vessels are always very capacious in the region of the after-birth, much internal bleeding may be expected. To meet this danger, and to avoid the effect of uterine incision, Bell proposed dilatation. In my opinion, I will here observe, that if with proper ligatures we could remove the womb altogether, the risk of internal bleeding would be cleared away at once.

Much, however, of the danger of the Cæsarian incisions must, I fear, be ascribed to a cause, over which, in the present state of our knowledge, we have but little control; I mean the cachexy of malacosteon. Mr. Barlow's patient, of fractured pelvis and healthy habit, recovered. The Cæsarian deliveries of the Continent, performed on healthier constitutions than those of our own patients, have been attended, it may be, with corresponding success; but the British practitioner, pertinacious of his rule, using the incisory delivery in those cases only, where, by the natural passages, delivery is impracticable, in general finds himself compelled to operate in cases already desperate from malacosteon, as, unless there be fracture, it rarely happens that the pelvis, from any other cause than malacosteon, is contracted in that degree, which alone justifies the operation. After medicine and surgery have accomplished so

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* All the opponents of the Cæsarian operation fear the hæmorrhage, which, they say, must follow. Indeed, if the uterus were not to contract sufficiently, when the fœtus and after-birth had come away, the bleeding would really be perilous; but when, by means of the Cæsarian operation, the fœtus is extracted, together with the placenta and membranes, the uterus contracts, just as it does after a natural labour. Besides, even when the mother is alive, the operation is not commonly done, till the uterus evinces a propensity to deliver itself, and begins to contract. The womb being delivered of its contents, the incision becomes closed, the vessels obliterated, and there is no fear of hæmorrhage. *S. Cooper's Surgery.*

much, for other human failings, I would fain persuade myself that they will not ultimately fail us here; and there is reason to hope, therefore, that in the further progress of our knowledge, this cause of danger, in the operation, may admit of alleviation. In Dr. Merriman's Synopsis, you will find an account of all the cases which have been performed by British obstetricians. *

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* *Dr. Merriman's List of Cases in which the Cæsarian Operation has been performed in the British Islands.*

1. *Mary Dunally*, a midwife, performed the operation with a razor, on Alice O'Neal, near Charlemont, in Ireland. Child dead; mother recovered, 1738.—(*Edinburgh Essays*, vol. v.)
2. *Mr. Robert Smith* operated upon ——— Paterson, in the Canongate, Edinburgh. Child and mother both lost their lives. The operation is said to have been performed in 1737; but this seems a mistake for 1757.—(*Smellie*, vol. iii. collect. xxxix. No. ii.)
3. *Dr. Young* operated upon a woman, about a mile from Edinburgh. "She was distressed with a constant vomiting; and I found the *pelvis* very narrow." "In performing the operation, I had no occasion to take up any vessel; having got into the womb, I could not possibly get the child away, till I caused one to press up the head from the *vagina*, a part of it was so closely wedged in the *pelvis*. [The bulk of the head must of course have passed through the superior aperture of the *pelvis*, or there could not have been this difficulty in withdrawing the child. Was the operation at all necessary under such circumstances?] However, I brought away the child alive; but it fell into convulsive fits, and died in a few days. The mother died.
4. *Dr. Young* again operated on "a little decrepid woman, in the Royal Infirmary." The woman died in a few days; but the child was alive, and "was shewn at the class, a healthy promising girl."—(*M. S. Lectures, formerly Dr. Dale's, taken in* 1773.)
5. *Mr. Alexander Wood* is stated, in *Dr. Hamilton's Outlines of Midwifery*, to have performed this operation; but no other account is given, except that the child and mother were both lost.
6. *Mr. Chalmer* performed the operation on Elizabeth Clerk, in 1774. The case is detailed in *Hamilton's Outlines*. Child alive; mother died.
7. *Dr. Hamilton, jun.* performed the operation in 1795. The case is detailed in *Hamilton's Outlines*. Child was putrid; mother died.
8. *Mr. W. Whyte*, of Glasgow, in 1775. Both mother and child perished.—(*Dr. Hull's Defence of the Cæsarian Operation*, p. 66.)
9. *Mr. Kay*, of Forfar. Child born alive; mother lived eleven days.—(*Hull's Defence*, p. 66.)
10. *Dr. White*, of Manchester. Child and mother both died.—(*Hull's Defence*, p. 67.)
11. *Mr. Thompson* performed the operation on Martha Rhodes, at the London Hospital, in 1769, in the presence of many physicians and surgeons. Child was extracted alive, fell into convulsions on the next day, and the day after died. It had an uncommon excrescence on the forehead, communicating with the brain. Mother died.—(*Medical Observations and Inquiries*, vol. iv.)

ON PERITONITIS, AS THE CAUSE OF DEATH AFTER CÆSARIAN DELIVERY.

When obstetricians are asked what is the cause of death after the Cæsarian delivery, they not unfrequently tell us, that it is a diffused peritonitis; and when I first turned my attention to the profession, I used not unfrequently to hear, that, like wild-fire, an inflammation commencing in a spot of the peritoneum, might be expected to spread rapidly over its whole surface. When, however, we have

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12. *Mr. John Hunter*, in 1774, operated on Mrs. Foster. The child was alive, the mother died.—(*Medical Observations and Inquiries*, vol. v.)
13. *Mr. Atkinson*, in 1777, operated upon Elizabeth Hutchinson, at Leicester. Child alive; mother died.---(*Vaughan's Cases of Hydrophobia, &c.* 1778.)
14. *Mr. Clarke* opened the *abdomen* of a woman, from which he extracted a dead child; the mother died. The child was at the time extra-uterine.---(*Memoirs of Medical Society of London*, vol. iii. p. 197.)
15. *Dr. Hull* operated upon Isabel Redman, in 1794. Child alive; mother died.---(*Hull's Defence*, p. 172.)
16. The same gentleman performed the same operation in 1798, on Ann Lee; both mother and child perished.---(*Defence*, p. 162.)
17. *Mr. Barlow* operated upon Jane Foster, in 1793. Child died; mother recovered.--(*Medical Records and Researches*, p. 154.---*Barlow's Essays on Surgery and Midwifery*, 1822.)
18. *Mr. Wood* performed the operation on Elizabeth Thompson, in 1799. Child alive; mother died.---(*Memoirs of Medical Society*, vol. v.---*Hull's Observations on Mr. Simmon's Detection*, p. 109.)
19. *Mr. John Bell* performed the operation, in 1800, at Edinburgh. Child lived; mother died.---This case is fully related by *Mr. Charles Bell*.---(*Medico-Chirurgical Transactions*, vol. iv. p. 347.)
20. *Mr. Dunlop*, of Rochdale, operated on Susan Holt. Mother died; child lived a fortnight.---(*Hull's Translation of Baudelocque*, p. 134.)
21. *Mr. Wood* gives the case of Hannah Rheubotham, in the sixth volume of the *Medical and Physical Journal*, p. 346; both mother and child perished.
22. *Dr. Kellie* relates a case in the *Edinburgh Medical and Surgical Journal*, vol. viii. p. 11. Mother died; child born alive, died the next day.
23. *Mr. Kinder Wood*, in the *Medico-Chirurgical Transactions*, vol. vii. p. 264, relates a case; both died.
24. *Mr. Barlow* and *Mr. Cori* operated upon Ann Hacking, of Blackburn. Child alive; mother died, July, 1817.---(*Barlow's Essays.*)
25. *Mr. Barlow* and *Mr. Dugdale* operated upon Mrs. Ridgedale, April, 1821. Child alive; mother died.
26. *Dr. Henderson* performed the operation at Perth, in presence of six of his professional brethren. Child alive; mother died.

Thus, in these cases, 13 lives were preserved, and 39 lost. *Dr. Merriman.*

not the good sense and prudence to close our eyes and ears to what is passing round us, experience, troublesome and presumptuous experience, has sometimes the insolence to contradict, without qualification, our most favourite opinions ; and I suspect, that something of this kind will be found to occur in the cases under consideration. That the risk of diffused peritonitis, from local injuries of the peritoneum, has been greatly exaggerated, I have endeavoured to show, in a small paper, printed in the Physiological Researches,* and from the adverse opinions of my contemporaries on this point, I confidently appeal to posterity. In some future age, when our hearts and their petty passions are quiet in the dust, this opinion, not merely the plaything of a medical society, but

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* From the small collection of facts, *favourable* and *unfavourable*, which, with limited opportunities, I have been able gradually to accumulate in the course of the last five or six years, and which to me seem calculated to throw some additional light on the probable success of a more enlarged abdominal surgery, I feel conscious that no *certain* inference can yet be drawn, though *presumptive* inferences certainly may, and they seem to me to be the following :

1st. That smaller wounds of the peritoneum, as in tapping, hernia, &c. do not in general induce fatal peritonitis, or other destructive effects ; and, therefore, that the common opinion, not perhaps found on paper, but frequently urged in conversation, and apparently operative in practice, I mean, that inflammation in a spot of the peritoneum, will almost invariably diffuse itself over the greater part of it, is probably unfounded in truth.

2dly. That extensive divisions of the peritoneum are certainly not of necessity fatal, whether by inflammation or otherwise; and *probably* not generally so.

3dly. That the womb, spleen, and ovaries may be taken away, certainly without of necessity destroying life, and *presumptively* without generally destroying it.

4thly. That the womb, when developed from pregnancy, may be torn open; that the child may escape into the peritoneal sack, among the viscera; and that the mouth of the womb may be torn off, not, indeed, so far as these cases may be relied on, without great danger, but twice, in seven instances, without death.

5thly, And generally that the peritoneum and abdominal viscera, though very tender in the human body, will, without fatal consequences, bear more injury, than, from their modes of practice, the British surgeons, especially, seem disposed to admit.

6thly. That all the above inferences, from observations on the human abdomen, are in unison with those drawn from observations on the rabbit, the one set of inferences mutually supporting the other; and in this we have a fact corroborative of the principle for which I have contended elsewhere, that observation on the brute and human subject, when made with caution, may, perhaps, be found more in correspondence with each other, than some surgeons are disposed, at present, to admit. A contrary opinion, so far as it is erroneous, must exert a very baleful influence upon the progress of surgery. *Dr. Blundell's Physiological Researches*, p. 22.

whether right or wrong, of great importance to our race in all future ages, will probably be decided by accumulated experience—may I not add ?—in the affirmative.

Knowing but little, with certainty, respecting the Cæsarian incisions, I do not venture to decide whether this peritonitis is, or not, a frequent cause of death ; but I may add, that all my analagous experience is decidedly opposed to this doctrine, nor do I think that it ought to be received into your medical creed, without further corroboration. In philosophy, however, doubt is no crime, and in order to place yourselves on the safe side, after the abdominal operations, sedulously watch for the expected peritonitis ; and should it occur, let it be treated upon ordinary principles. *

Mr. Lizars, recollecting that peritoneal inflammation, when the abdomen is laid open, may be produced by the coldness of the atmosphere, with laudable forethought, took the precaution of raising the temperature of the apartment, in which he performed his operations, to an elevation ranging between 80 and 90° of

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* In the fatal cases of this operation, it may be of use to inquire, whether death was occasioned by any disease, with which they were afflicted before the time of labour; or was the consequence of the state to which they were reduced from the occurrences of labour, before the operation was performed; or from the inevitable consequence of the operation. In cases of death occasioned by wounds, the following order in which the danger is produced, may be observed: first, from convulsions, or immediate loss of blood ; secondly, from inflammation; thirdly, from gangrene; fourthly, from excessive or long-continued suppuration, under which the patient becomes hectic. Though almost all the patients, on whom this operation has been performed, died, their death happened at different periods: but not one died, either while the operation was performing, or immediately after it. No convulsions were brought on by incisions; nor does it appear, that any of them sunk through the loss of blood accompanying or succeeding the operation. Some died within twelve, others at the end of twenty-four hours, and a few died on the third day after the operation. If we may judge of the cause of the patient's death by the time of her dying, it might be said, that the death of those who failed within twenty-four hours, was probably owing, not to the operation alone, but to the violence of this, combined with that of the previous disease ; but when they survived twenty-four or forty-eight hours, then their death might be attributed to the succeeding inflammation in a body predisposed to disease. If we had the liberty of selecting a patient on whom to try the merits of this operation, we certainly should not choose one who was either very much distorted, or who had the *mollities ossium*, or who was evidently under the influence of some dangerous disease, or who had been several days in labour; because the event must very much depend upon her state at the time when the operation was performed. *Dr. Denman.*

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Having applied my ligatures, I tied one on the right side, and the other on the left, respectively, over the fallopian tube, drawing the threads very firmly, so as completely to cut off all communication with the vagina; and this part of the operation carefully performed, I took a knife and completely removed the wombs, cutting, for this purpose, very close upon the ligatures, afterwards replacing the parts; this done, after closing the abdominal wound by suture, I drew forward the ligatures through the wound, till I brought the raw surface, left by the removal of the wombs, in contact with the abdominal incision internally. By means of the ligature, the wound of the vagina, and adjacent parts, which must otherwise have been of great extent, being drawn together into a very narrow compass, became not broader than a sixpence, and I trusted that this might promptly contract adhesion with the inner surface of the abdomen. Beyond my hopes the operation succeeded; of the four rabbits three recovered, the fourth dying in consequence of the ligatures slipping from their place. Experiments of this kind, made upon different animals, are much wanted, for the importance of the subject renders multiplication and variety desirable here. Let us think maturely upon facts like these. In performing the Cæsarian delivery on the human body, perhaps this method of operating may hereafter prove an eminent and valuable improvement. Let it be remembered, that in securing the vagina and removing the uterus, we are substituting a wound, well secured and of smaller extent, for one that is larger and not secured by ligature at all. Some months after delivery, when shrunk in bulk, the inverted uterus has been repeatedly extirpated with success—once by myself*. Webber, of Yarmouth, successfully extirpated an inverted puerperal uterus, within a few days after delivery.†

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* Lancet, August, 1828.

† In many instances, both mothers and children have lived after the Cæsarian operation, and the mother even borne children after; see *Heister's Institutes of Surgery, chap.* 113. *Mém.* de l'Acad. de Chirurgie, t. 1. p. 623; t. 2. p. 308; in 4to. *Edinburgh Medical Essays*, vol. 5. art. 37, 38. *Edinburgh Medical and Surgical Journal*, vol. 4. p. 179. *Medico-Chirurgical Trans. vols.* 9 and 11, &c. Very recently an example has been recorded, in

SECTION XLII.

OF THE MEANS OF SUPERSEDING THE CÆSARIAN OPERATION.

The Cæsarian operation, it seems, from the preceding remarks, is attended with much danger, and hence it has been asked, whether we have not the means of superseding it? May not an operation, so formidable in its nature, be rendered altogether unnecessary by measures of a different kind?

SECTION OF THE FALLOPIAN TUBES.

If the pelvis be contracted in so high a degree, that parturition, by the natural passages, is impossible, I need scarcely tell you, that the shortest way to avoid the necessity of the operation, would be by abstinence altogether from intercourse with the other sex. The most solid resolution, however, may sometimes thaw; and when a woman is married, she may be placed under those circum-

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which Dr. Müller, of Lowenburgh, in Silesia, performed the Cæsarian section, and saved both the mother and the child, *Magazin für die gesaminate Heilkunde*, 1828, b. 28. p. 146. An instance of similar success is reported by C. H. Graefe, *Jour. für Chirurgie*, b. 9. s. 1. Two successful cases, in which both women and children were operated on at the hospital of Maestricht, by Bosch, *Bibl. Med.* 1823. And, in a valuable periodical work, an example is reported from Hufeland's Journal, where the mother and twins were all saved by the operation. *Quarterly Journal of Foreign Medicine*, &c. 4 *vol.* p. 625.

The most extraordinary case of Cæsarian operation on record, is one performed by a negro-girl on herself, who recovered. Dr. Basset and Dr. M'Clellan, testify this case. *New York Medical and Physical Journal, March*, 1823.

Dr. Mosely mentions the case of a negro-woman at Jamaica, who opened her side with a butcher's knife, and extracted a child, which died of lock-jaw. The woman recovered. *Dr. Ryan's Manual*, 3*d edit.* p. 590.

The mother of Cæsar, according to Suetonius, was living at the time of her son's expedition into Britain, so that she must have survived the operation many years, had it been performed on her. *Dr. Denman's Midwifery.*

The operation has been proposed to be performed on the living subject, under a great variety of circumstances, as in case of contracted passages from cicatrix, callosities, or tumours any where about the vagina, or os tincæ, of lacerated uterus where the child has escaped partially or wholly into the cavity of the abdomen, of extra-uterine conception, of herniæ of the uterus, of unfavourable position, or extraordinary bulk of the child, and of defective pelvis. *Dr. Hamilton's Outlines.*

stances in which it is not very easy to adhere to this advice, her life perhaps falling a sacrifice to her neglect. My friend Dr. Hull, of Manchester, once transmitted me the case of a woman whose pelvis was contracted in a high degree; she knew her situation, remained in a state of abstinence many years, but afterwards became pregnant, and died. Now is there any mode in which, when the obstruction of the pelvis is insuperable, the formation of a fœtus may be prevented? In my opinion there is: for if a woman were in that condition, in which delivery could not take place by the natural passage, provided she distrusted the circumstances in which she was placed, I would advise an incision of an inch in length in the linea alba above the symphysis pubis; I would advise further, that the fallopian tube on either side should be drawn up to this aperture; and, lastly, I would advise, that a portion of the tube should be removed, an operation easily performed, when the woman would, for ever after, be sterile.

DESTRUCTION OF THE OVUM.

If a woman, in the earlier months of pregnancy, is known to have a pelvis contracted in a high degree, is there nothing which you may then do to prevent an ultimate need of the Cæsarian operation? Why, yes; abortive medicines might, in this case, be thought of; or these failing or rejected, if you could feel the os uteri, you might introduce a female sound, or any other instrument of that kind; and passing this sound into the uterine cavity, you might completely break up the structure of the ovum, so as to prevent the progress of generation. In doing this, there would always be a risk of hæmorrhage; but where you are endeavouring to avoid the necessity of the Cæsarian incisions, this risk would be justifiable. The substitution of the smaller evil for the greater, is frequently the principle of the healing art. But what, if the os uteri be inaccessible, is there, in such case, any other expedient to which we may have recourse? In a case like this, were my opinion consulted, I should incline to reply--as a substitute for the Cæsarian

operation, let an incision be made as before stated, above the symphysis pubis, then let some small instrument, a trocar or canula, be carried into the cavity of the uterus; let this instrument be sufficiently stiff to enter the cavity, and retain its form there under pressure; and then let it be resolutely moved about in the uterus, so as to break up completely the texture of the ovum. The whole instrument need not be much thicker than a bell-wire; the process is allied to that of acupuncture: the point of the trocar, on entering the uterus, should be withdrawn within the canula; a finger should be carefully placed on the uterus, so as to guide the instrument, and guard against injury of the intestines or the bladder. To produce further sterility, the tubes might be rendered impervious.

ON CRANIOTOMY IN THESE CASES.

But suppose the gestation has reached the end of nine months, is there then nothing which may be done, to supersede the Cæsarian operation? Why, if the patient can be delivered by having recourse to perforation, by all means this should be adopted. Observe, it is a rule—an axiom in British midwifery, that we are never to deliver by the Cæsarian operation, provided we may, in any way, deliver by the natural passages. Difficult and dangerous as the delivery is, in some cases, when effected by the natural passages, I feel persuaded that women might sometimes be more safely and more easily delivered by the Cæsarian incisions, than by the passages of the pelvis; but if, acting on this persuasion, we were once to establish the principle, that the Cæsarian delivery may be used as a substitute for delivery by the perforator, there would, I fear, be too many cases in which it would be needlessly adopted, and men would now and then, not to say frequently, perform this operation under circumstances in which it ought never to have been dreamed of. Where, therefore, the embryotomic delivery is practicable, let this be preferred. But then, you may reasonably ask here, how are we, in any case, to decide at the

bed-side, whether the delivery be practicable or not? To this query I wish it were in my power to return a satisfactory reply. Much must depend on the dexterity, and other qualities, of the operator; for one man may be able to succeed in the delivery, when another may not. Much again must depend upon the instruments which we employ; to "The Operative Midwifery of Dr. Davis," I must refer you for an exposition of these different contrivances, together with a description of his own inventions and improvements. Much must depend, too, upon the size of the aperture; and it seems, from the researches of Hull and Burns, that the smallest aperture through which a full grown fœtus may be extracted by the embryotomic operations, under circumstances the most advantageous, must be, at least, three inches in its length, and an inch and three quarters in its breadth. To justify embryotomy, therefore, there must be a clear passage through the pelvis, of these diameters at the least. From the consideration of all these particulars must emanate the determination, whether you will, or not, embryotomize. Before you come to a decision, procure the best advice within reach.

SECTION XLIII.

SECTION OF THE SYMPHYSIS PUBIS* IN LABORIOUS LABOURS.

With the view of enlarging the capacity of the pelvis, in cases of labour more or less laborious, it has been proposed to make a division of the symphysis pubis, an operation which is easily performed. In executing this operation, the surgeon or accoucheur cuts down upon the joint, and carries the scalpel between the extremities of the ossa innominata, so as completely to detach them from each other, taking care that no injury be inflicted upon the urethra or bladder.

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* Frequently called after its author, "The Sigaultian Operation."

SEPARATION OF THE OSSA INNOMINATA NECESSARY.

The simple division of the symphysis pubis, however, enlarges the pelvis but little; and, therefore, in order to secure the full benefit of the operation, it is proposed further, that the surgeon should separate the ossa innominata from each other to the extent of one, two, perhaps I may say of three or four inches. It seems to be ascertained pretty clearly, by observation made on the Continent, that in the mere division of the symphysis, pain, not very intense, and no incurable injuries of the part are to be expected; but if the joint be not only divided, but if, moreover, the bones be separated from each other to the extent of two or three inches, then in consequence of the injury done to the sacro-iliac synchondrosis, and the lesion of the sciatic nerves, and the straining of the softer viscera, which are connected with the pelvis, the operation becomes one of considerable pain, and is, perhaps, scarcely less dangerous than the Cæsarian incisions themselves, even in the present condition of that mode of delivery.

OBJECTIONS TO THE OPERATION.

The section of the symphysis pubis was proposed originally* as

* In the year 1777, M. Sigault, a surgeon at Paris, first performed this operation on the human subject, in the time of labour, the patient recovering, and the life of the child being preserved; though it is not clear from the context, that the operation was, in that case, absolutely necessary. Some credit might have been due to M. Sigault for the spirit of enterprise which suggested the operation, and for his resolution in performing it; but the applauses given to him by many of the faculty at Paris (though, if I mistake not, the Royal Academy refused to give any testimony of their approbation) and by the nation at large, was beyond all measure extravagant; a medal was struck to perpetuate the fact, and there could scarcely have been greater exultation and triumph, had he invented a method by which the whole human race should in future have been universally freed from the pains and dangers of parturition. The influence of vanity was at least as strongly marked in these proceedings as the dictates of humanity, and far more than the encouragement of science; so that the steps taken to aggrandize the merits of the operation, then supported only by a single fact, and the reputation of the surgeon who performed it, were too hasty and too enthusiastic, not to raise a suspicion of error or deceit in the estimate of the operation, or in the account given of it. But the conduct of the French extended its influence on the Continent, where the operation has been several times performed with various success. *Dr. Denman's Midwifery.*

a substitute for the use of the perforator and the Cæsarian operation. There seems, however, to be no reasonable doubt, that as a substitute for the Cæsarian incisions, this operation is exceedingly inadequate ; for the pelvis, being distorted in a high degree, if you were not merely to divide the symphysis pubis, but to separate the bones to the extent of two or three inches from each other, you would have a great deal of difficulty in getting away the child; very probably you would be compelled to lay open the head, and at the same time you would inflict great injury on the pelvis, and the softer parts generally, more especially the bladder, so that I conceive the operation would be as dangerous and painful to the mother, and far more dangerous to the child, than the Cæsarian delivery itself. Add to this, the difficulty of performing the operation at all under the higher distortion of the pelvis.*

Although the operation is not a substitute for the Cæsarian, some may think, that, in many cases, the section of the symphysis might supersede the necessity of the perforator, and this I believe to be true.† Generally, where there is a narrowing of the pelvis requiring the use of the tractor, forceps, or perforator, the contraction lies between the promontory of the sacrum and the symphysis. There is a want of room between the front and back, which a division of the symphysis pubis is calculated in a measure to remove. In common and ordinary contraction of the pelvis, it may then be said, why is not the section of the symphysis pubis substituted for the operation of embryotomy? Why! for this valid reason,

* The unanswerable objections to this highly dangerous and unwarrantable operation, are, 1st. The pubic joint may be ossified, and must be divided with a saw; 2ndly,—In cases of deformity, the pubis may be more to one side than the other; 3rdly,—The separation of the symphysis, to the extent of two inches, as advised, must inevitably separate and lacerate the sacro-iliac joints, procure incurable lameness, or abscesses that may prove fatal, or the unfortunate woman may be confined to bed, with horrible pain, for one or two years, as the separated joints, if ever restored, can only be united by anchylosis, which is a slow and tedious process. In 41 operations of this kind, says Baudelocque, 14 women died, and 28 infants were destroyed by the violence of the proceeding, which is farther evidence against the adoption of this fatal operation. *Dr. Ryan.*

† This operation is performed by the French when the infant is alive, and the pelvis contracted from two and a half to three inches; when the head of the infant is large, and in cases of monstrocity. *Dr. Ryan.*

because it is an axiom in British midwifery to sacrifice the child to the safety of the mother, and, in these cases, without injury to the parent, the child may be brought away by laying open the head. Remember, too, what has been stated already, that in narrowings of the brim, the fœtus may often be saved with little risk to the mother, by the induction of delivery in the seventh or eighth month. On both these accounts, therefore, because we may deliver by the perforator, and because, too, we may altogether supersede the need of the instrument by the induction of premature delivery, the division of the symphysis pubis is unjustifiable as a general practice, when the pelvis is slightly contracted. Not to add to these objections, that if we were to allow of the division of the symphysis, in those cases where there is merely a narrowing of the pelvis between the front and the back, such is the present imperfection of obstetric diagnostics in general, that there would be many cases in which it would be performed, where it was not at all necessary.

SECTION XLIV.

ON PARTICULAR LABORIOUS LABOURS.

I shall now proceed to the consideration of the different varieties of laborious parturition, together with those modifications of the general practices which these varieties require.

The laborious labours which are giving rise to the more formidable difficulties during parturition, may be divided into three species or varieties; those labours, I mean, in which the difficulty is produced by an unfavourable position of the fœtus, and more especially of the cranium; those in which the difficulty arises from a deficiency of room between the bones; and those in which the difficulty arises from the rigidity of the softer parts; not to add, that we sometimes meet with cases in which the difficulty may be ascribed from these causes mixed.

SECTION XLV.

LABORIOUS LABOURS FROM AN UNFAVOURABLE POSITION OF THE CRANIUM.

Where a labour proceeds naturally, the presentation is of the vertex, the face in the beginning of the delivery lying towards the one, and the occiput towards the other side; but as parturition advances, the head descends, and the face takes place in the hollow of the sacrum, and the occiput under the arch of the pubis, and the sagittal suture lies along the perineum, and thus the head emerges. It is not always, however, that the fœtal head, in passing, assumes these favourable positions; for sometimes when the presentation is vertical, the face is lying forward throughout the labour; and sometimes, instead of a vertex presentation, we have a presentation of the forehead, or of the face; difficulties being in this way produced.

VARIETIES IN THESE CASES.*

Thus, then, it appears, that there are three varieties of the laborious labours produced by unfavourable positions of the fœtal head; that, I mean, in which the vertex presenting, the face lies forward on the symphysis pubis all through the labour; that variety again in which the face is lying over the centre of the pelvis; and, lastly, that position of the head, not without its difficulties, though less important than the former, in which the presentation, instead of being vertical, is frontal.

MEANS OF ALLEVIATING THE DIFFICULTIES.

When it is found, by examination, that the child's head is lying

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* Some French Authors mention more than 20 varieties of malposition of the head, but for all practical purposes it is sufficient to enumerate three only.

unfavourably for transmission, an accident, understand, which is by no means very uncommon in its occurrence, the obstetrician begins to consider what steps become proper, in order to facilitate the delivery. Now, there seem to be four different ways in which the difficulty may be alleviated; by turning, by rectification of the position of the head, by the use of instruments, and by the natural efforts. And here I wish you to understand clearly at the outset, that when the child is lying unfavourably, it does not, therefore, necessarily follow, that you must immediately have recourse to artificial means of delivery; for, under presentations of the face or forehead, or in vertical presentations, with the face lying forward on the symphysis pubis, by the mere efforts of the uterus, if the pelvis be large and the head small, the child will not unfrequently be expelled. It sometimes happens, however, that the natural efforts fail us, more especially if the pelvis be contracted or the head be large, and, in such cases, we may be compelled to have recourse to some of those instruments, which I have lately mentioned. The tractor or forceps being first tried, and these failing, the perforator.

TURNING, AS A RULE, IMPROPER.

By some it has been observed, that where the child lies unfavourably, it may very readily be brought away by the operation of turning. Now, in some cases, as, for instance, where the pelvis is large and the softer parts are lax, and the hand of the accoucheur is dexterous, so that the feet may be seized without difficulty, the operation of turning might, perhaps, be desirable. I must entreat you, however, to look upon this method of delivery, turning, as an exception to the general rule; for although now and then, perhaps, the child may be with advantage withdrawn by the feet, when the head lies unfavourably, yet, as a general practice, turning is improper, because it requires the introduction of the hand into the uterus, because that operation should never be performed without there exist an absolute need for it, and because, by the natural

efforts, or the use of instruments, abstraction of the child may be very generally accomplished. The more I see of obstetricy, the more I see the necessity of evading the operation of turning, wherever to avoid it is practicable.

ADJUSTMENT OF THE HEAD.

In some cases, again, where the head is lying unfavourably, its position may be rectified. The pelvis is large, the parts are lax, the hand may be easily introduced, and, with the action of the hand, the position of the head may be altered. Suppose, for example, the child present by the face, you may insinuate the hand into the pelvis without violence, and bring down the vertex. Suppose, again, you make an examination, and, discovering a frontal presentation, pass your finger over the occiput; by the mere action of the finger, or by the play of the lever, you may, in this manner, rectify the presentation of the cranium. Nevertheless, though this rectification is, in itself, highly desirable, yet, as a general practice in these cases, it is scarcely proper; for it cannot be easily accomplished without carrying the hand along the vagina, and some little way into the uterus, and, in my opinion, the risk of rupture constitutes a valid objection to this method of operation. To an adjustment of the head by the lever I have less objection.

RELIANCE ON THE NATURAL EFFORTS, ETC.

Instead of turning or rectifying, in these cases of unfavourable position, unless circumstances forbid, the more wholesome practice is, either to commit the woman to the natural efforts, or to have recourse to the lever, forceps, or perforator, according to the nature of the emergency.

But here, perhaps, it will be asked, how are we to decide whether, in any given case, we ought to resort to the employment of instruments, or to confide in the natural powers of the system. Let me

remind you then of the rule* which has been already so often prescribed; if the woman have not been in strong labour for twelve or four-and-twenty hours, and if no dangerous symptoms are apparent, then you are not to interfere; but if dangerous symptoms are manifesting themselves, referable to the prolongation of the delivery, or, if the woman have been in strong labour twelve or four-and-twenty hours, the head making little or no progress, then the embryospastic instruments become justifiable. Further, if the embryospastic instruments have been fairly tried without success, and if dangerous symptoms are manifest, or if the woman have been in labour for six-and-thirty or eight-and-forty hours, the head not descending, notwithstanding the dreadful nature of the operation, you are justified in having recourse to embryotomy.

RECTIFICATION OF FACE AND FOREHEAD PRESENTATIONS.

Face presentations may, sometimes, be rectified by the fingers, or the tractor. Forehead presentations may spontaneously become facial, or vertical; by the fingers, or the tractor, rectification may be accomplished in this manner. The face, when lying on the symphysis pubis, may be, in three different ways, thrown into the side of the pelvis: by grasping the cranium, when above the brim; by the action of the short forceps, when it is below the brim; or, when the head is in the cavity, by making pressure, during pain, with two fingers, placed on the side of the cranium near the face, the face being carried, by little and little, first into the side of the pelvis, and then into the hollow of the sacrum behind.

SECTION XLVI.

LABORIOUS LABOURS FROM DISTORTION AND CONTRACTION OF THE PELVIS.

In a former part, I took occasion to observe to you, that from

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* See "Observations on Contracted Pelvis," p. 15.

fractures, mollities ossium, or rickets, more or less of distortion and contraction of the pelvis may be produced; and, in a view to practice, we may divide these distortions into two kinds, namely, those of slighter degree, and which are more frequent in their occurrence, and those contractions in which the coarctation is very considerable.

ANGULAR AND ELLIPTICAL CONTRACTIONS.

Contractions of the pelvis, in the higher degrees, are divisible into two varieties, the *elliptical* and *angular*.* For a description of these two varieties, I must refer you to my former observations† on the deviations from the standard pelvis; for these greater distortions are so rare, in ordinary practice, that I deem it unnecessary to treat respecting them again. When you meet with the slighter contractions of the pelvis, in their occurrence not uncommon, these contractions may lie in any part of it—brim, cavity, or outlet; but, in that degree, which gives rise to laborious labours, they are most frequently met with at the brim, between the front and back of the pelvis, interposed sometimes between the promontory of the sacrum and the symphysis pubis; and sometimes between the promontory of the sacrum and acetabulum.

MEANS OF ASCERTAINING THE CONTRACTION.

By different practitioners and operators, those contractions of the pelvis, in a slighter degree, may be differently ascertained;‡

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* Some obstetricians believe, that the elliptical distortions of the pelvis are generally produced by mollities ossium, while the angular are caused by rickets. *Dr. F. H. Ramsbotham.*

† See "Observations on Distorted Pelvis," p. 12-13.

‡ There are three methods by which we have been recommended to examine the size of the pelvis, without the use of any artificial instrument.

1. One mode is by the first finger of the right hand, introduced as in a common examination, so that its point may touch, or approximate to, the promontory of the sacrum, while the root of the finger is applied exactly under the symphysis pubis, at the upper part of the arch.

2. A second method is, the introduction of the whole hand into the pelvis, with the outside

my own method, I have formerly explained.* If a woman have before had a number of children with difficulty, all still-born, for example, or all requiring the use of instruments; if, on making examination, you feel the promontory of the sacrum with unusual facility; if your patient have been in labour for a length of time, the waters being discharged, and the parts relaxed, and the head not descending; if the cranium, on examination, be found to be intumescent, the margin of the one parietal bone lying over the margin of the other, you may then be pretty well satisfied, that the pelvis is too small. By the difficulty of previous labours; then, by the unusual facility with which the promontory may be felt; by the failure of the descent of the cranium after strong efforts; by the swelling of the scalp, and the overlapping of the parietal bones, coarctations may, in general, be detected, without the help of those pelvimeters which were formerly mentioned, though these instruments are not to be despised.

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of the little finger touching the back part of the symphysis pubis, and the first finger placed against the promontory of the sacrum.

3. The third mode is that which I myself adopt, and which I would strongly recommend to you, viz. that you should introduce two fingers of the left hand within the vagina; that you should place the fore part of the first finger exactly behind the symphysis pubis, and carry the tip of the second against the promontory of the sacrum. In a common-sized pelvis, there is little difficulty in reaching the promontory, by stretching the fingers in this way; and we are enabled to ascertain by the distance between them, the exact dimensions of the pelvic brim. We may withdraw our fingers in the same position, and measure off the space between their extremities on the first finger of the right hand, as with the limbs of a pair of compasses. If you please, you may follow out the practice, I pursue, still farther. I always carry about with me a female catheter, which no obstetrical practitioner should ever be without. Upon this catheter I have marked, in very faint lines, inches and half inches, and I can measure the exact diameter of the pelvis at the brim, by applying this little instrument to my fingers. It is not difficult to accomplish this mode of examination, even when the head is partly engaged in the pelvis, because the protruded portion is situated between the two fingers, and we have no trouble in passing one before and the other rather behind it; it is by far the easiest mode of the three. Where there is a small pelvis, there is no difficulty whatever; and where the pelvis is about the common size, or a little below it, there is less than in either of the other methods. *Dr. F. H. Ramsbotham's Lectures.*

* See "Means of ascertaining the Kinds of Pelvis," p. 17.

DIVISION OF THESE LABOURS.

The laborious labours, which thus result from deficiency of room among the bones of the pelvis, are usually divided, in my own practice, into *three* varieties:—the first consisting of those cases in which the pelvis is so highly contracted and distorted, that the head does not descend into the pelvis at all;—the second, comprising those more frequent cases, in which the head comes down among the bones of the pelvis, and is there incarcerated, so as neither to advance nor recede;—the third, comprehending those cases which are of all the most common, and where there is just that degree of contraction, which prevents the descent of the head into the pelvis, the cranium coming down but a little way within the superior aperture.

LABOURS WITH THE HIGHEST DEGREES OF CONTRACTION.*

You may be in practice for a length of time without meeting

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* In cases of contracted pelvis, our Gallic neighbours sometimes have recourse to dividing the symphysis pubis, when the infant is alive, an operation not admitted into British obstetricy.

In extreme cases of deformity, the instrument called *terebellum*, or *cephalatrobe*, by the present Baudelocque, or the instrument of Professor Davis, will be used with advantage.

When the sacro-pubic diameter measures only two inches and a half, the French practitioners advise the Cæsarian operation—but under the same circumstances with us, craniotomy is preferred. *Dr. Ryan.*

To effect the complete and safe delivery of the fœtus, in cases of extreme difficulty, and especially where the crotchet proves inefficient to bring away the cranial bones, without danger to the mother, our distinguished countryman, Dr. Davis, has invented an instrument, which he calls the *osteomist*, or *bone-pliers*. Thus in his own language, speaking of the failure of the crotchet, and the necessity of force, in cases of extremely contracted pelvis, he remarks, "I am happy to feel myself in a situation to offer a safe substitute for the exertion of inordinate force in the treatment of these deplorable cases; not only without contracting the limits of our art, but compatibly with a considerable extension of its power. The expedient I allude to consists in the application of a simple, but very effectual contrivance, for effecting a much greater reduction of the fœtal skull than has hitherto been attempted in the practice of modern times. It is, indeed, a power, by which any portion of the fœtal skeleton, presenting at the brim of a contracted pelvis, may be broken down into small fragments of about half an inch in diameter, with the most perfect impunity to the structure of the parts of the mother concerned in the operation. The instrument by which this is to be done, I call the *osteomist*, or *bone-pliers*. It is made of solid and well-tempered steel; its cutting ends are

with a single instance of the first variety of laborious labour; namely, that case in which you have the highest degree of contraction, so that the head cannot enter the pelvis at all; now and then, however, such cases must occur to you, and one or two have

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worked into two long and fenestrated oval rims, of unequal size, but of nearly equal strength. The smaller is of a size to enter into, and to fit closely within the parietes of the larger. The mutually adapted parts of each, being formed into a continuous oval edge, they become competent, when brought together, and firmly applied to their object, to exert a prodigious power upon a portion of bone placed within their grasp. The handles are of great length, in proportion to the parts anterior to the joint; and, being of sufficient strength to be perfectly inelastic and inflexible, their power must be deemed equal to the full length of their leverage, multiplied by the muscular force employed in using them. It is evident that the employment of any inordinate force of attraction with the crotchet, may, almost in all cases whatever, be happily and certainly avoided. One or two sections taken out by the osteotomist from the basis of the skull, which is by far the most bulky part of the fœtal cranium, will generally have the effect of putting an end to all difficulty. In cases of greater confinement, a few additional sections will, perhaps, be required to be made, in order to give a sufficient degree of facility to the after-part of the operation. I take it for granted, that wherever there may be sufficient space to admit of the introduction of this instrument, together with the point of an index finger, to feed it with successive purchases of bone, it will be practicable to effect, and therefore prudent to attempt, the delivery by the natural passages. There are few pelves, even in large collections of distorted ones, with superior apertures so small as not to furnish from between an inch and an inch and a half of space in the direction of their conjugate diameters; or, at least, of antero-posterior diameters across some part of their brim. In any such cases, I should think it my duty to avail myself of the use of the osteotomist, and to undertake the delivery by the natural passages.

The cases which form the objects of treatment with this instrument, are of two kinds; first those in which it may be used with advantage to facilitate delivery with the crotchet, and simply to supersede the necessity of much pulling with that instrument; and, secondly, cases of so much confinement and distortion of the pelvis, as must render delivery by the natural passages, without the assistance of some kind of osteotomist, impracticable.

If, indeed, I am not greatly overvaluing the power of this instrument, it will not only enable skilful operators to effect deliveries in cases of moderate distortions with much more facility to themselves, and proportionally less danger to their patients, than heretofore; but it will also have the effect of reducing, almost to zero, the necessity of having recourse to that last extremity of our art, and the forlorn hope of the unhappy patient, the Cæsarian operation. In this country it is well known, that, with one exception (for I see no good reason for disputing Mr. Barlow's case), the Cæsarian section has uniformly failed in the more important part of its object, that of preserving the most valuable life of the mother, whilst in France and Germany, where it has been most frequently performed, its fatality, however variously reported by its friends and foes, has been universally acknowledged to have greatly exceeded in frequency its happy results. Any suggestion, therefore, for superseding the necessity of so formidable an operation, or even for greatly reducing the frequency of that necessity, seems entitled to the attention of the profession; and that, indeed, is all that I have at present a right to claim in favour of the osteotomist. *Dr. Davis's Elements of Operative Midwifery.*

fallen under my own notice. In the extremer difficulties, the pelvis may be so much contracted, that even the os uteri cannot be reached by the finger. Should it fall to your lot to operate in laborious labours of this kind, in order that you may decide rightly, I would advise you, by all means, to procure the best advice in the neighbourhood. Now, should it appear on consultation, that delivery by the natural passages is impracticable, and that the Cæsarian delivery is required, in accordance with principles already explained, it is obvious, that the sooner the operation is performed, the better; for where it is performed early, there is a fairer chance of saving the child, and for the woman herself, there are better hopes of recovery.

Again, in those cases of higher distortion, provided embryotomy be thought of, and the child is to be abstracted by the use of the perforator, averse as I am to an operation so dreadful, I must still maintain, that the sooner we perforate the better; nay, in the very commencement of the labour, if it be perfectly obvious that embryotomy must at last be adopted, the operation becomes justifiable. By embryotomising early, you secure the advantage of operating, while you are yourselves fresh, and not exhausted from long attendance, the woman herself being in full spirits and vigour; besides which, you have it in your power to leave the head in the pelvis for hours after it has been laid open by the perforator, so that it softens and putrifies, and readily separates into different pieces; a condition which materially facilitates the delivery.

In these cases of extreme difficulty, you may ask, how is it that we are to decide whether the Cæsarian operation, or the operation of embryotomy, should have the preference, for the two practices are very different? To my remarks, comprised in a previous section, I must again refer you.

LABOURS WITH THE LOCKED HEAD.

There is yet a second variety of laborious labours which you must now and then meet with in your practice, I mean that variety

in which the head, pushed down among the bones of the pelvis, becomes impacted there, so as to constitute that kind of case which is familiarly denominated the *locked* head.* In these cases where the head is incarcerated, great danger arises in consequence of the strong and permanent pressure which it makes on the softer parts, and contusions, inflammations, suppurations, and sloughings of the mother, not to mention the death of the child, may all of them be the result. Here, too, I may notice especially, that owing to this pressure on the pelvis in front, the bladder may be injured, great accumulations and disruption ensuing. Under these accumulations of urine, too, even where no rupture occurs, acute inflammation, or chronic disease, may be the result, and the patient may be irrevocably injured, or perish in consequence. Left to themselves, therefore, I look upon these incarcerations as properly ranging among the most dangerous deliveries with which we have to contend, and yet, though dangerous, when thoroughly understood, they may be managed with perfect facility.

If you find the head among the bones of the pelvis, and firmly impacted there, you will be led to consider what are the steps to be taken, in order to render the delivery secure. Now, in cases of this kind, women are sometimes delivered by the natural efforts,

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* When the head has advanced some distance into the pelvis, and cannot proceed farther and when it is immovable except upward in the pelvic cavity, it is then said to be *locked*, or *impacted*. Baudelocque admits but of one general species of locking, and that is, where the head is fixed by two points of its surface diametrically opposite each other; this species he divides into two varieties; 1st. Where the head is jammed with its greatest length between the pubis and the sacrum; and, 2nd, Where its thickness cannot pass, owing to a contraction of the pelvis. In the first case, it is the forehead and occiput which are in contact with the inner circle of the pelvis; and in the second, it is the parietal protuberances; this latter is the most rare. Whenever the head becomes locked, it acquires the form of a wedge; or, as La Motte finely illustrates it, by comparing it to the key stone of an arch. *Dr. Dewees.*

The immobility of the head is a pathognomic sign of its being locked, but after it has become fixed, other symptoms arise, which, if they do not characterize this situation, are sure always to accompany it—such as a swelling of the hairy scalp of the child; a thickening of the os uteri; an intumescence of the vagina and internal parts. These symptoms do not always declare a locked head, but a locked head is never without them. These cases are always serious to both mother and child; the mother is exposed to inflammation, sloughing, or gangrene, and the child to almost certain death. *Dr. Dewees.*

and sometimes by the assistance of the tractor, forceps, or perforator. So that it comes to be a point of consideration whether we ought to have recourse to the use of the instruments, or whether we ought to rely upon the natural efforts? In deciding this question, I should myself be guided principally by that general rule, or canon, which I have already so often prescribed; and if the woman had not been in labour for twelve or four-and-twenty hours, and if no dangerous symptoms were manifesting themselves, I should then commit her to the natural efforts; but if, on the other hand, I found that dangerous symptoms were appearing, or, independently of these symptoms, if the patient had been twelve or four-and-twenty hours in strong labour, the head making no progress, I should then make trial of my tractor and forceps; if, lastly, these instruments failed, or if dangerous symptoms were appearing, or if, independently of these symptoms, the patient had been in labour twenty-four or six-and-thirty hours, I should then deem myself justified in having recourse to the perforator.

There are some practitioners, who are guided by a very different principle, too valuable to be neglected; I mean, the degree of compression which the head is making on the softer parts: and if the head is among the bones, and if, upon examination, it appears that it is very firmly locked there, so that the finger may not be insinuated between the cranium and the symphysis pubis, a prompt delivery is recommended; but, on the other hand, if, on examination, it is obvious that the fingers, though not without difficulty, may be passed between the bones and the cranium, they wait for two, four, or six hours, a longer or shorter term, according to the degree of pressure. Now, I could wish this rule to operate influentially upon your practice, though you may still adhere, in the main, to the general maxim prescribed. If you find that the head is but loosely incarcerated, you may wait with more confidence; but if it so happen, that the head is more firmly impacted between the front and back of the pelvis, you must watch more vigilantly for the symptoms indicative of contusion; and you must, too, promptly have recourse to delivery, as soon as the first marks of

injury appear. There is, I suspect, little ground for apprehension, while the pulse remains below one hundred; a pulse more frequent, though not necessarily dangerous, ought, in all cases, to awaken and alarm. Beware of overlooking the indications of injury from compression; beware of delaying the delivery too long.

LABOURS WITH A SLIGHT CONTRACTION.

The third variety of laborious labour, arising from want of room, of all others the most common in its occurrence, and which requires some little dexterity in its management, is that in which you have a slight narrowing of the brim, and where the head is prevented from thoroughly entering the cavity, being pushed a little way only into the superior aperture. Now, in deliveries of this kind, it not unfrequently happens, that the child is expelled by the natural efforts, notwithstanding the coarctation, and therefore these efforts ought to be fairly tried; for it does not follow, because you have a narrow pelvis, that you are officiously to interfere with instruments, without further consideration. But it not infrequently happens, when the natural efforts are fully and fairly tried, that these efforts are inadequate to the expulsion of the fœtus, and in such cases the tractor or forceps become necessary, or, these failing, the perforator.

In these cases, by some practitioners, turning is recommended, a practice which I must reprobate in a decided manner. It is true, that where there is a narrowing at the brim of the pelvis, a skilful operator might, now and then, introduce his hand, and bring away the fœtus by this undesirable operation; but to me, as a general practice, it seems to be highly improper; first, because in performing it, you must carry your hand into the uterus, a noperation always to be deprecated, and, secondly, because when you have turned and brought down the fœtus, as to its limbs and trunk, the abstraction of the head and shoulders must still be attended with difficulty, for the narrowing of the brim remains, and by endeavour-

ing to extract the cranium in this manner, you may detach the head from the body. Turning, therefore, I cannot approve.* In narrowings at the brim, it is better, as a general practice, either to suffer the woman to be delivered by the natural efforts, or to have recourse to the instruments already enumerated, viz. the tractor, forceps, or perforator.

Again, it may be asked, granting that these two modes of delivery are to be preferred, how are we to decide whether we ought to commit the delivery to the natural efforts, or have recourse to the embryospastic instruments? Why, to this, as to many other emergencies, the general rule will apply; if the woman have not been in labour for twelve or twenty-four hours, and if no dangerous symptoms are appearing, it is better not to interfere; but if, on the other hand, the woman have been in labour for twelve or twenty-four hours, or, if dangerous symptoms are manifesting themselves, the pulse rising, the bladder closing, inflammation of the abdomen appearing, then we may, properly, have recourse to the lever or forceps; and further, if these instruments fail, or if dangerous symptoms appear, or, independently of any dangerous symptoms, if the woman have been twenty-four or six-and-thirty hours in labour, we are again justified, though unwillingly, in having recourse to the perforator.

What I stated to you in a former part, is well worth remarking here, namely, that in those instances where you have laborious

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* The operation of turning is one always of hazard to the child, even in a well-constructed pelvis; à fortiori, that risk must be greater in a restrained one. For turning to be successful, even under the best management, it will require, that there shall exist a proper relation between the diameters of the child's head and those of the pelvis; that the waters shall not have been too long drained off; that the breast of the child and cord shall not suffer compression; that the head shall not be too long detained, and the neck not suffer too much extension. To obtain these advantages, requires no very common combination of favourable circumstances; therefore should deformity exist, leaving less than three inches and a half in the antero-posterior diameter of the superior strait, we need scarcely look to this operation for success as regards the child; and when resorted to under such circumstances, it must only be considered as a remedy for the safety of the mother. *Dr. Dewees' Midwifery.*

labour, from a narrowing of the brim, the head will sometimes mould itself, and thus come away. In the morning you may apply your forceps, but cannot extract the cranium; if no dangerous symptoms manifest themselves, wait till the evening, and then try the forceps again; for probably the head, moulded by compression and the pains, will have so adapted itself to the passage, as on the second application of the forceps, a living fœtus may be abstracted.

SECTION XLVII.

LABORIOUS LABOURS FROM RIGIDITY.

Laborious labours are sometimes produced by a cause very different from a mere deficiency of room among the bones of the pelvis, or an unfavourable position of the head, I mean, the rigidity of the softer parts*; and of all the laborious labours which have fallen under my care, these labours of rigidity are, I think, by far the most unmanageable, and may therefore be looked upon as very undesirable undertakings for those who are commencing their obstetric career.

SYMPTOMS AND EFFECTS OF RIGIDITY.

Even when women bear their first child, early in life, the labour

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* Writers upon midwifery have but very imperfectly considered the rigidity of the softer parts as a cause of difficult or tedious labour. It is decidedly the most frequent cause; and it may occur in those we regard as strictly natural, as well as those which are confessedly preternatural; and when it does occur in the latter, it adds most to its difficulties, while it renders the former tedious and terribly painful. Rigidity may arise, 1st, in the mouth or neck of the uterus, from the circular fibres of these parts maintaining their power inordinately long, but not inflamed; 2nd, this condition may be attended with inflammation; 3rd, it may arise from previous injury done the parts, by either mechanical violence, or inflammation and its consequences; 4th, it may happen from a relative cause, as the disproportionate powers between the longitudinal and circular fibres; lastly, it may proceed from the too powerful exertion of the tonic contraction of the uterus, especially of the fundus and body. *Dr. Dewees.*

of rigidity may now and then happen; but such rigidities are more especially likely to occur in those cases where women marry at a later period, say about the age of forty, and where, too, they have enjoyed a vigorous health, previously undisturbed by those floodings, or leucorrhœas, by which the softer parts are so effectually relaxed. When rigidity exists, provided we are habituated to investigations of this kind, it may, by examination,* be very easily detected, for, instead of yielding as in ordinary cases, the vagina feels firm, and dry, and contracted, insomuch that you have no small difficulty in passing the finger to the mouth of the uterus, also, on examination, found to be firm and in good measure closed. In these cases of rigidity, under the best management, contusions, inflammations, sloughings, suppurations, and lacerations of the perineum, more especially, are liable to occur; and sometimes there are convulsions, and sometimes retentions of urine. Almost invariably the child is born dead, and not very uncommonly the woman herself is ultimately lost, so that in the commencement of your obstetric practice, more especially, I would advise you, by all means, not needlessly to expose yourselves to difficulties so unmanageable.

MEANS OF OBTAINING RELAXATION.

In the labours of rigidity, it should be our first indication to

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* Rigidity of the os uteri, though sometimes a cause of difficult labour, is natural to some women, and especially those who are somewhat advanced in life when they begin to bear children; also with the first child the parts dilate more slowly than in subsequent labours. Rigidity of the os uteri forms one of the most painful labours, accompanied with excruciating pains in the back. It is also attended with inclination to vomit and to sleep, both which symptoms are in themselves favourable; for sleep restores the strength of the body, while the vomiting strengthens the bearing down, and assists in relaxing the part.

There are two kinds of rigidity of the os uteri; the one in which the state of rigidity resembles inflammation, in being tender to the touch, and its hardness almost reminding us of a board which is bored through the middle with an auger; the other presenting a very different feel; it is more apt to give way under the finger, is of a pulpy substance, and in some measure resembles the intestine of an animal filled with water, and drawn into a circle. The second kind, though not so rigid to the fingers as the first, is longer in giving way. *London Practice of Midwifery, by Dr. Jewel.*

produce, if possible, a laxity of the softer parts; but, unhappily, we are in possession of no very effectual means by which an indication of this kind may be accomplished.* When women have large uterine bleedings, these generally produce much relaxation of the passages; hence, in these labours of rigidity, we are advised by some to take a hint from this observation, and to make free use of the lancet. By some it has been recommended, that a month before delivery, ten or twelve ounces of blood should be taken away; that a fortnight before delivery, we should take ten or twelve ounces more; and, more especially, when the delivery itself commences, if the woman is robust, we are advised to bleed more copiously, abstracting twenty-five ounces, more or less, according to the circumstances of the case. Sometimes thirty, sometimes even forty ounces have been drawn, a bold practice in these cases, however, the more safely admissible, because the patients are frequently firm and robust. To obtain the full effect from the relaxing powers of depletion, you ought, by all means, to perform your bleedings in the commencement of the labour; and this promptitude clearly becomes justifiable, provided it is obvious, from the degree of rigidity, that to venesection we must ultimately have recourse.

The softening power of fomentations in these cases is unhappily but small; relaxation of the os uteri and the upper part of the vagina cannot, perhaps, in any degree be produced in this manner; but relaxation of the external parts, the labia pudendi and perineum, for example, may perhaps be accelerated somewhat; and these relaxants, therefore, ought by no means to be neglected. To take a seat over steaming water can, I conceive, be productive of but small benefit, though it may amuse the mind somewhat; in some cases, perhaps, inspiring confidence, at the same time that it inflicts

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* The French apply extract of belladonna to the affected parts, to dilate them, a practice disregarded in this country. Chaussier, Conquest, Lachapelle, and Velpeau, speak in favourable terms of it. It is prepared by mixing a drachm of the extract with an ounce of simple cerate or adeps, about the size of a filbert of which is rubbed on the circumference of the neck of the womb. It is said to act in the same manner as on the iris, and often with surprising promptitude. *Dr. Ryan.*

no injury on the patient. To use these emollient relaxants with full effect, however, you ought to be supplied with a large quantity of warm water and flannels, and for five or six hours together the vulva should be fomented, so as to mollify, as much as may be, before the head descends upon the external parts. For applying these fomentations, the most obvious season is the close of the labour, when the child, approaching the outlet, lies near the perineum and the labia pudendi. It is well, however, to begin the fomentations before the head is descended, in order that the parts, softened by your operations, may be brought into a state of readiness before the cranium begins to emerge.

