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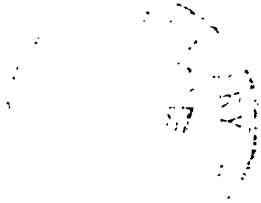


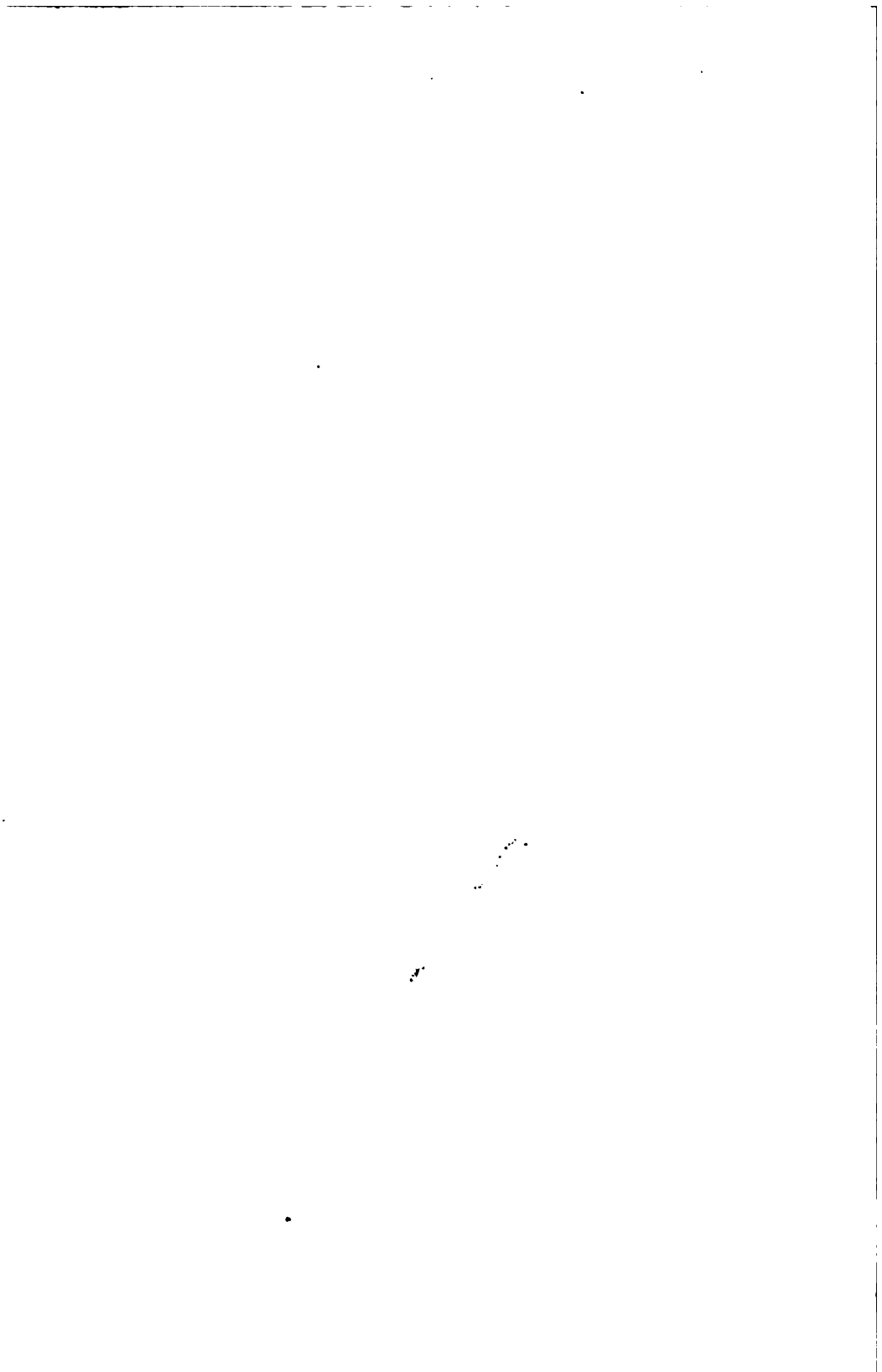
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PRINCIPLES OF MIDWIFERY.

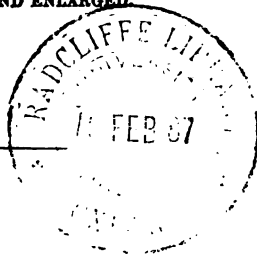




THE
PRINCIPLES
OF
M I D W I F E R Y ;
INCLUDING THE
DISEASES OF WOMEN AND CHILDREN.

By JOHN BURNS, M.D., F.R.S.,
REGIUS PROFESSOR OF SURGERY IN THE UNIVERSITY OF GLASGOW, ETC., ETC., ETC.

TENTH EDITION, REVISED AND ENLARGED.



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TO HIS GRACE,
JAMES, DUKE OF MONTROSE,
CHANCELLOR OF THE UNIVERSITY OF GLASGOW,
THE FOLLOWING PAGES,
ARE RESPECTFULLY DEDICATED,
BY THE AUTHOR.

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P R E F A C E.

IN preparing this work, I have endeavoured to proceed as much as possible upon the method of induction. I have collected with care, the different cases which have been made public, as well as my own private observations. To these, I have added the opinions and advices given by others, in so far as they seemed to be founded on facts, and supported by experience. From the whole, I have deduced, in the different parts of my subject, both the symptoms and the practice.

The anatomical descriptions, I have given from dissections and preparations before me whilst writing.

Should this work fall, only, into the hands of those competent to judge in their profession, it would, if faulty or deficient, do little harm; but, as it has been circulated extensively, it must, like other systems and elements, have an influence on the opinions, and future practice of the student of midwifery; and will prove useful or injurious to society, according to the correctness of the principles it contains. When I consider how important the diseases of women and children are, and how much depends on the prudent management of parturition, I feel the high responsibility

which falls on those, who presume to give lessons in midwifery. I do, however, sincerely trust, that the precepts I have inculcated shall be found agreeable to experience ;—and, on a review of the whole, I cannot say that I have either wasted the reader's time in idle theory, or misled his opinion by mere speculation.

This edition has been carefully revised, some parts re-written, and new matter added.

The reader is requested to mark the following corrections and additions :—

Page 36, line 20, for “of possible,” read “as possible.”

Page 159, Add to the note,—

Mr Waime relates a successful case in the *Med. Gaz.* for Dec. 1842, p. 437. The incision was 13 inches long. The pedicle was tied, and the tumour cut off. Dr Clay also operated at Manchester in several cases with success, an account of which he did me the favour to send. He prefers the large, to the small, incision. In his first case, that of Mrs Wheeler, the incision was twenty-four inches long, extending from near the sternum to the pubis. The pedicle was tied, but, the ligature not being efficient, the individual vessels required to be taken up. The patient recovered. He gives a table of eleven cases, from his own practice and that of others, ten of which were successful.

When the small incision is employed, as by Mr Jefferson and others, it does not exceed two inches in length, the sac is punctured