In the laborious labours of rigidity, the warm bath has been recommended, a remedy more commodious in the practice of the hospital than of the private chamber; but, really, as those parts are not constricted by muscular spasm, and as they are not likely to become relaxed in consequence of faintness, I do not think that much advantage may be derived from the use of the warm bath, though, should circumstances conduce, it may be tried. Tobacco injections are scarcely adapted to the nature of the difficulty, and they are not without their dangers. Very powerful they certainly are in relaxing the muscular fibres, but not equally powerful in producing that relaxation which laborious labours, arising from rigidity, require. For myself, in endeavouring to effect the relaxation of the softer parts, fomentations and bleedings are the remedies on which I principally confide.

RELIANCE ON THE NATURAL EFFORTS.

In these laborious labours, you must not forget, that not infrequently women are ultimately delivered by their natural efforts, and perhaps by their natural efforts most safely, although they may have been one or two days in labour, the pains, during the whole of this term, having been more or less severe. In these cases, it is the office of the accoucheur to watch his patient diligently, in order that if any bad symptoms should manifest themselves, and those symptoms should become alarming, he may immediately have re-

course to his obstetric instruments, before any serious injury have been inflicted. One point I particularly recommend to your recollection, and that is, the numeration of the pulse ; if it is not above one hundred and ten, all is safe, as far as the mother is concerned ; if it rises to one hundred and twenty or one hundred and thirty, or one hundred and forty in the minute, I am not prepared to say that the mother must therefore do ill, but there certainly is much ground for apprehension.

BE CAUTIOUS OF THE PERINEUM.

In cases of laborious labour, resulting from rigidity of the softer parts, you must, too, be very cautious of the perineum, for when the cranium emerges, this part is much exposed to contusion and laceration, and very extensive sloughings or rupture may be produced. To prepare the perineum, you may bleed and foment, as before recommended ; and, to prevent laceration, you may proceed as follows :—The woman, lying on her left side near the edge of the bed, with the right hand you bear upon the cranium, supporting the perineum with the left, and wait in expectation of the uterine action. Now, if the parts are lax, and the head advances, and, examined by the touch, the perineum seems to be in no danger of disruption or contusion, though the hands may still be kept in readiness, it is unnecessary to interfere ; but if the head, bearing too rapidly forwards, a rending of the perineum is to be apprehended, you may then, with the right hand, resist the advance of the head, while you effectively restrain the perineum by the counter pressure of the left. During the emersion of the head, voluntary bearing is frequently recommended ; but in these cases it is obviously improper. It is unwise to resist the passage of the head longer than the security of the perineum requires ; for I am not sure, that in preserving the perineum we are not at the same time endangering a rupture of the uterus. On these occasions you are, as frequently happens, interposed between two dangers, and it requires some little nicety to determine when you ought to admit or resist the passage of the child.

INSTRUMENTAL ASSISTANCE.

If the natural efforts fail in laborious labours, obstetric instruments must obviously become your next resource; but in these labours of rigidity, I should by all means dissuade you from the use of the embryospastics, the tractor for example, or the forceps. That a gentle trial of them may now and then be justifiable, I do not venture to deny; such trials I have myself ventured; but, on the whole, I distrust the practice. Owing to the rigidity of the softer parts, use the tractor or forceps as gently as you may, there is almost always a tendency to sloughing and bruising of the passages; the more to be regretted, as the fœtus, after all, is generally still-born. Under all circumstances, if you must have recourse to instruments at all, you had better, at once, have recourse to the perforator. Now, in deciding whether instruments are or not required, you may be guided by that general rule to which I have so often adverted. If there are no dangerous symptoms, and if the woman have not been in labour for twelve or twenty-four hours, after the discharge of the waters, instruments are not justifiable; but if dangerous symptoms are apparent, or if the woman have been in strong labour for twenty-four hours, or a longer term, the perforator may be necessary, and therefore justifiable.

CAUTIONS.

Do not administer ergot or other stimuli in these cases, they are injurious; in the laborious labours of rigidity, stimulants are not required. Pains you do not want, but relaxation. Do not suffer your patient to be in labour too long; a great and fatal error; the issue after all is a dead child, and contusions, inflammations, and sloughings of the maternal parts are apt to ensue. Do not forget the caution which I have given you respecting the use of embryospastics: contusion, laceration, inflammation, suppuration, collapse, may all be the results of forgetfulness here. Let your tracheal pipe be in readiness. After-floodings are probable.

SECTION XLVIII.

LABORIOUS LABOURS FROM DIFFERENT CAUSES.

It is not to the agents we have just considered that the difficulties and prolongations of these labours are exclusively to be ascribed; of laborious labours there are other causes, real or reputed, and to a brief consideration of these we will now proceed.

THICKNESS OF THE MEMBRANES.

Sometimes the membranes of the ovum are extraordinarily unyielding; firm, for example, as the bullock's bladder, so that though the os uteri is wide open, and the bag of water is bearing forth into the vagina, the membranes, notwithstanding, remain unbroken, and in some rarer cases the labour is prolonged for one or two days in consequence. A case of this kind never fell to my own lot, and I suspect its occurrence to be rare.*

To rupture the membranes must be easy. If more gentle measures fail, you may lay open the membranes in the same manner as you would craniotomise; but before you have recourse to an instrument of this kind, never, without necessity, to be introduced into the vagina, I would advise you by all means to break through the membranes, if practicable, by the mere pressure of the finger. Pains supervening, the bag descends and becomes tense, and the womb bearing down in one direction, you may carry one or two fingers into the vagina, and bear against the membranes in the

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* Dr. Orme, known and respected as an obstetric teacher, seemed, according to his own showing, to have encountered the difficulty under consideration; the os uteri had been long dilated, and the membranes had been forced into the vagina, but the delivery being delayed, his assistance was requested; "on entering the chamber," said he, "I heard the membranes give way with report, and immediately the fœtus and the water escaped together. Examination after the birth of the placenta proved the toughness of the membranes, and demonstrated pretty clearly the nature of the difficulty." *Dr. Blundell.*

other direction, and under this action and counteraction, the rupture will seldom fail to be accomplished. Should this expedient fail, you may take a penknife to notch your nail, and communicating in this manner a serrated edge to the finger, you bring it to bear on the unyielding membranes, and, under gentle laceration, they readily give way.

Be careful, however, to recollect here, that the bladder becomes overcharged with urine, and may be pushed down behind the symphysis pubis below and before the child's head, or it may, perhaps, sometimes be forced into the same position by the action of the membranes, where they are firmer than ordinary. Do not, therefore, lay open the bladder in mistake for the membranes. In an unguarded moment, you may mistake the protruding bladder for the membranes, and, in such a case, if you have recourse to the perforator, you may lay the bladder open instead of the involucra; hence one among other reasons why, in this operation, the perforator ought not to be heedlessly employed. Disruption of the membranes can never, perhaps, be required in these cases of unyielding involucra, unless the os uteri be fully expanded previously, and the bag be forced down into the upper half of the vaginal cavity.

LENGTH OF THE FUNIS.

The umbilical cord * is sometimes unusually long, of three or four feet, for example, and sometimes it is equally remarkable for its brevity. Brevity † of the cord is said to give rise to laborious labours, but of this I much doubt. It was the opinion of the ancients, that the fœtus, not expelled by the action of the uterus,

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* See "Observations on the Funis Umbilicalis." p. 106.

† Baudelocque, La Motte, and others supposed, that when the cord was only six or eight inches in length, it impeded the descent of the head, if the placenta was attached to the fundus uteri; but this opinion is ill-founded. *Dr. Ryan.*

made its way into the world by its own efforts. Holding this opinion, they were led to infer, that where the umbilical cord was short, the fœtus would be retained; being tethered, as it were, to the sides of the uterine cavity. From the ancients, then, I apprehend has been derived this opinion of impeded labour, produced by brevity of the cord, but the foundation of this opinion appears to be erroneous. In modern times it has been proved demonstratively, that it is not by its own efforts that the fœtus makes its escape. The dead fœtus, *cæteris paribus*, is born as easily as the living. The child is expelled by the contraction of the womb, and these contractions of the uterus, I have myself had frequent occasions to feel, when the hand has been introduced for the purpose of removing the fœtus by turning. Hence, when the child descends, the uterus descends also, as it is the movement of the one that gives motion to the other; therefore the distance between the uterus and the umbilicus, as the labour advances, must always remain pretty equal; nor will the shortness of the cord, I conceive, make itself felt in the labour, till the body of the fœtus have escaped from the vagina. Be it remembered also, that if the cord resisted the progress of the fœtus, the placenta would become detached under the strong action of the uterus, and a large flooding ensue in consequence.

ANCHYLOSED SACRO-COCCYGEAL JOINT.

It is not frequently that the *sacro-coccygeal joint* is *anchylosed*,* yet this accident now and then occurs.† When the coccyx is anchylosed at right angles with the sacrum, encroaching on the outlet of the pelvis, it may materially obstruct the passage of the head; and, in some rarer cases, laborious labour, demanding the administration of instruments, may be produced in consequence.

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* Anchylosis:—From *αγκυλωσις*, *agkulōsis*, and that from *αγκυλομαι*, *agkulomai*, to bend; when a joint is bent and cannot be extended.

† In the Obstetric Museum, I have a very beautiful specimen of this anchylosis, the sacrum and coccyx being consolidated into one bone. *Dr. Blundell.*

That such is the nature of the obstruction, you are led to surmise, by finding, when the head is at the outlet, and cannot be transmitted, that it bears very forcibly on the coccyx and pubes, and the nature of the case once suspected, you pass your finger internally upon the surface of the coccyx, and externally laying the thumb in apposition with the finger, you feel the bone through the softer parts, and easily perceive its immobility. A case of this kind, I should be inclined to treat on the general principles already so often reiterated. And, first, I should give a fair trial to the natural efforts for twelve or four-and-twenty hours, if no dangerous symptoms appeared; and if twelve or twenty-four hours passed away without delivery, or if dangerous symptoms occurred, I should then have recourse to the tractor or the forceps; or should dangerous symptoms become manifest, or without the occurrence of these symptoms, should the labour be prolonged beyond six-and-thirty, or eight-and-forty hours, after the discharge of the waters, I should then have recourse to the embryotomic instruments, provided the embryospastic had been fairly tried without success.

RIGIDITY FROM AGE.

When women bear their first child late in life, labour, as I have already observed, becomes more or less laborious in consequence. In women, however, who are advanced to the middle period of life—the fortieth year, for example, it will not be necessary, under ordinary circumstances, to have recourse to instruments. Should no symptoms of danger become manifest, give a fair trial to the natural efforts for twelve or four-and-twenty hours after the discharge of the liquor amnii, and the fœtus will, I think, not infrequently be expelled.

BULK OF THE FŒTUS.

Like the adult, the fœtus, too, at full age, may be unusually

large, and this extraordinary bulk may become a cause of laborious labour. Instead of weighing about seven pounds only, the fœtus, at birth, may weigh twelve, fourteen, sixteen pounds, or more than this. I have myself seen a woman of middle stature, who produced remarkably large children, one of which, without clothes, was found, as I was assured, to weigh seventeen pounds at birth. Now, in these cases, generally when the children are extraordinarily large, the head being large also, unless the pelvis be of more than common capacity, difficulty of parturition ensues; but this difficulty, be it observed, is to be managed on the same principles as those difficulties which result from coarctation of the pelvis. Essentially, indeed, the two cases are the same; in both, disproportion is the cause of the obstruction; but, in the one case, this disproportion arises from the contraction of the passages, and, in the other, from the overbulk of the cranium.

HYDROCEPHALIC HEAD.

You will meet with cases, though rarely, in which the head is *hydrocephalic*,* half a pint, or more, of water accumulating within the cranium. Now, in these difficulties, it has been proposed to turn the child, an operation of which, as you may infer from cautions already given, I can by no means cordially approve. In one case of hydrocephalic labour, which has fallen under my notice, the practitioner, with the best intentions, carried his hand into the uterus, but a fatal rupture of the genitals was the consequence. To the exclusion of this formidable operation, therefore, I would advise you to adopt, what to me appears to be a safer practice, namely, confiding the birth to the embryospastic, the embryotomic instruments, or the unassisted efforts of nature.

The head, when hydrocephalic, readily yields under pressure; and sometimes by disruption, and sometimes by an accommodation

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* Hydrocephalic:—The adj. of *hydrocephalus*; *ὑδροκηφαλος*, *udrokēphalos*, from *ὑδωρ*, *udōr*, water, and *κηφαλη*, *kēphatē*, the head; dropsy in the head.

of its form and bulk, it will be found, without the aid of instruments, to make its way into the world. Should no dangerous symptoms be observed, therefore, give a fair trial to the natural efforts, applying the lever, or the forceps, should these efforts fail you; but should the softness of the head unfit it for the action of these instruments, then, if delivery be necessary, betake yourselves to perforation; a large opening would not be required, a small puncture would discharge the waters. With this disease, life is scarcely desirable.

DESCENT OF THE HEAD AND CORD TOGETHER.

In labours, laborious or not, it sometimes happens that the head and cord descend together into the pelvis; the simultaneous descent of these parts being, on the whole, not uncommon. When the cord is in the pelvis, together with the head of the fœtus, not infrequently the child perishes, stifled in consequence of the compression of the funis, and the interception of the placentar changes at a time when respiration cannot be performed; and this more certainly if the labour be retarded by the rigidity of the parts, the position of the fœtus, the bulk of the cranium, the coarctation of the passages, or any of the other causes already enumerated. Now, it is desirable, if possible, to secure the child against these dangers; and it was first suggested to me, by one of my own pupils, that a piece of sponge, about the size of four fingers, very soft and fine, should be insinuated into the uterus, and left there, in such a manner as to carry back the descending loop of cord, and preclude its return into the vagina. Should much cord descend, it could hardly be replaced in this way. A smaller descent may be remedied. I have myself tried the practice with success. If it can be accomplished without violence, it is, I think, to be recommended.* The inexperienced, however, and the awkward, had better refrain.

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* To push the cord back and to retain it, various instruments have been invented and proposed. By some we have been advised to tie the funis. Osiander proposes to lodge the cord in the midst of a sponge, and replace it. *Dr. Burns.*

In some rare cases, to be looked upon as anomalies, should the pains remit, you may carry the cord and the hand into the cavity of the uterus, provided the parts make no resistance; and looping the cord upon some part of the fœtus, you may thus prevent its reiterated descent. As a general practice, however, this is not to be advised, as the introduction of the hand is always attended with more or less risk of laceration. Should these measures fail us, we must then, I believe, be contented to place the cord in the most capacious part of the pelvis, directing the patient to make the most of her pains by co-operative voluntary urging, the birth of the head being accelerated cautiously, by the tractor or the forceps, provided we are dexterous in the management of these instruments.

DESCENT OF THE ARM WITH THE CORD.

With the cord it sometimes happens that the arm descends, the birth becoming obstructed, more especially if there is a large head, or a contracted pelvis. By the hand or the sponge, as before explained, the arm may sometimes be replaced; but, should these attempts fail, the delivery may be completed by instruments, the embryospastic, or the embryotomic; or the birth may be confided to the unaided efforts of the uterus; and in determining in which of the three modes the birth should be completed, we must, I conceive, be guided by the principles already prescribed.*

CONCLUSION.

Of laborious labours it is not to be forgotten, that though they sometimes arise from one cause only, yet, however, they are occasionally referrible to the co-operation of several; thus, rigidity of the parts may concur with unfavourable position of the fœtus, or both may be met with where there is a coarctation of the apertures of the pelvis.

* Burns and others, are in favour of turning in these cases, where the os uteri is sufficiently dilated, and other circumstances do not forbid it.

SECTION XLIX.

RETENTION OF THE PLACENTA.

In the earlier, as in the latter months, in the laborious and flooding cases, and in natural labours, the placenta does not always escape with the usual facility; difficulties sometimes impede its abstraction, and it may be retained for days, weeks, not to say one or two months.

EFFECTS OF A RETAINED PLACENTA.

Where the placenta in this manner remains in the uterus after the expulsion of the fœtus, occasionally for days together, not a single alarming symptom occurs, so that if you were not acquainted with the history of the case, you would scarcely suspect that the placenta was still lodged in the uterine cavity. It is a great mistake to imagine, because the placenta is lying in the uterine cavity, that the woman must necessarily do ill; and from this erroneous impression I would wish your minds to be liberated. So long, however, as the placenta is retained in the uterine cavity, so long the patient is liable to various symptoms more or less alarming, of which the principal are pains, bleedings, uterine discharges, and constitutional irritation.

When the placenta is retained in the uterus, it will sometimes give rise to cutting, grinding, sawing pains, felt in the back or the front of the abdomen near the symphysis pubis, not to mention the hips and thighs, the pains being very like the first pains of labour, or those latter pains felt after the birth of the fœtus, and which are usually denominated the *after pains*. These pains it is by no means difficult to alleviate by the use of opium, but they are rather to be sought than deprecated, for by these pains it is, or rather by the contractions which produce them, that the placenta is ultimately expected.

LIABILITY TO HÆMORRHAGE.

Under retained placenta, whether in the earlier or the latter

months, and in the latter months, more frequently, the patient is always liable to floodings more or less copious; and, indeed, this is the most dangerous symptom to which she is obnoxious. From my own personal observation, I am prepared to state, that the placenta may lie quiet and inoffensive in the uterus, for one or two weeks together, large eruptions of blood ultimately occurring notwithstanding; and you may, therefore, set down, among the dangers to which women are always exposed, whether in the earlier or the latter months, but in the latter months more especially, these copious eruptions of blood from the uterine cavity. After what has been said so largely on the subject of floodings, you will not be at a loss as to the management of discharges of this kind. For a fuller exposition of the method of treatment, I must refer you to the principles before laid down; suffice it to remark here, that the only effectual remedy for putting a stop to the discharge, is the removal of the placenta, and, therefore, if a woman is liable, not merely to small shows of blood, but to the larger eruptions, the sooner the placenta, whether by manual operations or otherwise, is, in an easy manner, extracted from the uterus, the better.

FŒTID DISCHARGE.

When the placenta is retained in the uterus, you will sometimes find that the patient remains, in good measure, or entirely, free from any offensive or fœtid discharge; but so long as the placenta is lying in the uterine cavity, so long is she liable to all the effects of its putrescence there; and sometimes the discharges become offensive in a high degree, the chamber, though spacious, becoming infected with the offensive odour, which may, by a delicate sense, be now and then perceived in the adjoining apartments.

Why it is in some cases, that the placenta putrefies rapidly, while, in others, it remains unchanged, I am not able, in a satisfactory manner, to explain, though the subject is well worth investigation; I strongly suspect, however, that the placenta will be found to putrefy much more readily, if it is completely detached from the

uterus, than in those cases in which it continues to adhere to the uterine surface; for detachment from the uterus, seems to imply a consequent extinction of vitality.

Lotions may be found of service here, provided, by means of a long tube syringe, they are thoroughly injected into the uterine cavity. For the performance of this injection, the accoucheur will be found the best operator; and it is desirable, that the fluid be injected repeatedly in the course of the day, unless bleeding, or other symptoms, forbid. Warm water, decoction of bark, or other injections, diluent or antiseptic, may be recommended in these cases. The fluid being absorbed, you bear the syringe in the right hand, carrying the fingers of the left, in the way of a director, to the mouth of the uterus, and then the tube being passed along the finger into the uterine cavity, by the action of the syringe, it may be very completely washed out. After all, however, the only effectual mode of arresting these discharges so offensive, is the abstraction of the placenta, either by manual operation, or the deobstruent remedies, of which I shall hereafter treat; and to this remedy we must ultimately have recourse, should symptoms become pressing, and should other means fail us.

CONSTITUTIONAL IRRITATION.

When the placenta is retained in the uterus, we sometimes have the satisfaction to find, that no active symptoms of constitutional irritation occur, but the woman lies perfectly quiet, her appetite good, her bowels regular, and her general health undisturbed; so long, however, as the placenta remains, so long constitutional symptoms, of the most alarming kind, are likely, sooner or later, to supervene; purgings, vomitings, sweatings, a pulse of one hundred and forty, a cheek of typhoid tint, and a tongue that is brown. Now, I once imagined that these constitutional symptoms might rather be ascribed to violence, used to get away the placenta, occasioning contusions and lacerations of the genitals, than to the mere action of the placenta itself; and the rather, because, having paid a good

deal of attention to this subject, I had noted more than one case, in which the placenta had remained for a long time in the uterus, without a single conspicuous symptom of irritation becoming manifest; but from observations since made, I have been induced to believe, that independently of all manual practice, these irritations may be produced. A girl, in St. Thomas's, aborting about the fourth month, I was requested to see her, when I found that the placenta could not be got away without force and danger; and I deemed it wise, therefore, not to make the attempt. On the fifth day putrid discharges appeared, and, at this time, there was a good deal of constitutional irritation; a cheek flushed, a countenance anxious, a pulse of one hundred and forty, vomiting, purging, and copious perspirations. Urged by the symptoms, I removed the placenta at this time, for it appeared to be pushed some little way into the vagina; all the symptoms giving way very rapidly afterwards, and the girl ultimately recovering. Is the *putrid* placenta alone likely to occasion these irritations? I doubt; for it is a matter of fact, well worthy of notice, not only in midwifery, but in surgical science also, that substances may become very putrid, and yet they may lie in the vagina for a length of time, without occasioning much constitutional irritation.

TREATMENT OF THE PRECEDING SYMPTOMS.

It is, I believe, agreed on all hands, among practical men, that as the woman is always obnoxious to these symptoms, so long as the placenta is retained, it is always desirable that the placenta should be got away. Now the means to be employed for this purpose, are divisible into two kinds; the de-obstruents, as they are called, and those which require active manual operation.

PRESSURE ON THE ABDOMEN.

When the placenta is retained in the uterus, independent of any very active manual operation, we may, sometimes, obtain its expul-

sion, merely by laying the hand on the womb externally, feeling it through the abdominal coverings, grasping it, and thus stimulating its fibres to contract, the placenta being expelled, or, to use a coarse but significant expression, this viscus being squeezed forth by the action of the hand. This is a very simple mode of ridding the uterus of its contents, proper, more especially, where it is retained in the later months; nor is much active manual exertion required for the purpose.

PURGATIVES.

When the placenta is retained in the uterus, whether in the earlier or latter months, we may sometimes ensure its expulsion by the use of some remedy which may stimulate the bowels, as purgatives, for example. Mr. Fagg, a practitioner of experience, informs me, that he has found the injection of senna and salts into the rectum to be of no small use; six or eight ounces of the infusion of senna, with an ounce of salts, formed into an injection, and thrown into the rectum, have, apparently, had the effect of exciting the pains, and thereby accelerating the expulsion of the fœtus; and, on his authority, I recommend the remedy to your attention. The action of the womb may be brought on by the application of cold; not that I should recommend you to advise your patient to plunge her hips into cold water, but you may venture to administer the cold as if you were applying it in flooding cases, sprinkling the napkin, and suddenly and smartly dashing it upon the abdomen and thighs; and perhaps the stimulus of this sudden impulse may cause the womb to contract. I think it proper to mention this, as one of the deobstruents which may be resorted to in these cases; but, after all, it is one that is not to be relied on. Coughing, sneezing, blowing on the back of the hand, not to mention voluntary bearing, may bring on the action of the womb, and these, therefore, may be recommended where deobstruents are required; but of all deobstruents of this kind, the most efficient is retching; the placenta sometimes speedily escaping when the patient begins to vomit. In

the commencement of practice, you may occasionally be at a loss to know how to get the placenta away, not because there really is difficulty, but because you are timid, and very properly so, while yet unexperienced. In these difficulties you very unwisely leave the patient, instead of writing to procure further assistance, and while you are away, perhaps an old woman comes into the room, puts a candle into the throat, excites retching, and liberates the placenta at once. Nor is retching to be despised as a deobstruent —not that I would advise you to nauseate the patient with a candle, but you may insert a feather into the back of the throat, as the emetic is, perhaps, no less efficacious, and is certainly more elegant.

ERGOT OF RYE.

In cases where the placenta is retained, if the *ergot* is at hand, I would recommend you to make a trial of this; not that I have such experience of it in these difficulties, as enables me to state positively that it has much effect; but I have reason to believe, that in many cases, it has been used with advantage. A drachm, coarsely powdered, may be mixed with three ounces of boiling water, to be poured upon it; and this being decocted to an ounce and a half, you may give the patient a table spoonful as a dose, repeating it every twenty minutes, unless you perceive that the action of the womb has been previously brought on.

MANUAL ASSISTANCE.

Besides these deobstruent remedies, and which require but little manual operation, the hand or fingers of the obstetrician may be used with advantage for the removal of the placenta. In the earlier months, perhaps, we may remove the remains of the ovum, by passing two fingers into the vagina; or, if it lie too high to admit of abstraction in this manner, then, if the hand be small, the vagina large, and the parts relaxed, we may introduce the whole hand into the vagina without the risk of tearing, and the two fingers

being carried into the cavity of the uterus, securing a hold of the ovum in this manner by the action of the fingers, you may often at once bring it away. In the later months, also, independently of the introduction of the hand into the uterus, the placenta may sometimes be abstracted, as it often lies down in the vagina; and when it lies there you may lay hold of it, careful not to tear any part. The whole may then be abstracted at once; the mass being diligently inspected afterwards, so as to ascertain that no part has been left behind in the uterus. It very frequently happens, however, in difficult cases, that the bulk of the after-birth is lying in the womb, and you must then, though unwillingly, carry the hand into the cavity of the uterus, where you may first detach it by passing the fingers between the womb and the viscus, and having detached it, you may lay hold of its substance, and cautiously bring it away. Nor is it difficult to perform this operation, where the practitioner has been long in practice, and has the perfect use of his fingers.

RULES REGULATING MANUAL ASSISTANCE.

When the placenta is retained, it sometimes becomes a point of great nicety to decide when you are to operate manually and when you are not. And sometimes my obstetric friends come to me in great perplexity, asking what they are to do; whether they are to leave the patient to her natural powers, to trust to deobstruent remedies, or to interfere manually? I think it may be observed with truth, that it is always highly desirable the placenta should be got away, if it can be withdrawn without violence; because, as I before explained to you, though it may lie in the uterus quiet for a time, so long as it lies there the patient is liable to floodings and other dangerous symptoms. Now, this being the case, I have endeavoured to establish certain principles for my own guidance here, and they are, in few words, the following:—1st. If the placenta be retained, and there is reason to believe, on a careful examination of all circumstances, that it may be removed without violence,

without the risk of bruising or tearing, and if there is no reasonable hope of liberating it by the deobstruent means before mentioned, I then by all means endeavour to remove it manually. 2ndly. On the other hand, if the placenta be retained, and I find the hand cannot be carried up so high as to secure the command of the placenta without the risk of bruising or lacerating, I then leave it in the uterine cavity, not because it is not an evil to leave it there, but because, to leave it in the uterus, is a smaller evil than to abstract it with violence, and we had better abide by the smaller evil, than expose ourselves to the greater evil, that of lacerating, bruising, and killing. And in the third place, if, acting on this principle, I leave the placenta behind in the uterus, which I have sometimes done for days or weeks, and with success, too, I watch the patient diligently during the whole term of retention; and if any alarming symptoms supervene, I again examine; and although I could not before have removed the placenta, I now, perhaps, find that I can abstract it with facility; should the abstraction of the placenta, however, still remain difficult, provided the danger be great, I urge my endeavours to remove it more diligently than before, in flooding cases especially, the most dangerous, and those too, happily, in which the parts are the most relaxed.

In fine, the three rules of practice are these: 1st. Immediately after the birth of the child, when the placenta is retained, provided it can be removed without consequent danger, let it, by all means, be taken from the uterus. 2ndly. When the placenta is retained for days together, and no symptoms of danger appear, examine occasionally, removing the placenta at the time of examination, provided it can be withdrawn, as it were, by a mere touch, and committing the expulsion of it to the natural efforts, provided it cannot be abstracted with facility. Lastly, when dangerous symptoms appear, and the placenta is lying in the uterus, the symptoms being clearly referrible to the retention of the placenta—if the symptoms are not urgent, you had better leave the placenta, if it cannot be abstracted without violence; and even where the symptoms are pressing, you are still scarcely justifiable in ab-

stracting manually, provided the operation be attended with the risk of laceration; for if a patient must be exposed to dangers, in the general, perhaps, she had better be exposed to the dangers which arise naturally from her situation, than to those which may result from obstetric violence. Much, however, must depend on the individual character of the obstetrician; a skilful practitioner may venture to operate where one who is wanting in dexterity ought to refrain.

SECTION L.

DIFFERENT CAUSES OF RETENTION.

Having said thus much, generally, respecting the symptoms and management of the retained placenta, we will now proceed to the consideration of the different varieties of this accident.

RETENTION FROM BREAKING THE FUNIS.

After the birth of the child, the umbilical cord in some cases breaks away, close upon the after-birth, so that you lose your hold of the placenta, and, in other cases, where the placenta is large, in attempting to abstract, you may leave a third or a half of it behind; this portion being torn off from the rest. Now, in those cases in which the placenta is lying in the uterus wholly or partially, your hold being lost, some difficulty may attend its abstraction; and if you have never reflected on it before you meet the accident, you may be at a loss as to the mode of procedure. When, in this manner, you lose your bearing on the placenta, a portion of it being left behind in the uterine cavity, it may sometimes be expelled from the uterus, nevertheless, by the unaided efforts of the womb. Waiting for one or two hours, more especially if you give some of the ergot in the way formerly advised, you may reasonably hope, that, under the uterine efforts, the placenta will be expelled completely from the uterus, or, at any rate, that it will be pushed into

the upper part of the vagina, so that the fingers may reach it. Suppose, however, that the pains are feeble or failing; in these cases the expulsion of the placenta may be effectively assisted, by merely laying the hand on the abdomen above the symphysis pubis, and feeling for the uterus, and pressing it, the placenta being urged out of the uterine cavity by compression, in the same manner as you might, by well-directed pressure, expel any other substance from a bag. With care and dexterity, prudently proceeding in this way, you may press the entire mass into the vagina, or at any rate so large a portion of the placenta may frequently be detruded, that, lying under the action of the fingers, the whole on it may be easily got away. Should these means further fail you, however, there is yet a third mode, the least desirable, but the most effectual, by which the placenta may be removed, and to this you may have recourse in the last resort: I mean the introduction of the hand into the uterine cavity, an operation, against the unnecessary performance of which, you have already been so frequently cautioned. In performing this operation, you will not, probably, meet with much difficulty, because, as half an hour or an hour before, the head and body of the child have been transmitted along the vagina, your hand, of course, unless it be unusually bulky, if duly lubricated, will pass up with facility. The hand then being in the uterine cavity, you may grasp the placenta and draw it downwards, proceeding with the usual obstetric mixture, resolution and tenderness, careful that you leave no portion of after-birth behind. Here, then, are the three practices to be adopted for the removal of the placenta, in difficulties of this kind,—the introduction of the hand,—the external compression of the uterus, and—the commission of the expulsion to the unaided efforts of the womb. Provided you find that the parts are very lax, and that the hand may be carried into the uterus with perfect safety, I would excuse your having early recourse even to manual operation; but if in making this essay, or if on making an examination, and considering all circumstances previously, you expect there will be the least difficulty to

the introduction of the hand, or the smallest probability of laceration, then, by all means, first confide the birth of the placenta to the other two modes of treatment, and satisfy yourselves of their inefficiency before you have recourse to this undesirable operation.

RETENTION FROM SWELLING, ETC. OF THE PARTS.

When examinations have been frequent, or deliveries have been laborious, or instruments have been administered, and sometimes independently of the action of these causes, the softer parts occasionally become unusually inflamed and excoriated, and the genitals swelled and irritable, are totally impatient of the touch. In these cases, then, in which there is excoriation, swelling, and irritability, embarrassment may arise in the abstraction of the placenta, in general, however, to be subdued with facility. The parts being in this condition, provided the patient possess a moderate share of strength, you ought, I think, to take away twelve or sixteen ounces of blood, giving afterwards a somewhat copious dose of opium, and fifty or sixty drops, for example, drops, I mean, not minims, may be given at once in cases of this kind. This done, procuring a full supply of warm water, you may very thoroughly foment the parts; and after a thorough fomentation, large doses of opium, and the extraction of blood from the arm, you will most probably find the irritability so much allayed, that the necessary manual operations may be performed, so that seizing the cord with the one hand, and the substance of the placenta with the other, with resolution and gentleness, you solicit and lead it forth from the uterine cavity.

RETENTION FROM IRREGULAR UTERINE CONTRACTION.

After the expulsion of the fœtus, when the birth of the placenta takes place in the usual manner, the summit or fundus of the uterus is first contracted, then the body, then the neck, the mouth contracting ultimately; there being in general a tendency to contrac-

tions of the upper part of the uterus, before the under portions become constricted. Now the womb contracting in this manner, in ordinary cases, the placenta and uterus mutually separate; for when the womb contracts, being muscular, the placenta wanting that muscularity, cannot contract itself in a corresponding manner, and the surface of the uterus moving, of consequence, on the placentar surface, a mutual dissolution of adhesion ensues. The placenta then being detached in this manner, and the uterine contractions proceeding, the detached mass is pushed lower and lower towards the vagina; and if the uterus be very vigorous and active, it may even be urged beyond the external parts, or a considerable way into the vagina, becoming, in most cases, partially pushed into the vagina, so that it may be easily seized and taken away. But when the irregular contractions now under consideration occur, in some cases we find the uterus contracted around the placenta, as if anxious to retain it, so that you can neither abstract the after-birth, nor insinuate your hand into the cavity of the womb, and, in other cases, in their occurrence more common, the placenta is retained by a circular contraction of the uterus, seated more frequently at the mouth of the womb, and more rarely in the centre, insomuch, that the cavity of the womb becomes divided into two chambers, the superior, and one below. This constitutes what, from an analogy of form, has been denominated the *hour-glass* contraction; not, however, of so frequent occurrence as many imagine, for unless an accoucheur be tolerably skilful, he may think there is this kind of contraction of the uterus, when in reality the contraction is oral, the upper part of the vagina long and dilated, being, in examination, mistaken for the lower part of the cavity of the womb.

These irregular contractions are not of difficult detection. In a preceding section, when we were speaking of the delivery of the placenta in ordinary cases, it was observed, that you ought to carry your fingers along the umbilical chord, until you reach the mouth of the uterus. After which, when you find any portion of the placenta lying forth at the mouth of the womb, this

part should be secured, and, in this manner, with the cord in one hand and the body of the placenta in the other, you may withdraw the entire mass from the uterus, the uterine contractions effectually assisting. Now, if it so happen, in these difficulties, that the uterus is firmly embracing the whole of the placenta, examining externally above the symphysis pubis, this contraction may, perhaps, be detected pretty easily; feeling for the uterus above the symphysis pubis, grasping it as you ought always to do, and finding it very round and hard, while yet no part of the placenta stretches down into the vagina, you will have a pretty clear proof, that it is in this way that the placenta is retained. While, in cases where a circular contraction, whether oral or central, is the retaining cause, the contracted aperture may be felt on passing up the fingers.

When a retention of the placenta occurs in consequence of these irregular contractions, by a little manual skill and labour, you may sometimes abstract the placenta easily enough: carry one or two fingers of your left hand up to the os uteri, and insert those fingers into the aperture; then the fingers being deposited there, act with them, in the manner of a dilator; tenderly, resolutely, perseveringly, and again I say tenderly, expanding the uterine mouth as it may bear, and thus room may be obtained to bring the placenta away.

In some few cases, on carrying the hand to the entrance of the uterus, you may find lying in it a portion of the placenta. Now, in these cases, if the constriction of the uterus be firm, it may not be safe to draw down by this portion, lest laceration and detachment should ensue; yet, should it so happen, that the mouth and neck of the uterus are lax, then, without further trouble, the placenta may be abstracted, the viscus being gently worked through the opening. After abstraction examine the secundines, and ascertain that the whole mass has been brought away entire.

But it is not always that you meet with these cases of easy management, for sometimes the mouth and body of the uterus

are contracted with more than ordinary firmness; or, if you dilate, the part contracts again more firmly than before; and, if you again dilate it, again it contracts; and if attempting to overbear resistance, you use a greater force, you lacerate, and then, DEATH. When, in this way, the contractions are very strong, and the womb is very irritable, before you attempt to abstract the placenta, you ought to have recourse to relaxents. Bleeding to faintness might sometimes effectually resolve the uterine contraction, and some few cases might perhaps justify it. It must be admitted, however, that this is a rough measure, and not perhaps altogether without its danger; for the bleeding might be followed by flooding from the uterus, and the patient, if of feeble constitution might sink. The *tobacco injection*, I have little doubt, would relax the uterus, even in the most difficult cases, so as to admit the introduction of the hand; but the tobacco injection is attended with considerable danger; and I have already laid it down as a principle, that the retention of the placenta is not attended with that degree of danger which may justify you in resorting to the more perilous measures. It has too been advised in these cases, that we should try the effect of cold, emetics, and other remedies, insignificant and unimportant, and sometimes a nauseating or emetic dose, sulphate of zinc or ipecacuanha, for example, may have the effect of expelling the placenta; or the sudden application of cold over the uterus, or the lower part of the abdomen, may relax the spasms. For myself, however, in all cases which I have hitherto met, I have found that the uterus has relaxed sufficiently under a very simple mode of treatment. From the arm I have abstracted sixteen or twenty ounces of blood, a loss which most patients can bear very well; then, immediately afterwards, I have administered a copious dose of opium, sixty or seventy drops of the tincture, or a corresponding quantity of the solid, or of Batley's excellent anodyne. This done, I have waited half an hour till the irritability of the parts has been quieted, and then I have proceeded to dilate the os uteri, and abstracted the placenta as before explained, always here bearing in mind the two grand principles of management: I mean, first,

that the placenta is never to be abstracted with violence; and secondly, that if without violence it may be got away, its removal is desirable, as during its retention the woman is never altogether secure.

In some women, there seems to be a strong *pre-disposition* to this *irregular contraction* of the womb after delivery; and this being the case, it comes to be a question of some importance, whether we may have recourse to any effectual preventive. Of the preventives proposed, one of the most promising is that which used, I think, to be recommended by Dr. Hamilton of Edinburgh, and this consists of committing the birth of the body to the natural efforts, the womb being suffered to expel it slowly after the birth of the head. If the head being expelled, we hastily draw the body from the vagina, before the womb is contracted, the uterus suddenly emptied, becomes more obnoxious to irregular contractions afterwards; but where the body, arms, and legs, are pushed away by the regular and healthy actions of the uterus, a more regular and healthy contraction may be afterwards expected.

RETENTION FROM SCIRRHOUS ADHESION.

It rarely happens that the placenta is retained in the uterus, in consequence of inflammatory adhesions of that kind, which has been denominated *scirrhous;* for though you may frequently hear of cases so called, yet I am persuaded, from my own observations, as well as from the experience of my valued predecessor, Dr. Haighton, that the genuine scirrhous adhesion is by no means very common in its occurrence. Sometimes, however, the womb inflames; and, in consequence of this inflammation, the placenta may become attached to its surface; and if this have been going on in the earlier or middle part of gestation, the adhesions may be extensive and strong. With induration of the placenta, these adhesions may be accompanied, in consequence, I suppose, of an interstitious deposition of lymph in the pores of the placentar structure; and this induration, I apprehend it is, and not a

genuine schirrosity, which has given rise to the epithet by which the disease is designated; for although the parts are hardened and altered in their structure, I am not aware that there is that peculiar change of organization, which the morbid anatomist understands by this disease.

COHESION FROM SCIRRHUS.

When the placenta coheres to the uterus, in consequence of scirrhus,* to ascertain this is not, in general, very difficult, for, although the womb be thoroughly contracted, and though the obstetrician draws resolutely by the cord and body of the placenta, it is not found to descend far into the vagina, and the hand being introduced into the uterus to investigate the nature of the difficulty, the induration and the firm adhesion may be felt. Now, when the placenta coheres to the uterine surface, there are different practices which may be adopted for its removal;—first, we may endeavour to break through the connexion by managing the placenta, in the ordinary manner, excepting that we draw with a little more resolution than ordinary, care being taken to avail ourselves of those moments when the womb is in action, and the pains are felt. Secondly, if, as may be expected, the after birth cannot be abstracted in this manner, the chord breaking, and the body of the placenta tearing away, we may then endeavour to overcome the difficulty, by passing the fingers between the placenta

* The natural attachment of the placenta to the uterus is of such a texture and kind, as very readily to admit of separation. But if that part of the uterus, to which the placenta adheres, should be in a scirrhous or morbid state, the placenta will partake of the disease. On the examination of the placenta of different women, there are not unfrequently found morbid appearances, some being disposed to a putrid, others to a scirrhous or cartilaginous state, while in others there is a degree of ossification in the vessels, and sometimes perfect concretions. The adipose substance often found upon the placenta in large quantities is not of any importance. The difficulty of the separation will depend partly upon the placenta itself, and partly upon the state of the uterus. When there is found, on the introduction of the hand into the uterus, an uncommonly firm adhesion of the placenta, a perfect separation will be extremely difficult, and perhaps, sometimes impossible, without the hazard of doing direct injury to the uterus. There is no security in these cases, but by taking time in the operation, confiding chiefly in slow proceedings, both for accomplishing our purpose, and avoiding mischief. *Dr. Denman.*

and the uterus, so as by peeling to detach the one from the other. Should the adhesion be firm, however, we may also fail in this mode of detachment, and it then becomes necessary to have recourse to a third expedient. The hand being in the uterus, the operator must cautiously tear away, piece by piece, that part of the placenta which is not become scirrhous, leaving each morsel, after detachment, in the uterine cavity, and proceeding to the separation of another, until all that part of the after-birth, which is not scirrhous and adherent, has been separated from the rest. When the healthy portion of the placenta has thus been separated from that part which is diseased, we may bring away all the different portions at once from the uterus; and it is better to abstract in this manner simultaneously, than to remove each portion separately, as this method of operating demands the repeated introduction of the hand. The detached pieces of the placenta, being thus withdrawn, the obstetrician introducing the hand afresh, carefully examines that part of the placenta which still remains adherent to the uterus, and brings it away, if this may be accomplished without violence; but, should its safe removal be impracticable, he then contents himself with the separation of any loose portions of placenta which may have been left in connexion with the scirrhous mass, and leaves the scirrhous part itself in the womb. It is, I conceive, very desirable that the scirrhous portion of the placenta, if left, should be thoroughly cleared of those loose portions which are not scirrhous and adherent, for they may be expected to lose the vital principle afterwards, and to putrify and give rise to offensive discharges in consequence. But what is to be done, if the scirrhous part of the placenta, not to be detached, is left behind in the uterine cavity? Why in such cases, I believe, the woman must be committed principally to her own resources, the practitioner palliating symptoms as they may arise. *

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* Dr. Smellie relates two cases of retention from induration of the placenta. In the first, he brought away the indurated portions, but the woman died from hæmorrhage. In the second, he left the adhering portions, and the woman recovered, *Col.* 23, c. 1 and 2.

The scirrhous portion of the placenta is said to have separated spontaneously, in some cases, after the practitioner had failed. More generally, however, if the patient recover, this diseased part wastes, sometimes, perhaps, wearing away under putrefaction, and, in other cases, wasting under a sort of absorption, similar to that which, after delivery, removes the secreting excrescences which are formed upon the uterus of the ruminating animals.

RETENTION FROM INERTNESS OF THE UTERUS.

After the expulsion of the fœtus, the womb sometimes lies quiet for a few minutes, and then again acts, the fundus and body contracting, while the mouth and neck remain open. In consequence of this contraction, the uterine surface separates from that of the placenta, and the after-birth, lying loose in the cavity of the uterus, is easily expelled by a little further expulsatory effort. Although, however, the uterus generally operates in this way, it sometimes remains inactive, more especially after laborious labours; and, in consequence of this inaction, the placenta is neither separated nor expelled. Cases of this kind, in which the placenta is retained from the inertness of the uterus, may be recognised by the following indications: — by the uterus being rather larger and softer than it should be, a short time after delivery; by no portion of the placenta being within reach of the fingers, when introduced into the vagina; by there being no return of the alternate contractions of the uterus; and lastly, when

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There can then be no doubt, but that it is a less evil to leave a portion of the placenta behind, than to do any positive injury to the uterus, in striving to bring it away. For it has been found, when a portion of the placenta was left behind, that an existing hæmorrhage has ceased and not returned, and that this portion far sooner decayed, and was more readily digested or expelled than the whole. I once saw an instance of a whole placenta retained till the fifteenth day after the birth of the child, and then expelled with little signs of putrefaction, except upon the membranes; the whole surface, which had adhered, exhibited marks of a fresh separation, the recovery of this patient was very fortunate, for I have seen several other cases of a similar kind terminate fatally. *Dr. Denman.*

a force is applied to the cord, it gives the idea that the placenta is descending, but which is not the case, for as soon as you come to draw upon the cord, it immediately ascends again into the pelvis. When properly managed, they generally terminate favourably, more especially if there be little or no flooding; but if the obstetrician lay hold of the cord without reflexion, and pull the placenta, an inversion of the womb, and perhaps a fatal flooding, may be the consequence. In these cases, therefore, in which the womb is inactive, it should be your first object to secure the contraction of the uterus, before you take away the placenta: and for this purpose you may wait for half an hour, or an hour, compressing the uterus, with the hand placed above the symphysis pubis. When the womb is contracted it will feel firm and hard, and something larger than the head of a full-grown fœtus; and, when these indications are observed, you may proceed immediately to the abstraction of the placenta, which may be removed without further difficulty, a small discharge of fluid blood, or coagula, or both, announcing its appearance. If the womb be indisposed to contract, although you have waited for half an hour or an hour, you may then endeavour to stimulate it by some of the deobstruents formerly recommended, but these should not be needlessly tried.* Beware of flooding, beware of inversion, beware of tearing the placenta, and leaving a part of it unobserved in the uterine cavity, beware of the needless insertion of the hand into the uterus. It may be sometimes necessary to peel the placenta from the uterus, by interposing the fingers, but this operation it is always desirable to avoid.

ERRORS IN MANAGING A RETAINED PLACENTA.

Three errors you are liable to incur in managing cases of retained

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* When the placenta is retained from inertness of the uterus, Mojon and other Italian physicians have recently injected about six or eight ounces of cold water, or vinegar and water, into the umbilical vein; colic, uterine pains, &c. were excited, and by these means, detachment of the after-birth was effected. *Dr. Ryan.*

placenta in all their different varieties. In the first place, when performing your operations, you may bruise, lacerate, or otherwise injure the softer parts, by proceeding roughly; in the next place, you may persuade yourselves that the after-birth must be removed from the uterus, come what may, and, in consequence of this persuasion, you may persist in your attempts to remove it by manual efforts, when it would be better to desist; and, lastly, removing the placenta with difficulty, you may detach a portion by laceration, and, neglecting to examine the placenta very carefully after its abstraction, you may leave this part unperceived in the uterine cavity. In dismissing this important subject, I must not omit to observe, that I have been called to one or two women, dead before my arrival, and that, on inquiry, I have been informed, that the birth of the child had occurred two or three hours before, and that a flooding, not very copious, had taken place afterwards, and that moderate force only had been used to abstract the placenta. On examining the body in these cases, a day or two afterwards, I have detected, in the uterus, a lobe of placenta, *not a coagulum*, about as large as a pullet's egg, but no laceration—no obvious contusion—no intelligible cause of death. Were these deaths the anomalous effects of moderate flooding, or of the retained portion of the placenta? *

SECTION LI.

LABOURS WITH MONSTROSITY.

In the course of practice we sometimes, though rarely, meet with fœtuses that deviate conspicuously from the ordinary make. These fœtuses have been denominated monsters, apparently because of

* It is a conclusion generally made, though not always warranted, that, if a woman die with a portion of the placenta retained, her death ought to be attributed to it; yet it should be considered, that there may have been previous disease in the uterus, and that the event may have been really occasioned by violent, though unsuccessful attempts to bring it away,

our besotted predecessors; some who have undertaken the perilous task of forming human opinions, have been pleased to represent such morbid structures as portending something mysterious and alarming, *credo quod impossibile est*, and this too has been believed.

CLASSES OF MONSTERS.

Buffon has divided these monsters into four different classes, those, I mean, in which the parts are deficient; those in which they are redundant; those monsters in which the parts are misshapen; and those in which, although they are naturally formed in other points, certain parts are misplaced; and to these four classes, if you please, a fifth may be added, comprising those monsters which are of a mixed character; cases, for example, in which some parts are redundant and others wanting, in the same individual.

MONSTERS IN WHICH PARTS ARE DEFICIENT.

From previous remarks* on the peculiarities of the fœtus I have shown, by example, that children may grow with a deficiency of parts. But of all difficult monsters the most important is that in which there is a want of the bones of the cranium, basis excepted, and where, together with the deficiency of bone, there is also a deficiency of the cerebrum and cerebellum, wholly or in a great measure.† This monster it is which is called brainless.

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and not by retention. Sometimes the danger of these cases is known to the practitioner only, who is obliged to act according to exigencies, for which he may not be particularly prepared; but if he have before acquired a just knowledge of the principles of the art, explain himself ingenuously, determine not rashly, and proceed slowly, he will not do any thing, for which he can be justly blamed, and will generally be successful. *Dr. Denman.*

* Page 96, &c.

† In the circle of my own obstetric acquaintances, it has repeatedly occurred, and it is not, therefore, very uncommon; and it becomes the more desirable that you should pay a little attention to it. It may not be amiss to remark here, when speaking of this monster, that not

In some instances* you will find the whole thorax, together with the head and shoulders, are wanting, the child consisting merely of the parts below, the abdomen forming a cyst. But monsters of this kind are by no means so frequent as the former.

Again, the fœtus may be deficient in the lower parts,* the legs being wanting, so as to give it an appearance as if an amputation had been performed; in reality, however, this is the product of disease. Should a fœtus like this, deficient in the lower extremities, be lying across the pelvis, presenting by the arm, hip, or back, no small difficulty would arise in an attempt to turn it, and, probably, we should be obliged to resign the operation altogether.

And lastly, in place of the deficient part, I have a case, where, instead of the lower extremities there is a conical cyst of skin, containing cellular substances, and a piece of bone, this piece of bone being, apparently, the vestige of those bones which belong to the lower extremities. I have likewise one, in which both the lower limbs coalesce, so as to form but one compound member, and the foot is placed in the retroverted position, the heel lying forward, and the toes behind.

MONSTERS WITH REDUNDANCY.

As nature, in her fancies, has deprived some children of their due proportion of parts, so on the other hand, has she, with the same apparent sport, given additional or duplicate members to others. Cases of this kind have been repeatedly recorded,† and some good specimens‡ may be seen in my obstetric museum.

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infrequently it is born alive, and that it lives for a few hours after birth. When living, it admits of some curious observations; and should you ever meet with a case of this kind in the course of practice, pray insert your finger into the mouth to try whether it will suck, in order to know whether the sensorial powers, which relate to these actions, are above or below; whether they are in the spinal marrow, the medulla oblongata, or the brain. *Dr. Blundell.*

* See specimens in Dr. Blundell's Museum.

† See relation of cases, at page 99.

‡ 1st Case. A fœtus with two faces, and they looking in different directions. 2nd. Case. A fœtus with two bodies, with one head in common to both, and a deficiency also as

MIS-SHAPEN MONSTERS, ETC.

On monsters which are mis-shapen and the other kinds, I shall make no remarks, because, in a view to practice, they are not of much importance; the two classes principally interesting, are those which I have stated; consisting of the deficient and the redundant; and of their management I shall now proceed to treat.

RULES OF MANAGEMENT.

If it should so happen that you have under your care a case in which the parts are deficient, provided you adhere to some of those wholesome rules which have already been frequently prescribed, you will probably experience but little difficulty in the delivery. If you know that there is a deficiency in the monstrosity, it does not follow that you are in a meddlesome manner, to interfere. A meddlesome obstetricy is bad; give a fair trial to the natural efforts, and the child being smaller, instead of larger, in consequence of this defect of parts, it will come the more easily away. In cases of redundancy,* moreover,

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to brains. 3rd Case. A very valuable obstetric curiosity, consists of two fœtuses of full size very finely formed; these fœtuses, however, though so beautifully modelled, are united at the thorax and abdomen. In fœtuses like these, the abdominal cavity is, I suspect, generally common to both, so that if you were to endeavour to separate them by the knife, the abdomen would be laid open. Fond as I am of abdominal surgery, of this I do not approve. This specimen of monstrosity becomes particularly valuable, because it came away from a woman who had borne a large family previously, occasioning merely a small laceration of the perineum; the children descending under the foot presentation, and the head of the one being deposited on the neck of the other, during the transit through the pelvis. The one fœtus is placed a little below the level of the other, and the head seems still inclined to repose upon the neck of its companion. *Dr. Blundell.*

* Cases of monstrosity from redundancy of parts may produce considerable difficulty in delivery; and the general principle of conduct must be, that, where the impediment is very great and does not yield to such force as can be safely exerted, by pulling that part which is protruded, a separation of the part must be made, and the child afterwards turned, if necessary.

In the 7th volume of the Nouv. Journal, p. 164, is a case where two children were born at the full time, united by the inferior part of the belly, from the centre of which came the cord.

the child may be very strangely formed, and yet, after all, it may come away from the uterus with very little assistance from the accoucheur. It sometimes happens, that the pelvis of the patient is very large, and still more frequently it happens, where fœtuses are of monstrous formation, that they come away in the sixth or seventh month; and in this way, therefore, their multiplicity of members is compensated by their small size, and the conformability of their soft texture. Were I called to a case in which I knew there was a redundant monstrosity, and where there were two fœtuses* formed, I should in the general, give a fair trial to the natural efforts, say for four-and-twenty hours, unless some dangerous symptom obviously demanded delivery, and if dangerous symptoms occurred, or if the patient had been in strong pains for four-and-twenty hours, the monster not descending, I should then have recourse to the lever, the forceps, or perforator; either the one or other instruments, according to the circumstances of the case.

The vertebral columns almost touched at the lower part. The two children, who were of different sexes, lived, we are told, twelve days, but nothing is said of the labour. In the Bulletins for 1818, page 2, two children, who were joined by the back at the sacrum, are stated to have been born, and lived till the ninth day. The first child presented the head but the midwife could not tell how the second got out. There is another case at p. 32, of a woman, who, after many days labour, bore a monster, double in the upper parts. The spinal column was united from the sacrum to the top of the dorsal vertebra, there the vertebra divided to form two necks. The midwife finding the head to present along with the cord and a hand, tried to turn, could discover nothing but superior extremities, she therefore left her alone. The head was afterwards expelled, neither nature nor art could deliver the body. M. Ratel finding the head and two arms already almost separated from the body, cut those parts off; then introducing his hand, he found another head, turned the child, and brought away the whole mass.

Unless the pelvis be greatly deformed, it will be practicable to deliver, even a double child by means of perforating the cavities, or such separation as may be deemed expedient, and the use of the hand, forceps, or crotchet, according to circumstances. *Dr. Burns' Principles of Midwifery.* 8th Edit. p. 403.

* The surgeon who had under his management the case of double fœtus which I have just mentioned, perceiving something monstrous in the construction of the fœtus, deemed it necessary to do something to facilitate the labour; to this end, therefore, he took a pair of scissors, and tried to cut away the lower part of one of them, a very rough expedient, in which he was unsuccessful; he then waited, and the consequence was, that the delivery which he could not accomplish, was completed spontaneously by the natural efforts of the uterus; the fœtus coming away with only a small rent of the perineum. *Dr. Blundell.*

SECTION LII.

CONVULSIONS DURING PREGNANCY AND LABOUR.*

In treating of the diseases of pregnancy †, I have mentioned that women, during gestation, are liable to convulsions ; I deferred, then, entering on this subject, with a view to speak more largely in the present place.

VARIETIES OF CONVULSIONS.‡

In practice, I find it useful to divide convulsive cases into three kinds or varieties, according as they occur, in the progress of gestation—during labour—or after parturition. Two cases § I have now seen, in which the attack of convulsions supervened after delivery, one of the patients doing perfectly well notwithstanding. I suspect that these attacks of convulsion, after expulsion of the fœtus, are more dangerous than those attacks occurring during the time of delivery.

PREMONITORY SYMPTOMS.

Convulsions from pregnancy and from delivery, are occasionally met with,‖ though, fortunately, by no means common, for when

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* Also called puerperal convulsions, from *puerpera*, a lying-in woman; and that from *puer*, a child, and *pario*, to bring forth.

† Page 200.

‡ Dr. Dewees divides puerperal convulsions into three species; namely, the epileptic, the apoplectic, and the hysterical. *Essay on Puerperal Convulsions.*

§ Of these cases, one was shown to me by my friend Mr. Gaitskell, and large bleedings completely cured her. The second was shown to me by Mr. Masterman; large bleedings were resorted to here, but the patient never recovered, and, in a few hours, died. Inspection was refused. *Dr. Blundell.*

‖ There is no woman who may not be seized with convulsions during pregnancy and labour, the causes of which are very numerous; but there are some women in whom they seem to depend on that state, that they are repeated every time they become pregnant, or are in labour. *Baudelocque.*

they do occur, there is great danger.* Unhappily for the safety of the patient, she may be seized without† premonitory symptoms; still, however, premonitory signs sometimes occur, and more especially in the convulsions of pregnancy. Tremors of the whole muscular system, shudderings, crampy pains in the region of the stomach, cerebral afflux of blood, flushing and tumidity‡ of the face, throbbing of the carotid arteries, severe and splitting pains of the head,§ stammering, perhaps, and failure of utterance, constitute some of the leading prognostics. Sometimes the patient becomes deaf, and more frequently her sight is affected, dazzled with light, or blinded.‖ When the fit supervenes, the woman becomes entirely insensible, and, together with this insensibility, she has a violent commotion of the voluntary muscles; the arms and legs are agitated, the features flicker, and the eyes are distorted; the tongue is involuntarily pushed forth from the mouth, and perhaps there is a spasm of the levators of the jaw, which closes the teeth, and wounds it.¶ Respiration is affected sometimes, and the

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* Dr. Dewees justly observes, that no disease is more formidable or menacing, than puerperal convulsions, the attack of which is always ferocious, and too often fatal. *Medico-Chirurgical Review.*

Dr. Hunter, Dr. Lowder, and other teachers of midwifery, used to state in their lectures, that more than one-half of the women died, who were attacked with convulsions in their labours.

Dr. Farr, in his *Medical Dictionary*, states even a larger amount of fatal cases; he says, that "that six or seven in ten elude the most active and best-concerted measures;" and Jacobs, in his *Ecole Pratique des Accouchemens*, says, that "it is always fatal; scarce an instance of recovery is known." In modern practice, the proportion of deaths is by no means so great. *Dr. Merriman's Synopsis.*

† Chaussier thinks, that they are scarcely ever wanting altogether. *Sur les Convulsions que attaq. les Femmes Enceintes.*

‡ J. F. Osiander remarks, that a tumid state of the face and hands he has seldom seen wanting. *Dentsche Zeitschrift f. Geburtskiinde.*

§ Dr. Hamilton was disposed to believe, that an intense pain in the forehead was almost always a premonitory symptom of the puerperal species. *Dr. Hamilton's Outlines.*

‖ These symptoms we might precede, by mentioning, that the patient may either directly, or even for several days prior to the attack, complain of lassitude, depression, and a feeling of indisposition, which she cannot well describe; frequently, also, she may complain of disorder of the stomach, drowsiness, vertigo, &c. *Dr. Copland's Dict. Art. Puerp. Conv.* 28.

¶ With a view to prevent this injury, you must, if possible, secure a cork, or some other substance, between the teeth---a cork is to be preferred. *Dr. Blundell.*

patient may breathe with a sort of hissing noise, as has been well observed by Denman,* so that in the next chamber you may hear her breathing; foaming is by no means uncommon; and this foam being not infrequently mixed with blood, gives to the patient, in the eye of friends, an alarming and even terrific appearance. When these attacks have continued for a few minutes in different cases, a longer or shorter period, we find the patient recovering more or less completely. In most attacks of convulsions, where the attack is not severe, the spasms ceasing, the patient seems very well, awaking up as from a slumber. When asked how she feels, she replies, perhaps—Well! nor is she aware of the attack to which she has been subjected. It is not always, however, that the recovery is complete. Sometimes the patient lies apoplectic, or in a state analogous; or she is deaf or blind, or incapable of speaking, or both; or the limbs are benumbed; in fine, it seems as if the sensorium has received some permanent injury, the corresponding parts of the body suffering in consequence.

CAUSES OF CONVULSIONS.

Concerning the origin of puerperal convulsions, I am not disposed to enter; the subject is so extensive, and at the most, so unsatisfactory, that I shall content myself by merely mentioning some of the reputed causes. The immediate causes† are often very obscure; they appear sometimes to depend upon a loaded state of the vessels of the brain; at other times, the brain appears to be influenced by distant irritation, either in the uterus, or in the

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* With the foaming at the mouth there is also a sharp hissing noise, produced by fixing the teeth, and by the sudden motion of the under lip, as if attempts were made to retract the *saliva* back into the mouth; and by this noise I have generally been able to discover the state of a patient in convulsions, though she was in another room. *Dr. Denman's Midwifery.*

† The *proximate* cause of puerperal convulsions, is congestion in the vessels of the brain, occurring under an irritable condition of the uterus. The *predisposing* and *exciting* causes are, pressure of the gravid uterus on the descending blood-vessels; powerful mental exertions; morbid intestinal secretion; distended bladder; parturient exertions; and uterine irritation and distention. *Dr. Conquest's Outlines, 5th edit.*

digestive organs; and again, in some cases, puerperal convulsions are induced, apparently, by a peculiar irritability of the nervous system. That the uterine organs are in some way implicated, is evident, from the convulsions being of a character which may be said to be peculiar to the state of either pregnancy or parturition.* Some writers† assign three especial causes which may give rise to this disease; namely,—general irritability of the constitution—irritability of the uterus from distention, and an overloaded state of the system: these causes, real or presumptive, you may read of.‡ The custom or manner of living, the seasons or climate,§ and the general state of the health‖ of the patients, are not wholly undeserving of being classed among the causes of these convulsions. Again, it is said that the woman is more liable to the complaint in

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* Dr. Locock.

† Dr. Merriman, &c.

‡ The immediate attack may be brought on by a loaded or disordered stomach, or by food, however small in quantity, of an indigestible kind. Some substances, shell-fish, for instance, have been found very frequently to induce convulsions in a puerperal condition, when at other times they may have been taken by the same individual with perfect impunity. A sudden fright, afflicting intelligence, or any unexpected or depressing mental emotion, may excite the paroxysms. The violent straining caused by labour-pains, and even the disturbance of the frame by the earlier uterine contractions, causing a temporary rush of blood to the head, will sometimes bring on convulsions. *Dr. Locock on Puerperal Convulsions, Cycl. Pract. Mid.* p. 481.

§ It is remarkable that puerperal convulsions occur so rarely in the country, that I have not been able to make some very intelligent men, of great experience, comprehend them, they having never seen a single example. The few cases, of which I have been informed, out of this city, have happened in large towns, or among those who might be reckoned in the higher ranks of life. It has also been justly observed, that women are far more liable to puerperal convulsions in certain years and seasons, than in others. We may therefore conclude, that a remote cause of these convulsions is to be sought for in some change made in the constitution, by the customs and manner of living in cities and large towns, especially among those who too zealously devote themselves to music; or in the particular influence of the air; though there may also be immediate causes capable of producing these convulsions in any situation, or under any circumstances. *Dr. Denman's Midwifery, by Dr. Waller.*

‖ It is not only in weak and very nervous habits that convulsions occur, as they more frequently happen in plethoric constitutions, and are accompanied with a strong action of the vascular system in general, or of some particular part of the body. With such different constitutions and indications, some with symptoms of debility and depression, and others of plethora and fever, the method of treatment must of course vary; and great judgment will be required to suit the proper method, if that can be discovered, both in the degree and extent to which it ought to be carried, to the state of every individual patient. *Ibid.*

first than in her subsequent labours;* and more frequently when the child is dead, than when it is living.†

CONVULSIONS DURING GESTATION.

To persons prone to cerebral afflux,‡ convulsions may occur in the middle and earlier months§ sometimes, but still more frequently in the end of pregnancy. When convulsions attack a patient in the progress of gestation, she may have a single fit only, or several, the intervals being usually irregular and somewhat long, not of a few minutes only, but of hours perhaps, or days. When first the attack occurs, on making examination, it may be that you do not find a single symptom of labour, the fœtus is unapproachable, the uterus is shut, and there is a perfect freedom from uterine pains. Sooner or later, however, if the fit continue, parturition of itself commences, without the interference of the obstetricians;—the womb opens, and the membranes protrude, the liquor amnii flows, and a sudden emersion of the fœtus occurs. Now, do not forget that this may happen, not only where the patient has pain, and can give an account of her feelings; but in those cases also, in which the

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* Some women have, however, had convulsions in several successive labours: but, having had them in one, they generally, by the precautions taken, or some natural change, escape them in future. *Dr. Denman's Midwifery, by Dr. Waller.*

† That a woman is more liable to convulsions in her first labour, I agree; but that they are more frequently attacked when the child is dead, than when it is living, I cannot allow. For when women have convulsions, the death of the children ought generally to be esteemed rather an effect than a cause; as they have very often been delivered of living children while they were were in convulsions; or of dead, and even putrid children, without any tendency to convulsions. *Ibid.*

‡ It may be generally remarked, that, upon the accession of puerperal convulsions, a flux of blood takes place to the head and superior extremities: the veins of the lower limbs becoming proportionately empty, and the pulsation of their arteries being comparatively small and weak. *Dr. Copland's Dict. Art. Puerp. Conv.* 30.

§ In the earlier months of pregnancy, say during the first four months, women are not uncommonly attacked with hysterical convulsions, more especially in irritable and excitable habits, or in those who are, naturally, disposed to syncope, or who have had their strength exhausted from various causes. The symptoms in these cases are far more mild than in those attending the puerperal state. The face is usually pale during the attack, the features

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SECTION LIII.

TREATMENT OF PUERPERAL CONVULSIONS.

Convulsions being a very alarming disease, a variety of remedies have been recommended, every one being laudably anxious to interpose some relief, in cases of so much danger. To avoid confusion, however, I am accustomed to divide these remedies into two classes; the first comprising those which constitute our principal reliance; the second, those which, though not to be forgotten, may be regarded as of small importance. In an affection like this, which requires promptitude and decision, it is of the greatest importance to keep your minds fixed on the leading and principal remedies, careful not to lose yourselves in the administration of those remedies, which can have but small effect upon the disease.

ABSTRACTION OF BLOOD.

It is now, I believe, well agreed between those who have seen much of this formidable malady, that a main remedy is the abstraction of blood from the vascular system,* as largely as the patient may safely bear.† So long as the line of prudence is not exceeded, the more largely ‡ you bleed, the better; not that these copious venesections are wholly unattended with danger, but that the convulsions themselves are so formidable and urgent, and the

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* Mauriceau, De la Motte and Puzzos, were strongly in favour of depletion, and we might say, that it is now admitted as a general rule of practice. The repetition of venesection must depend on the powers of the patient, and the continuance of the attack; so also, the quantity of blood abstracted must vary. Dr. Dewees thinks that less than twenty-four or thirty ounces is seldom effectual, and that more than from seventy to one hundred ounces, will be rarely required. Ed.

† The young practitioner must be reminded, that copious depletion can be only employed with safety, in strong, young, plethoric women, and that local bleeding is preferable in nervous, delicate, and lymphatic persons, and also when the disease comes on after hæmorrhage. *Dr. Ryan.*

‡ One copious bleeding has sometimes entirely removed the convulsions, which have not returned, after as well as before delivery. *Dr. Denman's Midwifery.*

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ance of the benefit derived from these large accidental bleedings, that first led practitioners, within the last few years, to resort to copious venesections.*

REMARKS ON BLEEDING.

In practice do not forget that in order to have the full benefit of your bleedings, you must adopt them early. Hours, nay minutes, are not without their importance here. In cases of this kind, blood† may be effused on the brain; and I know that water is found sometimes both on its surface, and in its ventricles. Now, when these effusions have occurred, there is little to be expected from the bleeding; but so long as the fluids are contained in the vessels, venesection, if large and early, will be powerfully effectual. From arteriotomy, I am not convinced that any peculiar advantage is derivable.‡

EVACUATION OF THE ALIMENTARY CANAL.

Your second remedy in the treatment of puerperal convulsions,

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* Illustrative of this fact, Dr. Denman relates, that "the late Dr. Bromfield informed him of a case of puerperal convulsions, for which he had bled the patient without much benefit. In the violence of some of her struggles the orifice opened, and a considerable quantity of blood was lost before the accident was discovered; but the convulsions from that time ceased. *Dr. Denman's Midwifery.*

† In appearances after death in those who have died of puerperal convulsions, contrary statements have been given: Dr. Denman says that in the examination of women who have died of convulsions, he has *never* seen one instance of blood in the brain, though the vessels were extremely turgid; but has always remarked, that the heart was unusually flaccid, without a single drop in the auricles or ventricles; but he adds, that Mr. Hewson had informed him of a case of convulsions, where an effusion of blood, in a small quantity, had been found on the surface of the brain; and, in his 5th edition, he mentions a case by Dr. Hooper, where a coagulum of blood weighing nearly four ounces, was found between the *dura* and *pia mater*. In one instance I have seen an effusion of blood in the posterior part of the *cranium*; but the quantity was not large. Dr. Ley has lately met with a similar case. *Dr. Merriman's Synopsis, 4th Edit. p.* 147.

‡ When blood has been freely drawn previously and more is still wanting, then opening the temporal artery may be highly advantageous; but this operation should never be relied on when much blood is necessary to be drawn. *Dr. Dewees' Essay.*

and which you ought to look upon as of very great importance, is the thorough evacuation of the alimentary tube, viz. the stomach and bowels. In some cases, indeed, the patients lying comatose do not easily swallow; but in most instances, if you watch the proper moment, deglutition may be accomplished. Senna and salts, a smart dose of calomel, the croton oil, &c., may be thought of in these cases. Senna and salts will answer perfectly well, where the patient can swallow; calomel and the croton oil may have the preference, provided you want to give a dose that lies in a very small compass.* Should gastric aperients fail, after a trial of three or four hours, injections† into the rectum may be tried with great propriety; and these remedies are more especially useful, when they are superadded to purgatives, taken by the mouth some few hours before. Two or three scruples of the compound extract of colocynth, half a pint of water, and as much soap as will blend the whole, may be thrown into the rectum every half hour or hour, till it acts. Where patients are seized with fits of convulsion, and you have bled them, if there is any thing wrong with the stomach, you may give an emetic.‡ The sulphate of zinc is rather a rough remedy, but its promptitude recommends

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* Immediately after venesection, cold applications to the head, and the exhibition of ten grains of calomel, and from five to ten grains of camphor, previously reduced to a powder by a few drops of spirit, with or without an equal quantity of musk; and shortly afterwards two or three drops of croton oil should never be omitted. These medicines may readily be administered by mixing them in sweet butter, and introducing a portion from time to time over the root of the tongue, upon the end of an ivory letter folder, or upon the handle of a spoon. My experience of the excellent effects of camphor is fully confirmed by Dr. Hamilton, although Chaussier expresses an unfavourable opinion of it, and of all heating anti-spasmodics; and the recently published observations of Mr. Michell are strongly in favor of musk, which he gives in doses of from one to two scruples. *Dr. Copland.*

† Dr. Copland is of opinion that a *cathartic* and anti-spasmodic enema should be thrown up without delay, and immediately repeated if it be returned. Dr. Burns also recommends that intestinal irritation should be removed by clysters, followed up by purgatives. *Dr. Copland's Dictionary. Dr. Burn's Midwifery.*

‡ The state of the patient will seldom allow of the use of emetics; but when they could be given, and have produced their effect, they have produced much relief. *Dr. Denman.*

Mauriceau, Levret, Chaussier, and Hamilton condemn the use of emetics, unless after blood-letting and when the seizure has been excited by improper ingesta; the only circumstances under which, in my opinion, they should be given. *Dr. Copland.*

it; and these are cases in which no time should be lost. Ipecacuanha may, in most instances, be given safely enough; and a drachm of the powder being mixed with two ounces of water, and shaken, one quarter of this mixture may be administered every twenty or thirty minutes, till it acts.

Thus, then, a thorough evacuation of the alimentary canal is very proper in puerperal convulsions, and more especially proper in those cases which tend to the chronic form.*

REFRIGERATION OF THE HEAD.

When patients are affected with convulsions, you will generally, if not always, find symptoms of a cerebral afflux of the blood; the carotid arteries are thumping, the scalp is hot, the face is larger, and the features are suffused and bloated. Hence the importance of another capital remedy in convulsions, I mean the complete refrigeration of the head. A chordee is promptly relieved by plunging into water; the arteries are quieted, and the parts collapse; in like manner, if the patient labour under cerebral turgescence, produced by an increased action of the carotids, apply cold water, and the action may sink. There are different modes in which the head may be refrigerated, and, provided you accomplish the object thoroughly, I am careless how you proceed. In ordinary cases, on urgency, you may, if you please, with the hearth-brush and cold water, very plentifully besprinkle the head and neck of the patient. If the case be more obstinate, it may be necessary to remove the hair; but as this is looked on by young ladies as a very agreeable ornament, it ought not, I think, to be wantonly sacrificed.

Where the attack has been produced by a loaded stomach, or by indigestible food, spontaneous vomiting has often happened with great and sudden relief to the patient, and in such cases, but, perhaps, only in such, benefit will often arise from seconding the natural efforts by administering an emetic. *Dr. Locock.*

* In this form a free action should be kept up from the bowels, and an injection of a stimulating and purgative character thrown into the rectum; and for the latter purpose, nothing perhaps is more effectual than turpentine. *Dr. Locock.*

Should this refrigeration fail, you may apply ice, which, may commonly be bought by the pound at the fishmongers or pastry-cooks. Expel the air from a bullock's bladder, and half fill it with the ice; it may then be applied to the head in the manner of a cap. You may also refrigerate the head very much, by pouring cold water upon it, and this, in some very bad cases, has been done with very great advantage. You draw the patient's bust beyond the bed-side, and placing a tub, or reservoir, beneath the head and shoulders, with a proper vessel, you pour water on the head till the features shrink, and the scalp is thoroughly refrigerated. I know of one or two cases in which two or three pailfuls of water were poured over the head with advantage. The practice, like the disease, is a very rough one, but ought not to be lost sight of; it is a sort of homely shower-bath. In one or other of these modes, then, by sprinkling, by icing, or by pouring water on the bust, the head is to be refrigerated; resolutely beat down the action of the cerebral vessels, and you may thus diminish the quantity of blood in the head.

ON THE PROPRIETY OF DELIVERY.

After bleeding, purging, and refrigeration, you may ask, is there no other remedy to which we can have resort? Is it not further proper, in *all* cases of puerperal convulsions, to *deliver* the patient? In answer to the latter question, I must say, "No;"* for it is, I believe, an ascertained fact, that more women die, when they are officiously delivered by force, as it is called, than when they are

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* La Motte, Osborne, Leake, Hamilton, Dubois, Ashwell, Nauche, Miguel, Burns, Ryan, the Osianders, Duges, and Ramsbotham, are said to be favourable to an early delivery as possible, without violence; whilst Bland, Garthshore, Baudelocque, Hull, Gardien, Denman, and Blundell, are as generally reported to be against delivery. Now, though at the first impression, we may take up an idea that a contrary practice is pursued by each party, upon further enquiry, and duly balancing the rules which guide each, we shall find the dispute more in words than in intention; for the general rule of those who espouse either side, is, "to hasten the delivery without injurious interference." *Dr. Copland, &c.*

committed to their own resources. That delivery is a powerful remedy in convulsions, there can be no doubt—after the fœtus is expelled, the convulsions usually cease—but this remedy requires much discretion.

RULES FOR DELIVERY.

In my own practice, the rules touching delivery lie principally here:—First, if you can relieve your patient by bleeding, purging, and refrigeration, it is not fitting that you should have recourse to artificial delivery; secondly, the condition or situation of the fœtus may so vary, that sometimes the head may lie very low, and the parts may be so lax, that, without difficulty, it may be removed by the forceps; thirdly, in other cases the child may be altogether above the brim, and yet the mouth of the womb being capacious, and the parts being lax, and the uterine fibres continuing in good measure at rest, it may be neither dangerous nor difficult to deliver by turning.

On the other hand, if delivery cannot be accomplished by the means prescribed, or under the circumstances just enumerated, take the following rules of action, and until experience shall prove them unworthy your confidence, be guided by them.

First,—if without bruising, tearing, or otherwise injuring the genitals, you can abstract the ovum, do so, if you please; but if you find the case is such that you cannot deliver without risk of injury, then content yourself by discharging the liquor amnii, and leave the system to its own resources, for in my mind it is far better women should die convulsed in the hands of nature, than that she should perish by rough and unskilful treatment. Secondly,—When delivery is impracticable, you may have it in your power to discharge the liquor amnii, an operation of itself simple, but nevertheless a practice by no means to be despised. By discharging the liquor amnii, you relieve immediately the distention of the uterus, and as the womb is generally brought into action during convulsions, it will be found clearly to sink, and its effectual contraction

in part accomplished. Again, by evacuating the waters, you further encourage the fœtus itself, for it is well known that even in healthy women, indisposed to premature parturition, discharging the amniotic fluid generally brings on labour in the course of one or two days. Lastly, in those cases where delivery is not to be accomplished without the risk of contusions and lacerations, you should keep a close eye on the case, make frequent examinations, say every half hour or hour; for, as in floodings so in convulsions, sudden and extensive changes occur in the condition of the parts; and though in the morning you may not be able to deliver the patient, yet in the evening you may find the delivery easy; nay, in half an hour only, in some cases, a great change may occur, and, when circumstances conduce, the delivery should be with promptitude accomplished.

Such, then, are my general principles, which, when combined with the observations I have already made, may keep you near the right line of practice in these distressing cases. Let it be your first principle not to deliver artificially, provided you find the convulsions may be subdued by other means, unless, indeed, in those anomalous cases in which the ovum may be abstracted without the least difficulty. Next, in those cases in which bleedings and purgings, and refrigerations fail, and where delivery is to be looked upon as the only remaining effectual remedy, let it still be your principle to have recourse to delivery in those cases only in which the abstraction of the fœtus may be easily and safely* accom-

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* It will frequently happen that the os uteri does not dilate during the most violent convulsions; hence Chaussier recommends the application of a pomade, containing belladonna. This preparation consists of two drachms of the extract, softened with an equal quantity of water, and triturated with about an ounce of prepared lard. A piece, the size of a small nut, is to be introduced into a female syringe, open at the extremity, and conveyed to the os uteri, where it is to be applied by pushing onwards the piston. In about half an hour, it is said, that the rigidity subsides, and the labour proceeds. In cases of unyielding rigidity of the os uteri, Van Swieten advised an incision to be made through its margin. Dubosc, and, subsequently, Lauverjat, Bodin, and Contouly, who considered it perfectly justifiable, after bloodletting, the warm-bath, and other means usually employed, had failed, have had recourse to this operation. *Dr. Copland, Dr. Ryan, &c.*

plished, since death from convulsions is preferable to death by the hand of the obstetrician. In the third place, do not forget the beneficial effects sometimes derivable from discharging the liquor amnii. And, lastly, if delivery is desirable in consequence of the failure of other remedies, should the state of the parts forbid it, you will act wisely in making repeated, though cautious, examinations, (since sudden and favourable changes may occur), completing the delivery by artificial means, if necessary, as soon as circumstances conduce.*

SUBORDINATE REMEDIES.

In the treatment of convulsions, there are many other remedies of less importance than those we have already considered, but as every auxiliary means may prove sometimes beneficial, I shall proceed to enumerate some of them:—Leeches to the temples are generally innocent, and if we apply fifteen or twenty, they may, perhaps, sometimes be productive of considerable benefit, in relieving the head. A fit of convulsions, with cupping-glasses upon the patient, would be very incommodious: if you choose, however, cupping may be tried between the paroxysms. If the disease be obstinate or pressing, the head may be shaved, more especially if the scalp be hot; but an operation of this kind need not be wantonly recommended. Of blisters I have made but little use; in the opinion of some, they are of real efficacy, and, therefore, should not be forgotten. Rubefacients, especially of mustard, to the feet, and more particularly where the woman is comatose, should not be neglected.† The warm bath‡ I should more frequently recom-

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* The infant is usually destroyed in convulsions, from the extraordinary movements during the fits. *Dr. Ryan.*

† In those cases which assume the comatose or apoplectic characters, blisters applied to the nape of the neck, and sinapisms to the feet, or to the ankles and calves of the legs, friction in the course of the spine, are all said to be serviceable. Burns, Ryan, and Clarke, advise a blister on the head. Ed.

‡ The *warm bath* and *emollient fomentations*, followed by the use of an *anodyne liniment*

mend, if it could be employed in private practice, as commodiously as in puerperal hospitals. Nervous medicines, as castor, camphor,* æther, valerian, opium, or the like, are not to be overlooked. If opium determine to the head, it will probably do mischief; if it open the cutaneous pores, and diffusely support the circulation, advantage may be expected from it.† Lastly, the ergot of rye is said to have proved effectual, when all other means had failed.‡

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on the abdomen, have been recommended by Denman and Nauche; and the tepid bath by Capuron, after bleeding has been practised. *Dr. Copland.*

When the convulsions have continued or increased, notwithstanding the bleeding duly put in practice, which indeed seldom is the case, and the use of all the other reasonable means which could be devised, the patient may be put into the warm bath, in which she may remain a considerable time, if the convulsions be suspended while she is in. There have been instances of women with convulsions, who have been freed from them only during the time they were in the bath; and I have heard of one or more cases of their being actually delivered in the bath, without any ill consequences, either to the mother or child. When a warm bath could not be procured, or while it was preparing, I have directed flannels wrung out of hot water, or any suitable fomentation, to be applied over the whole *abdomen*, and, I think, with advantage; and after the use of the fomentations, I have also advised some liniment, made more soothing by the mixture of opium, such as equal parts of oil and *tinctura opii*. *Dr. Denman's Midwifery.*

* Of the use of camphor, see Dr. Copland's remarks, Note *, page 646.

† As to the propriety of prescribing *opium* in puerperal convulsions, very opposite opinions have been given. Petit, Hamilton, Merriman, and Dewees, consider it most injurious; Manning, and Bland, recommend it; and Leake and Burns, with a judicious discrimination, state, that when the disease is not accompanied with fulness of the vessels of the head, it may be administered with advantage after blood-letting. In this decision I concur, and add, that it should always be given either with camphor, as directed by Stoerck, or with the subcarbonate of the alkalies, as advised by Stutz and Bruninghausen, or with both; more particularly when the convulsions occur from excessive irritability, or after delivery, or when they assume chiefly the characters of hysteria. Rinck applies it to the abdomen, and Hufeland to the soles of the feet. *Dr. Copland's Dictionary*, page 433.

‡ Dr. Brinckle gave the ergot under such circumstances. Twenty minutes after the first dose had been given, uterine action came on, and the patient did well. Dr. Waterhouse, of Philadelphia, Mr. Michell, and a few more also, approve of its employment; but only where the os uteri be dilated, and the external parts free from rigidity. Dr. Copland, in one case, exhibited it in combination with borax. Ed.

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you expect an attack, you must thoroughly clear the alimentary tube. After bleeding, ipecacuanha, I conceive, or any other mild emetic,* may be given with advantage. If you believe there is any offensive accumulation in the bowels, use purgatives. Castor oil, senna and salts, rhubarb, or calomel, may be given, and if you wish the medicine to operate with promptitude, salts and senna. The advantage of this purification of the tube by means of purgatives, is two-fold; first, it tends to cool the system, more particularly if you employ the saline preparations, and thus you reduce the vascular action; and second, by clearing the tube, you are, perhaps, carrying out of the system, something that is irritative, and calculated to keep up the vascular movement, together with the determination of blood on the head.†

WARM BATH.

After clearing thoroughly the alimentary canal, and abstracting that portion of blood which you may deem expedient, you may put your patient into a warm bath, a remedy more easily managed where the patient has not yet been attacked with a fit. Get a large vessel, let the water be heated to 97° of Fahrenheit's thermometer, the cold and warm water being well mixed with each other, and there let the patient remain ten, fifteen or twenty minutes, according to the soothing effect produced. Experience has shown the use of warm baths in convulsions, whether of women or young children; nor is theory wanting to their recommendation, for the

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* When the symptoms threatening convulsions have been preceded, or are accompanied by, others, which denote much disturbance of, or the lodgment of any offensive matter in, the stomach, gentle emetics may be given with safety and advantage. In many affections of the brain it has been thought that emetics afforded a singular benefit; but some practitioners are not in favour of them, in any cerebral affections Ed.

† Every one who has experienced a fit of dyspepsia, must know, that by it the severest head-ache may be produced, and every one who has made the diseases of children the subject of his attention, must be aware how close is the connexion between a disordered state of the bowels and the state of the head. *Dr. Blundell.*

bath seems well calculated to relieve the head, inasmuch as it operates as a diffusive vascular, and produces perspiration.*

NERVOUS MEDICINES.

For my own part, the moderate abstraction of blood, the clearance of the alimentary tube, and the putting the patient under the bland and soothing influences of the warm bath, are the means on which I should mainly rely; but as nervous medicines, such, for instance, as opium and camphor, are sometimes prescribed, they must not be forgotten, though Denman says, and I think truly, that they are rather given from custom, perhaps, than in the expectation of any solid advantage to be derived from them. Of the propriety or impropriety of giving opium,† I should say if it equalize the circulation, benefit may be expected from it; but if it stimulate the brain, then injury will be the result.

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* In addition to bleeding, emetics, and the warm bath, if, notwithstanding signs of active determination continue, the *cold affusion on the head*, or cold applications, should be resorted to, either previously, at the same time with, or subsequently to the warm bath, Dr. Home and Dr. Blundell favour the exhibition of digitalis in such circumstances. *Dr. Copland.*

† Objections have been made to the frequent or habitual use of opiates for slight complaints in pregnant women; and there is much reason to suspect, that they sometimes, acting perhaps like spirituous liquors, prove injurious to the child. But these objections do not apply to their occasional use when they are really necessary. Yet as, in very large doses, opiates have been known to produce convulsions, it seems better to give them in these cases, in small quantities often repeated, than in a large dose at one time. *Dr. Denman's Midwifery.*

Baudelocque relates a case in which the exhibition of an anodyne, was more particularly the cause of keeping up and increasing the convulsive attacks. "To a woman attacked with convulsions during the first month of her pregnancy, eight or ten drops of the mineral anodyne liquor of Hoffman, were given in a spoonful of orange-flower water, which rendered the fit longer by half, than it had been the evening before; and a similar dose administered the next day, prolonged it as much more; so that from three quarters of an hour, which it was at first, it was lengthened to an hour and three quarters, and afterwards to three hours and an half, both morning and evening; which continued in that manner, during twelve days of each month, till the end of pregnancy, notwithstanding the use of the warm bath four hours each day, without interruption, diluting drinks, &c. *Heath's Trans. of Baudelocque's System of Mid.* Vol. 2, p. 101.

ACCELERATION OF DELIVERY.

Should a woman have had two or three attacks of convulsions at some former period, so that the premonitory symptoms are more than usually alarming, it might be worth considering, whether, in a case so pressing, delivery ought to be accelerated. Of turning the child by force, you must not even think; violence in obstetricy, is the unpardonable sin which may not be forgiven; but if you can carry the fingers to the mouth and neck of the womb, so as to touch the membranes, these may be punctured with a sound bluntly pointed, and in four-and-twenty, or six-and-thirty, hours afterwards, the ovum would most probably be expelled. My own opinion with respect to delivery, in the way of preventive treatment, is this; if bleeding, purging, and the warm bath, subdue the symptoms, do not as a general practice, interfere with the uterus; but if you have a case where the ordinary means fail, and where the convulsive attack is in a high degree probable, then it becomes justifiable to puncture the membranes, and discharge the liquor amnii, an operation not perhaps without its evils, but still very simple, and as far as the woman is concerned, very safe.

SECTION LV.

CONCLUDING OBSERVATIONS ON CONVULSIONS.

In the three preceding sections, we have made some general observations on convulsions, their treatment, and the means for preventing their recurrence. It now remains to add a few remarks on the probable causes of the disease, the diagnosis, and the appearances which are observable on dissections. And further, to make mention of apoplexy and sudden death, as analogous to puerperal convulsions.

CAUSES OF CONVULSIONS.

Should you ask me, in what manner convulsions are produced, I should reply, that the more probable and immediate cause of them is a pressure on the brain, and perhaps on the spinal marrow also.* This pressure sometimes results from the effusion of blood, still more frequently from effused water, and, most frequently of all, from mere congestion. If you were to ask me how it is that these congestions of blood are produced, I should reply, not in most instances by general plethora, but rather from an increased action of the cerebral vascular system, the carotid arteries, and perhaps the vertebral; indeed, in the adult, if we examine the carotids, we may sometimes see the pulse beating and jumping in the neck. That the convulsive and hydrocephalic affections of young children are connected with an increased action of the cerebral vessels, is certain. In young children, by placing a finger on the fontanel, you may examine the cerebral circulation, more readily than the circulation in the wrist. Now where there is a disposition to convulsions, or hydrocephalus in infancy, on putting your fingers upon the fontanels, you will often find that the brain is beating most strongly; nor is it necessary to touch it for this purpose; for if we take off the cap when the vessels are in action, the pulsatory play of the brain may be seen distinctly by the eye. An increased action of the vessels, produces an accumulation of blood in the genitals, in the wattles of birds, and in the breasts of women during suckling; and these points considered, it is not, I think, improbable, that in these convulsions and convulsive propensities of women, a cerebral congestion, with pressure and irregular circulation, and an increased action of the carotid and vertebral arteries, have a large

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* Dr. Burns thinks, that in a majority of instances, the spinal cord is first affected, through sympathetic irritation, by the state of the uterine nerves, and immediately afterwards, the head suffers.

Mr. Power supposed, that convulsions depend on a translation of, what he calls, the parturient energy, from the uterus to the brain, or that there is a metastasis of actions. *Dr. Burns' Mid. 8th edit. p.* 484.

share in producing the disease. In support of these opinions, respecting the more immediate nature of puerperal convulsions, the following symptoms may be also stated:—the flushing of the face, the throbbing of the carotids, the enlargement of the features, the heat of the scalp, not to mention other symptoms which are premonitory of the disease, and which seem to indicate the afflux of blood upon the head. Hence, too, the help derived from large bleedings, especially from the cephalic vessels.*

PROGNOSIS OF CONVULSIONS.

The prognosis of puerperal convulsions is rather favourable than otherwise: certainly it is a most alarming disease, and, if blood be effused on the brain, death is very probable, not to say desirable; if, however, you are early in your operations, and treat it actively upon the principles I have laid down, I think you may generally subdue it.

POST-MORTEM APPEARANCES.

When the management of convulsions was less understood than

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* To my remarks on the causes of convulsions, I may add an observation which I once accidentally made on the dog, and which seems to me well fitted to illustrate the cause of those affections. Anxious to know, in the dog, what are the utmost powers of circulation by anastomosis, for this purpose I contrived an instrument, by which, in this animal, I could close or open the thoracic aorta at pleasure, when I found, among other observations, the following facts worth notice:—If I bled the dog before I tied the aorta, he lived for some hours; but if I secured the artery without a previous bleeding, he had an attack of convulsions resembling very much the puerperal convulsions of women, and this attack could be relieved or renewed by opening or closing the aorta. When I opened the dogs, I discovered, on the surface of the brain, a few small clots of effused blood, not much bigger than a pea. And the explanation of the phenomenon was this: when the aorta was tied, it collapsed below the ligature, and emptied itself into the *vena cava*, then the blood came in large quantities from the cava through the right side of the heart, and the lungs into the left side of the heart, and the aorta, so as to reach the ligature by which its further progress was intercepted, so that it could not make its entrance into the parts below, or behind the thorax. As in convulsions, therefore, so here the blood accumulated in the upper or anterior parts of the system, and convulsions and death were the result. *Dr. Blundell.*

it is at present, and more especially when it was customary to deliver by force—death, both of the mother and child were by no means infrequent, whence frequent morbid dissections were made. Now, it is well worth your notice, that, in the great majority of those fatal cases which have been submitted to inspection, there has been no observable effusion of blood, whether upon the surface of the brain, or in its substance. Effusions of water I believe, from my own observations, are in these cases more common; and if a woman have a repetition of fits, I should expect to find water on the surface of the brain, between the meninges, not to omit the ventricles of the brain, and the spinal theca. In the general, women seem to die at a time when there is simply a congestion of blood which remains in the cerebral vessels, or with congestion and aqueous effusion conjoined; and very satisfactory it is to know this. If a large quantity of blood is poured into the brain, or upon it, in general it is all over with the patient; now and then, perhaps, by spontaneous process, the patient may recover, but I am convinced that medical treatment can then avail but little; if however, the blood be still contained, as it usually is, in the vessels, the bleeding relieving this surcharge, you may remove that pressure which is, I conceive, a more immediate cause of the disease, and thus perhaps you may save the patient.*

APOPLEXY AND SUDDEN DEATH.

In the end of gestation, women are sometimes attacked with apoplexy,† in which condition they may lie for hours, or days,

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* Denman says, that in most of the cases which he has met with, he found the heart unusually flaccid, and without a single drop of blood in the auricle or ventricles; adding, too, that in other cases, many large livid spots have been seen on the surface of the body. A case was reported to him by Hewson, in which, after death, much blood was found upon the brain; and another case was reported by Hooper, in which the patient died in eight hours after the fit, and effused blood was found weighing three or four ounces. *Dr. Blundell.*

† Apoplexy may take place, at the commencement of labour, or during gestation, without convulsions. In the latter term, the os uteri is rarely affected; still, in a few instances, if death did not take place immediately, it has been found to dilate a little. The practice,

recovering gradually afterwards, or ultimately sinking. Under apoplectic attacks, I believe, labour does not so readily come on as under the convulsive attack; nevertheless, I would advise you to examine the os uteri occasionally and to take care that the child be not born unperceived. In its nature, though there are no spasms, I look upon this disease as strictly analogous to the convulsions of which I have been speaking, and I would, therefore, treat it upon the same principle. I suppose it is produced, in good measure by congestion of blood in the head.

So also sudden deaths may sometimes occur during delivery, and the cause, even on dissection, may not always be discoverable. From apoplexy, rupture of the heart or large vessels, uterine bleedings, and so on: death may be suspected to follow suddenly.*

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in either case, is much the same, and differs in nothing from that to be followed at other times. The chief resource is the lancet, and as delivery can do no good to the mother, the child only claims attention. If it occur during labour, and death be evidently approaching, the delivery ought to be promoted, as soon as possible, by turning, or the forceps, in order to preserve the child. If it occur in the end of pregnancy, the Cæsarian operation should be performed immediately after death, or, with better chance, just before it, when the mother cannot suffer, being unconscious or insensible. *Dr. Burns' Mid. 8th Edit. p.* 489.

* Sudden deaths sometimes happen soon, or a considerable time after delivery, when there is no apparent reason for suspecting such events.

In every case of extreme debility, induced by any circumstance which might occur at the time of parturition, great caution was generally recommended, that patients should not exert themselves beyond their strength, or do what they seemed able to do without much apparent difficulty. But from a review of these dreadful accidents, of which, in a long and extensive practice, I have seen and known several instances, I think they may be reduced under the following heads:—

First; when before delivery the patients were subject to frequent returns of spasm or cramp-like pains in the stomach, spreading their influence to the heart, as is shown by the temporary suspension or interruption of the circulation, indicated by the pulse. These symptoms may return after delivery with increased and dreadful violence.

2ndly; when the patient is very much reduced by loss of blood at the time of delivery, the weakness thereby occasioned remaining a long time afterwards. In these cases, on making any extraordinary exertion, the patient is suddenly overcome, and the powers of the constitution are not able at that time to recover vigour of action sufficiently to sustain life.

3rdly; when without any adequate indication of the mischief to be apprehended, a faintness and a difficulty of respiration suddenly come on, and these increasing, the patient dies unexpectedly. This event is usually preceded by her spitting a small quantity of blood, and on examining the body after death, an oozing or effusion of blood in the air vessels of the lungs has clearly shown the cause.

SECTION LVI.

LABOURS COMPLICATED WITH TUMOURS, ETC.

Though the pelvic cavity is commonly healthy, and presents no impediment to delivery, yet occasionally, from morbid growth or other circumstances, parturition may not only be difficult, but even fatal.

DELIVERY IMPEDED BY EXOSTOSIS.*

For a large exostosis to grow upon the sacrum is not a common accident, though occasionally, large quantities of bone are formed

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4thly; in cases of extreme debility from other causes, particularly in the edematose swelling of the leg, in which there is often a surprising degree of weakness, with much disturbed action of the whole frame, on the patient's making any effort beyond her strength, and perhaps against her inclination, a fatal and sudden faintness is sometimes brought on, before an action to which she seemed competent is completed, and death seems more unexpected and instantaneous under these than any other circumstances; in some cases several weeks after delivery.

With regard to the first cause of these deplorable events, without waiting for the return of the spasm, it will be proper to give some very warm cordial immediately after delivery, as brandy alone or diluted, acting in the manner usually practised, when patients are suffering from gout in the stomach. The most suitable medicine is the *confectio opiata*, given and repeated in a full dose according to the exigencies of the case; and the stomach should be very often supplied with some actually warm drink, as weak broth, tea of various kinds, especially those made from ginger or pepper; with actually hot applications.—With regard to the second and third causes, there is no way of preventing their effects so reasonable, as by taking care not to fill the vessels too hastily, by very plentiful nourishment, from an impatience to restore that strength which the patient has lost; or pressing her too hastily to a convalescent state.—With respect to the fourth cause, of which I have seen three instances, we are to be very circumspect, that we do not permit or persuade patients to make much exertion, while they are weak, but leave them to act according to their own feelings and judgement.

These observations will not, I fear, be of much importance, but we may be truly said to have a very imperfect knowledge of the subject of sudden death under these circumstances; and it deserves more accurate observation, and greater consideration, than have hitherto been given it. *Dr. Denman's Midwifery.*

* The capacity of the pelvis may be affected in consequence of a fracture in the acetabulum, from which I have seen extensive and pointed ossifications stretch for nearly two inches into the pelvis. *Dr. Burns.*

upon this part. A case of this kind is to be managed precisely upon the same principles as those distortions, or contractions, of the pelvis which we considered under the head of laborious labour, and I dismiss them, therefore, without further remark.

CALCULI IN THE BLADDER.

Urinary calculi,* concurrent with delivery, are, also, by no means of frequent occurrence; if known before delivery, they ought to be taken away, as they are not unlikely to obstruct delivery. Now, these calculi may be removed either by cutting into the front or back of the neck of the bladder, or by dividing the urethra; but, in cases of this kind, removal by mere dilatation is desirable. This practice, now generally received, was strongly advised by my predecessor, Dr. Haighton, and year after year it has been as strongly recommended by myself. Sir Astley Cooper, in whose mind, I believe, the idea was of native growth, though anticipated, first introduced the operation.† It has always appeared to me, that the brevity of the female urethra, and the exceeding laxity of it, were extremely favourable to dilatations of this kind, nor has the event falsified the opinion.

Although the smaller calculi may be easily extracted prior to delivery, what is to be done if the stone is large, and should have remained undiscovered in the bladder till parturition begins? Why, if the calculus be small, we may allow the head to pass, the ob-

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* These concretions may sometimes be of no small size. Mr. Tipping, of Tooting, once showed me an urinary calculus considerably larger than a goose-egg. *Dr. Blundell.*

† I am myself an advocate for the removal of calculi from the female bladder, by dilating the meatus urinarius. Now, for this purpose, I employ an instrument constructed upon the principal of the speculum ani and speculum oris, and which has the advantage of permitting the urine to escape, whilst it dilates the passage sufficiently for the entrance of the forceps, and, the removal of a stone of considerable size. I would also say, if the stone be small, the dilatation should be accomplished in a few minutes; but that, if it should be large, it will be better to dilate but little, from day to day, (unless peremptorily required) until the greatest degree of extension is accomplished, carefully avoiding contusion, which is much to be dreaded. *Sir Astley Cooper.*

stetrician not meddling; but if the calculus be large, and likely to obstruct the passage of the head, then it would be advisable, if practicable, to urge the stone above the brim of the pelvis, so as not to interfere with the passages of the child through the pelvis. But, again, if a calculus obstructing delivery could not be got rid of in this way, it would then, I conceive, become necessary to open the head or the bladder, or the urethra, and of these practices, probably, the most advisable would be the removal of the calculus.

TUMOURS ON THE SACRO-SCIATIC LIGAMENT.

It sometimes happens, again, that tumours are growing to the sacro-sciatic ligaments, and Dr. Drew has recorded two cases of this sort. In one of these cases a large tumour grew on the sciatic ligaments, completely obstructing the outlet of the pelvis. In this case, new to the obstetrician, nothing was done, and both the mother and child died. In another case, there was a tumour on the sacro-sciatic ligaments, weighing about two pounds and a half, and Dr. Drew, considering the tragical result of the former, thought it his duty to extirpate by cautious dissection, when both child and mother were saved. The tumour was fourteen inches in circumference.* In these cases, then, the proper practice is obvious.

RECTO-VAGINAL TUMOURS.

The more common impediments, and, perhaps, the more dangerous in their effects, are the recto-vaginal tumours, that is, those enlargements which take place between the vagina and the rectum. These recto-vaginal tumours or enlargements, may arise from various causes, but with a view to practice, I shall only mention the more frequent cases.—1st. Between the vagina and rectum, water will sometimes accumulate, forming large swellings there; these yield pretty readily under pressure, and are of no obstetric

* See Edinburgh Journal, vol i., p. 23.

importance. — 2nd. Sometimes the intestines become interposed between the vagina and the rectum.—3rd. Occasionally, though not frequently, the lymphatic glands, I suspect, enlarge at this part.—4th. And lastly, be it not forgotten, when recto-vaginal tumours form at all, they most commonly form in consequence of an enlargement of the ovarium ; in nine cases out of ten, the enlargement is of this kind. These ovarian enlargements are not uncommonly the result of incipient dropsy; they may also be occasioned by scirrhus, or by a formation within the ovary of parts of the fœtus, as teeth, bones, pulp, quantities of hair, or the like. Not to dwell on these niceties, however, it may be observed, that in a view to utility, ovarian tumours may be divided into two varieties, viz. the solid, and those which contain water or pulp ; to which may be added a third variety ; namely, the tumour formed by a fold of the intestines, and descending with the ovary, thus forming a compound enlargement, partly ovarian, and partly gaseous and intestinal.

RULES AND PRACTICE IN CASES OF RECTO-VAGINAL TUMOURS.

The leading practice which the recto-vaginal tumours admit, are the three following :— In the first place, if you are called to a case of recto-vaginal tumour; and upon making examination, you find the outlet of the pelvis closed, the vagina lying before the tumour, and the rectum behind it, what would you do? If you are called to the labour early, before the child's head is forced down into the upper part of the pelvis, as those tumours do not, I think, in general, adhere firmly, or, indeed, do not adhere at all by inflammatory cohesion, you may sometimes succeed by urging them above the brim of the pelvis ; and of all the modes to be resorted to, this, when practicable, is the first and the best. But, in the second place, if you cannot accomplish this, nor, mind you, is failure improbable, what is to be done? Why, if the tumour be yielding, and its bulk be small, give a fair trial to those natural efforts, which the good obstetrician never hastily distrusts, and the

head perhaps may work its way through the pelvis, the tumour collapsing or bursting, or gradually ascending above the brim.—Lastly, if you think that there is no reasonable hope that the head will work a way for itself, there is yet a third practice to which you may have recourse, I mean the opening of the tumour, whether by puncture or incision.

EMPTYING THE TUMOUR.

If the tumour is filled with gelatinous matter, or with water, in such cases an evacuation of it may be effected. By some it is advised to open the tumour from the rectum; but I conceive the vaginal opening is preferable, though I know the rectum will bear a good deal of violence without fatal result. It has been recommended also, to lay the tumour open by the trochar and canula: if water is pretty certain, you may introduce the instrument at the most depending part of the tumour, and readily evacuate it, and should the substance which escapes be of viscid consistency, by little and little you may enlarge the opening with a scalpel, so as to give a broader vent. Should it be doubted whether the swelling be solid, or filled with water or viscid matter, you may cautiously cut down with the scalpel till the point is decided. In either case, when you do operate, recollect that a fold of intestine may lie in the way,

PRACTICES OF DUBIOUS UTILITY.

Other practices, but of more doubtful service, have been recommended. Where the means just considered have failed, laying open the head has been advised, but the practice, I believe to be bad, because, after this is accomplished, if the tumour be moderately large, you may still be unable to get it away. We have been advised further, and this measure may be sometimes necessary, to lay open the head, and the tumour too. In general, if the tumour is encysted, I should hope, that the laying open its

cavity, would supersede the necessity of the use of that formidable instrument, the perforator. The application of the forceps in these cases, is an excellent topic of obstetric dispute; but unless the tumour be exceedingly small, you may scarcely hope to accomplish the delivery by the use of this instrument. Turning is fatal, therefore inadmissible.

Again, it has been advised in some of these cases, to perform the Cæsarian operation, and I do believe, that in some instances of recto-vaginal tumour, the Cæsarian operation, dangerous as it is, might be the safest proceeding.* Still, however, I closely adhere to the general principle of British obstetricy, that the Cæsarian operation, in the present dangerous modes of performing it, at least, ought never to be attempted, if delivery, however difficult, may be accomplished by the natural passage; because, unless we adhered to this rule, there would, I fear, be no end to the cases in which the operation would be needlessly performed. By Dr. Davis it has been judiciously observed, that if the abdomen were laid open above the pubes, the tumour might, perhaps, be removed from the abdominal cavity, so as to make room for the passage of the child through the pelvis, and to supersede the division of the uterus. For myself, I conceive, that in some cases, perhaps, the tumour might be advantageously dissected away, by laying open the back of the vagina. Two advantages would result from an operation of this kind; namely, the clearance of the pelvic

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* Dr. Merriman is of opinion, that the Cæsarian operation might have been of service in Mrs. Daly's case; "thus," he says, "I know not that the Cæsarian operation has ever been applied to cases of this nature, and its constant fatality in this country, would be a very great objection, to employing that mode of giving relief. Yet, it must be acknowledgd, that if the Cæsarian operation had been performed upon Mrs. Daly, at the time the puncture was made into the tumour, there would have been a great probability of preserving the child, which was then vigorous and active; and the consequences to herself could not have been more calamitous than resulted from her actual labour, conducted, as we believed, with the greatest caution and judgment. Had the tumour in this case, been incapable of diminution by puncture, no other means of effecting delivery could have been used, than the Cæsarian section; and, consequently, under such circumstance, that operation would have been justifiable. *Dr. Merriman's Paper on Tumours Obstructing Parturition. Med. Chir. Trans.*, vol. x., p. 51.

cavity, and the liberation of the body from a diseased mass, which, in the progress of its growth, might afterwards destroy the patient. These practices, however, require much previous meditation.

RECAPITULATION.

To repeat what I have already said, the principal practices, admissible in these cases of pelvic tumours, concurrent with parturition, are the following: the urging of the tumour above the brim of the pelvis, if indeed this can be done with gentleness;—the giving a few trials to the natural efforts;—and the reduction of the bulk of the intumescence by puncture or incision. Other practices not to be forgotten, where the former fail us, are embryotomy, embryotomy in conjunction with the puncture of the tumour, applying the forceps, turning, the Cæsarian operation, and extirpation of the tumour, either by abdominal or vaginal incision. Extirpation of the tumour, by way of the vagina, may, perhaps, in an improved state of abdominal surgery, prove of valuable use; but till facts have accumulated, it is better to refrain. On reviewing the cases* which have been subjected to those different practices, we may, I think, safely conclude, that unless

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* One case I know of, in which the tumour was pushed above the brim of the pelvis, both the mother and child recovered.

Four cases I know of, in which the tumour was laid open by puncture or incision; in the first of these, the mother recovered with difficulty; in the second, imperfectly; in the third and fourth cases, she died; in one of the cases, about six months after the operation was performed; three of the four children were saved; of eight lives, therefore, five were preserved, and three were lost.

Eight cases have come to my knowledge, in which embryotomy was adopted; in these cases, two of the mothers recovered, one of them imperfectly, and five of them died; of course all the children were lost; of seventeen lives, therefore, three only were preserved, and fourteen were lost, for one was a case of twins.

Of puncture and perforation combined, that is, puncture of the tumour, and perforation of the head, three cases are known to me; in one of these, the mother recovered; in the second, she died; in the third, she sank eighteen months after the operation; all the children were lost; of six lives, one only was preserved.

Of turning, I have five recorded cases; in four of them the mothers died, in all the children; of ten lives, therefore, one only was preserved, and nine were lost. Baudelocque's, Van

the tumour can be urged above the brim, to open it is the most desirable practice, unless, indeed, it can be wholly extirpated.

SECTION LVII.

ON PLURALITY OF CHILDREN.

In general, women produce but one child at a birth; however, not unfrequently they present us with two,* and less commonly with three,† four, or even five.‡

DIVISION OF THE SIGNS OF PLURALITY.

It is very difficult to judge of the existence of two or more fœtuses,

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Doeveren's, Mackenzie's, and Hardwick's cases, were fatal to both mother and child. In the instance mentioned by Giffard, turning succeeded, but the child did not live many minutes.

In the second volume of the Medico-Chirurgical Transactions, there is an excellent paper on recto-vaginal tumour, by Park, of Liverpool; and, in the tenth volume of the same work, there is another, still more excellent, from the pen of Dr. Merriman; and to these papers I am indebted for many of the preceding facts. *Dr. Blundell.*

* It appears from the statistical accounts, transmitted to government about the year 1801, that, in these islands, on an average of sixty-five cases of parturition, one is a birth of twins. *Dr. Blundell.*

In the Middlesex Hospital, there was about one in ninety-one; whilst in Dublin, the proportion was greater. In France, agreeably to our return of "*l'Hospice de la Maternité*," the proportion was about one in eighty-eight: but, according to that of Madam Bouvin, of the same institution, the proportion was only one in about one hundred and thirty-four; while in that of the "*Maison d'Accouchemens*," the proportion was about one in ninety-one; Dr. Arnell's average is one in seventy-five; Dr. Moore's, one in seventy-six. In America, the average is about one in seventy-five. *Dr. Dewees' Compendium, p.* 543.

† In the return of cases in the "*Maison d'Accouchemens*," as furnished by Baudelocque, there appears to have been but one triplet case in more than eight thousand cases; in the return of Madam Bouvin, in the cases of "*l'Hospice de la Maternité*," one in rather less than seven thousand; Dr. Arnold's, one in one thousand two hundred; and in our own practice, in nearly nine thousand cases, we have not met with a single instance. *Dr. Dewees, p.* 544.

‡ Dr. Hamilton met with a case of four fœtuses; and Dr. Garshore, in the Transactions of the Royal Society, has given one or two well-authenticated cases of five children at a birth. *Dr. Hamilton's Outlines, p.* 380.

Dr. Osborne mentions a case, where, in an early miscarriage, he saw six distinct *ova*, each complete. *Lond. Prac. Med. 6th Edit. by Dr. Jewel.*

Sennert relates the case of a lady, who produced at once as many as nine children, nor does this appear to me to be wholly incredible; and Ambrose Paré tells us of another lady, who gave to our species no fewer than twenty children in two confinements. *Dr. Blundell.*

from appearances; hence practitioners have got together a variety of indications, and these, according to custom, I shall divide into three classes, according as they occur during gestation, and before delivery, during labour, or before the birth of the second child.

INDICATIONS DURING GESTATION.

Should a woman, throughout gestation, have an abdomen unusually small, you may generally be assured that there is not a plurality of children; and, in such cases, commonly, the question will not be asked: on the other hand, however, if you find that the abdomen is very bulky, and particularly the uterus, of which, perhaps, the outline may be easily distinguished, a plurality of children is by no means improbable. It is clear, however, that the large bulk of the abdomen, if it stand alone, is a very uncertain proof of twins; for in the first place, the bulk of the abdomen may be occasioned by dropsy of the peritoneum, or by enlargement of the ovaria, or a redundancy of the liquor amnii, not to mention gas, adeps, and other causes. And in the next place, some women have a considerable convexity of the lumbar curve, with a corresponding hollowing of the lumbar region behind. This, which has the effect of advancing the abdomen, has also the effect of carrying forward the uterus, so that where there is a single child, the lumbar vertebræ being pushed forward, together with the uterus, the abdomen, when viewed in profile, may appear as large as from twins. This indication, too, is the rather to be remembered, because the sex, and even the obstetrician, are not infrequently deceived by it; but, on laying the hand upon the loins of the woman, particularly if the dress be loose, the case becomes evident enough. The enlargement does not proceed from plurality of children, but merely from the pregnant uterus being thrown forward in consequence of the convexity of the lumbar curve.

Another indication, and one not to be overlooked, is the situation of the uterus under the recumbent position. When there is a plurality of children, the fœtuses may be deposited in the sides of

the uterus: and hence, when the patient is lying on her back, if the hand be laid on the abdomen, the womb may sometimes be felt separating, as it were, into two lateral tumours, one on either side the spine, a sort of groove being traceable between them. Now, if this observation be obscurely made, no certain inference may be drawn from it; but where it is repeatedly and clearly ascertained, I think it constitutes one of the most valuable signs indicative of a plurality, of which our art is possessed.

Again, of signs occurring during pregnancy, we are told that the womb may be expected to enlarge the faster in consequence of plurality; and it is asserted, accordingly, that the fundus uteri ascends in the abdomen more rapidly, where these pluralities exist. So also, the movements of the fœtus are said to be felt more extensively, where there is a plurality of children, than where there is a single fœtus only, and of course the abdomen is likely to feel heavier, than when the ovum is single. On these signs, however, after all, but little reliance can be placed; the cumbersome weight of the uterus, the rapid ascent of the fundus, and the large bulk of the abdomen, prove but little; and of the diagnostics enumerated, the only one on which I should myself venture to lay stress, is the separation of the uterus into the two lateral tumours, in the manner before stated.

INDICATIONS DURING PARTURITION.

We are sometimes able to ascertain that there are twins in the uterus during the birth of the first child, and this class of indications may next deserve a little attention from us, though it is unnecessary to dwell much on diagnostics of this kind, because they lead to little practical advantage. If there is a plurality of children, you may find, after the discharge of the liquor, that the uterus is still very bulky, and some might venture to infer that this large bulk of the uterus could not exist after the discharge of the water, except there were a second child in it. By a second child in the uterus, sometimes the full action of the womb is pre-

vented, whence skilful obstetricians sometimes take a hint from the inertness of the uterus; and when there is a second fœtus in the uterus, that which is passing may be prevented from feeling the full effect of the pains, because a second child is interposed, so that the slow advance of the fœtus, without other cause to which it may be referred, may be suspected to arise from plurality of children. When there is more than one fœtus, you may have, though rarely, a presentation of two right arms or legs, or three arms or legs, this being a clear proof of plurality, unless the child be monstrous.

Again, where there is a plurality of children, each is contained in a separate cyst, and each has its own liquor amnii. It sometimes happens, however, that there is but one membranous receptacle, and, of consequence, but one gush of water. Now, two or three gushes of water, are certainly no decisive proofs of twins; for these sometimes happen, indeed, not uncommonly, where there is but a single fœtus; nevertheless, if you do observe two very large and distinct gushes of water taking place, more especially where the bag from which the first gush issued, has been thoroughly lacerated, there can be little doubt.*

Thus, then, plurality may be indicated during labour, that is, during the birth of the first child, by repeated gushings of the water, by the protrusion of supernumerary members, by the inefficiency of the uterine action, by the inertness of the parturient effort, and by the large bulk of the uterus, after the liquor amnii has been thoroughly discharged.

INDICATIONS BEFORE A SECOND BIRTH.

To know that there is a second fœtus before the birth of the first, is seldom needful; but it is highly desirable that every good practical obstetrician should be able to say whether another child

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* Dr. Hull, of Manchester, has, I think, met with a case, where there were as many as five gushes, the woman producing five children at a birth. *Dr. Blundell.*

remain in the uterus after the first is away.* This may sometimes be ascertained by external examination, and sometimes by examining within, but most certainly by combining the two methods of investigation. Thus, if another child remain in the uterus, you may in general know it the very first moment by laying the hand on the abdomen, for instead of finding this part collapsed and flaccid, so that the coverings may be grasped in folds, and with an uterus contracted, round, and hard, easily to be distinguished when you have acquired a little manual experience, you observe the abdomen is nearly as large as at the end of nine months pregnancy; and, therefore, when the reduction of the abdomen is by no means considerable after the birth of the first fœtus, you may be pretty well satisfied that there is another in the uterus. Should doubts however, arise, the point may be further investigated by internal examination, when, if there is another fœtus in the uterus, you will feel the bearing of a bag of water, as at the commencement of an ordinary labour; or if the bag be broken, the child itself may be felt. Of course, if no other fœtus be lodging in the uterus, neither the members nor the cyst of a second child will be distinguishable. To carry your hand into the uterus unnecessarily, is always improper, not to say culpable or criminal, and in these cases generally, the fingers will be quite sufficient to make the examination, without the introduction of the whole hand.

CIRCUMSTANCES LIABLE TO MISLEAD.

There are many circumstances, which, unless carefully investigated, might lead you into error. Thus, when a child is away,

* The symptoms to which practitioners have chiefly trusted, *after* the birth of one child, are—1st. The diminutive size of the child, and the waters being disproportioned to the distention of the gravid uterus; 2dly, The umbilical cord, after it is divided, continuing to bleed beyond the usual time; 3rdly, The recurrence of regular labour pains; 4thly, The retention of the placenta; 5thly, The abdominal tumour not being sensibly diminished between the stomach and umbilicus. But as all these symptoms are seldom united, and several of them are, by themselves, fallacious, the most certain method is to attend to the usual diminution of the belly, and in doubtful cases, to introduce the hand into the uterus; but this will very seldom be found necessary. *Dr. Hamilton's Outlines.*

its membranes may fall over the os uteri, and then blood collecting in clots behind the membranes, which push forth into the vagina, something like the bag of a second fœtus may be felt, so that if guided by internal examination, you neglected to examine externally also, you might persuade yourselves that there was a plurality of children, when, in fact, there was not.*

By rupturing the membranes, these cases may be easily unmasked; for then the blood comes gushing forth, and, on examining externally, you find that the womb is very completely contracted, so that for a second fœtus there is no room.

Again, if careless or incompetent to make an accurate external examination, you may now and then be deceived; for the woman may have an enlargement of the spleen, the liver, the kidneys, the ovary, the last especially, or there may be air or gas, or a great deal of water in the abdomen, and from these causes, after delivery she may remain very large. To guard against this error, follow the advice already given, of feeling for the uterus. Do not content yourselves with simply laying the hand upon the abdomen, but do more than this; feel for the uterus itself, grasp it, ascertain its form and outline, and then, in general, you will be able to satisfy yourselves whether there be or be not another child in its cavity. A small uterus is to be esteemed a certain disproof of another fœtus; for blighted ova are not worth considering here. A large womb should always lead us to suspect another fœtus, and in dubious cases, make your examination internally. By passing the hand into the uterus, the point may at all times be set at rest; but, in general, this practice is not necessary.

SECTION LVIII.

MANAGEMENT OF LABOURS WITH TWINS.

In most instances, after the birth of the first child, natural pains

* Cases of this kind are not very infrequent; one occurred to Dr. Haighton, and one very remarkable one fell under my own care. *Dr. Blundell.*

soon come on, the membranes of the second cyst, should there be one, are quickly forced down or ruptured, the other fœtus presents for the world, and the completion of delivery is commonly not long.

DETENTION OF THE TWIN.

It sometimes happens that the twin enters the world so quickly, that you have scarcely time to prepare for its exit from the pelvis; but in other instances it remains in the uterus for hours and days, not a bad symptom occurring; nay, if twin labour have supervened prematurely, the first child leaving the uterus, the womb may close, and the second child may escape at the end of weeks or even months.*

Now, when a second child remains in the uterus after the first is born, the woman is always liable to floodings, and, therefore, I conceive, we ought not to leave the second child in the uterus, except in cases where the first child has quitted the pelvis prematurely, and a disposition to hæmorrhage is not observed to manifest itself. In those cases, then, in which the child is not disposed to come away, I should say the obstetrician would be justified in sooner or later interfering, the risk of flooding rendering it his duty to preside over the birth of the second child, just as he would over that of the first.

DELIVERY OF THE TWIN.

If you find, upon the birth of the first child, that there is a

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* Dr. Merriman, in his Synopsis, p. 104, has made mention of the two following cases of unusual detention of the second child:— 1st. "In the *Medical and Physical Journal*, a case of twins is related, in which the second child was retained for fourteen days after the birth of the first; and the author of that communication states, that another case had come to his knowledge, in which six weeks had elapsed between the birth of the twins." *April*, 1811, *vol.* xxv. *p.* 311.

2nd. "March 4th, 1814, the wife of Mr. James Pickworth, grazier, of Sempringham, Lincolnshire, was delivered of two boys, after which she was so much composed, that she got up the next day, and remained in that state till the 6th, when she was delivered of two more boys." *Gentleman's Magazine.*

second in another membranous receptacle, one of the first operations to be performed is, that of rupturing the membranes as soon as you find the bag is bearing down into the vagina towards the external parts, for I would not do it till then. Should the head of the child be lying in the cavity of the pelvis when the membranes are ruptured, in general you may have merely to sit at the bed-side, not interfering with the birth, more than in natural labour, and should the feet, breech, or transverse presentations occur, you may assist the birth exactly in the same manner as you would the birth of the single fœtus.

But what are you to do, provided there be presentation of the feet, breech, or vertex, the fœtus being indisposed to come away? Why, in this case, I would accede to Denman's rule ;* for it is better to wait for three or four hours, so as to give the womb an opportunity of acting, and then, should the uterus fail, artificial help becomes justifiable ; for so long as the fœtus is in the uterus, the patient is exposed to risk, and this help must be given according to the general principles of obstetricy, as already fully explained. But what if you find that the child is lying across the pelvis, the presentation being of the arm, the back, or the shoulder of the child? Why, in these cases, the child lying across in the pelvis, it is your office not to wait in the way which Denman has recommended, but rather to carry your hand into the uterus immediately on rupturing the membranes, in order that you may perform the operation of turning, for, in all probability, this must eventually be effected, and, under such circumstances, the sooner it is effected the better. If you delay your operations, the womb may close and obstruct you; but operating immediately after the first child is in the world, you find the parts are lax, dilated, and unresisting, so

* Without regard to those who are fond of speculative opinions, or the determination of those who are guided by a few instances which have occurred in practice, I have concluded that we may safely, and ought to wait for four hours at least after the birth of the first child, before we deliver the patient by art of the second child; if there be no particular cause for delivering her sooner. *Dr. Denman.*

that the hand may be passed into the uterus, and with considerable ease.

DELIVERY OF THE PLACENTA.

With cases of plurality of children, as many blood-vessels are laid open, you ought to proceed with great caution, managing the delivery of the placentas in these twin cases just in the same manner as where there is but a single child. Let it be your first office to ascertain that there is no other child in the uterus, for while there is another child in the uterus, in general you are not to remove the placenta. In cases of plurality, one placenta may be common to both children,* and where there is more than one placenta, they may be connected with each other marginally, and this is a strong argument against a premature removal; add to this, that if you bring away one placenta while there is another child in the uterus, the uterine contraction being prevented, dangerous bleeding may occur. Hence, then, in this, and all deliveries, a rule of first importance, before you remove the placenta, ascertain that there is no other fœtus in the womb. Well, satisfied upon this point, and assuming that no dangerous symptoms occur, wait the hour as usual, in order that the womb may contract, occasionally compressing, and, as it were, champooing it, so as to urge its contraction, and to ascertain where the contraction has taken place. Further, when the womb is round, hard, and not large, and you are satisfied that there is no risk of inversion or bleeding, you may next proceed to remove the placentas, and this more especially, if the insertion of the cord may be felt, or the substance of the placenta is lying forth into the vagina. In some cases it may be proper to

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* In the Memoirs of the Royal Academy, there is an account of a single placenta and a single cord having been found in a case of twins, the latter of which branched off into two after it had departed to some distance from the placenta.

My worthy friend Dr. John Sims, informed me of a case of twins, in which the two funes were so closely twined together, that they had the appearance of one. *Dr. Denman.*

withdraw them in succession, but, in general, the better method is to take the two umbilical cords, to coil them together, and then to abstract them at once; taking the cord in the right hand, and the substance of the placenta in the left, and proceeding afterwards as in ordinary labours. Having done this, lay your hand on the uterus, and feel that it is contracted, and in its natural situation, behind the bladder. Lay the placentas on a cloth, and examine them, that you may assure yourselves that there is no part left behind in the uterus.

CONCLUSION.

The uterine discharges are more copious in a case of twins, than in that of a single child, and they are in general of longer continuance. In consequence of this disposition to hæmorrhage, it is always prudent to watch the patient for some hours after delivery, and never to leave her until the uterus is well contracted, and the abdomen surrounded by a well-adjusted bandage. Women, also, who have born a plurality of children, are more disposed than others to puerperal diseases, and must, therefore, be carefully watched. It rarely happens that they are able to nurse both children without injury. The children, if more than two, are, I believe, seldom reared; though they may all sometimes live. As it is proper to distinguish the order of birth, a ribband should be put round the neck, or, if you please, round either arm.

SECTION LIX.

ON LINGERING PARTURITION.*

When women have had a large family, it not unfrequently happens that the child is expelled in the course of one or two hours,

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* Dr. Merriman defines a natural labour *tedious*, when it occupies a space of time exceeding twenty-four hours. Dr. Breen does not denominate the labour *tedious*, till thirty hours have elapsed from its commencement. *Dr. Merriman's Synopsis.*

or a shorter period; yet now and then, even where the pelvis is capacious, and the softer parts fully relaxed, parturition may be prolonged for many hours or days. Now this delay may arise, not from a deficiency of room in the pelvis, but from a want of uterine effort.

ORDINARY SYMPTOMS OF PARTURITION.

In lingering labour, we are assured that parturition is begun, by the usual indications. For days, perhaps, previously, the abdomen has been shrinking in its bulk; for hours before there has been a discharge of mucus, tinged with blood, forming what is called the show; the ordinary pains are felt too, though infrequently and feebly, and, when we make an examination, we observe that the os uteri is gradually dilating; that during the pains the membranes are becoming tense under the touch, relaxing when the pain ceases; and further, if the liquor amnii has been discharged, we find, during pain, that the head bears upon the finger, receding when the pains cease; so that, by considering these circumstances in combination, although the labour be advanced very languidly, still we may obtain a clear proof that the process is begun.

ON MANUAL INTERFERENCE.

In these cases, unless there are symptoms of danger, the less you interfere the better, for a meddlesome midwifery is bad; and if the protraction of the delivery be the only inconvenience which the patient suffers, and if there are no convulsions, no floodings, nor well-marked signs of collapse to excite alarm, it is scarcely necessary the accoucheur should interfere at all; nor need the patient herself be exposed to much inconvenience, as she may remain in her chamber, or come down to a well aired drawing-room, sitting, standing, walking, or lying a-bed, according as her inclination leads; food she may take regularly; and if, under these lingering

pains, she gets but little rest, you may give her an opiate,* so that once, at least, in the four-and-twenty or eight-and-forty hours, she may have an undisturbed sleep. Although, however, in lingering labour, much help is not really required, it does sometimes happen that the anxiety of the patient, and the solicitude of her friends, or perhaps, the convenience of the obstetrician himself, not to be altogether neglected, render it desirable that the labour should be accelerated somewhat; and it is, therefore, necessary to consider what milder means may be employed with a view of augmenting, as far as may be, the action of the uterus. I say, as far as may be, for the action of the uterus, happily, is not much under our controul, nor can it always be stimulated by artificial means.

POSITION OF THE PATIENT.

By Denman, it is said, that the sedentary posture alone, has had the effect of exciting the uterus and superseding the need of obstetric instruments; and certain it is, that the mere erection of the body, whether in sitting or walking, will sometimes have the effect of powerfully exciting the pains. In a practical view, it is sufficient to know that such is the effect of the erect posture, although we may not be able to explain how it is that this effect is produced; where I asked, however, to venture an opinion here, I should reply, that the excitement may be ascribed, in part, to the bearing of the fœtal head upon the neck of the uterus, and in part to the movement of the muscles within the pelvis. When, therefore, the pains are feeble, it is not unusual to direct the patient to rise and walk about. Care, however, must be taken that the woman be not fatigued by walking too much, for if she have been pacing the chamber for some hours together, you will find, by a little calculation, she has walked several miles, and it is scarcely necessary to

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† Dr. Breen, in his observations on the management of tedious labours, says, "it should be an universal rule not to administer opium in labour, unless the bowels be previously open." *Edin. Mid. Surg. Jour., April*, 1819.

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caution against them. I am not prepared to say that, under prudent management, they may never be safe and serviceable; but I regard them with fear, and think it better to refrain. Daventer seems to have got some reputation by exciting the uterus in this manner in cases of narrowing at the brim. If the womb is to be stimulated at all on these principles, the vectis is, perhaps, the best instrument for the purpose.

EFFECTS OF THE SECALE CORNUTUM.

In lingering parturition you will frequently find the ergot of invaluable use, for it has in a high degree, the power of exciting the muscular efforts of the uterus. On some parts of the Continent there has, I believe, long been an opinion that rye bread is of abortive nature, and after all that I have seen and heard, respecting the action of the secale cornutum, I think there is no doubt that it enjoys a specific power of stimulating the uterus, provided its muscular irritability be in a state well fitted to receive the impression. The secale cornutum, it is asserted, may kill the child in some cases; and if this were really the fact, it would be quite sufficient, in most instances to set the remedy aside altogether, in cases of lingering parturition, for as, in general, there is no danger in delivery of this kind, if committed to itself, of course the life of the fœtus must not be put to risk. I ought, however, to state here, that I am by no means satisfied that the secale really does exert a poisonous influence on the child, though I am by no means prepared to deny it.* The secale cornutum is not likely to

* It has been observed, that children born after the exhibition of ergot, very often are dead, and in that case, are blanched and bloodless. This has been attributed to the strong action of the uterus, but we find this action equally strong in other cases, without the production of this effect. It has also been supposed to proceed, from the separation of the placenta, before the birth of the child; but this evidently must be conjectural. I would rather attribute it to the specific effect produced on the uterus itself, which has an influence on the ovum; but fortunately this effect on the child is by no means invariable, though I must acknowledge it is frequent, especially if the uterine action do not expel the child soon after it is excited by the ergot. This would make us more or less willing to use it, according as we expected the expulsion, to be more or less speedily accomplished. *Dr. Burns' Midwifery, 8th Edit. p.* 415.

destroy the fœtus if you use it only in the lingering cases which we are now considering, but where the birth is delayed, in consequence of increased resistance, rigidity, narrowings, or the unfavourable position of the head, it may be fatal. In cases like these, if the secale cornutum be exhibited, and have a very powerful effect, it may force the child down among the bones of the pelvis, where it may die by compression, not to mention, that under the circumstances stated, there must be no small risk of rupturing the uterus. In these cases, then, in which the resistance to the uterine efforts is great or insuperable, the secale cornutum may endanger both the mother and her offspring; but in lingering labours, assuming that the rye exerts no direct and poisonous effect on the fœtus, I look upon it as a very valuable and efficient remedy, at least in some instances. It should be observed, however, that the ergot of rye is of very uncertain operation,* sometimes to appearance exciting the uterus most vehemently, while at other times it scarcely acts at all; nor is the cause of this difference altogether intelligible. There are different forms in which the secale cornutum may be administered; either in powder, for example, or in infusion or decoction. For myself, I generally add a drachm of the secale in powder, to three ounces of boiling water, decocting the whole briskly, with continual agitation, till it is reduced to about an ounce and a half; and then pouring off the decoction, I administer to the patient one of the three table-spoonfuls every twenty minutes, till the effect is produced. Sometimes the whole quantity is necessary to excite the action of the uterus; more generally, however, after the first dose, has been exhibited, the pains become more frequent and more forcing, and the child may be expelled.†

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* In some cases it merely excites the pains, in others, and these the most frequent, it produces a feeling of increased heat, but the pulse becomes rather slower than quicker. If the dose be too large, sickness and vomiting are produced.

Desgranges remarks that it often causes vomiting, and this aids farther labour; but he does not attribute its effects to this. *Dr. Burns' Midwifery, 8th Edit, p.* 414.

† Where the pains have entirely ceased, the effect of the ergot is by no means so certain as when there are regular though feeble ones, it seeming to have the power of increasing but not of producing uterine action; it therefore cannot be depended upon where it is found necessary to induce premature labour. *Dr. Waller.*

ON TURNING AND THE USE OF INSTRUMENTS.

Lingering labours are not usually dangerous, so as to require peremptorily the assistance of art, and hence it follows, as a matter of course, that in these labours generally, turning or the use of instruments are scarcely required. To turn the child, merely because a labour lingers, is an abominable and unwarrantable practice. In carrying the hand to the feet of the child, you may rupture the uterus, and in abstracting the head and shoulders of the fœtus, you may destroy it. To perforate the head, merely because the labour lingers, is a sort of murder, and if you do this, not from ignorance, but for the sake of saving time only, you are, I conceive, in *foro conscientia*, as criminal as the felon who dies on the gallows. The lever and forceps may perhaps, be now and then employed in lingering labours; but the judicious use of them must be rare. I have the satisfaction of knowing that I can employ those instruments with some dexterity, but I never employ them in a lingering labour. Instruments in the best hands are evils, and great ones, and you ought never to have resort to those obstetric evils, until there is an absolute necessity for them. I repeat it, therefore, when the labour is prolonged, without dangerous symptoms, without deficiency of room among the bones, without rigidity of the softer parts, the delay arising solely from the inertness of the uterus, it can be but rarely that manual operations will be adopted by the skilful obstetrician.

AFTER-TREATMENT OF THE PATIENT.

After the child comes into the world, in labours of this kind, you may expect an inertness of the uterus during the birth of the placenta; be prepared, therefore, for floodings, and be on your guard against inversions of the womb. If you lay hold of the placenta, and abstract it without reflection, acting first and thinking afterwards, you are all, I trust, aware, from what has been said already, that you run no small risk of inverting the uterus.

After the child is born, unless there be flooding, it becomes you to wait for an hour, to allow the womb to repose; your second duty consists in feeling for the uterus, and grasping and compressing it gently, so as to urge it to contract, while, at the same time, in feeling the uterus, you are enabled to ascertain whether it exhibit those characters of roundness, firmness, and hardness, which indicate that the contraction is complete; the womb contracting, your third duty consists in removing the placenta according to the rules already prescribed. The placenta removed, you ought then to ascertain whether there is inversion, flooding, or retention of any portion of the placentar mass. By examining the placenta, when spread out upon a cloth, you are enabled to decide whether the whole has, or not, been abstracted. An internal flooding is known, by compressing the uterus above the symphysis pubis in the region of the bladder, and external bleeding is so obvious, that it cannot be overlooked. Should inversion have occurred, you will find the womb lying like a child's head in the vagina, and should it not have occurred, you will find this viscus in its ordinary situation, between the umbilicus and the symphysis pubis.

ERRORS TO BE AVOIDED.

The errors you may fall into, if careless and unobserving, are, first, the abstracting the placenta, without previously ensuring the contraction of the uterus; secondly, allowing yourself to be needlessly alarmed: and lastly, desiring the termination of a tedious case, you may unwisely interfere.

SECTION LX.

INVERSION OF THE UTERUS.

Either through mis-management or from other causes, the womb together with the vagina, sometimes becomes inverted. In consequence of this inversion, a large tumour is formed, which lies

forth between the limbs. In other cases, again, where the inversion is less extensive, there is a change in the position of the uterus only, and the womb becoming inverted without the vagina, forms a tumour which lodges in the vaginal cavity, and which cannot be perceived without the introduction of the fingers. And in other instances, there is yet a third degree, in which the inversion may occur, for it sometimes happens that the fundus or summit of the uterus is drawn down alone, a little way only, so as to produce a sort of depression or dimpling of the upper part; and where this partial inversion of the uterus occurs, the whole womb, under efforts like those of parturition, may be eventually pushed down, and this, independently of any thing done by the obstetrician, so that what was originally a partial inversion may thus become complete.

SYMPTOMS ATTENDING INVERSION.

When an inversion of the uterus, or of the womb and vagina, occurs, it sometimes happens, that the patient scarcely sustains a single symptom of serious inconvenience, and this more especially, if the accoucheur, discovering what has unfortunately happened, promptly, without a moment's delay, with gentleness and firmness reduces the inversion. Where, however, uterine inversion does take place, more generally very dangerous symptoms are manifested, those symptoms consisting of collapse of the strength, with large eruption of blood from the uterus, and now and then terminating in the death of the patient.

Again: when the uterus is inverted, and remains in the inverted position, whether lying in the vagina merely, or whether lying forth between the limbs of the woman, it will sometimes happen, that for hours after the accident, not a single pressing symptom shall occur. In general, however, when a womb is left in this inverted position, the patient is still liable for hours, and days afterwards, to large and even fatal eruptions of blood, of which I have myself, been a witness; add to which that independently

of the flooding, mere displacement of the parts may, perhaps give rise to more or less collapse; obstruction of the bladder, too, is not infrequent, and the introduction of the catheter may become necessary.

DIAGNOSIS OF INVERSION.

Inversion of the womb is very readily detected by those who are possessed of good obstetric knowledge. If, together with the womb, the vagina is inverted, the whole mass forms a large tumour between the limbs, bigger than a child's head; and this tumour, on careful examination, is known to be the uterus, by various marks which it is unnecessary to enumerate. If you have an inversion of the womb only, without inversion of the vagina, then there is a little more difficulty in discriminating the case, for the tumour does not lie out for inspection, but is contained in the vagina, forming a swelling large and soft like the fœtal head when intumescent, and which Burns has happily enough compared to a *printer's ball*. When, after the completion of the delivery, you make your examination with a view of finding the uterus in its ordinary situation above the symphysis pubis, an examination which, if you follow my rule of practice, you will always institute, you soon discover that it cannot be detected there. Well, then, the womb being indistinguishable in the true pelvis above the brim, in the ordinary situation, behind the bladder, you proceed to institute an examination by the vagina, and discover there a swelling large as a child's head, round and soft, as before stated, when there can be little doubt respecting the real nature of the case. And lastly, if there is merely a partial inversion of the uterus, one of those depressions at which I was before hinting, this may be ascertained with tolerable facility. Passing one or two fingers of the left hand into the vagina, and feeling the os uteri, you get a bearing on the womb, and then pushing forward the uterus, above the symphysis pubis, you lay the right hand on the fundus, above the symphysis, readily feeling

the fundus through the abdominal coverings, always thin after delivery, unless the woman is unusually corpulent; and thus examining with nicety, you detect the depression. In all three varieties of inversion, therefore, by careful and nice examinations, you may readily detect them.

PROGNOSIS OF INVERSION.

The prognosis in inversion of the uterus is by no means cheering. If the woman survive the more immediate danger, she may live for weeks, for months, nay, sometimes for years, five, ten, fifteen, or twenty, notwithstanding the uterus may be the whole period in this state of inversion; and this, perhaps, more especially where, happily for the patient, the inversion has taken place about the period of the cessation of the catamenia. It more generally happens, however, that month after month, sometimes every two or three, when the patient ought to become the subject of the catamenia, instead of there being these natural discharges, eruptions of blood are observed, as if she had miscarried; and those eruptions of blood being monthly, or bimenstrual, the strength collapses, the exhalants begin to pour out their fluids; and the woman, weakened, wasted, and bloated with water, at the end of twelve or fourteen months is brought into the most imminent danger, or, it may be, collapses and sinks.

SECTION LXI.

TREATMENT OF INVERSION OF THE UTERUS.

Your treatment of these cases,* cases which if deliveries are properly managed, ought never to occur, must strictly depend on the circumstance of the inversion being recent or chronic.

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* In attempting a cure, we must first restore the prolapsed organ to its proper position, and then retain it there, by a support introduced into the vagina, which should be continued till

CHRONIC INVERSIONS NOT RETURNABLE.

It has, I believe, rarely, if ever happened, when a womb has been inverted for a day or two, that attempts at reduction have been attended with success.* Denman says, that he has never, in one single instance, succeeded in reducing an inversion which has become chronic, nor, in the present state of my knowledge, under such circumstances, should I entertain such hopes of success as would lead me to make an active essay. Indeed, if two or three hours only elapse after this displacement of the uterus, the probabilities of reduction are small: this being the case, if you should be called to an inversion two or three days after the accident, you ought either to make no attempts whatever at reduction, or, at all events, these attempts ought to be made with the greatest tenderness and caution; on the whole, I should incline not to attempt reduction at all, fearful, and not without reason, lest, by handling the uterus, I should tear the vagina, bruise the parts, or,

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the ligaments of the womb have recovered their proper tone. Various pessaries have been invented for this purpose, but that made of the caoutchouc or elastic gum, with a ligature to withdraw it at option, appears to be one of the most commodious. Astringent injections, or a solution of alum, or sulphate of zinc, of gall, oak-bark, or green tea, or even of cold water, will generally be found useful, as will also sponging the body with cold water, or using a hip-bath of sea water. Dr. Clarke prefers the vegetable to the mineral injections, having found the latter sometimes too irritating. New and rough port wine, diluted with an equal quantity of cold water, has proved one of the most valuable injections, to which the author has ever had recourse. A sofa or hair mattress should also be used, instead of the relaxing luxury of a down or feather-bed. *Dr. Good's Study of Medicine*, 3rd edit. vol. v. p. 147.

* Mr. White mentions a case of inversion, in which by grasping, and then compressing the womb, he succeeded in replacing it, notwithstanding as much as two hours must have elapsed after the occurrence of the accident. *White's Midwifery*, 5th edit.

This disease may become chronic, and continue for years, when the surface of the womb will become partially covered with cuticle or skin, or be ulcerated. A case of this description was seen by Dr. Hamilton, in 1793. I was lately consulted in a case in which the uterus protruded beyond the vulva, and had been in this state for some years, by my ingenious pupil, Dr. M'Donnell. The tumour was reduced, and a proper pessary applied. The patient experienced great relief from the instrument. *Dr. Ryan's Manual*, 3rd edit., p. 623.

Dr. Dewees is of opinion, that in Mr. White's case, the symptoms were only characteristic of a *partial* inversion. *Compendious System*, p. 534.

which is still more to be apprehended, lest I should give rise to fatal hæmorrhage in a woman probably already much reduced.

IMMEDIATELY REDUCE A RECENT INVERSION.

Should such cases occur under your own personal treatment, or should you be in the chamber at the very moment when the womb becomes inverted, remember it is a rule of primary importance, scarcely admitting an exception, that, in all cases, without a moment's delay, you ought to replace the uterus, immediately on discovering that inversion has occurred. That inversion does exist you must detect, provided, after all deliveries, you feel for the womb in the region of the bladder, in the way so often recommended. Proceeding then to reduce the womb immediately after its inversion, you will probably effect its return with as much facility, as that with which it was originally drawn down; but if you were to procrastinate needlessly—if, in a perturbed state of mind, losing precious moments, you were to wait with a view of sending for further assistance, the womb contracting itself, its cavity would become small, its sides would become thickened, its consistence would become indurated, and the return of it would be thenceforward impossible.* Remember, therefore, should inversion occur, that it is your office, as soon as you discover the accident, to replace the organ without the delay of a moment.

REMOVAL OF THE PLACENTA.

When the uterus is inverted, the placenta is sometimes com-

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* Should inversion be complete, it will for the most part, be impossible to restore it, especially if several hours have elapsed since the accident. Dr. Denman says, "the impossibility of replacing it, if not done soon after the accident, has been proved in several cases, to which I have been called, so early as within four hours, and the difficulty will be increased at the expiration of a longer time. Whenever an opinion is asked, or assistance required in those cases which may not improperly be called chronic inversions, it is almost a rule, that the reposition should be attempted; but I have never succeeded in any one instance, though the trials

pletely detached; but, in other cases, this viscus may still cohere to the surface of the uterus extensively, or by a single lobe only. Now when this is the case, a question may arise, and which you ought to be prepared to answer, before you reach the bed-side of the patient; and this question is, whether the placenta ought to be removed or not. Now the rule, in few words, is this: if the placenta be detached, in good measure, you had better remove it entirely; some hæmorrhage will be produced, but this you must venture; the case is necessarily of more or less danger, nor can you therefore proceed, without some risk; but if, on the other hand, the placenta is diffusively adherent to the uterine surface, then perhaps they are right, who recommend us to reduce the inversion, with the placenta on the uterus, to be removed afterwards in the ordinary manner, when the reduction has been accomplished.* Fatal hæmorrhagy might follow the removal of the placenta, while the womb remains inverted, and this is one reason of the rule. Contraction of the womb, while in the inverted position, might occur, if the placenta were abstracted at

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were made with all the force I durst exert, and with whatever skill and ingenuity I possessed; and I remember the same complaint being made by the late Doctors Hunter and Ford; so that the reposition of a uterus which has been long inverted, may be concluded to be impossible. It seems as if the cervix of the uterus continued to act, or had soon acted in such a manner, as to girdthe inverted uterus so firmly, that it could not be moved. This account of the impracticability of restoring the fundus when the inversion is complete, is in strict conformity to our own limited experience of the accident. *Dr. Dewees' Midwifery*, p. 533.

It has been said, that after a lapse of many years, the inversion might be spontaneously cured, which Dailliez explains, by supposing that the tubes pull up the inverted part. There are two examples of this termination recorded, and one of them, Madame Bourchalatte, on the authority of the justly celebrated Baudelocque. In this case, the restoration took place, after a lapse of eight years. *Dr. Burns' Principles.* 8th Edit., p. 519.

* Puzos, Dionis, and others, have recommended to remove the placenta from the inverted uterus, before any attempt is made to return the womb; but Denman, Burns, and other writers, consider it proper to return the inversion, while the placenta is still attached. Dr. Merriman, in one instance, followed the advice of Puzos, and without detriment; but still he did not, at that time, think he should again remove the placenta, till after the uterus was restored to its right position. Subsequently, however, he was called to a woman with an inverted uterus, to which the placenta adhered. He tried to effect a reduction without removing the placenta, but could not by any possibility accomplish it, till he had first separated the placenta; this being done, he succeeded perfectly in replacing the womb, and affirms, that the woman has since had two children without accident or inconvenience. Ed.

this time, and this is another reason of the rule. After all, however, I suspect it will sometimes be found difficult to return the womb, while the after-birth adheres to it; but never having inverted the uterus in my own practice, I have had no experience here, and my opinion should have but little weight.

TWO MODES OF TREATMENT.

There are two modes of treatment recommended in these cases: —1st. The womb hanging forth between the limbs, you may, if you please, lay hold of its substance, and reducing its bulk somewhat by grasping it, you may press it back again into its natural situation. In this operation, the reversion begins at the mouth, and then passes to the neck, body, and fundus, all these parts being turned back again in succession; so that at length the whole, both of the womb and vagina, become reduced.—2nd. The womb being pushed into the vagina, you may get your bearing on the fundus, or most depending part; and beginning your reduction there, you may first push inward, and return the fundus, the body, neck, and mouth, afterwards following, and then the vagina. Of these two methods of reduction, the one or other may be desirable, according to circumstances.

NECESSARY CAUTIONS IN THE REDUCTION.

In reducing the uterus, be careful not to urge it unawares, against the point of the arch of the pubis. In entering the inferior half of the cavity of the pelvis, be careful, too, to carry the womb upwards towards the promontory of the sacrum, that is, in the axis of this part; and, in rising through the superior half, let the womb be advanced towards the navel, so as to follow the axis here also, for it will mount more easily. When reducing the uterus, be careful that the reduction is complete, do not content yourselves with merely pushing the womb into the vagina. Be careful too, that you do not leave a depression of the fundus, for a

depression left in the fundus may give rise to violent forcing efforts, and under these the womb may be again pushed down, and become irreducible.

REMOVAL BY FORCE NOT ADVISEABLE.

To return the uterus, Dr. Hamilton was in the habit of operating with a good deal of resolution or force. But for my part, I should say, that the smallest force which will accomplish your object is the best, and that you never can use the higher degrees of force, without a most formidable risk of tearing the vagina and perhaps the uterus. It is true, that some ten or twelve years ago, we were not in possession of any operation which enabled us to save our patient, provided the inversion of the uterus became chronic. In this condition of the disease, not infrequently periodical flooding occurred, the woman ultimately perishing cachectic; as therefore there was little hope of recovery, unless the womb were reduced, force, in our operations, might appear the less unjustifiable. Since, however, it has been proved by Mr. Newnham,* of Farnham, that the inverted uterus, when chronic, may be removed by ligature; since, further, the operation has been successfully performed by others;† for the employment of force in our attempts at reduction, there seems now to be no pretence.

MEANS OF PROMOTING AN EASY REDUCTION.

Provided we cannot render the reduction easy and secure, we must have recourse to such measures as tend to render the parts more relaxed and obsequious. We are advised by some practi-

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* See Essay on Inversion of the Uterus, p. 31.

† Cases of successful extirpations are recorded, by Dr. Clarke, in the Edin. Med. and Surg. Jour., vol. ii., p. 419; by Mr. Baxter, in the Med. Phy. Jour., vol. xxv.; by Mr. Chevalier, related in Dr. Merriman's Synopsis, 4th Edit., p. 306; by Mr. Windsore, in the Med. Chir. Trans., vol. x., p. 358. Other instances are also furnished by Continental authors. Ed.

tioners to bleed till deliquium, but this recommendation must not be too rashly adopted. Indeed, large bleeding occasionally, nay, perhaps frequently, of itself accompanies these inversions, so that all the advantages derivable from depletion, are, in this manner, spontaneously secured. Tobacco injections have great power in producing relaxation of the muscular system; and, in a formidable disease like inversion of the uterus, it might be worth considering whether the injection should be tried. The warm bath, too, might be thought of, but the risk of asphyxia, and of bleedings from the uterus, must render the warm-bath very uncertain and unsafe.

PALLIATIVE REMEDIES.

If by prudent efforts, and such force as we may use, we cannot gently reduce the uterus in any way, we must then have recourse to palliative remedies.* Flooding is the principle danger to be apprehended, and this appearing, you may treat it according to principles already prescribed. If the urine is retained, the catheter may be introduced. If you find that the woman is wearing away under sanguineous oozings, the uterus lying within reach, you may then try the effect of astringent remedies. If the woman were evidently in danger of sinking from the oozings, extirpation,† with proper caution, and by competent hands, might be thought of. A ligature would probably be necessary. I have seen one woman perish, who might perhaps have been saved in this manner.

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* When the uterus cannot be replaced, we should, at least, return it into the vagina. We must palliate the symptoms, apply gentle astringent lotions, keep the patient easy and quiet, attend to the state of the bladder, support the strength, allay irritation by anodynes, and the troublesome bearing-down by a proper pessary; the bad effects of neglecting or removing this, are to be seen in La Motte's three hundred and eighty-fifth case. A spring bandage is also useful. By these means, the uterus may contract to its natural size, and the woman menstruate as usual, but generally the health is delicate. *Dr. Burns' Principles*, 8th edit., p. 521.

† Webber, an able and active-minded practitioner of Yarmouth, successfully extirpated the inverted uterus on the fourteenth or fifteenth day after delivery. *Dr. Blundell.*

CAUSES OF INVERSION.

Inversion of the uterus may be produced from a variety of causes; but in general, I believe, inversions of the uterus are produced by the practitioner, unacquainted, perhaps, with the principles of his art, drawing down the placenta, without previously securing the contraction of the womb, an obstetric criminality. Now, when the womb is in this way uncontracted, its cavity open, its fibres relaxed, its substance soft, its placenta cohering; if you at this time lay hold of the umbilical cord, and draw down, you will easily, very easily, accomplish an inversion, for what is there to resist it? But if, as you always ought to do, you secure the contraction of the uterus, before you bring the placenta away, the sides thickening, the cavity contracting, the fibres hardening, you cannot invert the uterus if you would; first, because it will not double on itself, and then, too, because in consequence of this thorough contraction of its surface, the placenta becomes detached, so that when you pull, you pull the placenta only, and not the uterus. And therefore it is, than when you are withdrawing the placenta, you ought, in the general, first to secure a thorough contraction of the womb. And therefore, again it is, that where inversion of the uterus occurs, these inversions are ordinarily occasioned* by the neglect of the obstetrician, who draws forth the placenta without previously securing the contraction of the uterus.

It is not, however,—to the credit of the practitioner be it mentioned,—that inversion always is the consequence of mis-

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* It has been almost universally supposed, that an undue force applied to the cord for the delivery of the placenta, was the principal cause of this accident; but in this we differ from such authorities as have adopted the opinion, and for the following reasons:—first, because the accident has occurred after the delivery of the placenta; secondly, because it has taken place, when no such force has been applied; but the caution of not applying too much force to the cord for withdrawing of the placenta, is founded upon just and important principles; since, did the disposition to inversion exist, and this mass be attached to the fundus, it would be almost certain to produce it, when perhaps, without such force, the woman might escape from the danger. *Dr. Dewees' Midwifery*, p. 531.

management or ignorance. The displacement in some cases appears to be produced by the shortness of the umbilical cord. The child is laid hold of as soon as it comes into the world, the length of its cord, perhaps not exceeding seven or eight inches, and the practitioner hastily drawing the cord from the maternal genitals, and this without respect to the brevity of the funis, a pluck at the placenta, and an inversion of the womb, is the result. Sometimes, perhaps, the womb is inverted by the falling of the fœtus from the uterus, in cases when the pelvis is large, and the parts are lax; and sometimes, as I suspect, from pressure of the intestines, or some other cause, a depression of the fundus uteri is spontaneously produced, without blame to the obstetrician, this depression, with or without vehement efforts, like the parturient, proceeding afterwards, till the inversion becomes complete. Moreover, in spontaneous depression of the fundus, the abstraction of the placenta may complete the inversion, and, perhaps, when the placenta is drawn down with great gentleness, the accoucheur is surprised to find, that the fundus of the uterus descends with it.

ERRORS LIABLE TO BE COMMITTED.

The principle errors which you are apt to commit in the management of these cases of inversion of the uterus are the following:— In the first place, you may produce the disease in the way I have explained, by neglecting to secure the contraction of the womb before the delivery of the placenta. In the second place, neglecting to examine the uterus properly after delivery, you may not discover the accident till a day or two afterwards, when it is too late to reduce it. Thirdly, where the womb is drawn beyond the external parts, not recognizing what you have done, you may make violent efforts to pull it away, as if it were some tumour that ought to be removed; or you may rashly have recourse to some amputating instrument, the patient dying in consequence.* Lastly,

* The inverted womb has been torn off with the crotchet, being mistaken for a child's head.

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lastly, being impacted in the pelvic cavity, so that it neither recedes nor advances, but remains immoveable, as in cases of incarceration, much in the same manner as if no rupture had occurred. In rare cases, the child is expelled, notwithstanding the rupture; the laceration probably resulting from the very pain by which the birth is completed.* The hæmorrhage attending, varies according to the seat of rupture.† When the lacerations are in the sides of the uterus, the bleeding is more copious, because the larger vessels are there; but if, as more frequently happens, the laceration is of the front or back of the uterus, the bleeding is more sparing, of a few ounces only: indeed, the extent of the wound considered, it is really surprising that more bleeding is not experienced. It must be recollected, however, that it is not by incision, but by laceration, that the parts are laid open, and the same in principle holds of other parts of the body, for when the arm is torn from the shoulder, but little hæmorrhagy occurs.

THE CAUSES OF LACERATION.

There are two grand causes to which lacerations of the uterus may be ascribed, and the one is continued resistance to the passing of the fœtus; and the other is obstetric violence, whether of instruments or the hand. That spontaneous lacerations of the uterus may occur when the fœtus lies unfavourably, or the pelvis is con-

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* One case of this kind I saw behind Guy's Hospital, the woman died a few hours afterwards; other cases are on record. *Dr. Blundell.*

I have known two cases in which it appeared that the uterus was ruptured by the very effort which expelled the child. *Dr. Denman.*

† When a laceration occurs, any part of the genitals may yield from the perineum upwards to the fundus, but more generally it is the neck of the womb, or the contiguous portion of the vagina opposite the symphysis pubis or the promontory of the sacrum. Most of these lacerations are transverse; longitudinal rents are rare. One case I have myself seen, in which the womb was torn longitudinally, where it unites with the broad ligament in such a manner, that when past through the rent, the fingers lay interposed between the folds of the peritoneum. *Dr. Blundell.*

tracted, or when from other causes, the birth is powerfully obstructed, is a point now established beyond all controversy.

Subordinate cases of laceration there are, also, nor should these be forgotten.* The linea ileo pectinea of the pelvis is sometimes so sharp, that the finger may almost receive a wound from it, and a bearing on this may, perhaps, dispose to rupture of the uterus. Attenuation† of the substance of the uterus may also occasion laceration, some parts of the womb not being thicker than brown paper, while others are of the ordinary thickness. Irregular contractions of the fibres of the womb are said to occasion rupture. Falls‡ also, and other violences may be productive of this injury, thus the passage of a carriage-wheel over the abdomen of pregnant women, is very likely to occasion it. The hand of the obstetrician may sometimes tear the genitals, although no extraordinary force has been employed. While, however, you bear in mind these less frequent agents, remember that the two most frequent causes to which these accidents are to be ascribed, are the culpable violence of the accoucheur, or the continual resistance to the passage of the child, and to these, therefore, the mind ought to be steadily directed, whether in the preternatural labours or the laborious.

RULES FOR MANAGEMENT.

The management of these cases, so far as they admit of

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* La Motte believed that the struggles of the child were capable of producing this accident. In this opinion, he has been followed by Leveret and Crantz, and even by some late writers. But as Baudelocque truly observes, the child is passive in these cases, and as a further contradiction to La Motte's opinion, the uterus has given way after the death of the child. *Dr. Dewees' Compendious System.*

† Salmathus considers a thinness of the uterus, as a predisposing cause of rupture; and Dr. Ross (Annals of Medicine, vol. iii., p. 277) relates a case, where it seemed to have the effect, the womb not being above the eighth part of an inch thick, and tearing like paper. *Dr. Burns' Midwifery. 8th edit.* p. 492.

‡ Sometimes the uterus seems to be disposed to this accident, by a fall or bruise. Reidlinus relates one instance of this. Behling, Steidle, and Perfect, furnish us each with another. *Ibid.*

management,* may be given in few words: if the child have been thrown into the world, the accoucheur has nothing to do but to treat the patient on the ordinary principles of medicine and surgery: I will not venture to assert, that it may not hereafter be found, that extirpation of the uterus, in some cases, is advisable, but at present the operation is, I conceive, unjustifiable. If, again, disruption occurring, the head of the child is incarcerated among the bones, so as to remain fixed in the pelvis, though the body lies forth through the rupture, you may then, properly enough, apply a pair of forceps; in this way superseding the necessity of the operation of turning. When lacerations of the womb occur, however, it will generally be found that the child enters the peritoneal sac, the placenta immediately following it, the womb emptying itself as effectually as when it expels the ovum through the pelvis. Now, by examination, this ventral lodgement of the fœtus is easily made out, and when ascertained, it then becomes your office to remove the coat, to raise the sleeve of your shirt, to lubricate the hand, and to carry it resolutely, but gently and steadily along the vagina, and through the ruptured opening, so as to enter the cavity of the peritoneum, lay hold of the feet, and bring away the child by the operation of turning. Beware of grasping the intestines and pulling them down along with the feet. Provided no injury be inflicted on the mother, the sooner the operation of turning is commenced and completed the better, because if the child is left long in the peritoneal sac, it perishes there, in consequence of a suspension of the function of the placenta, which lies

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Cases of ruptured uterus, in the early months of pregnancy, from falls and blows, are recorded in Phil. Trans., vol. xlv., p. 121; Mem. Acad. Scien., 1709; Jour. Med., 1780; Burns' Midwifery, p. 640-1; Journ. Med., vols. v. and vi.; Med. Coms., vol. ii.; Dublin Medical Trans. 1830, vol. i., new series. *Dr. Ryan's Manual.* 3rd edit., p. 441.

* Different opinions have been held respecting the best mode of treatment. Some have advised the performance of the Cæsarian operation; some delivery *per vias naturales*, and others leave the case to nature. We have instances of all these methods being successful; but, delivery, by turning the child, or otherwise, has advantages over the other modes; and certainly ought, with scarcely any exceptions, to be resorted to. *Dr. Burns' Midwifery*, 8th edit., p. 494.

detached among the intestines; but if the fœtus is removed promptly, there is a reasonable hope that it may be abstracted alive; and, if no violence be employed, promptitude of delivery may also facilitate the recovery of the mother. The child taken away, the placenta is to be abstracted also, the operator being very careful not to leave any part of it behind; and in this abstraction great care must be taken that you do not draw down any other parts, together with the afterbirth, and more especially the intestines. Let the mind in these dreadful emergencies be kept tranquil and unshaken; unless you are undisturbed and settled steadily upon obstetric principles, you are unfit to act. If you are unequal to the duty, give up the management of the case altogether, and send for further assistance. Do not mislead yourselves with a notion, that these cases are desperate, and, therefore, that it matters little what is done by the patient. One* recovery I have myself witnessed, and there are others on record.†

TREATMENT WHEN DELIVERY IS IMPRACTICABLE.

But what is to be done where the fœtus is in the abdominal cavity, and cannot be reached, the child being inaccessible in

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* A woman, in the neighbourhood of Guy's Hospital, had a contraction of the pelvis. I was called in, in consequence of collapse of the strength, and when I examined, I found the child lying in the peritoneal sac, distinct from the uterus, the aperture of which was contracted, and I found further a large transverse rent opposite to the bladder. Well, in this case, agreeably to the rule, I determined to turn, and for this purpose introducing my hand into the peritoneal sac, I perceived the intestines, felt the beat of the large abdominal arteries, touched the edge of the liver, and ultimately reaching the feet of the child, I withdrew it by the operation of turning, subsequently abstracting the placenta and membranes, the woman recovering in a few weeks afterwards. About five years after the recovery, I saw her, not so vigorous as before the accident, but nevertheless tolerably well. On very careful examination at this time, the os uteri was found to present the natural characters, and not a vestige of a cicatrix was discoverable in the vagina any where, above or below; the rupture, therefore, had been above, in the uterus itself. When, in this case, my hand was introduced to turn the fœtus, the womb, large as a child's head, was felt lying upon the promontory of the sacrum, above and behind the rent. *Dr. Blundell.*

† See Dr. Mc Keever on Lacerations of the Womb and Vagina, 1824: and other works.

consequence of contraction of the aperture? Why, if there seemed to be a disposition to rally a little, I should feel inclined to try palliatives if these were indicated, and I should leave the patient mainly to her natural resources. When the fœtus remains among the viscera, recovery is not impossible; becoming converted into bone, it may lie inert in the peritoneal sac for twenty, thirty, or forty years afterwards*; or be otherwise got rid of.

But what if the child should escape into the peritoneal sac? and if, further, the symptoms, being most alarming, there should appear to be no hope for the woman in her natural resources? Why, in such cases, it would be for sober consideration, whether it might not be adviseable to have recourse to abdominal incision, provided the patient would heartily assent. That such mode of proceeding is not altogether without hope, is proved by Mr. Barlow's case.† That extirpation of the uterus, with or without rup-

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* In the Museum of the London College of Surgeons is an ossification of this kind, presented, I think, by Dr. Cheston; and from the history of it which he used to give to Dr. Haighton, I am persuaded it was produced in this manner. After smart labour in this case, the presentation receded; the child left the womb by rupture, lodging either among the intestines or between the peritoneal covering and the muscular substance of the uterus, and the woman lived for forty or fifty years afterwards, this fœtus, as shown by dissection, becoming converted into bone. *Dr. Blundell.*

Astruc quotes a case where the child remained in the uterus for thirty-five years. *Liv.* v, *chap.* iv.

In another case, the midwife felt the child's head, but after a severe pain it disappeared, and the woman complained only of a weight in the belly. It was expelled by abscess. *Hist. de la Societé de Med. tom.* 1, *p.* 388.

In Dr. Bayles's case, the child was retained twenty years. *Phil. Trans. No.* 139, *p.* 997.

In Mr. Birkbeck's case, the child was discharged by the navel. *Phil. Trans. vol.* xxii. *p.* 1000.

Bromfield's patient did not get rid of the child, but she lived for many years, and after her death the rent was visible. *Phil. Trans. vol.* xli. *p.* 696.

In Dr. Syms' patient, the process for expelling the child by abscess was in a favourable train, when, by imprudent exertion, fatal inflammation was excited. *Med. Facts, vol.* 7, *p.* 150.

Le Dran relates an instance where the uterus was ruptured on the 23rd of April; on the 13th of May the placenta was expelled; on the 16th a tumour was formed at the linea alba, which was opened, and a child extracted. The woman recovered. *Obs. tom.* 2, *ob.* 92. All these cases are noticed in *Dr. Burns' Principles of Midwifery, pp.* 495, 496.

† A robust country-woman, becoming with child after fracture of the pelvis, was found to be so contracted and distorted at the time of delivery, that the abstraction of the fœtus by the

ture, might be of service, is a question which our better knowledge of abdominal surgery may ultimately prove.

TERMINATION OF THESE CASES.

The termination of these cases of laceration is various. The patient may sink in the course of a few hours, five or ten, for example; or she may survive for one or two, gradually and ultimately sinking, or rallying beyond expectation; or, lastly, she may become the subject of various cachectic symptoms, and recover at the end of a few weeks. All this I have myself seen. Death is not the necessary consequence of these dreadful injuries. In repeated instances the woman has recovered.

Examining the parts after death, when lacerations have been effected, you will sometimes find the child lying among the viscera in the abdominal cavity, and, generally a quantity of blood, from a few ounces to a pint or more, is lodging in the lower part of the abdominal cavity and the pelvis. Appearances of inflammation about the intestines sometimes manifesting themselves, if the woman have lived long under the disease. Burns says, that in all cases which he has examined, he has noted more or less the inflammatory characteristics.

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natural passages was impossible. Parturition coming on, a dexterous and intrepid surgeon, Mr. Barlow, of Blackburn, determined after due preliminaries, to deliver by abdominal incision. For this purpose, she was placed on a table, and when the abdomen was laid open, the fœtus appeared to lie behind a thin membrane, probably the peritoneal covering of the uterus, the muscular substance alone having given way. Mr. Barlow divided the membrane and removed the fœtus, which was dead; and a fortnight or three weeks after the woman was well enough to engage in her domestic concerns. To me it appears to have been a case of rupture of the muscular substance of the uterus without rupture of the uterine peritoneum, the patient recovering, after delivery by abdominal incision. Does success, in this case belong to an anomaly or a general principle? *Dr. Blundell.*

SECTION LXIII.

DELIVERY AFTER THE DEATH OF THE MOTHER.

When a woman dies during gestation or labour, either from accident or other causes, you are not to suppose, that as soon as the life of the mother becomes extinguished, the life of the fœtus is extinguished also; for it is a well-ascertained fact, that children will continue to live in utero for minutes, or even half an hour, after the maternal circulation is stopped.

DURATION OF THE FŒTAL LIFE.

When the death of the mother creeps on her gradually, whether from bleedings or other causes, the chance of saving the child by removal from the body of its deceased parent, is exceedingly small; nor is it unlikely in these cases, that the fœtus dies before its parent; but where the death of the mother occurs in consequence of apoplexy, or some sudden accident incident to the most vigorous health, the probability that the fœtus may survive the mother is much greater. What may be the longest time that the child may continue to live in the liquor amnii, after the circulation of the mother is stopped, is a very interesting problem, well deserving of your consideration.

Facts, however, are not wanting, which may encourage us to hope, that the child, within the body of its deceased parent, may live even for a considerable time.*

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* To Mr. Moseley I am indebted for the history of a heifer which, in the end of its pregnancy, died in consequence of some accident in a farm yard; in about three quarters of an hour afterwards it was flayed and embowelled, during which operation it was observed, that there was some little motion in the uterus; this led to closer inspection, when, on laying open the abdomen and uterus, the calf was taken out in a state of suspended animation, from which, in the course of a few hours, it became completely resuscitated. Thus, then, Mr. Moseley's statement, which, I trust, is to be relied upon in all its parts, furnishes us with an interesting example of the prolongation of the life of the fœtus for three quarters of an hour after the vitality of the parent was become extinct. *Dr. Blundell.*

It sometimes happens that a fœtus is still-born, and in that condition it may remain dead, to appearance, for twenty, thirty, or forty minutes, or even for a longer time than this. Now, while it is in this still condition, there is no obvious respiration or circulation, yet nevertheless, though it is in a state very nearly approximated to that of a person after death, it is now and then very unexpectedly resuscitated.*

Now if a fœtus lies in this way after birth, apparently dead for an hour, to be resuscitated, however, by artificial respiration, I think it is not unreasonable to hope that a fœtus might remain equally long in utero, without, however, getting beyond the reach of resuscitation; if by the Cæsarian operation, or otherwise, it could be brought forth, so as to secure a trial of the remedies which I shall presently enumerate. To be short, then, in the present state of our facts and knowledge, we may reasonably hope, if a child be taken out of the uterus within half an hour or an hour after the death of the mother, and more especially if the mother have perished by a sudden and violent death, that the life of that child may be preserved.†

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* I have myself resuscitated a child that had been lying in this state, without any obvious signs of active life, for more than twenty minutes together; and Mr. Tomkins of Yeovil, in Somersetshire, gave me a case in which a fœtus, after lying still for more than an hour, as measured by the watch, was nevertheless resuscitated by the artificial respiration; and as Mr. Tomkins is a very accurate observer, I can rely on his statement with more than average confidence. *Dr. Blundell.*

† Some few years back, a woman, in the end of her pregnancy, crossing a street near this Hospital, was run down by one of the stages; the wheel of which passing over the body, divided the liver into two pieces, death followed in the course of a few minutes afterwards. This poor creature was brought into the Hospital, and Mr. Green, who chanced to be going round at the time, gave it as his opinion, that the Cæsarian operation ought to be performed. I was accordingly sent for to give a little obstetric assistance, when, within thirteen minutes from the last respiration of the deceased, the abdomen was laid open; and the child was taken out, within fifteen minutes from the last respiration. The lungs were inflated by means of the tracheal pipe, my principal resort, the warm bath also being afterwards tried; in thirteen minutes more, the child first began to breathe a little, the umbilical cord began to act; and by perseverance in this method, the fœtus was completely resuscitated; it lived for a day or two, and would probably have been living still, had it been more judiciously managed by those to whose care it was committed. *Dr. Blundell.*

Should you be called, then, to a case in which the parent had suddenly died but a short time before, it is then highly probable that the fœtus is alive; and should motion be perceived in the abdomen there can then be no further doubt, and of course removal must be made the subject of deliberation.

MODES OF REMOVING THE CHILD.

There are two ways in which after the death of the mother, the child, may be taken away; the one is by making an opening into the abdomen with a razor, or any other convenient instrument, this method, on the whole, being the shortest and the best; the other turns on the introduction of the hand into the uterine cavity, and the abstraction of the fœtus by the operation of turning. This operation may be easily performed here, as the passages may be dilated with more force and celerity, provided the mother be really and thoroughly dead; though even in these cases, such is my strong dislike to obstetric violence, that I would not employ a greater degree of effort than is absolutely necessary in order to get the fœtus away. *Arte non vi.* And here let me observe, that it is only when the woman is dead beyond all doubt and controversy, that deliveries in these wretched cases ought, I conceive, for one moment to be thought of. Who that has a heart of flesh in his bosom, could coolly sit down in a real case to argue for the advantage to be derived to the fœtus from the performance of the Cæsarian incisions, before the maternal life is totally and beyond all doubt extinct? Who that has a heart of flesh in his bosom, could have firmness sufficient to perform his operations under such circumstances? Who could look on the dying eyes of his patient, without suffering the knife to drop from his hand? Who would himself like to be disturbed in such a moment? As long as men are surgeons, surely surgeons may continue to be men; and while they make it their duty to subject their feelings to their reason, doubtless it is still their duty to act under that moderated influence of the feelings which gives the last finish to the manly character.

SECTION LXIV.

EXTRA-UTERINE PREGNANCY.

In general, when women conceive, the ovum takes place, as it ought to do, in the uterine cavity, but sometimes it lodges in the peritoneal sac, and far more frequently in the fallopian tube, or the ovary. This constitutes what is called extra-uterine gestation: divided into three varieties, the tubal, the ovarian, and the ventral, according to the situation of the ovum. To these three varieties may be added a fourth, first shown me by Dr. Ramsbotham, the younger, the utero-tubular, as it may be called, in which the fœtus lodges in the uterine portion of the tube.*

VENTRAL PREGNANCY.

I have myself seen a fœtus, on the whole not imperfectly formed, about the size of six or seven months, and which was taken from the body of a boy, where it lay in a sack, in communication with the child's duodenum, the boy being pregnant. It being, therefore, not impossible for a fœtus to form within the body of a male, in such a situation too, I cannot accede to the opinion advanced by some, namely, that it is impossible that a fœtus should form in women within the peritoneal sac among the abdominal viscera. The probability is, that this accident is possible, but that it is of very rare occurrence; and I think with Dr. Merriman, that it is not impossible that some of those cases that have been looked upon as ventral pregnancy, have, in reality, been cases of rupture, the case having been mistaken for ventral pregnancy, in consequence

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* Dr. Breschet also speaks of a *fourth* species of extra-uterine pregnancy, which he terms *Graviditas in uteri substantia*. In this kind, the ovum is enclosed in the parenchyma of the uterus itself, excepting that a cyst separates it from the substance of the viscus, as is the case in the instance of foreign bodies introduced into organic textures. A few cases he considers to have been recorded on good authority, and relates a case himself. *Medico-Chirurg. Trans.*, vol. x. p. 31.

of the discovery of the ovum after death among the abdominal viscera, the rent in the womb being overlooked. *

Cases of ventral pregnancy being rare, I personally know nothing of the symptoms; but it is said that, in those cases, the placenta and fœtus form, in the ordinary way, the blood-vessels of the maternal viscera, enlarging wherever the placenta chances to adhere. †

OVARIAN PREGNANCY.

When patients die, the victims of ovarian pregnancy, a disease which is far more common, we sometimes find a great deal of blood effused among the viscera, with a fœtus, perhaps, not bigger than the thumb, and an ovary laid open by laceration. More generally, however, in these cases, the ovary becomes as large as the uterus, at the seventh, eighth, or ninth month of pregnancy, when it is found to contain a full-sized fœtus, with a placenta often remarkable for its tenuity, or this fœtus becomes putrid, and is contained in a sort of abscess, where its softer parts gradually disappear, or, in the course of years, it is transmuted into fat or bone. ‡

TUBULAR PREGNANCY.

When tubular pregnancy has been the cause of death, it rarely happens that the fallopian tube becomes as large as in the ovarian

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* As yet, no facts have been advanced, which satisfactorily substantiate the occurrence of abdominal gestation; and it is more than probable, that in those cases which are termed abdominal or ventral pregnancies, the fœtus does not exist in the belly from the commencement of utero-gestation, but escapes into the cavity of the abdomen from the uterus, either by ulceration or laceration of its parietes. *Dr. Conquest's Outlines.*

† A singular case is related by the late Mr. Hey, wherein the placenta was found in the uterus, while the fœtus lay in the tube. *Med. Observ. and Inqui.*, vol. iii. p. 341.

‡ Ovarian is much more rare than tubal pregnancy, and it is seldom that the ovarium acquires a great size. It either bursts early, or inflammation and abscess takes place; or the fœtus dies, and is converted into a confused mass, or it excites dropsy of the ovarium. *Dr. Burns' Principles*, 8th edit. p. 241.

pregnancy. I have never seen any case of tubular pregnancy, in which the tube was of great size; more generally this canal enlarges to about the size of a small fist, sometimes to the size of a pullett's egg only, and, in the early part of gestation, say in the second or third month, this cyst bursting open, the child escapes into the peritoneal sac, and the woman suddenly perishes by an internal hæmorrhagy.* Many women, I have little doubt, die in this way, but being buried without examination, the real cause of their death is never ascertained. Three or four tubal gestations of this kind have taken place within the circle of my own obstetric acquaintance, whence I infer, that the case is by no means rare.

STATE OF THE UTERUS IN THESE PREGNANCIES.

In extra-uterine pregnancy, the state of the womb varies somewhat, but it is remarkable that it generally becomes two or three times as large as in its virgin condition. In some cases, the tunica decidua is found to form in its cavity, much in the same way as if the fœtus were there; this, however, is by no means constant.†

SYMPTOMS ATTENDING EXTRA-UTERINE PREGNANCY.

When extra-uterine pregnancy occurs, whether of the ovarian, tubular, or perhaps of the ventral ‡ kind, the symptoms by which it is marked are not always very intelligible in the earlier months, whence it is not improbable, should you meet with a case of this

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* From several instances on record, particularly the one related by Dr. Clarke, it is evident that the tube goes on enlarging for nine months, and acquires a size nearly equal to the gravid uterus, at the same period of gestation.

† Mr. Langstaff, who has paid so much attention to morbid anatomy, examined a case in which there was no well-formed tunica decidua, and I have myself seen two tubal cases, in which the decidua was wanting; while, in a third case which I saw, where the patient died between the second and third month, the tunica decidua being very distinctly produced in the uterus. *Dr. Blundell.*

‡ In ventral hernia, the motions of the child are felt more freely than in the others, and its shape is readily distinguished through the abdominal integuments. *Dr. Burns.*

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DIFFERENT TERMINATION OF THESE CASES.

Before the parturient efforts occur, or after these symptoms are gradually worn away, the patient is liable to be attacked with an inflammation in the cyst where the fœtus is; this giving rise to tenderness, pains, and stabbings, adhesions, suppurations, and absorptions; and under these operations the cyst opens on the abdominal surface, or less desirably into the vagina or rectum, and, morsel by morsel, the fœtus may be expelled. In other cases, instead of terminating in this manner, the extra-uterine pregnancy is brought to its close in a way very different; nor is this the least interesting. In this termination of the disease, the ovum lies inert within the abdomen for ten, twenty, and thirty years, or longer; and during this time, as observed before, it becomes gradually changed into a bony, or sebaceous substance, occasioning the patient little further inconvenience than that which arises from its bulk and weight. In this state of the genitals another impregnation may, I believe, occur.

TREATMENT OF EXTRA-UTERINE PREGNANCY.

In the present state of our knowledge, extra-uterine pregnancies are rather matters of curiosity than the subject of much active treatment. If, in the earlier months, the woman have spasmodic or inflammatory pains, you must treat them on general principles. I have nothing peculiar to recommend for them; they are, however, both severe and dangerous. If you suspect an extra-uterine pregnancy, you ought to mention to the friends the chance of sudden death from internal bleedings; and should that occur, this previous intimation to the friends may, with reason, tend to preserve their confidence in your skill and knowledge. If in the end of gestation a great deal of

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taken a razor, and attempted to perform the operation herself, and she showed me the scar. *Dr. Blundell.*

parturient effort occur, and the wound be found to contain nothing but the tunica decidua, and the abdomen is as large as in a pregnancy of nine months, and the woman have exhibited previously all the indications of pregnancy, there can be little, if any doubt respecting the nature of the case, and anodynes and opium ought to be administered. In such cases, too, it might come to be a consideration, whether a sort of Cæsarian operation ought to be performed, or, at least, whether an opening should be made into the abdomen to take out the child.* On the whole, however, considering the danger of the incisions and the risk of a fatal bleeding internally, when the extra-uterine placenta is taken away, abdominal incision seems to promise but very little success, and, therefore, I should be averse to try it. If the fœtus, piece by piece, is coming away from the abdomen, the best office which you can render the patient is, nothing forbidding, to enlarge the opening, and to take out any parts you can without violence. Sometimes the discharge of the fœtus occupies many months, or some years, and during all that time, the patient is kept in a state of cachexia, though, in some cases, I believe she is relieved in a few months. Now, if, by dilating prudently, the orifice of the cyst, and removing the bones with the forceps, or otherwise, you can accelerate the evacuation and shorten this period, you may render the patient a very effectual service.†

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* After the most minute consideration of all the circumstances of ventral fœtation, M. M. Capuron, Desormeaux, Gardien, Velpeau, and various French writers, are advocates for gastrotomy after the seventh month. They argue, that the woman must either be lost by hæmorrhage, from the bursting of the fœtal sac, or by inflammation, and that the infant is also sacrificed. They hold the operation as safe as hysterotomy, and Capuron asserts, that it has been crowned with success, but he has not recorded any instance in which the operation has been performed. *Dr. Ryan's Midwifery*, 3rd edit. p. 445.

† Instances, more or less interesting, of extra-uterine pregnancy, with their different histories and treatment may be consulted in various works. Bonet, sess. III. xxi. 57.; Herst, opss. I. 131, II. 521; Barthol. Hist. An. VI. 92; ess. III. 250; Fulp. IV. xl.; Bayle, Bromfield, Copping, Middleton, Giffar, Marley, Simon, Winthorp, Phil. Trans.; Gemmil, Ed. Med. Ess. v. 336; King, 441; Chamoux, Jour. Mid. xxxix.; Langür, xli.; Thibault, Rec. pér. I. 368; Debenham, Phil. Trans. 1751-92; Young, Edin. Phys. Ess. II. 273; Morgagni, Ess. 48, n. 42; Bard, Med. Obs. and Inq. II. 369; Kelly, III. 41; Hay, 341; Haller, M. Ac. Par. 1773; T. Bell,

SECTION LXV.

LATTER GESTATION AND LABOUR WITH INFLAMMATION, ETC.

Having discussed the various points connected with the process of delivery, it is necessary, before we touch on the diseases and other circumstances attending the parturient state, that I should not omit to mention two other points worthy your consideration.

INFLAMMATIONS IN THE END OF PREGNANCY.

In the end of pregnancy, you will sometimes find inflammations taking place in the thorax, abdomen, or head, more especially of the thorax and abdomen. If those inflammations are unattended with any extraordinary symptoms, which probably they will be, you should treat them precisely in the same manner as you would an inflammation in which there is no pregnancy; because, though it may be true, your remedies, and more especially large bleedings or purgings, may not altogether suit the pregnant condition, yet, nevertheless, where you have inflammation of the thorax or abdomen, it is absolutely necessary that such inflammation should be subdued. It is to be remembered, however, that where there is an inflammation going forward, and where a great deal of blood is taken away, not very uncommonly miscarriages and floodings

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Mid. Com. Ed. II. 72; Percival, 77; Smith, V. 314; Walther Geschichte, 4, Berl. 1778; Fitzgerald, Dunc. Med. Com. VIIJ. 329; Bland, XI. 334; Maclarty, XVIJ. 481; Gerson, Brobachtung, 8, Hamb. 1784, Lit. Obs. II. 15; Cammel, Lond. Med, Jour. V. 396; Moyle, VI. 52; D. Jacob, VIIJ. 147; Underwood, 320; Baynham, Med. Facts, I. 73; Turnbull, Med. Soc. Lond. III. 176; Meaze, IV. 342; A. Fothergill, VI. 107; Gordon, Dunc. Med. Com. XVIIJ. 323; Wilson, Dunc. Ann. 1797, 317; 1799, 401; Forrester, 1798, 379; Goodsir, 1802, 412; Clarke, Grivel, Edin. Med. Jour. II. 19; Anderson, II. 186; Coley, VI. 50; Blizard, Ed. Trans. V. 18; Lallemand, Nouv. Journ. Trans. II. 320; Tucker, Med. and Phy. Jour. XXIX. 448; Bianchi, De Nat. in Hum. Corp. Vit. Morb. Gener. p. 166; Mounsey, Phil, Trans. XLV. 131; Firn. XXI. 121; Langstaff, Med. Chir. Trans. VIJ. 437; Sabatier, Med. Oper. Tom. I. 343; Bushell, Med. Chir. Rev. June 1824; Perfect, Cases, vol. II. 164; &c.

occur; nor is it to be forgotten, that during the abstraction of the placenta and the membranes, further and large quantities of blood may be discharged from the uterus, which, with the previous venesection, may sink the patient, at least, unless transfusion be interposed. Three cases of inflammation in the end of pregnancy I have had occasion to see; two of those cases did very well, and in the third, in which the inflammation supervened but a short time before delivery, the inflammatory action was completely subdued, but in a few days afterwards parturition commenced, a good deal of blood was lost, and ultimately, as my informant tells me, the lady sunk.

INFLAMMATION IN CONJUNCTION WITH DELIVERY.

You will sometimes find, what I have seen myself, an inflammation concurrent with parturition; perhaps inflammation begins with delivery, or it may supervene after the process is begun. When delivery is coming on, and there is inflammation in the abdomen, if you do not perceive that the abdominal inflammation is aggravated by the labour, meddlesome midwifery being bad, I would not have you to interfere. On the other hand, however, if it is clearly obvious that the labour is hurrying the inflammatory action, then the more promptly the delivery is terminated the better. If the head is within the reach of instruments, you may endeavour to accelerate the delivery by the use of the lever or the forceps, or, in some rarer cases, by the perforator; or, if the head is above the brim, then that undesirable operation of turning must be adopted, and by it the fœtus may be brought away.

FEVER IN THE END OF PREGNANCY.

When fever occurs in the end of pregnancy, if the attack be severe, it is not improbable that the expulsion of the child may take place; and for this accident, therefore, you ought to be

prepared. So long, however, as there are no peculiar obstetric symptoms occurring, so long it is unnecessary you should interfere; and even if the delivery should supervene, I think the process ought to be conducted on the general principles of midwifery. I need scarcely repeat what I have so often asserted, I mean, that a meddlesome midwifery is bad, and this being admitted, it follows that, in these cases of fever, the mere concurrence of the disease with the end of gestation, is, in itself, no valid argument why you should interpose. Should there be a concurrence of any other urgent symptom, which delivery alone can relieve, then assist if you please, provided you can assist with safety; but, remember, that fever alone will not justify your interference.

FEVER DURING LABOURS.

If fever concur with parturition, in the general, I believe, the labour will proceed well enough, though it may frequently linger, the pains not being so frequent and powerful. If floodings supervene, or other dangerous symptoms, you may then assist artificially, helping with your instruments, the lever, forceps, or perforator, or turning the fœtus, according to the circumstances of the case; but if, on the other hand, the labour lingers, and no symptom of danger concur, then, agreeably to the doctrine already laid down, you had better trust to the natural efforts, of which you are never hastily to despair. If the fever be infectious, and it becomes necessary to turn the child, some precaution becomes necessary. A friend of mine being engaged in turning a child, in a case where the mother laboured under fever of the typhoid kind; he to all appearance caught the disease from his patient, and it had very nearly cost him his life. If a woman is labouring under the measles, for instance, or the scarlet fever, and you have not been secured by a previous attack, it becomes necessary that you be upon your guard; I think you would be doing but justice to yourselves and your friends, were you to send for a practitioner who has had

those affections already, because, if it can be avoided, valuable lives ought not to be exposed; if, however, it become your duty to act, of course you must, at all risks, never retreating from your post; fall we all must sooner or later, nor can we fall better than in the ranks. In cases of this kind, however, it may be proper to have the patient lifted on to another bed; or, if this cannot be done, in order to keep down the steaming vapour, it may not be amiss to raise the patient a little, and to spread out two or three blankets beneath her, before you begin your operations. The prognosis, in these cases, is not favourable.

END OF PART IV.

THE

PRINCIPLES AND PRACTICE

OF

OBSTETRICY.

PART V.

AFTER-MANAGEMENT OF THE PUERPERAL STATE,

ETC.

THE

PRINCIPLES AND PRACTICE OF OBSTETRICY.

PART V.

AFTER-MANAGEMENT OF THE PUERPERAL STATE, ETC.

EMBRACING THE AFTER-MANAGEMENT OF THE PUERPERAL STATE; THE DISEASES OF PUERPERAL WOMEN; AND STRICTURES ON THE DISEASES OF INFANTS.

Women, after their delivery in the general, do perfectly well, although no attentions are paid to them; and where the constitution is good, and the circumstances are not extraordinary, I believe the less they are interfered with the better. Although, this position holds good in the general, yet it is no less certain that after parturition, women are sometimes affected with some of the most dreadful diseases to which the human frame is liable. This being the case, I shall now proceed to a consideration of these subjects; commencing with the management of the puerperal state in those cases in which the patient, on the whole, is recovering in the most favourable manner; then pass through the diseases of the puerperal woman; and conclude with some slight comments on some of the diseases of infants.

SECTION I.

AFTER-MANAGEMENT OF THE PUERPERAL STATE.

Although there seems to be no doubt, that the majority of

puerperal women would do perfectly well, even though they were subjected to no peculiar rule of discipline; yet, as it is certain that women become more susceptible of disease after parturition has taken place, a particular method of treatment is usually prescribed even for the healthiest and most robust.

EXAMINATION OF THE PERINEUM.

Immediately after parturition has been completed, if you have no reason to suspect that laceration of the perineum has occurred, it is not necessary that you should examine this part:* but if, from the circumstances of the labour, the rigidity of the softer organs, the largeness of the child, the unfavourable position of the head, the use of instruments, or other considerations, you have reason to believe that more or less laceration of the perineum has taken place, a very convenient time of satisfying the mind upon this point, is the moment after the child has come into the world. Neglecting to make your examination at this time, you may, perhaps, meet with symptoms, which lead you to suspect laceration; and disliking to examine the parts a day or two after delivery, for fear of alarming the patient, your mind may be kept in a state of suspense and distraction, of all others the most unpleasing to the feelings. When lacerations occur, you may always know it by the touch, allowance being made for the narrowing that takes place after the transverse distention that is occasioned by the child's head. If you still doubt, you may inspect; nor is is it necessary, in doing this, to occasion much exposure of the person.

PROTECTION OF THE PATIENT FROM COLD.

I know not whether the opinion of women is well grounded or

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* Dr. Burns and others, recommend, that in all cases, immediately after the placenta is expelled, the finger ought to be introduced into the vagina, to ascertain that the perineum or recto-vaginal septum be not torn, and that the uterus be not inverted. *Principles of Midwifery*, 8th Edit. p. 500.

not, but their persuasion is, that they are very liable to catch cold in the uterus, and parts contiguous, after delivery. Such an opinion prevailing, it is proper that the softer parts should be immediately clothed. In performing this office, you take a napkin dry and properly aired by the nurse, and fold it into an oblong form, and the woman lying on her left side, you place the napkin over the pubis, carrying it up in front and behind, so as to cover the genitals. A second napkin prepared in the same manner, you pass between the bed and the hip below, afterwards carrying it upwards, so as to fold it over the hip above; and, then, taking a third napkin, you lay it over the hips above, afterwards carrying it beneath the under hip. By the application of these three napkins, the centre of the person may be kept very secure, so that the patient is shut out, as it were, from all the blood and water, and other moisture, that may lie about her person, the access of the cold air being also intercepted.

COMPRESSION OF THE ABDOMEN.

In all cases, where there has been a large child, or a plurality of children, or where, from other causes, there has been sudden and great collapse of the abdomen, it becomes necessary to compress the abdomen with a broad bandage,* so as to give an agreeable support to the muscles, the woman feeling, after delivery, as if she was falling into pieces. This practice, which

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* Some persons have the bandage applied loosely during labour, and gradually tightened as the process advances; but this is an antiquated and useless practice, as the majority of women are delivered without it. The bandage is useful after delivery, and ought to be five or six yards in length, and one quarter of a yard in breadth; so that it may be brought several times round the lower part of the abdomen, and once between the limbs, so as to keep it properly over the hypogastrium. Unless this precaution is observed, it usually slips above the uterus, and becomes a ligature, serving no useful purpose, but the contrary. It must not be applied too tightly, as cases are on record in which it produced apoplexy. When the abdomen is flaccid and prominent, a soft pad or cushion, or two folded napkins, will be placed with advantage over the hypogastrium, and under the first turn of the roller. *Dr. Ryan's Midwifery*, 3rd edit. p. 617.

should certainly be adopted on all occasions, when there is an unusual collapse of the abdomen, may, I think, be followed with advantage in most instances; and I am now accustomed to apply a broad bandage of calico, or a towel, round the clothes externally, so as to comprise the abdomen, and give it support. Before the patient takes her place on the bed, for the purposes of delivery, it is better, perhaps, that this bandage should be put on; should you, however, delay its application till the delivery is completed, it may not be amiss to remember, that you ought not to raise your patient to the sedentary posture. In these cases, she ought to lie almost still; and when the bandage is to be passed, the operator may glide his arm beneath her person, so that the hand appears on the other side; when, grasping the end of the bandage, he easily draws it forth; afterwards adjusting and fixing it, so as to give the necessary support to the parts. For this office, Mr. Gaitskell's bandage is well adapted.*

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* *Directions for applying Mr. Gaitskell's Obstetrical Bandage.*

This bandage is applicable to four different periods of parturition.

1st. *The Eighth Month of Pregnancy.* At this period, the abdomen is often pendulous, particularly in fat women, and those who have borne many children. The over-stretching of the abdominal muscles destroys their tone, and lessens the elasticity of the integuments, which produces pain in the lumbar region, and many uncomfortable feelings. These are greatly relieved by the application of the bandage, which should be placed under the linen, and tied in the middle of the loins.

2ndly. *At the Commencement of Labour.* In this instance, the bandage should be applied exterior to the clothes, and tied on the right side of the abdomen, the patient lying on her left. It can be applied with more facility in the erect position of the trunk.

The pressure must be regulated by the feelings of the patient, as the integuments and fascia are in some cases exquisitely tender.

When the membranes are broken, and the waters discharged, the second row of tapes must be tied; by these means, the parietes of the abdomen are brought into contact with the enlarged uterus, which, embracing it, furnishes several additional points of support: this enables that organ to act with more energy in propelling and expelling the fœtus.

3dly. *After the Fœtus is expelled.* The third row of tapes must now be employed to lessen the abdominal cavity, and compress the uterus. At this period it is most essentially useful, by facilitating the action of that organ in detaching and expelling the placenta.

4thly. *After the Expulsion of the Placenta.* Many a woman, after an easy labour, and early expulsion of the placenta, is subjected to an atonic state of the uterus, followed by internal flooding and death, though there is no external appearance of hæmorrhage.

In this way I have known five instances of sudden death; the os tincæ closely contracted, and the cavity of the uterus distended with fluid and coagulated blood. This was not sus-

EXHIBITION OF CORDIALS.

After most deliveries, and especially those where there has been a good deal of exertion, the patient is liable to feel very exhausted and weary. Now this exhaustion, more especially felt immediately on the birth of the child, may be relieved by the administration of some cordial; say, for instance, of two or three tea-spoonsful of brandy, rum, or Geneva, diluted with five or six of warm water, a little sugar and nutmeg being added to flavor the draught; it warms the stomach, and exhilarates the spirits: and, in general, the administration of it gives no dissatisfaction to the patient.

NECESSITY OF THE RECUMBENT POSITION.

Where alarming floodings have taken place, a great deal of blood being lost, in general it becomes necessary to confine the woman strictly to one position for twelve or sixteen hours, nor ought she needlessly to stir hand or foot, lest further flooding or collapse should ensue. In ordinary cases, however, and such I am now considering, after the birth of the child and the removal of the placenta, it is enough for the patient to lie in one position for three quarters of an hour or an hour, during which time the nurse may wash and

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pected, till discovered by post-mortem examination. The proper application of the bandage completely prevents this misfortune. Another good effect is that of restoring the energy of the abdominal muscles, and improving the personal figure.

The utility of the bandage would be increased, if, before it is put on, a small pillow were placed on the abdomen, previously to drawing the tapes. Mr. Gaitskell, whose experience has been almost unlimited, says that, out of seven thousand cases of midwifery, occurring in his practice during the last forty-five years, he cannot recollect a single instance of fatal uterine hæmorrhage. Before he constructed this bandage, he was in the constant habit of employing a small table napkin. But the bandage in question is more extensive in its application, while it is extremely simple; as it is applied at the very commencement of labour, and follows it through all its different stages.

The bandage is made by a poor deformed young woman, a Miss Grierson, No. 6, Bedford Place, Deptford Lower Road, and costs but four shillings. It will last a female for life. *Dr. Blundell.*

dress the child, and set the room in order. After reposing in this manner, she is to be put into bed ;* and though I believe that our women after delivery might often rise and walk with impunity, like those of barbarous nations, nevertheless, in such exertion, there would be no small danger, in many instances, for the womb might descend ; and I have myself seen a woman perish under a flooding induced by rising to the erect position. Before delivery, therefore, the bed should be arranged ; and, then, after the birth of the child and its placenta, provided the nurse thoroughly understand her duties, the patient may be deposited in it with very little disturbance, and it can seldom be necessary, or proper, to raise her to the erect posture.

WATCH THE STATE OF THE PATIENT.

Since it has repeatedly happened, that within the first hour after delivery, women have been carried off very unexpectedly, sometimes by internal bleeding, and more frequently by discharges of blood externally, I should recommend you, more especially if you are beginning your practice, to remain in an adjoining chamber till the patient is put to bed, seeing her afterwards before you quit her apartments, for accidents may occur. Fatal cases are not common ; but their occurrence is sufficiently frequent to give value and importance to the rule which I have just prescribed. Although after delivery, in country practice especially, the vast majority of

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* It may be asked, is every woman to be put to bed as soon as she may be delivered? We say, no—this "putting to bed" must be governed by the following circumstances:—first, if the patient be very much exhausted by the severity of the labour, or by a previous flooding, or any other circumstance that may render her very feeble and faint, she must not be removed until she recovers some of her spent strength, should this require several hours; second, should she from her exertions during labour, or the heat of the weather, be in a perspiration, she should not be disturbed until this has gone off entirely; third, should there be too great a discharge or flooding, the patient must not be moved, until this is much diminished or stopped. But if neither of these conditions present themselves, we always direct this to be done immediately, as we are persuaded they bear it better, than if suffered to remain any time without. *Dr. Dewees' Compendious System*, p. 196.

women will certainly do well; let it not be forgotten, however, that in some anomalous cases,* women sometimes die very unexpectedly; and, therefore, that it is wise, particularly when you are beginning your practice, to remain in the adjoining apartment, and to pay your farewell visit when the patient is in bed. Finding the women in her bed, you may satisfy yourselves whether the bandage or the safeguard as it is called, has been brought to a due degree of tension. I should observe further, that, on seeing the patient, if there has been the least proneness to flooding, you should more especially, enquire into the circumstances of the bleeding. In the general, you are told that no discharge is felt; and when you lay your hand on the abdomen, anxious to satisfy yourselves of the fact, you find the uterus contracted, and, on compression with the hand, you do not find that blood is urged away. Sometimes, however, bleeding really occurs, and danger may attend it; but if there should happen to be an internal hæmorrhage, you may distinguish it by coldness, weakness, faintness, and by the gushing forth of the blood, when you press forcibly on the abdomen.

EXHIBITION OF AN ANODYNE.

Seeing the patient after she has been put to bed, you will then order what medicine is necessary; if she has had no child before, probably she will have no pains; but if she has had a large family, she may have very violent after-pains; and for these you may prescribe from twenty-five to thirty drops of the tincture of opium,†

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* The daughter of one of my friends was delivered by an excellent practitioner, who left her to appearance doing well. She was put to bed, and just as he was on the point of quitting the house, alarming symptoms occurring, he hurried to the bed side, and within the compass of five minutes saw her dying and dead. *Dr. Blundell.*

† We often find patients who dare not use opium in any of its common forms, in consequence of its disagreeable after-effects; such as severe head-ache, and distressing sickness of stomach. These consequences are very often entirely prevented, by mixing the laudanum with vinegar instead of water, or using the acetated tincture of opium, or black drop. *Dr. Dewees.*

a drachm or two of syrup of red poppies, and an ounce of camphor mixture. Of these draughts, you may order two; one to be taken an hour after you quit the patient, should pain urge, and one to be administered an hour after the preceding, should the former fail to relieve.

ATTENTION DURING THE EARLIER WEEKS.

Although the majority of women do very well after parturition, and particularly in country places, yet it is to be remembered that they are liable to some very formidable diseases, and certainly more frequently so in large towns, and in the middle of a dense population; hence the necessity of attending to the woman during the first two or three weeks. When you have practised a short time, you will find there is a popular opinion, that if women get beyond the ninth day, they are secure. And this popular opinion is not without some truth for its foundation; for almost all the more formidable accidents to which puerperal women are liable, occur within the first few days after delivery; and, therefore, in town practice especially, it is most important that you should be very attentive to your patient during the first week; bring her safely through the first week, and she will generally do well.

ASCERTAIN WHETHER THERE BE ANY INCIPIENT DISEASE.

When you are visiting a patient after delivery, one of your first objects should be to ascertain whether there be any incipient disease; for sometimes the bladder is getting overloaded with urine; or the bowels, not having been cleared out before delivery, remain constipated; or inflammation begins in the peritoneum; or there is inflammation in the breast, phlegmasia dolens, fatal cerebral disease, or the like. Now, if you find your patient looking cheerful and well, and complaining of no uneasiness whatever, there is little doubt that all is secure; on the other hand, if you find something hanging about her, and preventing her getting forward

in the usual manner, you should then be more solicitous in your inquiries, as the forming of disease may be suspected. In those cases, you should learn whether her nerves have been much disturbed, or whether she sleeps badly, for sometimes women are liable to puerperal irritability, or to puerperal mania. Ascertain what is the state of the bowels; sometimes they may have been constipated before delivery, and may remain so afterwards, and a great deal of pain, like that of puerperal fever, may be produced, all which, however, readily yields to purgatives. Inquire, again, respecting the after-pains; when women are doing very well, they usually have the after-pains slightly; but if the puerperal fever is prevalent at the time, you may suspect this is going to attack your patient, provided these pains recur with unusual severity, and you should, therefore, direct your inquiries accordingly. Women themselves are anxious about the lochia, and you should, therefore, inquire how this is going on; if it is moderately copious, all is well; if, on the other hand, it has been suddenly suppressed, provided there be no other bad symptoms, you need not disturb yourselves, but you ought always to inquire for these symptoms, and for the symptoms of uterine inflammation more especially; for inflammation of the womb is found sometimes to occasion the suppression of the lochial discharge.

Into the state of the bladder you should not neglect to inquire; the woman generally passes her urine well enough, but sometimes she does not pass it sufficiently,* and sometimes one or two pints, or one or two quarts, may accumulate, although the urine comes away in a copious stream, the bladder never being thoroughly eva-

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* If the patient have not made water, but have a desire to do so, without the power, a cloth dipped in warm water, and wrung pretty dry, should be applied to the pubis. If this fail, the urine may often be voided, if the uterus be gently raised a little, with the finger, or the catheter may be introduced.

There are two states, in which we are very solicitous that the urine may be voided; the first is, when the patient has much pain in the lower belly, with a desire to void urine; the second is, after severe or instrumental labour. *Dr. Burns' Principles.*

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fever* is passed away, it is best, according to the old practice, to keep the woman on very low diet, consisting of gruel or arrow-root, or milk and water, equal parts.† There are very few cases of very delicate women, in which it may be requisite to allow beef-tea, or even solid food, from the first day, but those cases are to be looked upon as exceptions to the general rule. After the period of milk-fever is away, the patient may be gradually brought back again to her usual mode of living; beginning with beef-tea, she may then proceed to the use of the white meats, chicken, veal, fish, afterwards making use of mutton, beef, and stronger food. Although it is certainly unwise, and especially when the puerperal fever is epidemic, to bring the woman too rapidly forward as to her food, yet I am persuaded we may sometimes err in not giving enough, and especially where the woman is giving milk to support the child. With respect to the beverage, it may consist of milk and water, or toast and water, or weak black tea, before the period of milk-fever; but after the period of milk-fever is passed, a more stimulant beverage may be used, not, however, unless symptoms seem to require it.

EXHIBITION OF MEDICINES.

When the patient is, on the whole, doing well, there is little need of having recourse to medicine; but should the patient be

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* During the latter end of gestation, milk is generally secreted in a small quantity in the breasts, and sometimes it even runs from the nipples. After delivery, the secretion increases, and about the third day, the breasts will be found considerably distended. Many women, indeed, complain at this time of much tension and uneasiness, and there is usually some acceleration of the pulse. A pretty smart fever may be induced, which is called the *milk-fever*. The best way to prevent these symptoms from becoming troublesome, is to keep the bowels open, and apply the child to the breast, before they become distended. This may generally be done twelve hours after delivery. *Dr. Burns' Principles.*

† It is customary to compel a woman after delivery, to live almost exclusively on gruel or broths, and it is no uncommon thing for her stomach to be most inordinately distended with several pints of these articles daily. The practice seems to be extremely irrational, and is often highly injurious. It frequently, not only enfeebles the stomach, but by keeping up constant perspiration, debilitates the whole system, and renders it very susceptible of cold, and is one cause of an immediate secretion of milk, which becomes a source of great distress to the patient. *Dr. Conquest.*

solicitous, you may order something that will do no harm, to be taken four or six times during the course of the four-and-twenty hours. Now and then operative medicines are required, and on the third day the bowels may be cleared; castor oil, or rhubarb, or senna and salts, being administered for the purpose; in the general, I prefer castor oil* to any other medicine; but there are some women who have a great dislike to it, and their stomachs reject it. Again, when women are nervous, as they frequently are, or irritable after delivery, some medicines which are calculated to sooth may be given; castor, camphor, æther, valerian, opium, or, above all, hyoscyamus; spermaceti draughts are as good as any thing. If there is a little fever, the liquor ammoniæ acetatis may be given, from half an ounce to an ounce, with a little camphor mixture, in the course of the four-and-twenty hours: sometimes double this quantity may be taken with advantage.

DIET FOR THE INFANT.

The natural anxiety of the mother for the safety of her child, renders it necessary to attend to its state of health. The principal points, however, to which you are to attend medically, are the bulk of the child and the state of the bowels. If the infant is large and plump, and of rapid growth, all is favourable; but should it waste, you will then frequently learn, on inquiry, that the bowels are acting six or eight times, or oftener, daily, and that the infant openly or clandestinely has been taking spoon-meat. One kind of food only is thoroughly well adapted to the stomach and bowels of young infants, and that is the human milk. If children thrive on spoon-meat, it is all very well, but the experiment ought never to be made wantonly, and when the food is given, even though it seem

* Should the after-pains have been very obstinate, and have not yielded to common remedies, the castor oil will be found to be the most useful of any of the purgatives; and has this very decided advantage over every other, perhaps, that, in cases of great pain, it can be administered with laudanum, if it be judged proper, to exhibit it without interruption, though it may delay a little, its operation. *Dr. Dewees' Midwifery.*

to agree with them, they should be closely watched. Infants sometimes thrive well enough on an artificial diet during the first fortnight, and then suddenly give way.

CONCLUSION.

Women should not be allowed to rise till the fifth day; it is an error to rise earlier, and gives rise to the coming down of the womb. When they sit up, they should do so at first for a few minutes only, then lying down again whenever any bearing down is perceived. In general, sofas are preferable to easy chairs, and the horizontal position is better for the patient than the sedentary. Patients are not usually allowed to quit the bed-chamber till the end of the third or fourth week; in warm weather, they leave it a little earlier.

SECTION II.

ON PUERPERAL FEVER.*

Of all the diseases to which the puerperal condition is obnoxious, by far the more formidable is the fever which has been not inappropriately termed the *puerperal plague*, so sudden in its attack, so rapid in its progress, so fatal in its effects, and so choice in its victims; attacking the young and the beautiful, destroying those who are the most endeared to us, those young wives and mothers, the moulds of the human species, who, in European

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* The term "puerperal fever" has been employed for upwards of a century, to designate the most fatal inflammatory disease to which child-bed women are liable. The name is now generally adopted by medical writers, and is considered to be synonymous with the terms *Puerperal Peritonitis*, *Child-bed Fever*, *Peritoneal Fever*, or the *Epidemic Disease of Lying-in-women*. *Dr. Lee on Puerperal Fever.*

The *first* accurate account of puerperal fever appeared in the Mem. de l'Acad. Roy. de Soc. 1746. A full detail of which is given by Dr. Ryan in the Lond. Med. and Surg. Journ. 1829. vol. iii. p. 18.

society at least, form not the least valuable, nor the least interesting members of the domestic circle.

PERIOD OF THE ATTACK.

The puerperal fever usually commences* on the second or third day, reckoning that of delivery as the first. Nevertheless I have known death to occur, with all the symptoms of puerperal fever, within the first four-and-twenty hours after parturition; and Dr. Haighton used to relate the case of a woman who perished under a puerperal fever, which commenced ten or twelve days after delivery; nay, if my memory be correct, after the patient had made her appearance in the drawing-room. The later the attack, the less is the pertinacity of the symptoms; and the fever, which seizes the patient on the fifth day, is much less likely to prove fatal than that which commences on the first.

SYMPTOMS OF THE FEVER.

This fatal disorder is characterized by various symptoms, and the most important of which, for the sake of elucidation, I shall separately consider, because I look upon them as constituting, in good measure, the identity of the disease.

CHILLS AND HEATS.

Chills† and heats, usually usher in the puerperal fever, and these

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* The time when women are chiefly subject to this fever, is uncertain. There are not wanting instances in which it has been evidently, forming before delivery, or during labour, or at any intermediate time for several weeks afterward; and the sooner from the time of delivery the patient is attacked, if in an equal degree, far greater is the attendant danger. *Dr. Denman's Midwifery.*

† Malignant puerperal fever, sometimes, begins in an insidious manner, without that shivering, which, usually, gives intimation of the approach of a serious malady. But, usually shivering is perceived, and varies considerably in degree, being either slight or pretty severe. *Dr. Burns' Principles.*

chills felt more especially along the back, arising, I suppose, from a peculiar condition of the spinal marrow: in the lumbar region they are, I believe, rarely perceived, but frequently about the shoulders and the neck. In the intensity of the chill, there is a good deal of difference;* for some women, when attacked, will chatter as in an intermittent, while, in others, the coldness is so slight, that unless you search them with great accuracy, you may not be able to find out that there have been any chills at all. It is said that the fever may sometimes assail without a chill; and it is not perhaps impossible, that half asleep at the time, the patient may not perceive its occurrence. The severity of the chill is no measure of the subsequent vehemence of the fever; fierce fever may follow mild chills, or the chill may be moderate, and the fever may be violent; indeed, I am disposed to suspect that when the disease opens in the mild manner, there is more cause for fearing its future progress.

ABDOMINAL PAINS.

About† the time of the rigor, the patient complains of abdominal pains, very slight sometimes, so that their detection is difficult; and, in some cases, so severe, that the touch of the finger is regarded with apprehension, and the weight of the coverlet is complained of as a distress and a burthen. Over the whole abdomen these pains may be felt, above, below, to the right, to the left,

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* From the violence and duration of the chill, we may generally estimate the danger of the succeeding disease. In some cases, however there has been no cold or shivering fit, or none which was observable; and in others, the shivering fit in the state of childbed has not been followed with those symptoms which were to be apprehended. *Dr. Denman's Midwifery.*

† Before the shivering fit, the patients have been much debilitated, and complained of wandering pains in the abdomen, which very soon became fixed in the hypogastric region, where a swelling or fulness with exquisite tenderness soon ensued. As the disease advances the whole abdomen becomes affected and tumefied, sometimes nearly to its size before delivery, the woman herself being sensible of and describing its progress. She also feels great pain in the back, hips, and sometimes in one or both legs, and other parts affected in

in the situation of the diaphragm, and in the lumbar region;* this diffusion, however, is neither constant nor frequent; you will find, especially in the less malignant varieties of the disease, that it is in the region of the navel, and more especially below it, that the patient complains; and hence, whenever you suspect the puerperal fever, you should immediately lay your hand upon the abdomen below the navel, in the region of the womb. In some varieties of the epidemic, severe after-pain is not infrequently felt; so that as soon as you enter the chamber on your second visit, the nurse addresses you by saying, "Sir, my mistress has suffered a great deal from the after-pains." You approach the bed, and you then perceive the rising cloud. This pain, I suspect, is felt most severely, where the uterine peritoneum is the seat of inflammation, and where the inflammation has a tendency to spread down into the substance of the womb. Mild fever may accompany intense pain, and the reverse. A circumscribed pain is always favourable, but much is to be apprehended when the pain and tenderness are diffused extensively over the surface of the abdomen, although the intensity of the pain be slight.

FREQUENCY OF THE PULSE.

An excellent characteristic of the puerperal fever is derived from the number of the pulse, which is always frequent.† It scarcely

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uterine complaints. She can scarcely lie in any other position than on her back, or on one side, with her body incurvated, and, if the disease be confined to the uterus, the seat of the pain seems to be changed when she alters her position. *Ibid.*

* Strother, Burton, Millar, and W. Johnson, state that the distinguishing marks of the disease are pain in the hypogastric region, abdomen, and loins.

† The pulse has almost invariably, in this disease, an unequal quickness from the beginning. It has often that strength and vibration observed in disorders of the most inflammatory kind, in robust constitutions; and yet is sometimes exceedingly feeble and quick, beyond what might be expected from the concurring circumstances. The latter is to be reckoned among the most dangerous signs, proving, perhaps, increased irritability with great violence of disease; and that the powers of the constitution are unable to struggle with it, or scarcely to bear the operation of the medicines which might be necessary for its relief. There is much variation in the subsequent stages, but there is scarcely a worse omen, than a very weak and accelerated pulse, even though the other symptoms may seem to be abated. But the mere quickness of the pulse, if not attended with other perilous signs of inflammation or fever, is

ever happens that you have a pulse as low as one hundred and fifteen in a minute, unless the disease be giving way to your remedies; and generally it rises as high as one hundred and twenty, one hundred and thirty, or one hundred and forty, and I have myself counted pulses one hundred and sixty-five, or one hundred and seventy in the minute. Some will tell you, that these frequent pulses cannot be numbered. I differ from them, for you may count, in the rabbit, when agitated, a pulse of three hundred, and, of course, there can be no difficulty of numeration arising from mere number, while the pulse, in the human subject, is below two hundred.

SYMPTOMS OF MINOR IMPORTANCE.

In addition to these principal and pathognomonic symptoms, we also find the patient is affected with others of less importance. Vomiting, purgings, headaches, mental dejection, febrile indications, failures of the milk, &c.*

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not to be considered as indicating danger; experience having shown that very irritable patients have sometimes an unusually quick pulse, unaccompanied with any other alarming symptoms. *Dr. Denman's Midwifery.*

* Vomiting occasionally occurs at the very commencement, and, in that case, it is bilious. In the course of the disease, it becomes so frequent, that nothing will stay in the stomach, and towards the conclusion of the fever, the fluid thrown up is dark coloured, and frequently fœtid. This is a symptom which, so far as I have observed, always, if it do not proceed from a morbid structure, indicates, in whatever disease it occurs, an entire loss of tone of the stomach. *Dr. Burns' Principles*, 8th edit. p. 560.

The bowels are in general very much disturbed, and in some cases a looseness takes place immediately upon the accession, in others three or four days after, or not till the last stage of the disease; but it very seldom fails to attend, nor can it be removed without the greatest difficulty as well as danger, before the disease is terminated. The stools towards the close often come away involuntarily, being always preceded by an increase of pain, and every evacuation gives momentary relief. They are uncommonly fetid, of a green or dark brown colour, and working like yest. It is also remarkable, that after the long continuance of the looseness, when the patient has taken little or no solid nourishment, large and hard lumps of excrement will be sometimes discharged, which one might suspect to have been confined in the bowels for a long time before delivery. With regard, however, to this symptom, it is very necessary to observe, that in delicate constitutions great disturbances of the bowels are frequently occasioned by mere irritation, which are soon removed by the well-timed exhibition and repetition of some cordial opiate. *Ibid.*

Reviewing, therefore, the more important with the minor indications, I should say, that if, upon the second or third day of delivery, the patient is attacked with chills and heats, and abdominal pains and tenderness, and if, together with these symptoms, you find the pulse rising above the healthy level, to one hundred and thirty, one hundred and forty, or one hundred and fifty, or one hundred and sixty, in the minute, and more especially if the puerperal fever be prevalent at the time, provided you make those diagnostics, which I shall presently mention, there can, I imagine, be little doubt respecting the nature of the case.

DURATION OF THE COMPLAINT.

Like some other diseases, the puerperal fever is in its duration somewhat uncertain;* it may last, especially if we comprise the

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Cephalalgia, in some epidemics, has been a constant symptom; and Lowder, with others, was disposed to place it among the pathognomonic symptoms; but cases have occurred within my own observation, in which no headaches at all have been experienced, or, at all events, where the attack has been so slight, that it could scarcely deserve attention as a characteristic symptom. *Dr. Blundell.*

There is great dejection of mind, languor, with debility of the muscular fibres, and the patient lies chiefly on her back; or there is so much listlessness, that she sometimes makes little complaint. *Dr. Burns' Principles.*

The skin is not very hot, but rather clammy and relaxed. The tongue is pale or white at first, but presently becomes brown, and uniformly, aphthæ appear in the throat, and extend down the œsophagus, and over all the inside of the mouth. *Ibid.*

The secretion of milk, in most cases, becomes diminished, and it soon ceases altogether. The breasts are flaccid and empty. *Dr. Conquest's Outlines.*

The urine is dark-coloured, has a brown sediment, and is passed frequently, and with pain. The lochial discharge is diminished, and has a bad smell, or is changed in appearance, or gradually ceases; and it is observable, that the re-appearance of the lochia, if they have been entirely suppressed, which is not common, is not critical. As the disease advances, the pulse becomes more frequent, and weaker, or tremulous. In bad cases, there is a rapid swelling of the legs; but the pain does not always keep pace with the swelling, being sometimes least where the swelling is greatest, and in the end it generally goes off. The breathing becomes laborious, in proportion as the abdomen enlarges. The strength sinks; the throat and mouth become sloughy; perhaps the stools are passed involuntarily: hiccup sometimes takes place; and the patient usually dies about the fifth day of the disease, but in some cases not until the fourteenth; in others as early as the second day. *Dr. Burns' Principles.*

* Instances have occurred, in which women have died within twenty-four hours of the first attack; and I have seen a few, who never grew warm after the rigor, which then resembled

cachexia which follows it, for many days; or where no bleeding, or other active remedy has been employed, it may destroy the patient, which it has done, under my own observation, within twenty-four hours from the commencement of the disease, the plague itself being scarcely more rapid, or more fatal in its progress. Three or four days, not to say five or six, may be the average duration of this affection. I speak here of the epidemic.

MODES OF TERMINATION.

In different ways, the disease may be brought to its close. Sometimes we have the great satisfaction of seeing it terminate in a resolution of the inflammation, under which, after indications the most frightful and alarming, danger gradually vanishes,—the pulse sinks steadily to one hundred and forty, one hundred and thirty, one hundred and twenty, or one hundred and ten in the minute, the other symptoms giving way in like manner, and the patient, a few hours before on the verge of dissolution, is now brought into a state of comparative security. Too frequently, however, it happens and I regret to add, too, under the best average treatment, that the disease terminates in a very different manner; the extremities become cool, the pains in a great measure cease, the mind remains tranquil, hopes of recovery flatter, and the patient, perhaps, talks of the little schemes in which she is to be engaged on her re-establishment, and every thing, in short, is promising to our wishes, excepting the pulse, and there you feel her vital powers hurrying on to death. Whenever, in conjunction with these insidious and adulatory symptoms, you perceive a pulse of one hundred and fifty, or one hundred and sixty in a minute, the worst consequences are, I believe, to be apprehended; for a fatal termination, under symptoms so flattering, is by no means very uncommon; and I dwell on

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a convulsion. In some, death has followed quite unexpectedly, either from inattention or from the scarcely perceptible but insidious progress of the disease, the indications not having been at all proportionate to the danger. *Dr. Denman.*

it the more, because I am anxious that it should not be forgotten; for it has now and then happened with physicians of eminence,—men who, whether they have reflected much or not, most certainly have seen much of practice,—that, notwithstanding all their experience, they have been deceived by these symptoms, and have pronounced the patient secure from danger, when, perhaps, she has died in the course of one or two hours afterwards.

A third mode in which the puerperal fever may terminate, is by a sort of cachexia. In this termination, the patient becomes relieved from her more pressing symptoms, and the pulse gets down to one hundred and thirty, or one hundred and twenty, or one hundred and fifteen in the minute, but still there is a disposition to vomitings, to diarrhœa, to colliquative sweatings, and to exacerbations, and remissions of the feverish symptoms. These symptoms continuing for several days, the patient recovers under a gradual cessation of them; or the strength, notwithstanding some gleaming amendments, declines daily, and, at the end of a week or two, the patient dies. In these cases, whether the patient sink or recover under cachexia, I always suspect that the inflammation of the peritoneum has given rise to disorganization, and adhesion of certain folds of the intestines; and that the cause of the disease is the inflammation and irritation that is going on in those parts, the original parts also being slightly affected, perhaps, but still not in the same violent manner that they are, where the patient labour under the dangerous and violent attack of the puerperal fever.

SECTION III.

THE TREATMENT OF PUERPERAL FEVER.

As in every other dangerous complaint, so in the treatment of puerperal fever, a variety of means have been proposed and tried to ensure the safety of the patient, but, haplessly must it be said that we too often find our endeavours sink beneath this dreadful scourge of the parturient state. By different physicians we have

been recommended to as many remedies, by some we have been advised to commit the result to tonics, by others to purging, to mercury, to turpentine, to emetics, to bloodletting, conjoined with calomel, and the more copious doses of opium. In the malignant form of the disease, I fear, your patient will die under the best known treatment, so that there seems to be but little room for choice; but, in the milder or inflammatory varieties of the epidemic, I think, on the whole that your most effectual remedies will be venesection, calomel, and opium.

VENESECTION IN THE EARLY STAGE.

In using venesection, whether in the milder or severer forms of the disease, it is of the greatest importance to commence the bleeding as early as may be.* I have laid it down as a sort of rule

* For the cure of puerperal fever, some have placed their whole confidence in the early and free use of this remedy, while others have expressed more than ordinary fears and apprehensions with respect to it. In the early part of my own practice, I had much doubt of the propriety of bleeding indiscriminately for the cure of this disease, and I was long of opinion, that it was not the most natural, safe, or effectual remedy. But I am now convinced by manifold experience, that my reasoning was fallacious, and my fears groundless; and that what I had considered as proofs of the insufficiency or impropriety of bleeding in the true inflammatory puerperal fever, ought in reality to have been attributed to the neglect of performing it in an effectual manner at the very beginning of the disease. In short, if the first stage be suffered to pass unheeded, bleeding will certainly then be injurious, the opportunity having been lost; and the physician afterwards called in, however great his talents may be, will too often have the mortification of being a spectator of mischief which he cannot then remedy, and of an event which he can only deplore. It is, therefore, in general, absolutely necessary to bleed in the beginning of the puerperal fever, and we may then avail ourselves of the advantage which this operation affords, with equal safety and propriety as in any other inflammatory disease, under other circumstances. *Dr. Denman.*

I am quite convinced that, in simple peritonitis, the lancet is the anchor of hope, if hope may be indulged; but in contagious, or puerperal fever, it must be used with more circumspection, and is still less to be depended on. I am, however, from observation, convinced that if this remedy be useful, it is in the very early stage, and that it cannot be too soon employed. If the disease have gained any progress, I never have found it useful. *Dr. Burns.*

† Leake, Denman, Gordon, Armstrong, Hey, Macintosh, Conquest, Campbell, Douglas, Boer, J. Watson, and S. Clarke, approve of venesection; Butter, Manning, Hulen, Kirkland, Hull, Gardien, and Cusac, approve of bleeding in some instances only; while Walsh, Whyte, and John Clarke, are against it. Ed.

The efficacy of bleeding is not confirmed by the reports of the French and German physicians. *Dr. Ryan.*

in my own practice, that if, in the less vehement attacks, the bleeding be commenced within six hours after the chill, your patient will often be saved, and if within twelve hours, not infrequently; but that if you do not begin till twenty-four hours are passed away, in epidemic cases, the patient will usually die.* With regard to the quantity of blood † you are to abstract, it must of necessity vary somewhat with the condition of the patient, and the vehemence of the disease; yet it is well to have an average, and this may, I think, range between twenty-five and thirty-five ounces.‡ In taking away this blood, you will sometimes find your patient becomes faint, even before many ounces have been drawn. Now if the faintness is permanent, lasting for four or five hours, which in general it does not, it may be considered to be of great benefit to the patient; but if, on the other hand, it is merely temporary, I believe it has not infrequently occasioned women to lose their lives, by intimidating the operator, and preventing, him when

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* When the symptoms are violent, twenty or twenty-four ounces of blood should be immediately abstracted from the arm by a large orifice, and while the patient has the shoulders and trunk considerably elevated in bed. We should not be deterred from employing the lancet, because the pulse is small and contracted, provided it does not exceed one hundred and ten or one hundred and fifteen pulsations in the minute; for in many cases the pulse has become fuller and stronger during the time the blood has been flowing, or soon after, and there has been a marked relief from suffering. In all cases, if possible, a decided impression should be made upon the system, and where syncope or faintness follows the venesection, it increases the salutary effects. In no case of inflammation of the peritonial surface of the uterus have we observed any bad consequences to result from depletion carried to this extent; and in many, from its early use, the force of the disease has at once been completely broken. *Dr. Lee on Puerperal Fever.*

† With respect to the quantity of blood drawn, we are to be guided by the constitution of the patient, and the violence of the symptoms, being cautious not to err by bleeding unnecessarily, or in taking away too large a quantity. But if benefit should be derived from the first operation, and the violence of the disease should require it, we shall be justified in repeating it at short intervals; not with a view of moderating or retarding the progress of the inflammation, but, if possible, of wholly suppressing it. For when the fever has remained for a very few days, the putrid symptoms, which are usually according to the degree of the preceding inflammation, advance very rapidly, and its continuance depends upon causes, which bleeding cannot remove. *Dr. Denman's Midwifery.*

‡ One early and plentiful bleeding, inducing a temporary collapse of the system, will generally suffice for an acute attack of the most active kind; the *temporary debility* resulting from such a bleeding may be greater, but the *permanent weakness* is certainly less. *Dr. Conquest.*

bleeding, from abstracting the necessary quantity. Be it remembered, then, in puerperal fever, that if venesection be begun, you must not act with irresolution. In cases like these, when syncope occurs, I would recommend you to remain with the patient until you have ascertained whether the fainting be of short time only, or permanent; and if the circulation return after a short interval, should the original source fail, you may open the vein afresh.

ON THE PROPRIETY OF A SECOND VENESECTION.

From four to eight hours after you have first bled the patient, you will generally be able to determine whether the bleeding, in conjunction with the other practices, may or may not be sufficient to subdue the disease; and, therefore, I should lay it down as a general rule in a case which proceeds with such rapidity, that within six or seven hours after the first venesection, you ought to come to your determination whether you will have recourse to a second venesection. Now, this is an anxious and nice point to decide, therefore, if you are placed in the midst of a large circle of obstetric friends, endeavour, by all means, to have another opinion, as the decision may be delicate, and a divided responsibility may not be undesirable; but if that circle be small, you may find it necessary to decide on your own judgment only. My own method of determining the point is the following: counting round the second circle of the pulse, if I find that the pulse, which was sunk after the bleeding, perhaps, to one hundred and twenty, or one hundred and fifteen, is mounted again to one hundred and thirty, one hundred and forty, or one hundred and fifty in the minute, perhaps to the same number as before the operation, though not alone decisive, yet, as far as it goes, this symptom to me appears to indicate that further depletion will be required; but, on the other hand, if the pulse be sunk to one hundred and ten, and remains so, I feel unwilling to have recourse to the lancet, deeming it wise to let well alone. After solicitously counting the pulse, I should then proceed to a careful examination of the abdomen; and if I found it was painful

and tender, even though the pain and tenderness were somewhat obscure, I should look upon these symptoms as an argument for the lancet, and on the other hand, I should reject the use of this instrument, if tenderness and soreness of the abdomen were wholly or in a great measure subsided. If you have prudently refrained, during the first few hours, from the application of a blister, the abdomen may be easily examined, by laying your hand above the symphysis pubis, and pressing there; and by directing the patient to draw her knees towards the bosom, or to attempt a turn in the bed, or to assume the sedentary posture, when, if tenderness exist, it may be readily detected, provided the examination be conducted with patience and attention. Mere tenderness, or pain of the abdomen, however, without frequency of the pulse, is no valid reason for the further abstraction of blood from the arm; so also mere frequency of the pulse, without the pain or tenderness of the abdomen, is not a satisfactory warrant for a second use of the lancet.* It is only where those two symptoms are met with *in conjunction*, that I feel satisfied the inflammation is proceeding within the peritoneum, and that I am justified in acting; that is, when, for example, there is tenderness and pain of the abdomen, and when, in conjunction with this, the pulse is at one hundred and twenty-five, one hundred and thirty, one hundred and thirty-five, or more, in the minute. On inspecting the blood you have already drawn, should you find it cupped and buffy, you may consider it as a collateral argument in favour of further bleeding; but at the same time remember, that the absence of the inflammatory appearance of the blood, if you have bled early, is no certain reason why you should not bleed a second time, provided you find all the other inflammatory symptoms are present; for I have

* There are few cases in which it is necessary to have recourse to a second bleeding from the arm; and where the propriety of this is indicated by a renewal of the acute pain, the quantity of blood taken away should not exceed twelve or fourteen ounces. However much the patient may complain of the uterine pain, if the pulse be above one hundred and twenty and feeble, and if the powers of the constitution have been much reduced by the previous treatment, blood should not be drawn a second time from the arm. *Dr. Lee.*

myself, in some cases, on bleeding early, detected no buffy or cupped appearance on the first blood, although the blood afterwards drawn has appeared highly inflammatory. It is better at each bleeding to receive the blood in at least two or three different receivers.

ON THE PROPRIETY OF A THIRD VENESECTION.

In about six or eight hours after the second abstraction of blood, you must come to a determination whether you will or not bleed a third time.* This point must be decided sooner or later, according to the symptoms: and here let me observe, that your decision respecting the third bleeding is more important and more difficult than the determination respecting the second; for where women sink under puerperal fever, it is commonly under the third bleeding that they appear to succumb. Now if you are resolved on depletion in a case of puerperal fever, you ought not to wait for one minute for the advice of another respecting the first bleeding; moments are precious; and, in the uncertainty of medicine, there is not such a risk from a first bleeding, as may make it your duty to pause; but in coming to a determination whether you shall or shall not bleed a third time, unless your experience is large, another opinion is desirable, provided an opinion of value may be obtained; for if patients really sink from over-bleeding it is, I suspect, this third venesection which destroys. Whether, as a general practice, it be wise to bleed a third time at all, may, I think, be disputed; for if our two first bleedings fail, we may reasonably be discouraged, and doubt the efficacy of a third. I believe, that I have sometimes seen the third bleeding put a close to the inflammation; and as I cannot deny its occasional necessity, I will lay down some rules to regulate its employ-

* In no case of peritonitis which has fallen under our care, has it appeared necessary or safe to bleed from the arm a third time, and in a very large proportion of cases, one bleeding only has been had recourse to. *Dr. Lee.*

ment. In determining, then, whether we ought to bleed a third time, we must be guided, in good measure, by the same indications as in the determination respecting the second bleeding; if the pulse is not above one hundred and fifteen, or if the abdomen is not tender, or if symptoms of collapse are beginning to appear, you must abstain from the lancet; but if there are no symptoms of collapse, and the belly is tender, and the pulse is one hundred and twenty, thirty, forty, fifty, or more in the minute, you may bleed; though from the use of venesection, I fear much benefit is not to be expected.

REMARKS ON VENESECTION.

It is highly desirable that the whole quantity of blood drawn in this disease, should be abstracted within the first twenty-four hours after the chill. The whole quantity which in all the bleedings it may be necessary to withdraw, I think may average between forty and fifty ounces.* Sixty or more ounces have been sometimes taken with apparent benefit; but these are anomalous cases of success; and do not warrant such extensive venesection as a rule. For my part, by way of caution, I would say, beware of bleeding, if collapse is begun,† and in epidemic cases this is not improbable. Beware of rash bleeding, provided the two first bleedings have together exceeded fifty ounces or more. Before you take more

* Mr. S. Clark expressly says, in a statement he gave me, that all the cases he saw cured, and his practice was very extensive in the disease, were by means of very copious depletion, both by venesection and purgatives. *Dr. Burns.*

† It frequently happens, where depletion has been employed, especially the large bleedings, that friends persuade themselves that the patient is sinking from the venesection, when, in reality, she collapses from the effects of the disease. I once saw a robust Irishwoman, who, in the commencement of the attack, had been bled to eight or ten ounces only, dying, a few hours afterwards, under the collapse of the fever, with symptoms very like those to which a fatal flooding might give rise. Making due allowance, however, for these deceptions, there can, I think, be no doubt, that women do occasionally sink, perhaps not very rarely, from excess in the best-intentioned bleedings; but, really, the collapse of the disease, and the collapse from the depletion, may be so similar, that in any given case the wisest may have their doubts. I fear there is a disposition abroad to abstract blood from the arm too largely. In over-bleedings, however, I trust that transfusion may now prove a remedy. *Dr. Blundell.*

blood, pause, consider well, and above all act with judgment. Tenderness of the abdomen alone, without a frequent pulse, nay, perhaps a frequent pulse alone, without tenderness of the abdomen, will not justify bleeding. An average quantity for a third bleeding may be ten or twelve ounces. If the arguments for and against bleeding a third time, are found nearly to countervail each other, perhaps it is better to decide against it. In the more doubtful cases, ten or twelve leeches may be substituted for venesection, though not without some risk, since I have more than once seen patients apparently sinking from the application of twenty or thirty leeches, after one or two great bleedings had been premised.

CALOMEL AND OPIUM.

In puerperal fever we have been recommended to make trial of calomel and opium,* in conjunction with venesection; and I have myself, in treating this disease, made use of opium in the larger doses, without observing any ill consequences result; and it seems not improbable, that it really does possess some efficacy in lowering the irritability of the vascular system, and in extinguishing the inflammatiou. As opium, then, does no obvious injury, and may, perhaps, be of service, give a fair trial; and I should also recommend you to administer the larger doses, say five or ten grains in the course of the twenty-four hours, provided you watch carefully the effects.† I have given larger quantities than this, and apparently without

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* Ten grains of calomel in combination with five grains of antimonial powder, and one grain and a half or two grains of opium, or with ten grains of Dover's powder, may be given, and repeated every three or four hours, until the symptoms begin to subside. Upwards of fifty grains of calomel have been given in many cases in this manner with decided benefit, and in two only, out of one hundred and sixty-six patients, has the mouth been severely affected. We have never seen the mercury in such large doses, produce those symptoms of alarming weakness, and that tympanitic state of the abdomen, with vomiting and great irritability of stomach, which some have represented. *Dr. Lee on Puerperal Fever.*

† Opiates combined with mercurials are invaluable. Opium used to be thought to afford only an insidious truce, and rather tend to obscure and prolong the disease, than to contribute to its subjugation. Great dependence may be placed on large doses of opium and calomel in all cases after bleeding and purging. They must be exhibited in such doses as

mischief; but it is to be remembered, that there are idiosyncrasies which may render larger doses peculiarly dangerous. In large flooding cases, where opium is given, we find that the patients are not affected by given quantities of this anodyne, in the same manner as they would be if they were in a state of florid health, and in full and lively condition. Now it is, in a measure, to this state of inanition, patients are reduced by the bleeding, and this may be a reason why the larger doses of opium may not so much affect them. Therefore, where the case is highly dangerous, so as to justify an active remedy, and where you are watching your patient sedulously, perhaps passing a great part of the day in the bed-room, you may venture to give opium in the larger quantity, say five or ten grains of the extract of opium in the course of twenty-four hours, in divided doses; the remedy being administered not so much by weight as according to the effect produced.

There are two modes in which opium may be employed in this fever: you may begin the administration of it directly after the first bleeding, so that the venesection and the use of opium proceed hand in hand; or, again, if you bleed a third time, you may wait till your third bleeding, which will be about sixteen hours from the chill, and then commence with your anodyne. My experience of the use of opium will not allow me to say, which of these two methods is to be considered the best; but certainly, I should give the preference to the first.

Calomel also may be given in two ways.* The most gentle, and perhaps the safer practice, consists in the administration of a

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will make a decided impression on the sensorial functions, and speedily bring the constitution under the specific influence of mercury; and when we succeed in doing this, the case will generally assume a favourable character. *Dr. Conquest's Outlines.*

* Dr. Armstrong, considered this fever as decidedly inflammatory, and trusted to the use of the lancet, followed by a large dose of calomel, from one and a half scruple to a dram, with the subsequent assistance of infusion of senna with salts. Afterwards, he trusted more to bleeding, followed by full doses of opium. Copious bleeding, blistering, and large doses of opium, were the remedies used by Dr. J. Watson, in the epidemic at Glasgow, in 1819.

grain of calomel every three or four hours, in conjunction with the opium. Guarded with opium, ten grains, or more, have been given every six hours, till the mouth was affected, a bold practice, which I have seen tried without obvious ill consequences. In one case, forty ounces of blood had been abstracted, and when forty grains of calomel had been administered, the mouth became sore; the inflammation, however, continued, and ultimately destroyed the patient.

SUBORDINATE REMEDIES.

Although we must mainly rely on venesection, opium and calomel for treating this fatal disorder, yet, let us remember, that while we employ these remedies as the principal, there are others not to be forgotten. It may be proper to purge* the patient five or six times, during the first day especially. It may, too, be proper enough to give the digitalis.†

Leeches‡ to the abdomen may be proper, and more especially

The writings of Hamilton, Gordon, and Vandenzande, incontestably prove that, by means of calomel in large doses, many cases of puerperal peritonitis of the most severe kind have been saved. *Dr. Ryan.*

* On the appearance of the disease, it is proper, at the same time that we bleed, or apply leeches, immediately to give a smart dose of some purgative medicine, such as infusion of senna with salts, or calomel succeeded by salts or castor oil. *Dr. Burns' Principles.*

Immediately after bleeding or during the application of leeches, an active purgative should be administered, consisting of six grains of calomel and ten of jalap; or, the calomel may be given alone, and followed up by half an ounce of sulphate of magnesia or castor oil, every two or three hours, until several copious evacuations are procured; after which, a gentle catharsis should be kept up. *London Practice of Midwifery.*

† In one pressing case, within forty-eight hours from the chill, I brought a patient so completely under the operation of the digitalis, that I was alarmed for the consequences; yet, notwithstanding this, the fever ran its course, and the patient sunk in the ordinary manner. *Dr. Blundell.*

‡ When the attack of inflammation is violent, and when the pain is but slightly relieved, the venesection should be followed without loss of time, by the application of one, two, or three dozen of leeches to the hypogastrium, proportioning their number to the urgency of the symptoms. *Dr. Lee.*

It is rather surprising that local bleeding has not been more generally employed. Thus leeches and cupping might be applied to the groins, hypogastric region, and the former to the labia and vagina. *Dr. Ryan.*

when you dare not further bleed from the arm. Beware of applying too large a number of leeches if you have bled twice from the arm; but if you have drawn but little blood, and no dangerous symptoms appear, then you may apply leeches with more freedom. The flow from the leech-bites may be kept on by sponging, or commodiously enough by three large successive poultices, applied each of them for two hours. To a blister, there is an objection, namely, that it creates a difficulty in deciding the most important question, whether abdominal tenderness exists or not; but, after the second or third bleeding, this objection may be set aside. The milder varieties of the disease are best adapted for blisters, and those severer cases in which the abdominal tenderness is become, in great measure, local, and where, perhaps, the pulse is not above one hundred or one hundred and fifteen. An excellent rubefaciant is the hot oil of turpentine, care being taken that you do not fire the house when you are heating the oil. By means of tow, the oil may be applied to the abdominal surface, and it may be kept there till the skin become red.

SECTION IV.

VARIOUS MEASURES PROPOSED FOR THE TREATMENT OF PUERPERAL FEVER.

As I have hinted before, a variety of measures for the cure of

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The treatment pursued by Dr. Campbell and Dr. Mackintosh, consists in bleeding freely from the arm, fomenting the abdomen, and applying to it and the pudendum, from sixty to one hundred leeches. *Dr. Burns.*

The application of leeches to the abdomen, and cupping from the loins, are adjuvants of considerable value; and especially when some dregs of inflammatory disease, may remain after copious general bleeding. While general bleeding diminishes the force of arterial action, topical bleeding unloads and relieves the capillary vessels. When copious and general bleeding is inadmissible and injurious, fifty or one hundred leeches should be applied to the abdomen; and this will scarcely ever be done without sensible relief—often to such an extent, that the poor woman will again and again solicit their re-application. In the epidemic and typhoid form, this is often the only allowable method of abstracting blood; and in every stage of this unmanageable disease, even when effusion is manifest, and death inevitable, leeches will smooth the ruggedness of the path. *Dr. Conquest.*

this fever, have been advocated at different times, and by different practitioners. To a consideration of these curative means, I shall next proceed.

TONIC REMEDIES.

In the more formidable forms of the puerperal fever, it was, some years ago, proposed by the late Dr. John Clarke,* that we should attempt the cure by tonics; and, under his direction, as I have been informed, bark has been very largely administered, together with other tonics less powerful. Tonic remedies, however, I fear, are not to be relied upon; nor have I been able to learn that, even in the hands of Clarke himself, a practitioner of acknowledged talent, the use of cinchona in puerperal fever, was attended with any very encouraging success.

EMETICS.

Dr. Denman and others,† many years ago, strongly recommended emetics in puerperal fever, more especially the tartarised antimony;‡

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* Dr. J. Clarke forbids venesection, and advises bark, as freely as the stomach will bear. He also gave opium, together with a moderate quantity of wine, along with sago. If there was much purging, the bark was omitted. Dr. Leak, M. Doulcet, Dr. Kirkland, and Dr. Hull, in some instances, also recommend bark as an auxiliary. Ed.

† Willis, White, and other physicians, employed emetics, and more particularly ipecacuan, in the treatment of puerperal fever, before the year 1782, when Doulcet recommended the exclusive use of these remedies, at the Hôtel Dieu. Much doubt is entertained of the accuracy of Doulcet's reports, and emetics have generally fallen into disuse; nevertheless, Hufland, Osiander, and Desormeaux have continued to employ them, and have supposed that they derived benefit from their use. *Dr. Lee.*

‡ Many years ago, after much embarrassment and repeated disappointments in the treatment of this fever in the customary way, I gave the powder which was recommended by, and acquired much reputation under the sanction of the late Dr. James, and sometimes the following medicine; and I was soon sensible of their good effects.

℞ Antimon. tartarisat. gr. ij.
Chel. cancror. pp. ℈ ij. *intimè misceantur.*

Of a powder thus prepared, after bleeding, and, if thought necessary, the exhibition of a clyster, I have given from three to ten grains, repeating it as circumstances required. Should the first dose produce no sensible evacuations, for on these only we are to rely, an increased

and M. Doulcet, who had formerly under his direction the obstetric department of the Hotel Dieu, thinking he observed, when the puerperal fever was raging in the hospital, that where patients spontaneously vomited,—as they frequently do in the beginning of the disease,—the disease became ameliorated, he was led by this circumstance to make use of emetics; and with this view, doses of ipecacuanha were distributed among the nurses, with directions, that as soon as puerperal symptoms began to manifest themselves, the emetic should be immediately administered, without waiting for the visit of the physician. The report of the French practitioner is highly favourable; those, he says, who took the emetic, soon recovered; and those died to whom the emetic was not given promptly. On a report of this kind, we cannot rely with any confidence; the report itself is but vaguely given, and it is also to be recollected, that the nurses were the judges whether the disease was puerperal or not; whence it is highly probable that the emetic, in many cases, got the credit of subduing this formidable affection, when, in reality, puerperal fever did not exist. All allowances made, however, I cannot help thinking, that assuming Doulcet to be correct, the report deserves attention. With respect to Denman, you will find in the later editions* of his very excellent work, that he became, in his old age, a proselyte to depletion, so that it is

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quantity must be given at the end of two hours, and we must proceed in this manner, till the end we wish be obtained. If the first dose should occasion a vomiting, purging, or profuse sweat, we must wait for the good effect of these operations; and we shall then be able to judge of the propriety of repeating the powder. *Dr. Denman.*

* Denman, speaking of a case in which he had used his favourite remedy, says, "The event of this case, and of some others which occurred to me about the same time, was very flattering. I presumed, that I had at length discovered a method of treating this fever, and a medicine which would seldom fail to answer the most sanguine expectations. But further experience has convinced me, that without previous or even repeated bleeding in some cases, when the inflammatory symptoms are violent, this medicine will often fail to subdue the fever, and that it is sometimes uncertain in its operation. It is perhaps to be reckoned among the signs of an unfavourable termination of the disease, when the medicine in proper quantities produces no sensible effects. I am, however, persuaded, that if we have an opportunity of giving it soon after the accession of the disease, even without previous bleeding, it will often do the most essential service, and that too much cannot well be said in favour of this method. *Introduction to Midwifery.*

evident enough that he had found the emetics fail. On the whole, then, I conceive that these remedies deserve but little reliance; but should you chance to enter the chamber when the patient is just recovered from her chill, you may give an emetic with propriety, because, if it fail to subdue the complaint, it will, at least, do no harm; and, further, in those cases where you do not think it proper to have recourse to the lancet, it may be worth your while to consider whether the tartar emetic, or ipecacuanha, may not be given with advantage.

MERCURY.

From the powerful and often highly efficient powers of mercury in subduing many active diseases, particularly inflammatory cases, it has been supposed, that in the puerperal fever, if we could only promptly bring the system under its influence, whether by unctions or internal administration, much consequent benefit might be expected. Not, of course, feeling myself justifiable in making experiments on my patients, I have had no opportunity of giving it a fair trial. In one case only,* and this of the middle kind, where the patient was bled with little benefit, and where I saw no other hope of saving life, at the suggestion of the late Mr. Ledger, I administered mercury; but although it brought the system completely under its influence, the disease ran its course in

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* To this woman I was called, about twenty-two hours after the chill, her pulse being one hundred and twenty, or one hundred and thirty, and the other symptoms mild in proportion. More blood than I directed, viz. forty ounces, were taken away; a buffy coat was formed, a degree of faintness was produced, and, for a time, the pulse was lowered: thirty-five hours after the rigor, as the disease was proceeding, and there seemed to be no chance of curing by depletion, I resolved to make use of the calomel; ten grains were taken every six hours, as in the case of the croup; in forty hours, thirty-eight grains had been taken, and the system was fairly under its influence, the bowels acting twice or three times only, so that the greater part of the calomel was retained. Notwithstanding all this, and though the case was favourable, being one of the milder kind, and though the calomel was given till eighty grains had been administered, the fever proceeded, and the patient died in the usual manner. *Dr. Blundell.*

the usual manner, and the patient died, as if no calomel had been given.

We must not, however, draw general conclusions from one solitary case, but the result of the trial was very discouraging, and I have never had occasion to use this practice again.*

TURPENTINE.

By Dr. Brenan and others,† we have been strongly recommended, in cases of puerperal fever, to make trial of the oil of turpentine.‡ It has been asserted, that if half an ounce § or an ounce of the oil be given twice a-day, in the worst forms of puerperal fever, in their worst condition, the symptoms will be found to give way under it. This remedy I have not hitherto tried on the large scale, having a want of confidence in those reports, which I could not overcome, and not feeling myself justified in acting experimentally. In some few cases, however, where I have had no other hope, I have tried it, and the result convinces me, that the oil of turpentine does not do any marked mischief, that it does not clearly aggravate the disease; not to add that a sort of persuasion has been left in my

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* Fonellé places most reliance on mercurial frictions, which saved three patients. *Dr. Ryan's Midwifery.*

M. Velpeau has tried and recommended mercurial frictions over the abdominal surface, after local bleeding. Two drachms of the strong mercurial ointment to be rubbed in every three or four hours; and as soon as mercurial action appears in the mouth, the remedy is to be discontinued, or used very sparingly. *London Practice of Midwifery.*

† Since the oil of turpentine was introduced into practice by Dr. Brenan, the most contradictory statements have been published respecting its effects. We have not ventured to prescribe in many instances, the internal use of turpentine, either in the superficial or deep-seated inflammatory affections of the uterus; but wherever this has been done, it has not only produced a renewal of the pain, but has excited the most distressing nausea and sickness. *Dr. Lee, Cyclop. Med.*

‡ Dr. Payne, of Nottingham, most strongly recommends the oil of turpentine, and has always found it successful. He never used depletion of late years. *Edin. Med. and Surg. Jour.*, 1822, vol. xviii. p. 538.

§ Dr. J. A. Johnson has published six cases, in which he exhibited half an ounce of turpentine, and the same quantity of castor-oil every hour, until the bowels were freely purged, and then continued the medicine at longer intervals, and all terminated successfully. *Philadelphia Medical Journal.*

mind, that now and then, perhaps, it may relieve.* Still, from the few cases† which have fallen under my own observations, it is my decided opinion that,in London, this remedy is by no means so powerful in subduing the fever as some, especially the Dublin practitioners, may have supposed. Should you, however, deem it right to use turpentine, it may be well not only to administer it internally, but to apply it also to the abdominal surface, in the way of a rubefacient.

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* Dr. Dewees has lately recorded a case of real puerperal fever, which was seen by two other practitioners. The antiphlogistic plan was studiously pursued, but without success. The case was considered hopeless, when thirty minims of the oil of turpentine were exhibited every hour, sinapisms applied to the legs, and an ounce of mercurial ointment rubbed on the abdomen every night, with an enema, containing one drachm of laudanum. This practice was continued for three successive days, and the patient recovered. *Amer. Jour. Med. Science, August*, 1828.

† Case 1.— I was called once to a patient, seized with puerperal fever of the milder form, with a pulse about one hundred and twenty in the minute; the pain not widely diffused over the abdomen, the other symptoms proportionally mild. The woman had been ill about ten hours, when eight ounces of blood had been taken from the arm, and with little benefit. Under all these circumstances, thinking there was little hope of curing the disease by means of the lancet, for I had not seen her till twenty-one hours after the chill, an ounce of the oil of turpentine was given immediately, a second in twenty-seven hours from the chill, a third in the course of the night, and a fourth next morning, fifty hours from the first attack; no less than four ounces of the oil of turpentine being taken in seventeen hours; three of the doses, I am sure, were swallowed, because a young gentleman, who attended himself, administered them, and they were not rejected from the stomach. The first dose was followed by some remission of pains, but whether from the oil of turpentine, or from three or four operations of the bowels, did not appear. The other three doses did not produce much effect; the pulse, on the following day, remained much the same, and the patient ultimately died. The failure of cure in this case was very striking, because the attack was not in its character very formidable, and certainly by no means unfavourable to the success of the oil.

Case 2.—I was also once called to a woman labouring under puerperal fever in the most malignant form; she had been ill for two or three days; the pain was diffused over the greater part of the abdomen, and the pulse was clearly ascertained to be one hundred and seventy in the minute. In this case there was clearly no hope of saving the woman by the use of the lancet; two or three ounces of the oil of turpentine were administered in the course of the next twelve hours. Some little remission of the tenderness and pain was, I think, observed after the first dose; but no marked or permanent benefit was produced by it, and the woman died. The failure was here the less discouraging, because, I believe, the disease had gone so far, and the inflammation was spread so widely over the peritoneum, that, perhaps, no human aid could avail.

Case 3.—In the autumn of 1824, when the puerperal fever was not so prevalent as it had previously been, I was requested, by Mr. Edwards, of Queen-Street, a very active and judi-

SECTION V.

VARIETIES OF PUERPERAL FEVER.

In teaching, I am accustomed to divide this disease into three varieties, and not without the belief that there is some advantage in so doing. Thus I divide them into the *mild epidemic*,* the *malignant epidemic*, and the *spasmodic*.

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cious practitioner, to see a woman who had a good deal of inflammatory tenderness, and pain about the abdomen; her pulse was about one hundred and thirty, and the blood that had been taken away was somewhat buffed. She had laboured under the disease for two days and a half before I saw her; and it was not till the fourth day after delivery that disease began, this being a highly-favourable circumstance. The woman had all the usual marks of puerperal fever, and about sixty-four ounces of blood had been taken away before I saw her. In this case, considering that little benefit was to be derived from the further use of the lancet, I thought it proper to make trial of the oil of turpentine; and in the course of twenty-four hours, an ounce and a half of the oil were given, a less copious quantity than in the former cases. Within the next twenty-four hours she took another ounce, and under this treatment, the symptoms were gradually subdued, whether from the use of the oil of turpentine or not, remains uncertain; but the recovery was unlooked for. *Dr. Blundell.*

* *Puerperal fever*, it should be remembered, is a generic term, which in reality designates only a prominent symptom of disease, but which, in ordinary usage, embraces complaints having little or no connexion, either in their nature, their seat, or their treatment. *Dr. Conquest's Outlines.*

There is no disease about which there is so much difference of sentiment as puerperal fever; many of the most eminent obstetricians in Europe and America entertain discordant opinions as to the pathology of the disease. Conquest, Blundell, and Duges, consider it as a symptom of a local disease, while Hamilton, Burns, Joseph and John Clarke, Roux, Velpeau, Mastoscheck, Raimann, Hartman, Boir, Schiffner, Festi, Billetzky, and others, entertain a different opinion. *Dr. Ryan's Manual.*

Dr. Hull considers the disease as simple peritoneal inflammation, which may affect three classes, the robust, the feeble, and those who are in an intermediate state. Vigarous joins with those, who consider this as not a fever *sui generis*, but varying according to circumstances. He has divided it into five species. Dr. Armstrong, Dr. Lee, Dr. Campbell, Mr. Hey, and Mackintosh, considered the disease as decidedly inflammatory. Gardien admits six species. Dr. Cusac has three species. M. Dance considers it phlebitis. M. Fonellé looks on it either as the suppurating, or what he calls typhoid stage of phlebitis, or as a peculiar "forme ataxique," in which appearances, on dissection, are in no degree proportioned to the severity of the symptoms. *Dr. Burns' Principles.*

Dr. Lee considers it decidedly inflammation of the uterus, or its appendages, and enumerates four principal varieties of the disease:—

1. Inflammation of the peritoneal covering of the uterus, and of the peritoneal sac. *Puerperal peritonitis.*

FIRST VARIETY.

When puerperal fever is prevalent, the epidemic is often *mild;* the pulse, perhaps, not rising above one hundred and twenty, or one hundred and thirty in the minute. These cases are known by the pain and tenderness being confined to a surface of the abdomen, not broader than the two hands, by the exhaustion coming on less rapidly, so that the woman may continue ill for three or four days, then recovering or sinking, collapsed, and by the mild character of the epidemic at the time the case occurs.

Now, it is in this variety, the milder and inflammatory form of the disease, that we have the fairest chance of subduing it, and many cases of this type are completely cured by means of the method of depletion I have before mentioned.

Venesection, calomel, opium, perhaps turpentine, and, in the beginning of the disease, an emetic, are the remedies which I should recommend in these cases. Whatever be your measures, begin your operations as soon after the chill as possible.

SECOND VARIETY.

When the puerperal fever is diffused all over the district, we sometimes find that almost all the cases are of the *malignant* kind, not to be subdued by the most active remedies, and speedily running

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2. Inflammation of the uterine appendages; ovaria, fallopian tubes, and broad ligaments.

3. Inflammation of the muscular and nervous tissues of the uterus.

4. Inflammation and suppuration of the absorbent vessels and veins of the uterine organs; when the veins of the uterus suffer only. *Uterine phlebitis.*

These varieties may take place quite independently of each other, though they are most frequently met with in combination.

From facts mentioned, Dr. Lee observes, "These facts prove that at different seasons different textures of the uterine organs are liable each to be affected with inflammation, in varying degrees of intensity, and they enable us in some measure to reconcile the discordant opinion entertained, both with respect to the symptoms and the treatment of puerperal fever. *Dr. Lee's Researches*, p. 18.

their course, to the destruction of the patient. In this form of the disease, we sometimes observe a certain hurry of the nervous system, which leads the patient to speak with a rapid utterance, and in a sharpened, and somewhat reedy tone of voice. If you ask her how she is, she replies, perhaps, in a hurried, dramatical manner—I am very well—there is nothing the matter with me,—a mode of speech which in me always excites the most gloomy apprehensions. Under these malignant attacks, moreover, the pulse rises to a high degree of frequency, mounting sometimes to one hundred and fifty, one hundred and sixty, or even one hundred and seventy in the minute; tenderness diffuses itself over the whole abdomen; coughing may occur; and pains may be felt in the loins, as if the peritoneum, covering the lumbar surface and that of the diaphragm, were affected. A very rapid exhaustion ensues; when the sun rises the patient is well, before it sets a second time, she is dead; in the extreme cases, she may sink within twenty-four hours after the chill. Add to these characteristics of the disease, a prevalence of the malignant type in other cases occurring at the time; and thus by the prevalence of the malignant variety of the disease at the time, by the speedy exhaustion of the patient, by the extensive diffusion of the pain and tenderness over the abdomen, by the great frequency of the pulse; and, then, by a less constant, but very important symptom, the hurry of the nervous system I mean, this malignant variety of the disease may be readily recognised. In the worst cases of the malignant epidemic, do what you will, in the present state of knowledge, the patient, I fear, must sink; and therefore, in these cases, it is, perhaps, better to refrain from the use of free venesection, as, by having recourse to it, you may bring the practice into disgrace; for the patient perishing under a collapse similar to that arising from inanition, it may seem, to the inexperienced, that she dies through depletion. In this state of the disease, therefore, other remedies may, in preference, be recommended. Colomel and opium, for example; emetics, turpentine, and small bleedings. But when the disease, though malignant, is in its milder form, it may be proper to attempt a cure by the bold

use of the lancet, aided by calomel and opium, as before explained; and if you will, by turpentine. Immediately after the chill, an emetic may be administered. Whatever is done, must be done with promptitude; after the chill, the sooner you commence your operations the better, provided there be, in the system, sufficient re-action to sustain them. Would this re-action be accelerated by wrapping the patient in blankets, wrung out of water warmed to the temperature of 98° of Farenheit's thermometer?*

THIRD VARIETY.

A third variety of puerperal fever is sometimes presenting itself, and this species is the sporadic. Perhaps the disease has not prevailed in the district for years; perhaps a solitary case has not been observed for a length of time, but at last you meet with a case in which the patient has chills, heats, head-aches, abdominal tenderness, pulses of one hundred and thirty or more in the minute, and all these symptoms commencing on the second, third, or fourth day, at a time when the fever shows no disposition to spread among puerperal women in the district. Now this solitary case it is which constitutes the sporadic variety of the disease. If sporadic puer-

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* Both general and local warm baths have been highly recommended by foreign practitioners. Where the skin was hot, the pain moderate, the strength of the patient not much depressed, immersion of the whole body in warm water was often followed by a general perspiration and relief of all the symptoms. On the other hand, they state, that when the pains were excessive, when there was yet anxiety, a profuse, general, or partial perspiration, the strength much reduced, the respiration hurried and anxious, and the face red with intense head-ache, the patient could not support the warm bath, and derived no benefit whatever from it. The hip-bath was found more generally useful, and was employed almost indiscriminately by M. Desormeaux, in all the different varieties of the disease. *Dr. Lee's Researches*, p. 110.

Racolin, Dance, and Fonellé, highly recommend the injection of warm water into the vagina, and cavity of the uterus. These injections were repeated by them three or four times in the course of the day, and they state that they not only washed away the putrid matters adhering to the internal surface of the organ, but that they appeared to relieve the irritation and inflammation of the organ itself. This practice appears to me to merit more attention than it has hitherto received in this country. I have tried it on several occasions with decided advantage. *Dr. Lee's Researches.*

peral fever be very severe, it should be treated exactly in the same way as you would treat the malignant form of the endemic, by venesection, calomel, opium, emetics, and the like; but if, which is more probable, the attack be milder, you may then, perhaps, subdue it, by applying thirty or forty leeches to the abdomen,* by laying a large blister over the abdominal surface, by purging, digitalis, diaphoretics, small abstractions of blood from the arm, and, in short, by all those ordinary remedies which are found to succeed in case of inflammation. These sporadic cases being rare, I would give an opinion with caution, but I think you will seldom find the pulse above one hundred and twenty, one hundred and twenty-five, one hundred and thirty, or one hundred and thirty-five in the minute.

CAUSE OF THE DIFFERENCE BETWEEN THE VARIETIES.

The cause of the difference between the three varieties of puerperal fever, I do not profess to explain; but a plausible opinion is the following:—in the malignant form of the disease, I suspect, that the epidemic disposition to peritonitis is strong, and that the diffusion of the inflammation is great, whence the difficulty of the cure, and the rapidity of the collapse. In the milder form of the disease, I conceive that the peritonitic propensities are weaker, and that the inflammation is of small extent, whence the strength gives way more slowly, and the peritonitis is more readily subdued. In the sporadic cases, the epidemic constitution is wanting altogether, and the surface of tenderness may, I believe, generally be covered with one or two hands, and this may, in a general way, explain to us why this attack is of small danger. I may observe, generally, that it is not so much the intensity as the extent of the inflammation, which constitutes the risk; and we may reasonably expect the

* The application of numerous leeches to the abdomen, and the subsequent application of a warm poultice, is more useful, than a repetition of venesection, and in some cases, is safer, and more to be depended on, even from the first. *Dr. Burns' Midwifery.*

milder symptoms, when the inflammation is confined to a few square inches; and the severer, when it extends over two or three square feet.

SECTION VI.

CONCLUDING OBSERVATIONS ON PUERPERAL FEVER.

Before I bring my remarks on this fatal disorder to a close, I deem it necessary to make a few observations touching its causes,* and so on.

CAUSES OF THE FEVER.

Among the important causes of puerperal fever, we may generally enumerate, such a condition of the abdomen as is produced by delivery, or its near approach. I say the near approach of delivery, because there is reason to believe, if our records may be relied on, that the fever sometimes commences before the child is expelled

With few exceptions,† if, indeed, there are any, it holds true as

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* Dr. Leake considered inflammation of the omentum to be the proximate cause, and suspected the whole mass of circulating blood became contaminated by absorption of the fluid effused into the peritoneal sac. *Dr. Leake on Child-bed Fever*, p. 90.

Dr. Hamilton believes that puerperal fever is a fever *sui generis*, and of a putrid nature. *Outlines of Midwifery.*

Dr. Lee is of opinion, "That inflammation of the uterus and its appendages, must be considered as essentially the cause of all destructive febrile affections which follow parturition, and that the various forms which they assume, inflammatory, congestive, and typhoid, will in a great measure be found to depend on whether the serous, the muscular, or venous tissue of the organ has become affected. *Medico-Chirurgical Transactions*, vol. xv. p. 405.

It appears to depend on inflammation of the peritoneum, conjoined with the operation of some debilitating poison, more or less contagious. *Dr. Burns' Midwifery*, 8th edit. p. 562.

† Dr. Denman relates a case in which symptoms very similar to the puerperal fever, supervened in a woman who had never been impregnated; this woman laboured under obstruction of the vagina, in consequence of which the uterus enlarged greatly, from catamenial accumulation; and when the hymen was divided, the contents of the womb were expelled with efforts like the parturient, and, no long time afterwards, abdominal inflammation supervened. A similar instance occurred at one of our hospitals, in which it was necessary to take away a

a general principle, that puerperal fever never attacks women but where they are prepared for it, either by the birth of the ovum, or perhaps now and then by a near approximation to its birth; and hence we may enumerate it generally among the great causes of disease.

Again, the puerperal fever is found to rage much more fiercely sometimes than at others; so that, after remaining quiet for fifteen or twenty years together, it suddenly becomes epidemic, and fills our families with mourning, and our printing presses with dissertations. Among the causes of puerperal fever, therefore, set down a sort of epidemic constitution among the women, a most unfortunate coincident with the first establishment of the young obstetrician in practice. The disease getting into his connexion, may, in its malignancy, baffle all his efforts, and, destroying his patients, it may blight his reputation in the bud. Indeed, I should strongly advise every young man not to commence his obstetric career when puerperal fever prevails, but to wait for one or two years, for it is wiser to delay than to begin rashly, with all these dangers surrounding.

DIAGNOSIS.

When you are nervously apprehensive, you are liable, without good reason, to believe that your patient is the subject of puerperal fever, and whence the need of a just diagnosis. If the bladder be loaded after delivery, it may produce symptoms exceedingly similar to puerperal fever, and hence the importance of introducing the catheter, in all dubious cases, for this diagnostic alone may be relied on; care, too, must be taken to put the catheter into the bladder, and pressure ought to be made above the symphysis pubis, to aid the flow, for some paralysis of the organ is not impossible.

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considerable quantity of blood from the arm before the symptoms could be subdued. Thus it now and then happens, independently of pregnancy, where the womb, being dilated from internal accumulation, becomes suddenly emptied and contracted, that abdominal inflammation, like puerperal fever occurs. *Dr. Blundell.*

Accumulation and irritation in the bowels may give rise to symptoms like puerperal fever, the pulse rising to one hundred and ten, one hundred and twenty, or more, and the abdomen becoming tender. A prompt purgation is the best diagnostic, and in very dubious cases, you may bleed once; after which, you may, I conceive, generally make your diagnosis, before a second bleeding can be necessary, as there may be time previously for the action of cathartics. Senna and salts, aided by injections, are of prompt operation. If women have merely spasmodic pains of the abdomen, whether of the gall-duct, intestines, ureters, or womb, the last being most, these are easily discriminated by the absence of the fever, during the epidemic; but it sometimes happens, when after-pains are severer, that a small fever attends the pulse, rising to one hundred and ten in the minute; and the hardened uterus when compressed, becoming acutely painful. This case appears to be the puerperal fever in a subdued form; and it may, perhaps, be most safely treated in the same manner as the sporadic variety of the disease; so long as the pulse remains below one hundred and twenty, little danger need be apprehended. Lastly, enteritis may, I suppose, be distinguished from puerperal fever, because it produces constipation, and an inflamed uterus may be easily recognized, because, by a competent obstetrician, it may be subjected to examination, almost with the same nicety as an inflamed finger. If, however, the puerperal fever is to be treated like other inflammatory diseases, this diagnosis becomes less important.

IS THE DISEASE INFECTIOUS.

It is much disputed by some whether this disease is infectious ;*

* Dr. Hulme maintained that it was not more contagious than pleuritis, or any other inflammatory disease. M. Fonellé, who has recorded the history of the most fatal epidemic that ever occurred in Paris, asserts that the idea of contagion was clearly out of the question. M. Duges, Baudelocque, and Campbell are against the doctrine of contagion. On the other hand, in the earlier description of the puerperal fever, it is referred not only to the corrupted atmosphere of hospitals, but also to contagion. In the Dublin Lying-in Hospital, the

but, however this point may be decided, or unsettled, the facts affirmative of infection are so strong, that accordingly it becomes our duty to act. Nor ought your faith in the possible infection of this disease to be hastily shaken by contrary opinions, even when advanced by the most experienced. There are some men who entertain a lurking belief of the infection of this fever, notwithstanding all their intrepid declarations to the contrary; not that in these declarations it is their intention to deceive, but there is a curious phenomenon of the human mind, well known to those who have studied it, and which consists in fancying that we believe that to which we give no credence, and the contrary; a state of mind which is soon discovered to ourselves and others, by placing ourselves in a position which calls for the operation of the faith or belief, when infidelity becomes manifest.*

Wavering the question of its precise character, I content myself with remarking, generally, that from more than one district I have received accounts of the prevalence of puerperal fever in the practice of some individuals, while its occurrence in that of others in the same neighbourhood, was not observed. Some, as I have been told, have lost ten, twelve, or a greater number of patients in

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Edinburgh Infirmary, the General Lying-in Hospital at Vienna, and in most of those in this metropolis, it has raged as an epidemic at different periods with great violence, and has appeared to be propagated by contagion. Dr. Gordon, Mr. Hey, Dr. Armstrong, Dr. J. Clarke, and many others speak of its infectious nature. Ed.

* Conversing with an obstetric friend, who contended that the puerperal fever was not infectious, I heard him, for he was my elder, with respectful attention, till at length, after he had delivered his sentiments somewhat at large. "Notwithstanding all this," said I, "my dear Sir, I cannot help thinking that the fever may be infectious, and, pardon the freedom, but I fancy you think so too." "I!" said he, in an accent of surprise, "I think so? why I have just been telling you to the contrary!" "Well," said I, "will you allow me to bring your belief to the test?" He nodded assent. It so happened that [this gentleman had a favourite niece recently confined, the only immediate representative of his very respectable family. "Come then," I proceeded, "you tell me your niece has just been confined, and I offer my congratulations; but, permit me to ask, if you had been to see one or two patients labouring under this terrible disease, would you like to take her by the hand and to sit down at the bed-side?" He started gently, and hesitated; then, in a subdued tone of voice, "Why, really," said he, "I should not like to do that." Andthus, it seems, even in the midst of denials, there may be on the mind a suspicion of infection; and on this suspicion, of course, it becomes our duty to act. *Dr. Blundell.*

scarcely broken succession;* like their evil genius, the puerperal fever has seemed to stalk behind them wherever they went. Some have deemed it prudent to retire for a time from practice. In fine, that this fever may occur spontaneously I admit, that its infectious nature may be plausibly disputed I do not deny, but I add, considerately, that in my own family, I had rather that those I esteemed the most should be delivered, unaided, in a stable, than that they should receive the best help in the fairest apartments, but exposed to the vapours of this pitiless disease. Gossiping friends, wet nurses, monthly nurses, and the practitioner himself, are the channels by which, I suspect, the infection is principally conveyed.

As to its prevention, I know of nothing certain. Moderate purging after delivery can do no injury. As flooding, during delivery, seems to dispose to the fever, I think it very doubtful whether venesection possesses any preventive power. To guard solicitously against the infection is, of course, of the first importance. Is bracing the abdomen of importance?

POST-MORTEM APPEARANCES.

On examining the body after the more malignant attacks of the puerperal fever, as when the patient for example, is dead within a day or two after the chill, on opening the abdomen, scarcely a trace of inflammation has been observed; a little bloody serum, a few dubious adhesions, a difference of opinion respecting the state of the capillaries, and that is all; but in the milder and more inflammatory varieties of the disease, where the patient lives for four or five days, and then dies, the changes become more conspicuous;

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* Mr. Robertson, of Manchester, has stated that, "From December 3rd 1830, to January 4th 1831, a midwife attended thirty patients for a public charity; sixteen of these were attacked with puerperal fever, and they all ultimately died. In the same month three hundred and eighty women were delivered by midwives for the institution, but none of the other patients suffered in the slightest degree. *Medical Gazette*, No. 214.

Dr. Armstrong observes that most (forty out of fifty) of the cases at Sunderland, occurred in the practice of one surgeon and his assistant. *Dr. Lee's Researches.*

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but which, in the great majority of cases, as in these, fixes on the peritoneum. That peritonitis usually occurs in this disease, is, I think, now so generally admitted, that it is not necessary to argue upon it; though the pains and tenderness of the abdomen, the buff on the blood, the frequency of the pulse, and the appearances on dissection, may all be produced as so many proofs of the truth of the assertion. Why it is that this inflammation of the peritoneum should sink the strength so rapidly, especially where it does not appear to have been extensively diffused, I am totally unable to explain; and this effect appears to be the more surprising, because in function, the peritoneum, though of wide extent, does not appear to be an organ of much importance to the system. In the operation of this inflammation, there seems to be something analogous to that of extensive burns; whether any new principles of treatment may be deduced from this consideration, I am not prepared to decide.*

CONCLUSION.

I cannot dismiss the consideration of the puerperal fever without mentioning with acknowledgment the names of Gordon, Hey, Armstrong, and Marshall Hall; and it is my sincere hope that Brenan may be found deserving of the applauses of posterity. To names of acknowledged merit, it would be superfluous to add an encomium; on the tomb of the French mareschal, the only inscription is—TURENNE.

* With regard to the nature of puerperal fever, it is difficult to determine whether it be of a common or specific kind. It certainly arises where individuals are not exposed to the ordinary causes of inflammation, and it often rages as an epidemic, particularly in hospitals; and in this respect it resembles erysipelas, hospital gangrene, and other specific inflammatory diseases, which are generally supposed to depend on a vitiated state of the atmosphere. Like these diseases, too, it ceases without any assignable cause, perhaps for several years, and then re-appears in the same establishments, and is attended with the same destructive consequences. Ponteau supposed the inflammation to be of an erysipelatous nature, and the same opinion was maintained by Dr. Lowder, and Drs. Home and Young, of Edinburgh, who saw the disease in the lying-in wards of the Royal Infirmary; Dr. Abercrombie also joins in the same opinion. Pinel, Bayle, Gasc, and Laennec traced no resemblance between the phenomena of puerperal peritonitis and erysipelatous inflammation. *Dr. Lee's Researches*, pp. 98, 99.

SECTION VII.

OF HIDROSIS OR HIDROTIC FEVER.

Among the various diseases to which the puerperal state is liable, there is one of considerable importance in practice; I mean the Hidrosis or Hidrotic Fever,—a disease not very common in its occurrence, but which, where it does take place, is in its milder form distressing and obstinate. In its severer varieties of considerable danger, and in its more malignant shape, is almost invariably fatal.*

PERIOD OF THE ATTACK.

The hidrosis may begin with shivers, even before parturition has taken place; and this I have observed in one or two instances, where the placenta was lying over the os uteri, and partially detached. More frequently, however, the disease commences after delivery has been accomplished.

At any time within the first eight or nine days, the attack may begin, and perhaps even later than this, but it more frequently commences within the first two, three, or four days, if I may judge from what I have hitherto observed.

The attacks are not confined to those patients only who are delivered at the usual term of gestation, for I have seen it occur with considerable violence, after premature delivery, as well as miscarriages of the earlier months; but whether it is more frequent after deliveries in the later months of gestation, facts do not at present enable me to decide.

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* I have given the disease the name of the hidrotic fever or hidrosis (ἱδρωσις, *'idrōsis,*) second syllable long, because in all its regular varieties it is, as this name implies, accompanied with sweats, which form one of its most striking characters. *Dr. Blundell.*

SYMPTOMS.

The symptoms which usher in, or accompany this disorder, are both numerous and important; I shall, therefore, speak of them separately, and in the following order.

SHUDDERING AND FEELING OF COLDNESS.

The disease opens usually, if not always, with a shudder, more or less severe, and so far resembles puerperal and other fevers; sometimes the shudder is slight, lasting for three or four minutes only, and attracting but very little attention, while in other cases the patient may shake, as if she was in an ague fit. In general, this shuddering is accompanied with a sensation of cold, which is occasionally intense; while in other cases, the feeling of coldness is slight, or perhaps wanting altogether; and I have been told by the attendants, that the patient has exclaimed—"I am so cold," and called for more covering, though the flesh has felt warm to the hand of the nurse.

The shuddering and the feeling of coldness are not always in proportion to each other: thus, the patient may shake violently, the sensation of cold being slight, or, she may complain much of the cold, without suffering a smart attack of the shudders: as in cases of puerperal fever, so also in this disease, there is sometimes only one attack; but we may observe occasionally, three or four occurring at uncertain intervals of hours or days—nay, in the same patient, where the disease continues in its lingering form for a period of several weeks, there may be a great many rigors, and this may now and then tend to observe the quotidian period, though the patient may suffer two or three attacks in the course of a day, at irregular intervals.

SWEATS AND HEAT.

In this disease, further, there is more or less disposition to

sweats and heats, combined, which constitutes a very characteristic symptom. These sweats are, I think at first more fluid, but they afterwards become more clammy, especially towards the close of the disease, during the last few hours. In some cases we find them to be sparing, while in others, especially in the more malignant varieties, they are surprisingly profuse. But whether they are sparing or copious, fluid or viscid, they are never critical—that is, they do not remove or effectually relieve the disease, to the great disappointment of the practitioner, and they may, I think, be not inaccurately described as *sweats of distress* in the system.

CHANGES OF THE PULSE.

This disease is attended, moreover, with an increase, frequency, and other changes of the pulse, previously, perhaps under ninety in the minute, it rises to one hundred and thirty, forty, fifty, or more; and in some, I may say many forms of the disease, it is very variable; at one period of the day, it may be one hundred and forty, or one hundred and fifty, in the minute; at another, one hundred, or one hundred and five: these changes occur in the compass of a very few hours. To which I may add, the pulse in many cases is round, soft, and bounding, till the collapse commences, so that on the whole it is very unlike the pulse of puerperal fever, in any thing but its frequency.

MORBID STATE OF THE NERVOUS SYSTEM.

In hidrotic fever, there is not unfrequently a morbid state of the nervous system, which shows itself in a certain quickness of manner, a rapidity of utterance, or a disposition wayward, pettish, or passionate. Sometimes, also, the patient becomes the subject of whimsical impulses, either of a comic or tragic character, so that there is an evident tendency to puerperal mania, which may ultimately, though not generally, occur. On the other hand, the patient's manner is now and then marked with a sort of forced

calmness, and in some cases there is no very obvious disorder of the nervous system, for these symptoms are not constant.

SECRETION OF MILK USUALLY DISTURBED.

That the secretion of milk is always suspended or changed in hidrosis, I am not prepared to assert—indeed, as the disease sometimes commences before delivery, and still more frequently within forty-eight hours after parturition, it is pretty evident that there is no essential connection between the mammary action and the fever. Nevertheless, I think it will be found that this action is often disturbed. Sometimes where the disease commences before the ordinary free secretion, which occurs forty-eight hours after delivery, not a drop of milk forms in the breast, and this, too, in women, who on former occasions have produced milk very profusely, and made excellent nurses. In other cases, the secretion of milk is diminished, but not completely arrested.

ABDOMINAL PAINS, ETC.

In the course of this fever, there is sometimes very little pain; but in one stage or other, the patient will frequently complain of uneasiness, which is felt in the region of the pelvis principally, though it may also attack other parts, more especially the epigastrium and chest coming and going. In general, these pains are not very severe: now and then, cases occur in which there is scarcely any pain at all, but in certain cases, in those, I suspect, in which the inflammation hangs about the uterus, the suffering of the patient is acute, and bears a strong resemblance to inflammatory after-pains.

In hidrotic fever, too, tympanites and sub-tympanites not infrequently occur, more especially in the close of the disease. These symptoms, however, are not always observed, and I have attended one or two well-marked and vehement cases, in which, as far as I

was able to observe and learn, there seemed to be no abdominal inflation throughout.

APPEARANCES OF THE BLOOD.

There is variety, too, in the appearance of the blood, which is sometimes highly inflammatory, and sometimes but obscurely so; my observations, however, have not hitherto been sufficiently numerous and accurate, to enable me to speak at large on this point.

TERMINATIONS OF THE DISEASE.

There are three principal ways in which this disease usually terminates: namely,—by resolution, collapse, or its conversion into some other affection. Sometimes, in the milder form especially, the disease is brought to its close by a gradual retreat of the symptoms, so that day after day it gets milder, till the patient ultimately gets well. But in the severer forms of hidrosis, even those varieties of it which do not appear very formidable at the outset, there is, I suspect, always a pertinacious tendency to collapse, the strength sometimes giving way very rapidly; say, in the course of a few hours; as if the patient had been poisoned. While in other cases, though the system holds out for three, four, five, or six days; yet the powers are at length laid prostrate, and the patient at last sinks. The complete collapse is marked by the usual symptoms—a pulse of perhaps 117 a minute, small, and easily stopped by compression—a corpse-like coldness of the hands and feet—breathing more or less laborious, sometimes very much so; and occasionally a tympanitic affection of the abdomen.

When the disease terminates in the third mode (if termination it can be called,) it is converted into some other affection, and the patient is assailed with puerperal mania, abscess of the breasts, phlegmasia dolens, &c.; the form and seat of the affection changing, although the nature of it probably remains the same.

SEVEN VARIETIES OF HIDROSIS.

Hidrotic fever may in the present state of my knowledge respecting it, be divided into seven different varieties. The ultra-malignant,—the malignant—the acute—the lingering—and that in which there is an obvious disposition to break out into some other affection—the mutable,—to which may be added the fugacious,—and the remittent.

ULTRA-MALIGNANT VARIETY.

And first, of the ultra-malignant hidrosis: the ultra-malignant hidrosis sometimes, I believe, makes its attack later after delivery—but more generally, as far as I have hitherto had occasion to observe, soon after parturition has taken place—before the milk can with probability be supposed to have any connection with its occurrence. The patient is seized with a chill more or less violent. The pulse rises suddenly to one hundred and sixty or more in the minute—the sweat is profuse and clammy—there is from the very first a disposition to the failure of the animal heat, and when the physician arrives, perhaps no long time after the shivers, the limbs, and it may be the whole body, are disposed to a corpse-like coldness—the strength is prostrate—tympanites and laborious breathing are perhaps already apparent—and death itself may take place within three or four hours from the chill, or even earlier—the patient giving way as rapidly as if she had taken a vehement poison, or been assailed with malignant cholera.

In cases of this kind, where the symptoms are so malignantly violent, there seems to be little hope of cure by any known method of medical treatment—indeed, the patient will most probably be moribund before the practitioner arrives. Ammonia and other stimuli, together with the ordinary remedies of extreme collapse, seem here to be indicated.

MALIGNANT OR SECOND VARIETY.

In the second variety of the disease, or the malignant hidrosis,

as I would call it, the patient is attacked as before, with shivers or chills more or less vehement. The pulse is frequent, small, weak, and perhaps one hundred and fifty in the minute—the sweats of distress are copious and sometimes very much so, and when suspended, break out afresh during sleep—at first with a general warmth of the body, afterwards with coldness. The secretion of the milk is, I suspect, arrested or greatly diminished—and if the disease exist on the third day of delivery, this secretion perhaps does not appear at all. To this I may add that there is sometimes a certain wildness of manner, that the abdomen is apt to become tympanitic, and that there may be a complete collapse in the course of twelve or twenty-four hours.

I have seen the disease commence on the fourth day, but I suspect that it generally begins on the first or second day of delivery—whether this is or not indicative of greater danger, I am not prepared to decide.

In this variety of the disease, as well as the former, I fear that there is little to be done, for though less rapid than the ultra-malignant fever, this malignant hidrosis proceeds to its close with great violence and rapidity. Would the rapid production of mercurial action or early and copious venesection be of any service here? The efficacy of both may be doubted.

ACUTE OR THIRD VARIETY.

In the acute or third variety of hidrosis, the disease is characterised by its lasting sometimes for several days together—by its fluctuations—that is, its exacerbations and remissions—by its pulse, which may be frequent, soft, and bounding—sometimes more steady, but in several cases which I have seen surprisingly variable, so that in the course of a few hours it will leap from one hundred and two, to one hundred and sixty in the minute, and range irregularly between the extremes. But I am not prepared to assert that these fickle changes of the pulse are constant. The sweats are copious, and seem to indicate distress in the system.

The body is worn—the strength may suddenly give way—the mind may be excited, or in a state of forced or morbid calmness, in both cases looks towards mania. There may be tympanites or sub-tympanites, perhaps more generally the latter. More or less tenderness is frequently felt over the lower part of the abdomen and the uterine, or perhaps I ought to say the ovarian region.

The milk is disposed to fail, and there is not always pain in the head. In this variety there is less disposition to a prostration of the strength than in the two preceding—the patient sometimes escaping the collapse altogether, and gradually recovers. More frequently, however, after irritating and tantalising our hopes, the disease overpowers our best remedies—the strength fails sometimes rather suddenly, and the patient dies on the third, fourth, fifth, sixth, seventh, or eighth day; sometimes perhaps later.

The pertinacity, the irregular remission of the disease, and the before-mentioned variableness of the pulse, and other symptoms, are all very remarkable. In the present state of my knowledge I should feel strongly inclined in these cases, nothing peculiar forbidding, to throw in mercury immediately—whether by the mouth, the lungs, or in unction. If this remedy should be rejected, then I would recommend palliative measures, a cool head, warm feet, the support of the mammary secretion, open bowels, flowing liver, cool diet, and perhaps a moderate support of the perspiration. I am not prepared to deny the utility of blood-letting in moderation, but the disease is pertinacious, and not likely to yield to a smart attack of this kind. And in the present state of my knowledge, I should not feel disposed to press the active use of venesection.

LINGERING OR FOURTH VARIETY.

The next or fourth variety of hidrosis which I think it right to notice, may be called the lingering—and though it differs in a striking manner from the ultra-malignant variety already characterised—yet, from viewing it in connection by the help of a

succession of intermediate cases, I think these two extremes may obviously enough be annexed to each other, so as to show that they are at bottom essentially the same.

The lingering hydrosis may last sometimes for six or eight weeks, though it is not always so long protracted, but it invariably shows a disposition to lurk about the patient; and seems, as it were, loth to take leave of her at last. The disease usually commences with chills, which may be confined to the back, or diffused over the surface of the body; not always severe, nor perhaps in all cases observed by the patient; one chill only may occur, or there may be several in the course of the night, say twenty or thirty, followed by a flush of heat. The pulse may rise to 150 in the minute, especially if the case tend towards danger; but it ranges more frequently between 110 and 125. The beat is more generally round and soft, than small and thready, more especially when it is not very frequent. Sometimes too, as in the preceding case, it is very variable. The warmth of the body is encreased as in former cases, and throughout the disease there is a disposition to the breaking forth of a breathing sweat; and not infrequently the physician finds his patient in this state of diaphoresis, perhaps after she has been so for some days. Though not quite healthy, still the patient's manner on the whole reminds one of health, perhaps she turns from the back to the side when we speak to her, and exhibits other marks of strength. But in some well marked cases, the sensorium is disturbed, and she complains of strange sensations in the head, and of those irregular impulses of the mind referred to in the general history of the disease; she becomes excited and irritable so as to lead us to think of puerperal mania. Wild dreams and startings are not uncommon during sleep.

The centre of the body is more or less distressed, there may be vehement after pains; a great tenderness of the hypogastrium, perhaps more towards the side than the centre, so that incipient phlegmasia dolens is suspected, and, perhaps the patient tells us that she formerly laboured under that disease.

The degree of tenderness varies, sometimes slight and occa-

sionally very severe; though blood drawn at this time may exhibit a buff. All these symptoms occur, I think, during the first days more especially.

Throughout the progress of the lingering hidrosis, the patient is liable to be assailed with those chills and heats with which the disease opens. These sometimes return at irregular intervals of a few hours; in other cases, observing for a time the quotidian period; so that for several evenings in succession, say five or six, she may be attacked with creeping sensations, slight chills, followed by febricula, restlessness, and a night without sleep. The whole disease will begin sometimes as early as the third day.

The treatment of this variety is purely palliative, all violent measures ought I conceive to be rejected. The disease is pretty evidently allied to phlegmasia dolens. Country air bids fair to be of service.

MUTABLE OR FIFTH VARIETY.

There is yet a fifth variety of hidrosis, which I would call the mutable, because it shows frequently a disposition to change into some other affection, apparently different. This difference, however, being rather apparent than real, for I suppose the nature of the disease always remains the same. The mutable hidrosis is, I suspect, generally connected with a diminished flow of the lochia, or with a cessation of the mammary secretion in women, who, under ordinary circumstances were disposed to produce milk copiously. At first this disease appears very similar to the lingering hidrosis before described; but it soon shows a disposition to break out into some other affection, of which the principal that have fallen under my notice, are puerperal mania, violent palpitation of the heart, abdominal pains, about the pelvis especially; phlegmasia dolens, and abscess of the mammæ. The disease in its original, or secondary form, being protracted for weeks or months together.

Of course, the treatment of this affection must vary according to

the shape that it assumes. In the first part of the attack, I mean when it resembles the lingering hidrosis, the same remedies which are found useful in that variety of disease, will prove serviceable here. But when the disease changes, becoming converted into the secondary affection above enumerated, of course the treatment must vary accordingly; of this treatment I say but little, because I feel that I have nothing to offer which will not suggest itself to every one acquainted with the general principles of medicine.

FUGACIOUS OR SIXTH VARIETY.

There is too, another form of disease which must, I suspect, be referred to the hidrotic affection, and which may be called the fugacious hidrosis, it may commence as late as the seventh day of delivery, or even later, with rigor, followed by frequency of the pulse, which is one hundred and twenty or more in the minute; the mind and the nerves not being much excited. This frequency of the pulse may continue two or three days, it then ceases, and all the other symptoms subside. The only alarming indication throughout, being the chills and the acceleration of the circulation. There are no obvious signs of abdominal inflammation; nor is there, I believe, always much sweat. The latter consideration leads me to doubt whether this may be regarded as belonging to the hidrotic affection—future observations must decide this point. A case of this kind, which fell under my notice, was marked with the following circumstances: the child died in utero, at birth it was found to be of a brown colour, with exfoliating cuticle. The cord being brown, soft, and as I was told offensive. In this case, too, there was a flooding to the amount of one or two pints, before the birth of the placenta, as I was informed by the practitioner, which was removed by peeling. The secretion of milk also was not kept up, as there was no child to take the breast. Till the seventh day, the patient was doing pretty well, though there was an offensive discharge from the vagina, in other words, offensive

lochia. Before the attack on the seventh day, there had been a good deal of uterine pain, and a coagulum as large as a walnut was expelled. The expulsory pain was considerable. This patient soon recovered. Diaphoretics, relaxed bowels, and soothing remedies, with time, perfected the cure.

SEVENTH VARIETY.

There is, too, a seventh variety of the hidrosis, the intermittent or remittent. I suspect, that this variety of the disease is in nature different from the genuine hidrosis, but am not yet determined on the point; sometimes there is a single paroxysm only, consisting of chill, heat, and sweat; probably identical with the weed, or ephemera so well described by Burns. In other cases, we have repeated paroxysms occurring at irregular intervals, two or three times in the course of the day, and this for days together, or there may be repeated attacks which observe the quotidian period, and regularly commence with a chill. Perhaps the two last variations here mentioned, the quotidian I mean, and the irregular, may be referred to a form of the disease already considered; namely, the lingering hidrosis.

MISCELLANEOUS OBSERVATIONS.

To these remarks on the different varieties of the hidrotic fever it may be right to subjoin a few miscellaneous observations. The patients in all the several varieties are, I suspect, liable to be attacked with retching and vomiting, with bilious diarrhœa, with lochia, pale, offensive, and sometimes suspended. The tongue is generally, perhaps always, crusted more or less; sometimes the incrustation is thin sometimes thick. In both cases, commonly white and unlike the tongue of puerperal fevers. As before observed, the intestines are often tympanitic or sub-tympanitic. The mind and nerves are generally more or less disturbed.

CAUSES OF HIDROSIS.

I now proceed to subjoin a few remarks respecting the causes of this disease; and first, it may be observed that although it sometimes commences before the birth of the child, delivery seems to be the great disposing cause. And it occurs not only after a delivery at the full period, but also after deliveries in the earlier months, or even weeks, of gestation.

The disease too, appears to be connected with the failure of the mammary secretion: I do not say that it cannot occur independently of such connection, but the mammary action, in many cases, seems to be mixed up with it. It generally commences in the earlier days after parturition, about the time when the secretion of milk should begin. And I have seen one or two cases in which the disease was violent, and not a drop of milk could be obtained from the breasts at any time when I examined, although the patient after former deliveries had a profuse secretion.

Flooding, whether before or after delivery, has a tendency to bring on the hidrotic fever, at least I think so. Not but that I have repeatedly seen the disease come on after easy deliveries without flooding; but in my experience, this hæmorrhage of the uterus has so frequently preceded the attack, that I feel a strong suspicion that it operates as an exciting cause.

The induction of premature delivery by detaching or rupturing the membranes (for the latter operation generally detaches them more or less,) has, I suspect, a tendency to produce this disease; sometimes this cause seems to co-operate with the former; the premature delivery induced by the operation being accompanied by flooding.

The disease seems also to be excited by the rude detachment of the secundines, whether this be performed after delivery at the full term, or after miscarriages. A still-born child, or I ought rather to say, a dead fœtus in utero, perhaps disposes to this disease. And I have suspected it to arise from the lodgment of putrescent

substances in the uterus, as in cases where a portion of the placenta has been left behind. A former attack of phlegmasia dolens after a preceding delivery, *may*, I think, be looked upon as a disposing cause to the lingering and mutable varieties of the disease. One lady attacked with the hidrosis was of a remarkably even temper, and another naturally violent.

Mortification of the vagina, or perhaps of the omentum, occurring in very corpulent women, after laborious labours, may occasion symptoms a little like the malignant hidrosis. But such cases are, I suspect, essentially different from hidrosis, properly so called.

As to the more immediate cause of hidrotic fever, my mind is in doubt. Some varieties of it at least, especially the lingering and the mutable, appear to arise from the inflammation of the veins of the uterus, so well investigated by Dr. Robert Lee. Upon this hypothesis several of the phenomena may, I think, be explained; and that correspondence is the more remarkable, as this supposition has in no way whatever influenced the characters which I have given of the disease, as they had been all marked out, more or less distinctly in my adversaria, before I was acquainted with his valuable labours in this part of morbid anatomy.

DIAGNOSIS OF HIDROSIS.

From typhus fever hidrosis may be distinguished by its occurrence in connection with delivery; by the characteristic sweats, more or less copious, and never critical; by its running its course in many instances so rapidly, say, three or four days, or three or four hours, as to prove its malignant nature; the tongue and mouth not exhibiting the black crusts or apthous redness which usually marks the malignant typhus; to which may be added that the general aspect of the disease is altogether entirely different.

From puerperal fever the hidrotic fever may be distinguished in the variableness of the pulse, which is remarkably observable in some hidrotic cases, as well as in the bounding, and softness,

and roundness which is sometimes observed in the obscurity of the abdominal symptoms, which are certainly not prominent nor perhaps essential in the characteristic sweats, and perhaps, I may add the general warmth of the body; in the failure or total suppression of the milk; in the milder cases, in the lingering duration of this disease, which even in the acuter form may last five or six days, and then prove fatal; also under some varieties of hidrosis in the first attack of the disease, not commencing till the fifth or sixth day of delivery, in the formation of a thick white crust on the tongue, (and under the mutable variety) in the disposition to the attack of other diseases already enumerated.

PROGNOSIS OF HIDROSIS.

The prognosis of hidrosis is on the whole decidedly unfavorable. The disease being of an obstinate intractable nature, and even in the milder forms of the acuter varieties not infrequently fatal. Indeed a very frequent pulse after delivery, is, on the whole, at all times, an unfavorable symptom.

We must not suffer ourselves to be led away with an idea that the disease is yielding because the abdomen remains flat, or the skin warm and perspiring, or the pulse is very variable, leaping about in the sudden manner before stated. The particular prognosis may be drawn from the history of the disease already given. The two first varieties are highly dangerous; the third variety not infrequently fatal; but the four last varieties often recover. Even the lingering variety, though on the whole decidedly mild, is at best a very obstinate disease, which harasses the physician, and wearies the patient.

MORBID APPEARANCE.

I am not prepared at present to give a good account of the morbid appearances observed after death, but this defect may, I trust, hereafter, be easily supplied.

SECTION VIII.

PHLEGMASIA DOLENS.*

This disease, both untractable and distressing, is, on the whole, not of very frequent occurrence ;† and though it has been my lot to see several specimens of it, yet, having met with it in my own practice less frequently than the puerperal fever, I have enjoyed but few opportunities of making personal observations on its treatment, and therefore I shall enlarge on it the less. For the sake of practice, the complaint is divided into two varieties, the acute and the chronic.

CHRONIC VARIETY.

In some rare instances, the phlegmasia dolens makes its appearance even months after the delivery; and Levret states, that he has known an attack to occur on weaning the child, perhaps a year or more after delivery. In general, however, the commence-

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* Commonly called the *White Leg*; sometimes the *Puerperal Tumid Leg*. Dr. Hall names it *phlegmasia dolens*; Dr. Cullen, *anasarca serosa*; Dr. Good, *bucknemia sparganosis*; and others, *phlegmasia lactea*, *&c.* Mentioned by the French writers, most commonly under the name of *l'enflure des jambes et des cuisses de la femme accouchée*, or that of *dépôt du lait*, from its supposed cause; but often with so little accuracy, as to make it difficult to distinguish what kind of swelling they meant to describe. By the Germans it is usually called the *œdema lacteum*.

The puerperal swelling of the inferior extremities does not seem to depend upon the kind of labour the patient may have had, as it indiscriminately happens after those which were easy and those which were difficult; or on any evident peculiarity of the constitution, the corpulent and thin, the feeble and the strong, being equally liable to it; or on rank in life, as the rich and poor are alike subject to it; or on any mode of treatment in the state of child-bed. Nor does any appearance during pregnancy usually denote a disposition to it, the swelling of the inferior extremities at that time being a totally different complaint; yet the whole disease seems to arise from some circumstances, subsequent to the delivery of the patient. It is also remarkable, which is a satisfactory reply to those who have attributed this swelling to the deposition of the milk, that it has happened to those who had an abundance, and those who had a scarcity of milk; to those who did, or those who did not give suck; and sometimes, though rarely, in abortions, when no milk was secreted. *Dr. Denman's Midwifery.*

† It is of rare occurrence. Hamilton, Burns, Clarke of Dublin, Dewees, &c. *Dr. Ryan's Manual.*

ment of the disease is of earlier date, occurring, according to Burns, in the second, third, or fourth week, and usually not far from the second week.* It would be too much, perhaps, to assert, that the disease never commences without abdominal symptoms; in general, however, and more or less conspicuously, those symptoms are observable. The patient feels a degree of pain and tenderness, and stiffness, and induration in front of the pelvis, and more so on one side than the other, and perhaps more frequently on the left side than the right, because, for a reason not understood, the left side is more frequently attacked with phlegmasia dolens. After these symptoms have continued for a few hours, longer or shorter, the woman may be seized with a severe pain in the middle of the lower limb, the region of the knee, for example, and this accompanied, sooner or later, with a swelling, firmness, whiteness, heat, and tenderness on pressure, or, when the limb is moved, all the symptoms varying a good deal in their degree in different cases. In other instances, instead of commencing in the middle of the limb, an accident, according to my own observations, by no means uncommon, the attack opens with a swelling of the upper part of the member, the intumescence spreading downwards along the thigh, the knee, the calf, the foot, successively, till the whole limb becomes twice as large as its fellow, being, at the same time, glossy, elastic, tense, painful, hot, tender, and of white complexion;† and this enlargement of the limb, with the changes which I have enumerated, may all of them be accomplished within the four-and-twenty or eight-and-forty hours, sooner or later, with different rapidities in different cases.

Under the slighter effects of the disease, the mobility of the limb, independently of that impediment to its movement which results from pain and swelling, is not always much impaired; but in the severer attacks, together with stiffness, there is a want of moving

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* This disease happens at no precise time after delivery, as it has come on at any period, from the fifth or sixth day, to the third or fourth week, but most commonly, I think, between the fifth and twelfth day. *Dr. Denman's Midwifery.*

† The leg does not retain the impression of the finger, or pit on pressure. *Callisen.*

power, in nature allied to paralytic debility, so that, if you ask the patient to move the leg, she performs the action with difficulty; and if you ask her, further, whether the difficulty arise entirely from the pain, she tells you no, but that she feels as if she were incapable of moving it. Together with these symptoms about the limbs and pelvis, there are certain constitutional symptoms* also, not to be overlooked; such as shiverings, heat, paleness, cutaneous warmth, the tongue milky, the pulse one hundred and thirty or more in the minute; the lochia may be suspended, or they may continue to flow in the natural way, a fact, in a view to the pathology of the disease, well worth your notice; sometimes the discharge is very offensive; the urine is turbid; the perspiration may be copious, but not critical; the patient may be very weak, and altogether there may be a good deal of nocturnal restlessness.

TERMINATION OF THE DISEASE.

After the disease has for a longer or shorter time continued,† it usually terminates by a gradual extinction of the inflammation;

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* The whole constitution is speedily and greatly affected by it. The pulse is extremely quick and generally feeble, the heat of the body is much increased, the tongue is white and clammy, and the countenance pale and dejected; the urine, which is voided in small quantities, is thick and of a muddy colour, unlike what I have observed in any other disease, the muddiness gradually lessening as the disease abates; the patient is costive, the *fæces* being of a pale colour and clayey consistency; and the uterine discharges, whatever their quantity may be, have an offensive smell and unnatural appearance. It is however to be observed, that this smell and appearance do not always continue through the course of the disease, but on inquiry will be found to have existed at, or some days before, its commencement. *Dr. Denman.*

† The disease may disappear in six or eight days, then recur, disappear, and return. It may attack each limb successively, and return to the first affected. *Dr. Ryan.*

After one leg has been affected, and even before the complaint has completed its course there, the other may become diseased; and this has no influence on the progress of the first. The second attack is sometimes the worse of the two, owing, perhaps, to the previous debility. Coldness is often felt in the second leg before the paroxysm comes on, and pain in the belly precedes the attack. The first leg may be a second time attacked. In one instance, both of the inferior and of the superior extremities were successively attacked. *Dr. Burns' Midwifery.*

and, in the more successful cases, we find that all the symptoms entirely disappear, the limb being reduced, or nearly, to its original dimensions, so that the patient can walk about with facility; while in other cases, when the inflammation has subsided, the limb remains hard, firm, and of great bulk, the disease degenerating into the chronic form, in which condition it may remain for months, perhaps for years. When the inflammation yields, local indurations are sometimes observed in different parts of the limb, not of glandular nature, for they do not generally hold the place of the conglobate structures of the lymphatic system.

Mortification is certainly uncommon. Abdominal suppurations are now and then observed. On the limb a succession of abscesses may form, a fact which my valued predecessor, Dr. Haighton had observed. The arms may swell as well as the legs, and occasionally the disease is itinerant, travelling metastatically from limb to limb. Puncture, I am told, gives passage to a little gelatinous material, say a few drops; of course it does not, as in anasarca, reduce the bulk of the limb. Lastly, the disease may exist for weeks, or days only, for its duration is very various; but a fortnight approaches the average term. It is not, in general, a dangerous disease, yet patients now and then perish under it. More especially, if women are much reduced in flesh and strength, and energy of nerve, they are liable to sudden dissolution, when, perhaps, nothing of the kind was apprehended; they attempt, perhaps, to turn in bed, or to rise into the sedentary posture; syncope supervenes, and they die. Denman has animadverted on this kind of danger, and instances of it I have seen in my own practice. Be on your guard therefore when treating your cases, of reducing the strength too much. In a proper manner mention this risk to the friends.

TREATMENT.

On the treatment of phlegmasia I shall enlarge but little, as all

that is of value may, I conceive, be comprised in few words. In its first commencement, leeches may be laid above the fold of the thigh, in the region of those pelvic and abdominal symptoms before mentioned. Blisters and sinapisms may be afterwards applied to the same parts, and the bowels may be cleared. If a woman were robust, I might feel disposed to bleed to the amount of sixteen ounces, if I saw the disease in its commencement; but in the present state of our knowledge, with respect to phlegmasia, it is, I believe, in general unwise to draw much blood, as we only weaken the system without subduing the disease, which more frequently seizes the debilitated than the vigorous, and can rarely, if ever, be arrested at once. When the disease is fully developed in the leg, the principal palliatives deserving our confidence are leeches, fomentations, evaporating lotions, poultices, such laxatives as will keep the bowels open, and when the pains and restlessness are distressing, anodynes. If the inflammatory symptoms are very urgent, then six or eight leeches may be applied once a week to the inflamed limb. A large number of leeches, however, I should not apply, for the reason already assigned; for I should not expect to extinguish the disease by using them; and it is to be remembered, that the weakly irritable constitutions most obnoxious to plegmasia, do not, in general, bear bleeding well. If the crural attack, the attack in the limb, I mean, be less violent, and the patient, as frequently, be weakly and irritable, the leeches may be laid aside, and the leg may be wrapped up in light poultices of linseed meal, or bread, to be frequently changed in the course of twenty-four hours. We have little encouragement to puncture in these cases, notwithstanding the œdematous appearances. In some cases, perhaps, a little fluid might issue; but we have reason to believe, that what accumulates in the cellular texture is, in its consistency, gelatinous. On lowering the foot, should the intumescence increase there, the collection under the skin may be suspected to be of watery consistency; this test may, perhaps, in some few cases, be of service.

In treating the phlegmasia dolens, also, you must not neglect the

state of the constitution, which, indeed, sometimes requires a good deal of attention. In the commencement of the attack, when the symptoms are most inflammatory, the antiphlogistic means, laxatives, diaphoretics, and perhaps the digitalis, may be employed; laxatives being used as sparingly as may be, as movement, when the bowels are open, often occasions a great deal of distress. When the patient has been labouring under the disease for some few days, and more especially if she be weakly and irritable, a treatment somewhat different from the preceding becomes requisite. Here nourishment, gentle aperients, opiates, and anodynes, may be given; and if the symptoms are subsiding, bark, sulphuric acid, and generally mild tonic remedies may be recommended.

CHRONIC PHLEGMASIA DOLENS.

Instead of the acute variety of this affection, I have, now and then, met with cases, in which the patient has been labouring under the chronic form of the disease, either of original occurrence, or, which more frequently happens, as a consequence of the previous acuter attack. Under this variety of the disease, for weeks or months together, the limb remains twice as large as its fellow, firm and hard, and stiff and cold, and free from inflammation; though now and then, perhaps, incidentally, attacks of inflammation may occur. In cases of this kind, of course, it is our grand object to excite such an action of the *absorbents* as may reduce the limb to its original dimensions. For this purpose, gastric medicines are, I fear, of little advantage; but something may be done topically, and not without effect; *friction* with the hand, friction with use of the *mercurial* ointment,* and a well-adjusted roller

* The operator should be protected with one or two pair of oil-silk gloves.

As soon as the inflammatory symptoms have a little subsided, local stimulants may be had recourse to, so as to excite the torpid absorbents to increased action; of which the most useful in the author's hands, has been the liniment of ammonia with laudanum.

Laudanum, on a cursory view, may seem to add to the vascular torpor; but it tends to take off the pain and soreness that still remain, and thus enables the tranquillized vessels the more easily to recover their tone.

may be of considerable service. Burns says, that advantage may be derived from the liberal use of the supertartrate of potash in solution, taken into the stomach. Now, of all these remedies, the one I principally recommend to you, is compression by the roller. Young advised compression to dissipate the scirrhous tumours of the breast. Dr. Hull has strongly recommended the roller in these cases of phlegmasia dolens ; and, for myself, in some two or three cases, I have employed it, apparently with very obvious advantage. The great object of our bandaging, is to produce such firm and steady pressure as may excite the action of the absorbents, without dangerously interrupting the circulation. For this purpose, a roller should be procured of many yards in length ; and this, as recommended by Dr. Hull, may be spread with some mild adhesive plaster, so as to give it a firmer hold upon the limb. Beginning at the foot, you may then bandage upwards to the knee, afterwards applying a second roller on the thigh, so as to leave the knee unbound, in order that the patient may have a less embarrassed use of the limb. If the pressure of a single roller be inadequate, a second may be laid over the first ; and thus, by multiplying bandages, we may augment the compression in any degree which may be deemed necessary. If, as advised, the knee-joint be left unbandaged, the patient may often be able to attend to her domestic concerns. By bandaging a few weeks, I have seen a case more benefited. than by a previous course of medicines continued for several months.

POST MORTEM APPEARANCES.

Dissections of this disease, in its acuter form, especially, are much wanted. Zinn, one of Haller's favourite pupils, found an enlargement of the inguinal glands near the large vessels. Dr.

Yet whatever application of this kind is employed, it should be accompanied with gentle friction, continued for half an hour or more, if the limb is able to bear it; for the friction itself is of essential service, and tends, perhaps, even more than any other local stimulant, to restore the limb to a healthy action. *Dr. Good.*

Davis has detected a great deal of inflammation in the large blood-vessels of the limb. Gaspar, as cited by Burns, discovered much inflammation about the neck of the womb and the vagina, but the vessels of the limb were without obvious disease. The nature of this malady is still dubious. Levret, Puzos, White, Frye, Hull, and Davis, have all advanced plausible opinions. Burns, in his Midwifery, has written excellently well on the phlegmasia dolens, and to him I am indebted for many observations.

SECTION IX.

AFTER-PAINS.

After delivery of the first child, women rarely suffer much inconvenience from after-pains;* but when they have borne two or more children, those pains are apt to harass.† For a day or two, they have pains not unlike the pains of delivery, produced also by the same cause, namely, the contraction of the muscular fibres of the womb; and these pains are aggravated by concretions in the uterine cavity, by retentions of the placenta, by the application of

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* After-pains are produced by the renewal of the alternate contractions of the uterus, in consequence of coagula forming, from time to time, within its cavity, which, as they are foreign bodies, it is obliged to expel. These coagula are formed by influent blood, from the extremities of the vessels exposed by the separation of the placenta, and they will be in proportion as the uterus may contract, to diminish the quantity of blood thrown into the uterine cavity; therefore it is found that the more this organ is closed, by virtue of its tonic power, the fewer and milder will be the "after-pains:" hence, these pains rarely occur with first children, as then the powers of the uterus are more perfect, or less exhausted. *Dr. Dewees' Compendious System*, p. 196.

† If common after-pains closely follow the labour, they proceed from a morbid irritation and spasmodic tendency of the uterus alone; and the best remedy is an anodyne liniament applied to the abdomen, with an active dose of laudanum, which last must be repeated as soon as the first has lost its effects, the bowels in the mean while being kept regularly open. If such violent pains do not take place till some hours after the evacuation of the placenta, or even the next day, it is highly probable, that some large cake of coagulated blood has formed in the uterus, and become a source of irritation. This may often be hooked out by a finger or two, introduced for such purpose, and the organ be rendered easy; if not, an opiate will here be as necessary as in the preceding case. *Dr. Good's Study of Medicine*, 3rd edit. vol. v. p. 232.

the infant to the breast, and by the administration of warm drinks. In ordinary after-pains, you will find that opium is an effectual and valuable remedy; and it is my own custom, as well as that, I believe, of most obstetricians, to prescribe from twenty-five to thirty drops of the tincture of opium, with an ounce of camphor mixture, and a little simple syrup. Of these draughts, I order two, one to be taken an hour after I quit the house, should pain urge; the other to be administered an hour after the former, should a first dose not prove sufficiently anodyne.

SUB-INFLAMMATORY AFTER-PAIN.

When the puerperal fever is prevalent, or even at other times, you will meet with a sort of sub-inflammatory after-pain, under which the suffering is, on the whole, very severe. In cases of this kind, when you revisit the patient, the nurse perhaps alarms you, by saying that her mistress has suffered in the abdomen greatly, and you go to the bed-side expecting the puerperal fever, but you have the happiness to find a pulse not exceeding one hundred, or one hundred and ten in the minute. Examining the case more minutely, you discover that the uterus is hard under the touch, and there is, too, a sort of tenderness which may be observed when it is compressed, nevertheless you cannot learn that there have been any cold chills, nor, as before observed, do you find cause for apprehension, in the frequency of the beat of the heart. These cases appear to constitute a subdued form of the puerperal fever, prone to break out into the more flagrant symptoms of inflammation; and they ought, therefore, during the first few days, to be watched with solicitous care, and this more especially if the puerperal plague is in the neighbourhood. From ten to twenty leeches may be applied above the symphysis pubis, three poultices each to be left on the part for two hours, being afterwards laid over the leech bites in succession, so as to keep the orifices bleeding. Fomentations to the abdomen for hours together may be useful in these cases, together with action of the bowels four times daily, and, in the more

pressing cases, venesection. After the use of antiphlogistics, opium may be employed as in the former case; but it is rarely necessary to begin with anodynes, though I see no objection to their employment, simultaneously with other remedies.

HIGHLY SEVERE AFTER-PAINS.

When there are no inflammatory symptoms, a third variety of the after-pains may occur, under which, for two or three days together, the patient suffers so severely, that, perhaps, for ever after she looks forward to the after-pains with still greater apprehension than to the pains of labour itself. In some cases, this highly severe after-pain is occasioned by something in the uterus; a portion of the placenta, or a concretion of blood, for example; severe pain being followed, perhaps, by the expulsion of a solid mass, as large as the closed hand. In other cases, however, and one I have seen among my own relatives, these severe pains occur without any distention to account for them. If the patient want fortitude to wait till the disease cease spontaneously, you may apply leeches, and give opium in operative quantities, the bowels having been previously cleared with salts and senna. The doses of opium must vary in different cases, but I suppose the first may range, on an average, between sixty and eighty drops; smaller quantities, of twenty or thirty drops, being afterwards administered, according to the effect produced. Do not heedlessly have recourse to these very active practices; for in most cases it is better that the disease should subside of itself.*

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* Dr. Dewees, when speaking of after-pains, remarks, "We have met with a few cases of a very distressing kind, which we have never seen noticed by any writer we have met with. It is a most severe and constant pain at the very extremity of the sacrum and coccyx; it begins and perseveres with most agonizing severity, until its violence is overcome by the rapid and liberal use of camphor and opium. It is declared to be by the patient, infinitely more insupportable than any pains of labour; for it is never ceasing. *Dr. Dewees' Compendious System*, p. 198.

DIAGNOSIS.

In practice, it is of vast importance to distinguish mere after-pains from those pains which are of inflammatory nature, whether they arise from inflammation of the ovary, the uterus, or of any other part; nor is the diagnosis difficult. If inflammation attend, there is chill, dry heat, tenderness, and, above all, an ominous pulse of one hundred and twenty, one hundred and thirty, or one hundred and forty, in the minute; but in pure after-pain, the pulse is below one hundred, and the chills and heats are not observed. After-pains, we must further distinguish from the pains which arise from spasms of other parts, of the bladder, the bowels, for example, not to mention those of the ureters and gall-ducts, of rare occurrence. Over-distention of the bladder may give rise to violent spasms, always accompanied, I believe, with much frequency of the pulse; a large hard tumour in the uterine region, and the introduction of a catheter into the bladder, are the best diagnostics. Spasm of the bowels is known by flatulency, tormina, and pains in kind unlike the after-pains, and which, moreover, are not accompanied with expulsion of solid blood, or other substances, from the cavity of the uterus. In conclusion, in cases of after-pain, the seat of the pain is the same as that of incipient delivery, namely, the back, hip, and thighs; the kind of pain similar to the cutting, grinding, and sawing pain of parturition; the eruption of the lochia; the feeling as if something were expelled from the uterus, or the actual expulsion of a large concretion, and the increase of the pain occasioned by the application of the child to the breast. These are some of the best diagnostics I know of, and, in general, they will enable you to distinguish these after-pains without much difficulty.

SECTION X.

OF THE LOCHIA.

After parturition has taken place, and the placenta has been

removed, women are liable to a red discharge from the uterus, the lochia,* as it is called, supposed to be of a purifying nature, but, in reality, consisting of little more than blood which oozes from the orifices laid open by the separation of the placenta.† At first, this discharge consists of deep red blood, it afterwards acquires a greenish colour, and is denominated the green water,‡ when the odour is said to be unpleasant, subsequently to which it becomes whiter and more transparent, finally ceasing altogether. In quantity the discharge varies exceedingly, being three times as abundant in one woman as another, both patients recovering, notwithstanding, with equal facility or difficulty. Much variety, moreover, is observed in the duration of the discharge, as it may last for hours only, or days, or for two or more weeks. To its average duration I have paid little attention, but I suppose it may be of ten or twelve days' continuance.§

OVERFLOW OF THE LOCHIA.

Modern practitioners do not generally pay much attention to the lochia, though our predecessors, fond of humoral pathology, professed to study this discharge with a great deal of care, and certainly it ought not to be overlooked. Should the uterine discharge be more abundant than ordinary, the health suffering but little in consequence, quietude and patience are all that the case

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* Lochia—λοχια, *lochia*, from λοκευω, *lokeuō*, to bring forth: a term employed by Dioscorides in the sense of secundæ, or the materials evacuated by a lying-in woman after the birth of the child.

† The lochia proceeds from the extremities of the vessels exposed by the separation of the placenta, and will of course be in proportion to the size of that mass; the number and size of the vessels; and the degree of contraction of the uterus. *Dr. Dewees.*

‡ By intermixing with the oxygen of the air, which has a free admission to the sexual organs, the lochial discharge assumes a purple or Modena hue; and as this becomes blended with the yellowish tinge of the serum, it necessarily changes to greenish. *Dr. Good.*

§ The lochia disappears altogether within a month, and often in a shorter time. During its flow, it is necessary that the vaginal and external parts be daily washed with tepid milk and water. *Dr. Burns.*

appears to require. Cough is not unfrequently the cause of over-flow, and therefore palliatives are indicated. A piece of placenta retained may augment the flow of the lochia; vomiting offensive discharge, and protracted after-pains, being the principal presumptive symptoms indicating the accident, to be ascertained with certainty by examination only, when the retained substance may be felt. To these cases, of course, removal is the best remedy; but, unless the symptoms are very urgent, it is better to refrain from manual operations; left to its own efforts, the uterus will, perhaps, more safely disburthen itself.

STOPPAGE OF THE LOCHIA.

It not infrequently occurs on our re-visiting the patient, we sometimes learn that this discharge is suppressed altogether, an accident which ought always to attract your attention.* Now, if you find, on examination, that there is no increase of the frequency of the pulse, and that all other symptoms are favourable, then you need not alarm yourselves about the suppression, more especially as it is prone to occur if a woman have lost large quantities. But suppressed lochia may arise from inflammation of the womb, known by coldness along the spine, by the roundness, and hardness, and tenderness of the uterus, easily felt through the abdominal coverings, and above all, by the heat of the skin, and the frequency of the pulse, which rises to one hundred and twenty, one hundred and thirty, or more, in the minute. Suppression of the lochia may also result from closure of the mouth and neck of the womb by clot, the blood collecting within, and giving rise to enlargement, induration, and pain about the uterus, all the symptoms giving way after a severe after-pain, under which the concreted blood is expelled.†

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* It should not be forgotten, that in some women, who have healthy labours, there is no lochial discharge whatever, the blood-vessels of the uterus contracting suddenly and closely as soon as the red blood ceases to flow. *Dr. Good's Study of Medicine*, 3rd edit. vol. v. p. 236.

† In attempting to remedy either the over-flow or suppression of the lochia, the exciting

SECTION XI.

LACERATION OF THE PERINEUM.

At the close of labour, from different causes, women are liable to lacerations of the perineum, giving rise to more or less distress to the patient, according to the extent of the accident. Now this part may be torn to the extent of an inch only, when it is a matter of little importance; or it may be laid open from one end to the other into the extremity of the intestine, the sphincter ani being lacerated too, so that the part loses its retentive power; or, it may be, that the perineum is perforated, the fœtal head passing through the aperture thus formed; or, lastly, with tremendous disruption, the head of the child may be forced through the orifice of the intestine, an accident, of which I have myself known one instance. Of these various lacerations of the perineum, or the parts about it, the most frequent is that in which the perineum is torn from one extremity to the other. This laceration of the perineum may be produced variously; sometimes by instruments, and the rude abstraction of the head; sometimes by rough attempts to introduce the hand of the obstetrician, and sometimes by the mere pressure of the head, the practitioner having, perhaps, neglected to guard the perineum, or the perineum being guarded with the nicest care, but the head forcibly and unexpectedly making its egress from the pelvis, perhaps during some start of agony; for, it is not always

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cause should, in the first place, be removed as far as this is capable of being accomplished. After which, in the former case, the strength (if required) to be sustained by unirritant tonics, astringents, and a plain nutritive diet; and in the latter, the spasmodic pains (if there be any), are to be subdued by antispasmodics and relaxants, particularly camphor, with small doses of ipecacuan. The neutral salts have also, in this case, proved serviceable, which have the farther advantage of opening and cooling the bowels. It will likewise be found highly useful to foment the abdomen with flannels wrung out in hot water, or, which is far better, to bind a flannel swath wrung out in hot water, in the same manner, round the whole of the abdomen and the back, and to encircle it with a band of folded linen, to prevent it from wetting the sheets, and to let it remain on like a cataplasm, till it becomes dry by evaporation. *Dr. Good's Study of Medicine*, 3rd edit., vol. v. p. 236.

that laceration implies either ignorance or carelessness on the part of the practitioner.

GENERAL PLAN OF TREATMENT.

When the accident has occurred, if it is merely a slight laceration, keep the parts clean, and it will heal of itself, the patient, it may be, never suspecting what has happened. If the laceration be more extensive, reaching through the sphincter, the most miserable consequences ensue, the patient becoming, for a time, incapable of retaining the contents of the bowels: it is, however, a satisfaction for her to know, that in the course of months, the parts harden round the orifice of laceration; and, in consequence of this hardening, unless there be diarrhœa, or extraordinary action of the rectum, the fæces may be retained, though not without uncertainty. Moreover, sexual intercourse suffers, and the uterus is very apt to bear down beyond the external parts; hence extensive laceration must be looked upon as a very great misfortune, and not without reason. Where a laceration of this kind has occurred, if there should be a copious discharge of blood, an accident, however, which I never myself have seen, ligature, cold applications, and pressure, would prove the most effective remedies. This accomplished, it would next be desirable to clean, as thoroughly as may be, the surface of the sore nearly always ragged, broad, and sloughy. Oil of turpentine duly diluted, tincture of myrrh, and other detergents may be found useful for this purpose.

ATTEMPT A RE-UNION OF THE PARTS.

The surface of the sore once cleansed, it is right to attempt a re-union of the parts, though, in this, we are generally and totally disappointed; partly in consequenee of the difficulty in keeping the parts together, and partly in consequence of indisposition to adhesion, and a propensity to suppuration or slough. Continued

contact of the sore is a principal indication in these cases, and this may be variously attempted. That ligatures of the rectum are of doubtful use seems to be agreed on all hands; but a ligature may be inserted into the perineum now and then, perhaps with advantage. I have reason to believe, however, that it is not so easy to keep the surfaces of the sores together by means of the ligature as, à priori, we might have expected; the ligatures are apt to give rise to inflammation, irritation, perhaps suppurations and slough, and, in this manner, they are likely to detach themselves before cohesion is accomplished, after the parts have been brought together. The conjunction of adhesive plaster with the ligature may prove a considerable help, and sometimes the union may be accomplished by the use of the adhesive plaster only, independently of the ligatures; and if this can be accomplished, it is to be preferred. When you are attempting re-union, the management of the bowels is a point of very nice importance, and must not be forgotten. Your indications here turn on opposite principles; for after clearing the canal thoroughly, you may give such remedies as will occasion no evacuation for a week or more together; the patient, during this term, using one or two eggs only for her daily food;—or, pursuing an opposite method, you may keep the bowels in a lax state from the first, giving very mild aperients for the purpose, the object being to occasion as little disturbance and tenesmus of the parts as may be; the patient, when the bowels act, carefully guarding against effort. Of these two modes of treatment, I know not which is decidedly preferable, though I have seen one case in which a re-union of the skin forming the perineum, properly so called, was produced, constipation of the bowels being kept up for about ten days. Circumstances must, however, direct our choice.

To attempt re-union in these distressing cases is, always proper; but much cannot be safely promised, for we seldom succeed to our wishes. Even when re-union is accomplished, I suspect it is, in a manner, more apparent than real; for I doubt much, whether the parts are ever brought back into the state in which they were

before the occurrence of the accident. When muscular parts are torn, retractions are apt to occur very unfavourable to their becoming duly united, and such appears to be the case here.

CHRONIC RENTS OF THE PERINEUM.

In practice you will sometimes have women come to you with chronic rents of the perineum, a year or more after the accident, anxious to know whether any thing can be done for them. Now, if your patient be merely troubled with prolapsus uteri, remedy her complaint by using a pessary, without attempting re-union; but if married, she may, for other reasons, be solicitous of a cure. I have seen one case* in which, by removing the callous edges of the wound, and by torpifying the bowels in the way I have been describing, the parts were made to unite. Other cases I have seen, in which the attempt was made, but not with the same success. The edges of the fissure were removed, ligatures were applied, the bowels were managed with the nicest care; the operation was twice repeated; but either the ligatures came away by sloughing, or there was so much irritation, suppuration, or sloughing of the sides of the wound, that the re-union could not be accomplished. Reviewing cases of this sort, I should draw the inference, that in chronic laceration, there is a chance, now and then, of accomplishing a re-union of the parts of the perineum; but in irritable constitutions especially, it is probable that we shall fail in our attempts. If, therefore, a woman is very pressing and anxious that something should be done, an attempt may be made to serve her, but it is not well to be eager for the undertaking, nor to promise too much, where the probabilities of failure are so great. Reproaches never sound musically to the ear, and to these you lay yourselves open, when, after all your pains and all your pro-

* This case was, I think, under the management of Mr. Rowley, and did credit to his surgery. *Dr. Blundell.*

mises, the patient finds herself in a condition very different from what either her or yourself had expected.

SECTION XII.

THE SURGICAL DISEASES OF INFANTS.

Into the disease of Infants I do not purpose to enter at large, but confining myself to a few strictures on those topics which are the more important, I shall now proceed, beginning with those affections which belong to the department of surgery.

INTUMESCENCE OF THE SCALP.

In consequence of resistance to transmission during laborious parturition, whether from rigidity, coarctation, or unfavourable position of the fœtus, it not infrequently happens, that the scalp becomes intumescent, the tumour* commonly lying to the one or other side of the vertex. These swellings seldom require attention, the tumour wasting, in most cases, in the course of a few days, so that the part soon acquires the natural appearance. To satisfy the mother, it is as well, however, to prescribe fomentations or lotions. Accumulation of the scalp, and perhaps effusion into the cellular web beneath, appear to be the general causes of the intumescence. Combined with these swellings of the scalp, inflammation and suppuration are now and then, though rarely, met with; these, so far as I have hitherto seen, doing very well, as treated on ordinary surgical principles. Suppuration is, I suspect, generally external to the tendon of the occipito-frontalis muscle. Inflammations of the scalp in infants are, perhaps, more dangerous

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* This seems to contain a fluid, and has so well defined hard edges, that one, who, for the first time saw a case of it, would suppose that the bone was deficient. It requires no particular treatment. By applying cloths dipped in brandy or gin, the effused fluid is soon absorbed. *Dr. Burns' Midwifery.*

than similar inflammations in the adult, as the vascular communications between the inner and outer surfaces of the cranium are numerous and free.

COMPRESSIONS OF THE BRAIN.

In infants the cranial bones are exceedingly moveable, and hence, in laborious labours, they frequently become displaced; the occipital bone being pushed, perhaps, beneath the posterior edge of the parietals, or the margin of one parietal bone becoming lodged beneath the margin of the other; not to mention that the whole cranium may be thrown back upon the occipital region, or so dislocated, that the summit rises preternaturally above the basis. Now, in these compressions of the brain, the fœtus is not infrequently still-born; and you use the warm bath and the artificial respiration, with little effect beyond the excitement of a few sighs, and a little unavailing respiration. It is to be observed, however, that the death of the fœtus seems to depend upon some other cause than the mere force of the compression, as children may be born still when the collocation of the bones is little altered; or they may breathe, struggle, and cry, directly they enter the world, although from the deformity of the head, and the intumescence of the scalp, and its evident and forcible compression during transmission through the pelvis, irreparable injury of the brain seemed, at first thought, to be inevitable. Whatever the apparent injury of the head, do not forget that attempts should be made to resuscitate the child by the bath and pipe; no case ought to be left, as desperate, till these active resuscitants have been found on trial to fail. The mobility of the bones seems to render unnecessary the replacement of them by active surgical means. Accordingly, of these means I have had no experience in the cases under consideration, and I forbear, therefore, to give an opinion respecting them.

DISFIGUREMENT OF THE FACE.

In facial presentations, the form of the features sometimes suffers but little; but, in many instances, in consequence of accumulated blood, and swelling, and a certain paralytic weakness of the neck, which allows the head to fall about unsupported, the appearance of the face becomes frightful, and even hideous. These cases, however generally do well; in the course of a few days or weeks, the parts recover their healthy condition, and you are surprised to see a countenance, at first so disfigured, adorned, at last, with all the pleasing graces of infancy. The head may be steadied by tapes annexed to the cap and the dress below, and much attention must be given to its due support during nursing. The swelling may, I should say, commonly, be committed to nature; time and patience will accomplish the rest.

INJURY TO THE NERVES.

In presentation of the nates, as I am informed, under rough management, the anterior crural nerve has been severely injured, and less rarely, perhaps, in those cases in which the arms have been abstracted with difficulty, the axillary plexus has been severely bruised; an iron hook, or a rude finger, are said to be the usual instruments by which these injuries are inflicted, beware therefore, of violence; but should injury be sustained, remember that the case is not wholly desperate; the nervous structure, unless extensively injured, may, perhaps, recover itself.* Remember, though much is to be expected from Nature in these cases, there is but little reliance on, or benefit from, art. Nevertheless, comfort the anxious parent, by telling her time may repair the accident.

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*Haighton, by dividing the eighth pair of nerves successively, at the interval of a few months, proved satisfactorily, that nervous structure may be repaired. The recovery of the sciatic nerve in Koscioscow, after severe injury inflicted by a Russian bayonet, also proves the same. *Dr. Blundell.*

FRACTURES OF THE FŒTAL SKELETON.

To repeat what I have so often mentioned, and be it here especially heeded;—in a scientific midwifery, violence has no place. Even tempered effort is not without its dangers: it is a sort of elephant in the battle. Sometimes, however, fractures of the fœtal skeleton occur during delivery, and the bones which most frequently suffer, are those of the thigh and the upper arm, to which may be added the clavicle, and perhaps the bones of the pelvis, and the maxillary inferior. The mere action of the uterus may, perhaps, break the fœtal bones; but Nature, provident in her operations, has rendered this accident rare. More frequently under preternatural presentations, when, in the drowsy moment, undue force creeps upon us, fractures of the thigh or arm, or clavicle occur in rude attempts to extricate the limbs.* In ordinary deliveries, it is unnecessary to examine whether the bones are fractured; but in all preternatural cases, where, from the difficulty of the birth, a fracture may be suspected, examination should be made. On the general principles of surgery these fractures may be treated; much constitutional irritation does not attend the process of reparation. As nutrition at this age is rapid, repair is rapid. From cutting a tooth, an infant may suffer more, and more dangerously, than from a fracture of the femur or the humerus.†

CEREBRAL AND PARIETAL TUMOURS.

Hernia of the brain is sometimes formed with the fœtus; but I forbear to dwell on this monstrosity, as, in the present state of our knowledge, it admits no remedy. More frequently we find

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* "I always break the thighs," was the downright, unblushing declaration of a female practitioner, when stating to Dr. Lowder her method of managing the presentations of the nates. I love her honest plainness. *Dr. Blundell.*

† Four cases of fracture, two of the humerus, and two of the thigh-bone, all ultimately doing well, have been narrated to me by my friends. *Dr. Blundell.*

at birth, on the parietal bone, an encysted tumour, larger than half a pullet's egg, and which may take place to the right or the left of the saggital suture. That a chasm of the parietal bone, leading into the cranium, never exists at the basis of this tumour, I am not prepared to assert; but in general, that part of the bone which corresponds with the inner table is complete, the external leaf being alone deficient. The defect of the external table, however, gives rise to extensive superficial excavation, the margin of which may be felt all round at the base of the cyst, and this margin is liable to lead the uninformed into an opinion, that there is a large chasm opening down into the brain, to the great alarm of those who are about the little patient.

It is not wise to press the brain of an infant with a tight bandage, for this I presume, is acknowledged, on all hands, to be a dangerous experiment. Do not, therefore, in these cases, apply a bandage to the cranium, for the bones being mobile, any pressure made on them might be transferred to the brain, which lies beneath. Do not hastily puncture* these tumours; the two surfaces of the cranium, external and internal, communicate freely by the emissory vessels: the brain of the infant is prone to inflammation, and frequently these inflammations prove fatal. Time and patience cure a vast number of evils, physical, mental, and moral, and these two Catholic remedies, accompanied by placebos, are, perhaps, the best which may be employed here. Astringents and stimulants, however, may be tried with no very doubtful advantage. Port wine lees, and aluminous solutions, are topical remedies which, from my limited experience in these cases, I should feel disposed to recommend. Let your first applications be weak, for the infant's skin is tender and prone to mortify; as the parts may bear them, the intensity may be increased. The lees may be diffused through bread, so as to form a poultice; of the alum you may make a lotion, beginning with a scruple, to six ounces of water. The alum failing, let the lees be tried.

* Glairy fluid issues when these cysts are punctured; at least, if I may infer generally from a single case, which used to be related by Dr. Haighton. *Dr. Blundell.*

COHESION OF THE NYMPHÆ, ETC.

In young infants, the nymphæ, or the labia pudendi, are occasionally coherent; the labial cohesion being easily discriminated, while that of the nymphæ requires somewhat closer inspection. When the labia are opened, the nymphæ being in cohesion with each other, in consequence of this separation, the nymphæ are laid flat over the orifice of the vagina, and the blood being pressed out of the vessels, the whole structure becomes pale and scarcely distinguishable from the surrounding parts, so that, at first glance, it seems as if there were no nymphæ, and as if the vaginal orifice did not exist. It is best known by the gradual approximation of the labia under which the nymphæ begin, as it were, to form afresh; by the interposition of a probe easily passed along behind between the cohering nymphæ, and the entrance of the vagina; and by the declaration of the nurse, that the orifice of the vagina, though now totally vanished, was originally obvious enough, as in other children, for the disease is not usually congenital.* A knife in these cohesions is rarely required: mere separative pressure is, in general, sufficient to disjoin the parts; or when the probe has been properly placed, so as to bear upon the connexion, this may often be gently torn asunder, by merely advancing the instrument. Care must be taken, that the cohesion is not renewed.

IMPERFORATION OF THE GENITALS.

Infants are sometimes born with imperforation of the genitals, and this with two conditions of the parts within, for it sometimes

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* The labia pudendi of infants are very often found adherent. This may be congenital, but we believe it is very rarely so. We have seldom seen this condition of the parts in children under six months old; and still more rarely after the age of a year. From these facts, it would seem to be almost always adventitious, and owing principally to want of cleanliness. Had the child been born with the labia in this condition, it is more than probable it would have been discovered early, as nurses, generally speaking, are at least curious, if not always careful, in their examinations. *Dr. Dewee's Treat. Phy. Med. Treat. Child.* p. 384.

happens, that the internal genitals are more or less deficient, while, in other cases, they are formed perfectly enough, with the exception of the barrier, which closes the access from the inferior parts to the superior. When the inferior organs are imperforate and imperfect, it ought always to be our first consideration, whether those organs which lie above, are in a healthy state or not, namely, the ovaries, the womb and vagina. It would be too much to assert, that the determination of these points is wholly impracticable, even during the first two or three years of life; but it should not be forgotten, that the most proper time for deciding this very important question, is after the period of puberty is gone by. If the ovaries exist in perfection, the womanly changes occur, and to omit the developement of the external system, the hips spread, the bosom swells, and the charms and graces which embellish the sex are found to gather about the whole person; the mind also, from unknown causes, undergoing that consentaneous change, whereby it becomes not insensible to corresponding desire. From the ovaries, as their centre, all these effects are emanating, and their manifestation is the best proof that these important organs exist. *Propter sola ovaria mulier est quod est;* to the maxim of Paracelsus, thus modified, I heartily assent.

A few years, not to say a few months, after puberty, we may moreover, easily determine, in most cases, whether the uterus and upper part of the vagina exist or not; for if these parts are not wanting, the symptoms of menstruation will be perceived, and, after a time, the secretion accumulating, both the womb and the upper vagina will become dilated, and, on careful examinations, by a competent practitioner, both these organs, when distended, may be distinctly felt.

If the internal genitals are wanting, the case admits of no remedy; throughout life, the individual remains a mere girl, neither desiring marriage, nor becoming it; but if the parts above are well-formed, a closure of the vagina, above or below, constituting the only defect of organisation, in some cases, at least, the ailment may be relieved and removed, merely by dividing the

partition. Before puberty, whatever may be the wish of friends, it is unwise to attempt this, for we are ignorant of the state of the womb, vagina, and ovaries, and the parts are too small and too tender to be well fitted for the knife; but when puberty is gone by, and the condition of the pelvic viscera is known, and the vagina and uterus, dilated by the accumulation, are become accessible to the knife, the operation, in many cases, may be performed easily enough, and if the opening be sufficient to allow of impregnation, however small it may be, delivery, which naturally lays open this part of the person, may, with a little help from surgery, thoroughly accomplish the rest. Of constricted vagina, I mean in conjunction with parturition, it has been my lot to see some bad cases; the stricture was divided, and they have all hitherto done well.

RESTRICTION OF THE TONGUE.*

If you open the mouth before a mirror, and raise the tip of the tongue, you may observe a sort of ligature, which, while it allows free motion to the tip, assists, however, in conjunction with other bonds, in restraining its more extensive movements, and this ligature is called the *frænum*. I never saw a case in which the frænum left the tongue too loose, though reputed cases of this kind have been put on record; and it is said that the tongue may be partially swallowed in consequence, so as to lodge over the rima glottidis, and occasion suffocation.† Cases, however, are common,

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* The tongue may be restrained from two causes: the one, an adventitious membrane attached to the frænum, and the other, an original conformation of the frænum, rendering the tongue too short. In the first case, the plan above mentioned is commonly followed; in the latter, no operation with safety can be performed. Ed.

† Van Swieten describes an affection called a swallowing of the tongue, in which suffocation is said to have followed the attempt to swallow, in consequence of the tongue, too loose in the mouth, getting into the cavity of the pharynx, and lodging over the rima glottidis. Having never seen this disease, I feel inclined to think that Swieten may have been deceived by an imperforation of the œsophagus. Should swallowing of the tongue really occur, if the practitioner do not reach the infant till apparent death is produced, the tongue ought to be drawn down into its place with the incurvated shank of a spoon, or any other convenient instrument; and though the child have lain to appearance dead for twenty or thirty minutes, artificial

in which the frænum extends to the very tip of the tongue beneath, giving rise to *tongue-tying*, as it is called, a circumstance by no means uncommon.

Nurses, usually themselves profuse of words, have a great horror of this restraint of the tongue, and making their exordium in the received formula of "Lord, Sir," breathless and alarmed they come down at length upon the peroration, and "esse videantur" the child's tongue is tied! Remember, however, tongues are not always tied, when nurses please to fancy so; and it is well, therefore, to be in possession of diagnostics, by which the disease may be known. Now the tongue is free, for all its functions, if the tip may be advanced beyond the outer margin of the lip, and moreover, if it may be placed upon the roof of the mouth, liberation being requisite, if the confinement be such as to restrain from either of these movements. Those who are in the habit of examining the frænum of the tongue in healthy children, can tell, at first look, whether it requires a division. Acquire this diagnostic glance, for it may be of use to you. There is one right way, and many wrong, in doing most things; and thus it is with the division of the frænum. The operation, though little, if ill-conducted, may occasion trouble to you, and danger to the infant: a wound of the ranine vessels, beneath the tongue, sometimes producing a fatal bleeding. To divide the frænum, you ought to be provided with a pair of scissors, with rounded tips, and which will cut well to their extreme ends. Try them on a bit of damp paper. The nurse, must, at the time hold the head firmly, with the face upwards, when the child will frequently scream; for at no age are we fond of restraint; and, at this moment, when the infant is pushing forth a long-continued cry of thirty or forty seconds, the operator, taking his place behind the top of the head, or in front if he prefer, finds the mouth wide open, and the tip of the tongue

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respiration, and the warm bath, ought to be diligently tried. New-born infants may, now and then, be resuscitated, after they have lain in a state of asphyxia for a good part of an hour. We ought not, therefore, in these cases to despair too soon. *Dr. Blundell.*

a little raised, so that, inserting the first and second fingers of the left hand, he can easily place one upon either side of the frænum beneath the tongue, when, both lip and tongue being protected from the scissors, the frænum may, in a *leisurely* manner, be divided to any extent deemed necessary. Sometimes nurses and mothers are very firmly persuaded, though without reason, that the tongue is tied; to satisfy them you may touch the frænum with the scissors; the operation, if well done, is of no pain. Do not cut the frænum too far;* do not wound the ranine vessels, or the salivary ducts. If a child be suffered to grow to the age of eight or ten years before the tied tongue be liberated, it may never afterwards acquire a free use of the organ, an occurrence indicating criminal neglect.

DEFECTS OF THE LOWER EXTREMITIES.

Very fine children are sometimes born with defects of the lower extremities; and notwithstanding all the parts of the foot and leg are duly organised, there may be a misplacement, the foot being turned too much outwards or inwards. The infant growth is amazingly rapid; a young child will tripple its weight in six or eight months after birth; it will double its length in two or three years; and, during the first months especially, the bones containing but little earthy matter, become as obsequious to external impressions as the future mind. In the cases under consideration, think of this. When the foot is distorted, it may, I suspect, be frequently drawn to its proper bearing. Any apparatus which, without materially disturbing the circulation, has the effect of continually urging the limb towards a healthy relative position of its

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* Bleeding to a fatal extent, swallowing the tongue, and convulsions have followed this, apparently slight operation: when the veins are actually wounded, the danger, it has been said, is considerable. M. Petit, to suppress the hemorrhage, recommends a piece of ivory in the form of a short fork; the prongs of which should be placed so as to press against the apertures in the veins, and the other end against the inside of the lower jaw, and should, therefore, be broad and somewhat convex, that it may keep its place. We believe filling the part beneath the tongue with dry lint, and holding it there some time, would answer better than M. Petit's contrivance. *Dr. Dewee's Treat. Phy. Med. Treat. Child.* p. 369. &c.

parts, may be tried, with benefit. A boot made of tin, to be had of the surgical instrument makers, answers the necessary indication very well. The apparatus ought to be examined once or twice every day. In applying your remedial means do not needlessly interrupt the circulation by bandages. If the inner bandage be coated with mild adhesive plaster, it will retain its place with less pressure. In proposing these types of bandage, often will you be earnestly asked the question, "Can you not wait a few months before you tease the dear child with these bandages and instruments?" Nay, the question is sometimes put by mothers in a tone of supplication. But be your sympathy for her feelings whatever it may, you must firmly reply, "no! not one day, *needlessly*." If the bearings of the limb are to be rectified at all, it must be while the bones are yielding, and the organs are rapidly growing. At the end of the first year the cure may, perhaps, be impracticable; I have heard of cures which have been accomplished in the course of some eight or ten weeks; but never having had cases of this kind under my permanent care, I cannot decide from personal observation.

UMBILICAL HERNIA, OR EXOMPHALOS.*

Children are sometimes born with an umbilical hernia, as large as a full-sized orange, most of the intestines lying forth beyond the abdominal coverings, invested solely by the peritoneum; for it deserves remark, that there is generally, if not always, a very large aperture through the muscles and common teguments in these cases, and through this aperture the hernia pushes. Lowder used to relate a case, in which the hernia, being of the middle size, the peritoneum became encased with a cicatrix, and an imperfect cure was obtained; but, in general, death is the only effectual remedy in these cases.

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* Exomphalos:—From εξ ex, out, and ομφαλος, *omphalos*, the navel; from the intestine protruding at the navel.

When, as very frequently happens, the umbilical hernia is no larger than the tip of the finger, the common teguments, I think, usually cover it, and we may cure the disease either by ligature or pressure.* When the cord drops, as it commonly does, a few days after birth, if the navel protrude, we may lay over the front of the abdomen a broad slip of adhesive plaster, so as, in part, to repress the intestine; and then, directly on the navel, may be placed a thin plate of tinfoil, about as broad as a shilling, to be retained in its situation by a second adhesive bandage, which, completely surrounding the abdomen, may lie over the first. The firmness of the apparatus ought to be inspected daily once or twice. When it becomes necessary to change, have every thing in readiness, and, if possible, do not excite screaming when the apparatus is removed, lest the navel should start, and the aperture should be enlarged afresh. If the child grimace, as if about to cry, an assistant should be at hand, to place a finger over the umbilicus, and to resist the eruption of the hernia; but, unless this eruption be expected, it is better not to touch this part. Umbilical hernia is of slow cure by compression, and, among the lower classes especially, the necessary attention and perseverance may be wanting. In some cases, we may find it convenient to attempt the cure of the disease by pushing back the intestine, and closing the sac at its root with a ligature, great care being taken not to include the bowel. I am afraid this operation is not unattended with danger, even when the bowel lies clear of the ligature; therefore, think well before you have recourse to it.†

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* Dr. Underwood and others recommend at first, compression by straps of adhesive plaster; this plan has never entirely succeeded with us, though repeatedly tried. But we have never failed to cure it by the application of Dr. Hull's umbilical truss. This is simple in its construction, correct in its principles, and gives but very little trouble in its action. *Dr. Dewee's Treat. &c.* p. 376.

† It may be proper to observe, that the nurse is always blamed when umbilical hernia happens, but not with sufficient reason, for we do not believe it to be in her power always, nay, we may say it is very rarely so, to prevent it; for in general, it is owing to a natural defect of the part. Yet a prudent care is essential to the good health of the child. Children who cry a great deal, and who have had very large umbilical cords, are more subject to it than others. *Dr. Dewee's Treat. &c.* p. 375.

DROPSY OF THE SPINAL THECA.

Infants may be affected at birth with dropsy of the spinal theca. Sometimes the dropsy is in the theca wholly; sometimes in the theca and the cranium too; and sometimes the dropsies may communicate. The spinal marrow may be perfect, or the cauda equina may be more or less deficient; the nerves of the lower limbs and pelvis being formed, nevertheless, in all their perfection, and stretching into the cavity of the spine, to terminate, as Burns has justly stated, not in the marrow, but in that part of the theca which lines the corresponding arches of the lumbar vertebræ; the nerves, in fact, originating, or rather coalescing, at the theca of the spine. When the arches and spinous processes of the vertebræ are wanting throughout the chain, so that the spinal canal is completely open behind from end to end, the spinal marrow is, I suspect, generally deficient altogether; and, indeed, the disease scarcely belongs to that which I am now considering; but in spina bifida generally, there is a deficiency on the back of the lumbar vertebræ only, forming a chasm, at which one or two fingers may be passed down into the cavity of the spine; and above, and perhaps below, to some little extent, the spinous processes separate into two lateral pieces, so as to become forked, whence the disease is frequently denominated spina bifida.

Over the lumbar chasm, we may find the parts in one of two very different conditions; for sometimes on this part there is a large tumour, bulky as a small orange, covered with a dark rosy red skin, marbled with a leaden livid tint; and, in other cases, we find upon the chasm a circular brown wrinkled scar, broad as a half crown, and flat.

If the medulla spinalis be defective, I presume the case admits of no effectual remedy; but when this is sound, and the disease is, in other respects, favourable, a cure is not impossible. To the more distinguished works on surgery, I must refer you for a fuller exposition of the method of operating; suffice it to remark, that the tumour is punctured with an instrument like a glover's

needle, and day after day, by little and little, the fluid is gradually drawn away; the aperture being secured, more or less effectually, after every drawing and pressure, being kept up by means of bandage, or otherwise. Forty or fifty times, it may be necessary to repeat the punctures; the cyst filling repeatedly, but continually shrinking, till, at length, after a succession of operations, the cyst contracts into a sort of cicatrix, lying over the chasm, to be afterwards protected by truss. To open the cyst extensively, and discharge the water at once, is, I believe, highly dangerous.*

The cases with the brown flat scar are not adapted for this operation. In hydrocephalic cases, there is little to be hoped. Infants left to their fate, in this disease, perish after different intervals; they may live for weeks, months, or years; they may even reach to man's estate, always labouring under the disease. If the marrow be defective, the lower parts of the body may be void of feeling.

IMPERFORATE ŒSOPHAGUS.

Occasionally children are born with no opening to the œsophagus. For sixteen long days and more, a young infant may pine under the starvation of an imperforated gullet, sleeping, waking, weeping, wasting, greedy for the breast, grieved or angry when disappointed; and yet, after all, to judge from the unaffected expressions of the feelings, it may be fairly doubted whether its sufferings from thirst and hunger exceed those produced by many of the smaller infant ailments; and certainly they will scarcely bear a comparison with these that result from the suffocating symptoms hereafter mentioned.

Infants, when famished by the disease, may sometimes remain

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* In the course of twenty-four hours, death ensued in a case of this kind, narrated to me by one of my pupils. The tumour was mistaken for abscess. *Dr. Blundell.*

Dr. Haighton used to relate the case of a boy, who would thrust pins into the skin with little suffering. Acupuncturation sometimes occasions little pain, even in the healthy. *Dr. Blundell.*

alive for two or three weeks. Under this defect of œsophagus, all the pains of strangulation may be suffered every time the infant attempts to swallow. It takes the pap greedily, a small effort of deglutition follows, and then in a few seconds, the countenance alters, and the placid look of infancy changes for that of distress and agitation, the breath is intercepted, the face darkens, the chest heaves, the muscles quiver, and convulsions, followed by a dead quiet, ensue; the child remaining in a state of asphyxia, till the very sight of it, as you watch returning life, shortens the breath with anxiety, and lengthens the seconds to minutes. Alas, you think it is all over, when, as you rise from the chair, a small struggle is perceived, and the food taken is emitted from the mouth, life and breath being again restored, to be again miserably interrupted, should the attempt be repeated. Infants thus circumstanced, suffer many deaths. Severer symptoms are not produced by strangulation with the rope. Food, therefore, or the breast ought not to be offered when these violent symptoms result. Life might, perhaps, be prolonged, by injections into the bowels,; but the mind at this tender age being wisely constituted, without the instinctive fear of dissolution, of no use to a being which cannot help itself, a few hours or days are not desired; and why should we attempt to add a little space to existence, and to prevent that death which nature uses as the only effectual release from the disease?*

When, during swallowing, the food passes the pharynx or hinder cavity of the mouth, muscular action grasps the bolus, and, at the same time, closes all the passages, with the exception of the gullet, and, of course, the air-tube among the rest. When we are well, and full of appetite, deglutition, is accomplished with

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* One case of imperforate œsophagus was dissected by Mr. Hallam; another, in conjunction with him, by myself; a third by Mr. Burrows, an excellent practitioner in the city. In all three, throughout the mediastinum to the extent of several inches, the œsophagus was unformed, or represented by a mere ligament, stretching from the closed extremity of the œsophagus to the orifice of the stomach. The trochar and canula, therefore, can be of no service in like cases. *Dr. Blundell.*

promptitude; and, therefore, the stay of the food in the pharynx being less than momentary, the closure of the passages is unattended with inconvenience. But with infants, in whom the œsophagus is imperforate, this is not the case; for the food entering the pharynx, the rima glottidis becomes closed, and the bolus, involuntarily grasped on all sides by this muscular cavity, being propelled towards the œsophagus, where descent is prevented, the aliment remains in the pharynx, spasmodically detained, forming a sort of gag, till approaching death relaxes the muscles, opens the passages, suffering the food to escape, and the air to return to the lungs. Death as before observed, is the natural remedy. Infants who die under this disease, are, I believe, frequently thought to perish from convulsions; and as I know myself of three cases, I presume it is by no means very uncommon.

IMPERFORATE ANUS.

In new-born children we sometimes meet with closure of the intestinal tube.* This closure may occur in any part of the intestines, larger or smaller, the obstruction sometimes lying near the pylorus, but far more frequently at the extremity of the rectum, when the disease in denominated the imperforate anus. Vomiting, wasting, enlargement of the abdomen, and a total defect of evacuation from the bowels, are the more striking characteristics of the closed rectum; and the disease, when once suspected, is easily

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* The anus is sometimes imperforate at birth, with a preternatural outlet to supply the place of an anus in some neighbouring part or organ, as the bladder, in which case, the fæces have been discharged by the urethra, the vagina, the navel, or the groin. An extraordinary instance of such accommodation, is that of a girl, who from birth, was imperforate in the anus and meatus urinarius; in fact, in the whole division of the vulva; and who to the age of fourteen, had regularly discharged her urine by the breasts, and her fæces by a natural vomiting, or rejection from the stomach. *Samml. Med. Wahrnehm.*, b. viij. p. 29. *Dr. Good's Study of Medicine*, vol. i. p. 4.

There is also another remarkable case on record. In the Revue Med. for December, 1823, there is an account of a man, then alive, and aged seventy, who had both the anus and urethra imperforate. He voided the excrement by vomiting. *Dr. Burns' Principles.*

ascertained by a careful inspection and manual examination of the part.* If the closure be in the duodenum or jejunum, it is distinguished with more difficulty; but vomitings, wastings, and the want of a feculent matter, formed from the digested milk, will, I presume, generally enable us to detect even this variety of the disease, provided our attention be vigilantly awake. Four or five cases of imperforate anus have been shown to me by my obstetric friends, whence I infer that this malformation, though not common, is tolerably frequent in its occurrence. The obstruction which lies above is, I presume, rarer, as I have never met with a single instance of it in the living infant. Possibly, however, many young infants may sink under this disease, less obvious than the preceding variety, and the real nature of the affection, may remain undeveloped, from the want of an examination after death.

Although those cases in which the obstructions lie in the smaller intestines seem to admit of no effectual remedy, yet, when the anus only is imperforate, there is much that may be done. How long an infant may live with the rectum closed, is not clearly ascertained; days, weeks, nay, in some instances, perhaps, for several months, life may be protracted, if I may judge from one or two cases which have been related to me on somewhat dubious authority. Certain it is, that in these cases the infant, relieving itself by vomiting, may survive for some weeks, though, I suspect, the general health becomes gradually impaired in consequence. Experience proves, that when the anus is imperforate, it is better to wait a few days before any attempt is made to open it; for should

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* When a membrane, or production of the skin closes the opening of the rectum, the part producing the obstruction, is somewhat different in colour from the neighbouring integuments. It is usually of a purple or livid hue, in consequence of the accumulation of the meconium on its inner surface. The meconium propelled downwards by the viscera above, forms a small, roundish prominence, which yields like dough to the pressure of the finger; but immediately projects as before, when the pressure is removed. When a fleshy adhesion closes the intestines, the circumstance is obvious to the eye, if the part protrude, which is generally the case. The finger feels greater hardness, and resistance, than when there is a mere membrane, and the livid colour of the meconium cannot be seen through the obstructing substance. *Cooper's First Lines.*

we operate immediately, if unskilful especially, we may entirely miss the rectum, its cavity, at this age, being small; but if we wait for a few days, or weeks, till the intestine is become dilated, a very small knowledge of practical anatomy will enable us, readily enough, to cut into the part.

A small opening is apt to close again; a large opening may carry the knife into numerous hæmorrhoidal vessels, and, in young infants, internal bleeding, and death, may now and then be the result. In operating, therefore, I should advise you, to content yourselves with making room for a dilator, about as large as a female cathetar, when a further enlargement may be obtained gradually by daily dilatation. I presume the patient will be more likely to retain the stools afterwards, if the opening, formed by perforation, is not made too capacious.

When the anus is once laid open, great care must be taken to prevent its closing again, particularly if the opening be small. For this purpose, bougies should be passed daily, or a dilator ought to be employed; for I have seen a child die in consequence of a second operation, which, by attention to this rule, might have been entirely prevented. The precise method of operating I leave with the surgeons. I may remark, however, that the escape of gas, or meconium, indicates when the intestinal cavity has been entered; and that the access to the rectum may in some, perhaps in most cases, be rendered perfectly easy by irritating and producing tenesmus at the time of the operation, and by waiting a few days, as before recommended, so as to allow the bowel to enlarge and come down. When you first examine, perhaps, you find the end of the intestine lying, in good measure, beyond the ready reach of the knife; but at the time of the operation, the intestine will often be found to come down into sight. Until I have a proof to the contrary, I am inclined to think, that when the imperforate anus is opened in this manner, the infant will possess the power of retaining the fæces, unless fluid, and urged by diarrhœa; and the part being exercised in this function, it is not unreasonable to sup-

pose that its strength will increase with age. In affirmation of this opinion, however, I have no case to bring forward.

In some few cases of imperforation, the rectum opens in girls into the vagina; and in boys, into the urethra and bladder. Probably a cure might be accomplished by intercepting the communication, and cutting down into the rectum in the region of the anus.*

OBSTRUCTED PASSAGE OF THE URINE.

After birth, infants are sometimes unable to pass the water, and this may proceed from various causes. Inertness of the bladder, obstruction of the urethra, and closure of the orifice of the urethra by the prepuce, are the three principal impediments. Friction with the warm hand of the nurse, fomentation with warm water, and distention from accumulating urine, are the chief remedies for the inertness of the bladder. A good and careful surgeon may sometimes pass a blunt probe, curved, into the bladder

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* In my obstetric museum, there are preparations well adapted to illustrate some of the points which I have mentioned. In one you will find a closure of the duodenum within an inch from the pylorus; in another, an example of obstructed ilium, in which, on the gastric side of the closure, the gut is dilated enormously, and on the side of the colon, it is as small as that of a rabbit. In two preparations, you will see the rectum has become large enough to contain a pullet's egg; hence the advantage of waiting, before perforation is performed. In a fifth glass, you may see a rectum, with an aperture so capacious that the fore-finger might be introduced; the operator was not wanting in skill, but the opening was too large, and the child died from bleeding, principally internal. In a sixth preparation, is the rectum, vagina, and womb, of a young infant, a large piece being taken out from the back of the rectum to exhibit its interior; in which, the opening at the anus is scarcely large enough to allow the passage of a bristle; the opening, so conspicuous between the womb and rectum, is large enough to allow the passage of the finger. In the child from which these parts were taken, the anus, laid open by the first operation, was suffered to close almost entirely; and the surgeon, on attempting to open the rectum afresh, carried his instruments between the rectum and the uterus; hence the need of bougies after this operation, to prevent a closure. My excellent colleague, Mr. Bransby Cooper, gave a preparation to my museum; in which you will see the rectum in communication with the urethra, and no anus; it was asserted, not by Mr. Cooper, however, that the child lived many months; but I could not obtain good authority for this fact. *Dr. Blundell.*

with advantage. Blisters, however small, are dangerous remedies; likely to induce both slough and death. When the prepuce obstructs the urethra, incisions, lacerations, or amputations, can rarely be required. In general, the orifice of the prepuce is small, and not placed in opposition with that of the urethra, poultices and fomentations will relax the skin, and a little dilatation with the probe, will enlarge the opening sufficiently, so as to give the little sufferer a free passage for urine, and more is not required, till the period of puberty. Imperforate urethra I never saw, and know little of its management. In the end it would, I conceive, prove a vain attempt to lay open a passage artificially through the glans penis and the corpus spongiosum. To perforate would be no easy task, and should the child survive, a closure will probably follow. For the emission of the urine, I am disposed to think, an easy passage would be obtained by cutting directly down into the part where the closed extremity of the urethra lay, whether before or behind the scrotum.

PURULENT OPHTHALMIA.

When infants are seized with purulent ophthalmia, the conjunctiva reddens all over, and matter forms in such large abundance, that it seems as if the ball were dissolving: the eyelids,* too, swell, thicken, and become everted,† and, in the severer and more chronic cases, the transparent cornea darkens, and the sclerotic tunic may, I believe, slough; total dissolution of the organ ensuing. Of these dangerous forms of the ophthalmia I have seen but little, and my remarks, therefore, are of no value.

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* Should the surgeon succeed in gaining a view of the membrane lining them, it appears wrinkled, and converted into a red villous surface, somewhat like the inner coat of the rectum, when protruded in young children. *Warner, on the Human Eye*, p. 42.

† Sometimes in the child's fit of crying the eyelids become everted, and continue so, until rectified by an attendant. *S. Cooper's Surgery*, p. 515.

In the ordinary and early attack* of the disease, ten grains of sulphate of zinc, dissolved in two ounces of rose-water, will be found an excellent collyrium; but I must leave the subject to the oculist. Remember, that it is upon the proper application of the collyrium that success mainly depends. If, in a careless manner, the wash be dabbed upon the eye-lids, what good can ensue? To give your remedy a fair trial, the infant should be placed with the face upwards, and then the eye-lids being tenderly, yet firmly separated, so as, if possible, to get a glimpse of the ball, the collyrium should be dropped upon the surface of the eye, and this, too, three or four times a day, according to the effect produced. With an ivory syringe, never, on any former occasion, used in case of gonorrhœa, the solution may, if necessary, be injected by a competent hand, at the outer angle of the eye between the eye-lids.†

SYPHILIS.

Syphilis in young infants I have not frequently seen, nor do I know of any plain practical characters by which it may be recognized at a glance; but cutaneous diseases, not of the ordinary infantile character, and discharges from the nose, with offensive smell, ought to lead to enquiries, and these may terminate in the discovery of a source of infection.‡

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* Mr. Ware strongly recommends the *aqua camphorata* of Bates's Dispensatory. Of this he ventures to recommend about one drachm of it to be mixed with an ounce of cold clear water, as a medium or standard, to be strengthened or weakened as occasion may require. *Remarks on Purulent Ophthalmy*, p. 143.

† In the early stage, Mr. Lawrence prefers a saturnine lotion made with rose-water. He directs the bowels to be kept open with castor-oil, or magnesia; and when the inflammation is active, and the tongue white, he lets the purgative medicine be preceded by a grain of calomel. He does not approve of blisters for young children. *Lectures on the Eye.*

‡ When the disease exists at the time of birth, or shows itself soon afterwards, it makes its appearance in the form of an erysipelatous efflorescence dispersed over the whole body, the cuticle is in part or altogether destroyed, and a serous matter oozes from the skin. When

It is not in the thorny bowers of sensual pleasure, that the poor infant finds the origin of this loathsome disease; at this early age, it enters the system by other inlets, with which it is highly proper that you should be acquainted, that your enquiries should be directed accordingly. What is the origin of physical evil? Those who declare it to be penal, must surely be much embarrassed with the accidents and diseases to which the fœtus is liable; thus, not to multiply examples, the fœtus may be crushed in the uterus; and the child may be born with the marks of the small-pox and the venereal disease, two of the most terrible scourges of our race. That the venereal disease, when occult in the father, may, as it were, be congenital with the offspring, I am not prepared to assert, though I am inclined to the affirmative; but I have no reason to doubt, that it may be communicated by the mother.* It is, I conceive, pretty certain, that a woman who has had the small-pox, and is herself secure against another attack, may nevertheless communicate the disease to the fœtus within her person; that poison which fails to operate on her own structure, transfusing itself, through the intervention of the maternal blood, to the ovum in the uterus, and giving rise to a great deal of violent disorder in the fœtus. The same holds true of syphilis; and, therefore, not losing sight of the possibility of a direct paternal infection, remember, when investigating these cases, that, from the maternal system, the infant may possibly become infected even while it is lying in the uterus.

If there is a chancre in the passages, the child may, I presume,

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it makes its appearance some days after the birth, irregular blotches of a light red colour, and somewhat elevated, arise about the arms, nates, and pudenda. Crusty eruptions appear in other parts of the body, and these in some places continue dry and scale off, but in others, an acrid thin matter exudes from them. *Dr. Thomas's Practice of Physic*, p. 980.

* Infants may be affected with syphilis in different ways. They may be diseased in utero, in consequence of the state of one or both of the parents. They may be infected by passing through the vagina, when the mother has chancres; or by sucking a woman who has the nipples affected. Of all these methods, the first is the most frequent; and it is worthy of remark, that this mode of infection may take place when neither of the parents has at the time any venereal swelling or ulceration, and perhaps many years after a cure has been apparently effected. *Dr. Burn's Principles.*

be infected during the birth, an ulcer being produced on the tender skin of the lips and nostrils, near their margins, not to mention the angles of the eye. When the mouth is ulcerated, it may infect the nipple of a wet-nurse, and the sore produced there, may infect the mouth of another infant; so that a second source from which the syphilis of young infants may take its origin, is, I conceive, *chancre,* whether on the genitals during birth, or on the breast and parts adjacent during suckling.

Independently of experience, I should have suspected that the milk of a nurse, herself not manifestly affected with syphilis, might become the cause of this disease in the child that sucks her; and yet, I suppose, there can be little doubt of this; nor, after all, is it more surprising than the communication of small-pox to the ovum, by a mother exposed to the infection, but secured by a former attack from obvious signs of the disease. Facts are not wanting to prove, that both the venereal virus, and its antidote, may be found in the breast-milk.*

When an infant has syphilis, you should first ascertain and intercept the source of the infection; therefore, if the breast is in fault, wean. If a hired nurse is employed, she must be changed; but it is needless, wantonly to throw a taint upon her character; bear in mind the uncertainty of a medical diagnosis; it is reason sufficient for dismissal, that the milk does not agree; if your suspicions are strong, tell her privately not to take an engagement in another family.

For the cure of the lues venerea in infants, the ordinary alteratives may be employed; the hydrargyri submurias, pilula hydrargyri, and hydrargyrum cum cretâ being the principal mercurial preparations. Calomel is rough. Blue pill may be mixed with

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* Dr. Lowder used to relate the case of an infant apparently syphilitic, whom he twice cured by mercury; when the symptoms recurring a third time, he began to suspect that the infection was drawn from the mother; the child, therefore, was weaned, and then, without further difficulty, he entirely subdued the disease. Mercury given to the nurse will, it is said, cure the child at the breast. *Dr. Blundell.*

mucilage, when it is easily administered in any quantity. Let the medicine be continued for two or three weeks after the obvious symptoms have disappeared, and if diarrhœa is to be feared, cautiously add a little anodyne to prevent it.

SECTION XIII.

THE MEDICAL DISEASES OF INFANTS.

To investigate and treat those diseases of young infants which fall under the care of the physician, is no agreeable task, for at this early age we are often surrounded with more feeling than judgment; and as the child cannot speak for itself, its complaints are sometimes involved in much obscurity.

EXTERNAL SIGNS.

Since infants are not capable of communicating their ailments, we are often compelled to look to certain external signs. Thus, to speak of the more prominent, be it observed, that the diseases of young children frequently exhibit marks upon the skin; the surface of the body, therefore, ought always to be inspected; and, in doing this, you may, at the same time, observe the degree of plumpness or emaciation, as well as the bulk of the abdomen, which is always large in infants. The body may be cooler than natural, and is frequently warmer; this heat showing itself in the hands, feet, and mouth, and head more especially; do not, then, neglect to inquire into the temperature of the child. Croup, hooping cough, measles, gastric cough, thoracic inflammations, and so on, of course affect the breathing, and to the action of the lungs and thorax, therefore, our attention should, in all cases, be directed. In convulsive affections the scalp is hot, the fontanels beat more forcibly than the radial artery, even the hair sometimes grows very fast, and the head sweats; inquire into all these points. In chylopoietic and cerebral affections, so common in children, the

number and character of the stools change, and vomiting is occasionally produced. Infantile vomiting is of less importance than the vomiting of the adult; and, it should be observed, that the rejection of coagulated milk, is no proof of gastric disease; for coagulation is one of the first effects produced by the healthy digestive juice. The actions of young children ought not to pass unnoticed; they raise the knees to the abdomen, when affected with colic; put the fingers in the mouth when teething; pick the nostrils in worms or analogous affections; and when disposed to cephalic diseases, they may roll the head on the pillow, or frequently apply the hand to it. In young children, I pay but little attention to the pulse; even in health, it is nearly twice as frequent as in the adult.* When investigating infantile disease, do not lose sight of the gums.

CAUSES.

Diseases of the infantile age, like those of the adult period, arise from causes exceedingly various; but, in most cases, irritability, acid acrimony, and errors in diet, have much to do in producing or modifying them. Children sometimes become gross and ailing because they are supplied too copiously with breast-milk; but far more frequently they suffer, because for human milk, other food is substituted, marasmus and diarrhœa being the consequence. Children there are, and many, which thrive wonderfully upon pap; but some, and not a few, after two or three weeks' trial more especially, are found unfit for artificial food, and to them other food than the breast-milk is poison. Arsenic itself, though of more rapid operation, can scarcely produce more terrible effects than spoon-meat in such cases; excoriations of the bowels, tormina,

* At birth, about one hundred and forty; at the end of the first year, one hundred and twenty; of the second, one hundred and ten; of the third and fourth years, about ninety-six; in the seventh, about eighty-six; in manhood, various, from seventy to eighty in the minute; and, in old age, sometimes as low as sixty. *Dr. Blundell.*

diarrhœa, death, not to mention dissolution from mere wasting. The rapidity with which children are brought back from death's-door, under the use of the breast-milk, is, in some cases, very striking, and is a further proof of its congeniality. So important is this aliment in these constitutions, that the milk should be drawn from a woman's breast, and given with the spoon or bottle, if the infant be too weak to suck. Within the first one or two months especially, no infant ought wantonly to be put upon spoon-meat. When there is purging, wasting, or cephalic affection, our first inquiry should always be, "What is the diet of this child?" If there is a wet nurse, examine the evacuations, for when the breast is deficient, hirelings will sometimes clandestinely administer other food than the milk, nor can they be brought to confess it.*

EVACUATIONS NOT NATURALLY ACESCENT.

I do not agree in opinion with those who maintain, that the

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* As some mothers cannot, and others will not suckle their children, but employ another nurse or bring the child up on the spoon, in choosing a nurse it is necessary to be satisfied that she enjoys good health, and has an adequate supply of milk. Certain rules have been laid down to enable us to ascertain the quality of the milk by its appearance, but it is sufficient that it is not too thick, and have a good taste. With regard to the quantity, we cannot judge at first, for the milk may be kept so as to distend the breast, and give it a full appearance. A woman who is above the age of 35 years, or who has small flaccid breasts, or excoriated nipples, or who menstruates during lactation, or who is of a passionate disposition, should not be employed as a nurse. The milk during menstruation is apt to disagree with the child, and produce vomiting or purging, but this is not uniformly the case. Violent passions of the mind affect the milk still more; it often becomes thin, and yellowish, and causes colic, or even fits. Those who labour under hereditary disease should, at least for prudential motives, be rejected. The woman's child, if alive, should be inspected to ascertain how it has thriven, and both it and the nipple should be examined, lest the nurse may have syphilis. A woman who has already nursed several months is not to be chosen, as the milk is apt to go away sometimes, or become bad. With regard to the diet of a nurse, it is improper to pamper her, or make much difference in the quality of the food, from what she has been accustomed to. It is also proper that she be employed in some little duty in the family, otherwise she becomes indolent and overgrown. When a nurse becomes pregnant, the milk often diminishes in quantity, but, does not become hurtful; on the contrary, the quantity of phosphate of lime it contains, appears in the course of gestation to increase. *Dr. Burns' Midwifery.*

evacuations of infants are naturally acescent. In health, the marks of acidity are at most very faint, the evacuations have much of the odonr of new milk, and are of bright yellow tint. In some cases, however, these discharges become as sour as vinegar, and as green as grass, especially if breast-milk be denied. Now, cephalic or bowel disease may be the result or the concomitant of this state of the secretions; it is always proper, therefore, in these affections, to examine the evacuations generally, and more especially their acidity, giving antacids if necessary; chalk if you wish to shut, magnesia if you wish to open, ammoniacal preparations if you wish to stimulate the older children, and carbonate of soda if you desire a remedy of powerful antacid operation.

NERVOUS TEMPERAMENT.

The proportion of the nervous system to the rest of the body is greater in the infant than in the adult; hence, words, and looks, and accents, and a thousand other baubles, render them miserably obnoxious to nervous diseases. The cerebral vessels too, of the infant are much more prone to increased action than those of the healthy man. To these two causes, joined with a greater liveliness of the cerebral structure, the nervous temperament may, perhaps, be attributed; and in all cephalic and bowel diseases, therefore, great attention should be paid to the head, to its refrigeration, and the prevention or relief of the increased action of the vessels. Hence vegetable diet, leeches to the temples, bleeding from the jugular vein, evaporating lotions, and *la douche;* neither must anodynes be neglected, nor the removal of irritants, particularly in the gums of older children.

STROPHULUS, OR GUM RASH.*

The *strophulus*, or *gum* rash, is so common and gentle that it

* Dr. Willan has observed, that the colloquial name of *Red-gum*, applied to the common form of this disease, is a corruption of *Red-gown*, under which the disease was known in former times, and by which it still continues to be called in various districts; as though supposed from its variegated plots of red upon a pale ground, to resemble a piece of red printed linen. *Dr. Good's Study of Medicine*, 3rd edit. vol. v. p. 563.

excites but little attention; cutaneous patches, of a red colour, of an area varying between that of a split pea and a silver penny, constitute its principal character. In a few days, the disease always ceases spontaneously. Do not confound it with the measles. As there are neither catarrhal nor febrile symptoms; and as the eruptions differ, the two affections are easily distinguished. In the severer varieties there is a minute articular elevation in the centre of the red patch.*

ICTERUS INFANTUM,† OR YELLOW GUM.

In infants, jaundice, notwithstanding its very frequent occurrence, is never scarcely a dangerous disease.‡ Haller supposed that jaundice is produced in the infant by a clot of milk closing the ductus communis choledochus; for when the skin is yellow, often the bile from the bowels is very abundant. The real cause of the

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* The varieties in Willan are the following, whose descriptions are large and somewhat loose. We may extract from them, however, the subjoined distinctions of character.

α S. Intertinctus, or *Red-gum*; pimples bright red; distinct; intermixed with stigmata, and red patches, sometimes spreading over the body.

β S. Albidus, or *White-gum*; pimples minute, hard, whitish; surrounded by a reddish halo.

γ S. Confertus, or *Tooth-rash*; pimples red, of different sizes, crowding or in clusters, the larger surrounded by a red halo; occasionally succeeded by a red crop.

δ S. Volaticus, or *Wild-fire-rash*; pimples deep red, in circular patches, or clusters; clusters sometimes solitary on each arm or cheek, more generally flying from part to part.

ε S. Candidus. Pallid gum-rash; pimples large, glabrous, shining; of a lighter hue than the skin, without halo or blush.

Generally speaking, none of these varieties are of serious importance, and all of them being consistent with a healthy state of the functions of the body, require but little attention from medical practitioners. *Dr. Good's Study of Medicine*, 3rd. ed. vol. v. p. 564.

† Icterus—named from its likeness to the plumage of the golden thrush, of which Pliny relates, that if a jaundiced person looks on one, the bird dies and the patient recovers.

‡ This disease affects children at or soon after their birth, and usually continues for some days. It has generally been supposed to arise from meconium impacted in the intestines, preventing the flow of bile into them. The effects produced by it are languor, indolence, a yellow tinge of the skin, and a tendency to sleep, which is sometimes fatal where the child is prevented from sucking. *Dr. Hooper.*

icterus seems to be a redundancy of the bile under which a gorge and consequent absorption and reflux, are both of them produced in the same manner, as if obstruction existed in the passages. Let the little patient take a teaspoon-full of castor oil, and in a few days the yellow gum will vanish.*

FLATULENT COLIC.

Flatulent colic is common in infants, especially if they have been fed on spoon-meat. Give the breast-milk; change the nurse if the milk disagree. Dill water and friction of the abdomen are good carminatives. Nurses fancy that a lullaby is of use on these occasions; it may sooth the nerves, and is not, perhaps, altogether without its efficacy. A fit of anger, or some other nervous commotion in the nurse may, perhaps, produce this disease, by altering the quality of the milk.

CONVULSIONS.

Hundreds of children are yearly carried off by cerebral affection, convulsions, hydrocephalus, or a mixture of the two.

In some infants, the convulsions become chronic, they are far more frequently acute, that is of a few days or a few hours standing. During the fit, the child is insensible; shook about by spasms, with fixing, or staring, or partial closure of the eyes, and distortion of the features, which darken, and assume an ashy tint. The fontanel often throbs, and the scalp may be hot. There is evident analogy between these infant fits, and those of puerperal

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* The skin of newly-born children is frequently of a yellow colour; but this does not constitute jaundice. The yellowness here spoken of is not of a deep tone, though very generally diffused. This appearance may continue for several days, and then disappear without the aid of remedy, or without leaving any evil behind. It is difficult to say, to what this yellow tinge may be owing; certain it is, it cannot be attributed to the presence of bile, since neither the urine nor the whites of the eyes assume the yellow hue. *Dr. Dewee's Treat. Dis. Child.* p. 303.

women. A single paroxysm may destroy, but more generally not so. When the child, in slumbering, is twitched gently, and smiles, and half discloses the eyes, and looks more interesting than usual, with rosy cheeks, and brightened eye-balls, and a mind more active than ordinary, convulsions may be apprehended. These smaller symptoms are called inward fits.* Evening is often the apparent cause of the cephalic affections in children. The real cause of the beauty, the brilliancy, the precocity, the dissolution of the child, is the press of the blood towards the brain, and perhaps of the teeth towards the gums; this gives glow to the cheek and splendor to the eye, and activity to the intellect, and death to the mother's hopes.†

Tumours, effused water, effused blood, and accumulation and hurried circulation in the cerebral vessels, appear to be, in most instances, among the more immediate causes of this disease; and of these causes congestion and aqueous effusion are the most frequent. Blood is, I believe, rarely poured out, and tumours are uncommon. All these causes, perhaps, operate by pressure, but I have my doubts here. Full diet, damp air, irritation in the prima viæ, dentition, whooping cough, measles, and other acute diseases, are the more common remote causes. The convulsive and hydrocephalic affections may arise without any very obvious excitement. The evacuations are generally knotty, mucous, serous, and green. Scrofulous constitutions appear to be especially prone to the disease.

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* Our predecessors, besotted with superstition, always prone to ascribe nervous affections to demoniacal agencies, took it into their heads, that infants, when dosing, smiling convulsively, and starting, were holding converse with some airy being, charmed with their tender graces, and that the convulsions which followed were occasioned by a desperate struggle to escape from his grasp. This explained why children, the most forward and beautiful, as before observed, are most liable to this disease. There is a very pretty catch, called the Erl King, which turns entirely on this piece of foolery. *Dr. Blundell.*

† Among the lower classes of the South of Europe, if I am rightly informed, nothing alarms the mother more than the commendation of her infant's beauty. The dread of Nemesis seems still to prevail even in Christian Italy, and such praise is supposed, in some unknown manner, to exert malignant influence. *Dr. Blundell.*

The essential part of the treatment may be comprised in a few words: in chronic cases, after effusion has taken place, bleeding from the head is of very doubtful propriety; but it seems to be a principal remedy if the attack is sudden and recent. The blood may be taken by leeches,* or from the jugular vein.† To clear the chylopoietic viscera, is always proper in convulsive and hydrocephalic affections; ipecacuanha and calomel, or other laxatives and emetics being employed for the purpose. Pastry and fruit are sometimes brought away in this manner, given, perhaps, to please the child, by some indiscreet acquaintance.

In convulsive affections, be sure to refrigerate the head, particularly if the attack be recent. Let the hair be removed. Ether and water, vinegar and water, or liquor ammoniæ acetatis, being employed in the way of lotion. Once a day, or half a dozen times, for a few seconds, or for a few minutes, the administration of refrigerants may be continued, according to the effect produced. Coolness of the scalp, and paleness and shrinking of the features,

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* Leeches sometimes draw from young children more than intended; and one leech may be too much when a child is much reduced. Dr. O'Berne, formerly of Chillington in Devon, asserts that, like the horse of Baron Munchausen, if the hinder end of the leech be cut away, it will draw more copiously, being a sort of living pump, which gives off at one extremity what it absorbs at the other. When leeches are placed over bony surfaces, the bleeding, (if necessary,) may be more easily restrained by pressure; and the head and sternum are convenient places for their application. Besides compression and lunar caustic, a useful help for stopping the bleeding from the leech-orifices, is a small portion of clean sponge, easily passed down by means of a probe into the cellular web under the skin, where the bleeding vessels are situated. To Mr. Franks, one of my pupils, I was indebted for this fact. *Dr. Blundell.*

† Infants are best bled from the external jugular vein, particularly in head affections; and when the blood can be drawn in this manner, we know precisely the measure. What quantities may be safely drawn at once, must be determined by circumstances; but the following tabular statement of quantities of blood, which I have taken away myself at different ages, may, perhaps, be of some use as a guide:—

From a child of	oz.		oz. aver.		oz.		oz. aver.
2 months old, from . .	1	to	1¼	18 months old, from . .	4	to	5
4 months	1½	to	2	3 years	8	to	10
8 months	2	to	3	6 years	10	to	12
12 months	3	to	4				

For some of the facts on which this table is grounded, I am indebted to my friend, Mr. Edwards. *Dr. Blundell.*

are the indications that the refrigerating applications have exerted their full operation. Warmth about the head, pulsating fontanels, and inward fits, are the best signs that the refrigerants are again required.

To equalize the circulation, the warm bath is of great service; and although timorous mothers are very anxious lest the water should weaken, I think I never, in one instance, witnessed a dangerous debility produced in this manner; and of the bath I have made frequent use. 97° of Farenheit's thermometer appears to be a very fit temperature; ten or fifteen minutes is an average period of immersion, to be lengthened if the child seem lively, and to be abbreviated should faintness occur.*

I have known infants to be regularly attacked with convulsions every time they screamed; vex them, and a fit ensued: hence the importance of keeping all quiet. When the other remedies, namely, bleeding, purging, refrigeration of the head, and warm immersion, have been used, quiet may sometimes be ensured by syrup of poppies, or other anodynes.† I know that in convulsive cases, with much lethargy, protracted for one or two weeks together, infants sometimes unexpectedly recover; and I have seen

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* If after three or four immersions, the child still scream when bathed, the bathing vessel may be covered with a blanket, and this being gradually pressed down with the infant, the water transudes almost unperceived through the texture, so that the little patient is in the bath before it is aware of it. When the bath is obstinately refused, wrapping the infant in a flannel, wrung out of water at the temperature of 97° of Farenheit, may be found an excellent substitute; it may lie there among the folds, as comfortably as in the womb of the mother. If you wish to make the child superlatively happy, tell the friends to put a few broken corks in the water: *Dis miscent superis.* Thirty or forty years afterwards they would not find half the pleasure in a globe and sceptre. *Dr. Blundell.*

† In young infants, opiates must be given with great caution; for though some, under convulsive and bowel affections, bear anodynes very well, there is always a fear of an overdose; from half a drachm to a drachm of good syrup of poppies, or two drops of the tincture of opium, are a full daily quantity for an infant within the month. Negligent assistants ought not to be employed to measure out the preparation; infants have sometimes been killed by over doses; and still more frequently they have become drowsy, so as to neglect the breast and food for hours together, to their great detriment in bowel complaints. It is to be regretted that poppy syrup, so useful in children, varies so much in its strength and quality. *Dr. Blundell.*

these recoveries recur under the use of opium, in such doses as decidedly affected the system, given with no other view than of easing the distress of the little sufferer. Lowder, the predecessor of Haighton, used to state his conviction, that opiates were of effective use in curing the disease; and certainly my own persuasion is, that when administered in cases verging to the chronic form, and attended with distress and restlessness, they not only do no marked injury, but tend to accelerate the cure. I wish it were in my power to be more definite in my statements here; but I want more light.

When the disposition to cerebral afflux, and general hurry of the circulation, is obstinate, digitalis may deserve consideration. It is a dangerous but powerful agent, and must be sedulously watched. In convulsions, inquire whether any irritant is in operation. In all cases when the gums are suspected, they ought to be lanced.

A warm surface, a cool scalp, a vegetable diet, and gums lanced, when necessary, are, I believe, the best preventives of hydrocephalic and convulsive affections. With such children, evening walks are dangerous. Inward fits, bright eyes, glowing cheeks, and that slight irritability of temper which tender mothers deem an additional interest, constitute some of the plainer indications of an approaching attack. In one family, sometimes five or six infants are lost in succession under these cephalic affections; the necessity of preventive treatment is in such cases, obvious enough.

SEROUS DIARRHŒA.

Serous diarrhœa is a disease which proves the death of many infants, especially within the month. Ten or twenty watery evacuations, green, or becoming greenish, may occur in the course of the day. In the course of twenty or thirty hours, the fat may be absorbed so rapidly, that the skin, hanging loosely over the body, reminds one of the modish dresses of the day; and the body at first, perhaps, disposed to heat, becomes cold, pale and collapsed,

the patient recovering gradually, or dying at the end of some three or four days. This diarrhœa is more particularly dangerous, if the infant, not above a week or two old, has been gradually pining before the attack.

Mere irritability of the chylopoietic apparatus is not always nor, perhaps, often the sole and immediate cause of these attacks. In some severe cases, superficial ulcers are found in the villous membrane after death; in others, on different parts of the intestinal surface, we discover spots of increased vascularity. When the conjunctiva, the urethra, the vagina, and the Schneiderian membrane, are inflamed superficially, they all increase in their irritability and their secretions, unless the inflammation be pushed beyond a certain degree; and it seems not improbable, therefore, that in infants the serous diarrhœa may more properly be referred to inflammation than simple irritability of the inner surface of the membrane.*

The substitution of other aliment for the human breast-milk, is the ordinary cause of watery diarrhœa; and to correct this error, is the first step of the cure. As observed before, if the infant be too weak to draw from the breast, the milk should be procured by proper drawing instruments, and administered with a spoon. Unless the human milk be promptly supplied, there is no reasonable hope of cure. In some cases, when the disease has been recent, I have, to appearance, successfully treated the watery diarrhœa on the antiphlogistic plan; but syrup of poppies, opiates, ant-acids, and aromatics, are the remedies which have appeared to have the best effects. Two or three drops, not minims, daily of the tincture of opium, in slighter cases, may check the diarrhœa much; but the great evil of this, and, indeed, of all the anodynes, is, that they may make the infant so torpid, that it neglects to draw the breath, therefore beware of too large a dose.†

* In a preparation, in my museum, presented by a very excellent and promising young gentleman, the late Dr. Cox, in the compass of one foot of intestine, you may see fifteen or twenty superficial ulcers, large as the surface of a split pea. *Dr. Blundell.*

† A useful formula in these cases, is the following: of aromatic confection, one drachm;

APHTHA INFANTUM, OR THRUSH.*

A very common disease is the thrush, a sort of specific inflammation of the mucous membrane, attacking the mouth only, or the whole length of the alimentary tube.† That the milder thrush is begun, we may suspect when the nipple is aphthous and the child is drowsy; and when the suckling is frequently interrupted with crying, and the tongue and inner surface of the cheeks are red, and scattered over with a substance, like the curd of milk. When, in conjunction with these symptoms, the bowels purge, the stomach vomits, screaming and gas indicate intestinal spasms, and an apthous appearance is remarked in the perinæum and parts adjacent to the anus, we may then reasonably infer that the whole track of the intestinal tube is affected with aphthæ, or with aphthous irritation. The vagina, invested by a membrane like the oral epithelium, is, in women, sometimes attacked with a disease, which I conceive to be very analogous to the thrush of infants; and, under this disease, large quantities of curdy matter, will sometimes form itself in no sparing abundance. Now, what is the exact nature of the white specks of infantile thrush I am not certain, but it appears to me, that, not unlike this in nature, it consists of a morbid secretion from the mucous membrane. When thrush is attended with purging, it may, I believe, be best treated like the serous diarrhœa. When confined to the mouth, borax, mul-

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of poppy syrup, one drachm; of dill-seed water, an ounce and a half; of spirit of nutmeg, thirty or forty drops. A tea spoonful to be given after every or every other watery evacuation, unless the infant be drowsy, so that the whole may be taken in the course of the twenty-four hours. *Dr. Blundell.*

* Aphtha;—Ἀφθαι, *aphthai*, from απτω, *aptō*, to inflame.

† It very generally begins on the inner part of the lower lip, or corners of the mouth, and resembles a small coagulum of milk; from this point it sometimes spreads itself very rapidly over the inside of the cheeks, tongue, and gums. When this efflorescence is extensive, the child slavers very much, and is frequently embarrassed in its sucking, it cries, and evidently betrays that it is much pained; it is very restless and very thirsty, as it evinces by its frequent stirrings, and its disposition to be continued at the breast. *Dr. Dewees' Treat. Dis. Child.* p. 318.

berry syrup, and other stimulant astringents may be used with success.*

MESENTERIC OBSTRUCTIONS.

Mesenteric obstructions are not, I think, frequent in very young children, but, without such obstruction, you may frequently meet with an inflated abdomen, and a gradual wasting of the other parts. This state of disease is called marasmus.† It usually, I think, arises from one of three causes, a denial of the human breast-milk; an inertness of the chylopoietic viscera, which either form their secretions too sparingly, or of deficient digestive power; and an afflux of blood on the head, with, perhaps, a concealed hydrocephalus. When the chylopoietic viscera are inert, without cephalic disease. I have seen much apparent benefit from capsicum and quinine, in pill, according to the effect produced, with a dose of blue pill, or a grain or so of calomel, two or three times a week. Change of air, as from town to the country, or from the country to the sea-shore, seem sometimes, in marasmus, to do more good than all our medicines.

CONCLUSION.

Thus far then, have I entered into practical remarks on the diseases of young infants, those especially which occur within the first few weeks, for to these it is that my observations, with few exceptions, are designed mainly to apply. And as a final remark, let me add, that although so many infants sink beneath the

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* A useful linctus consists of borax, one drachm, and of simple syrup one ounce, or honey may be substituted for syrup, if not too irritating. Of this linctus, a little may be put into the mouth repeatedly in the course of the day; the best instrument for diffusing it over the mouth is the child's own tongue. *Dr. Blundell.*

† Marasmus:—From *μαραινω, marainō*, to grow lean.

diseases of their earlier days, you must not abandon any case, until the hand of death has fairly snatched the little patient from your care. The bud of life may appear withering, dying, nay, dead—when unexpectedly, nature, from her deep and hidden recess, comes forth and raises the sinking embryo to vigorous life.

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FINIS.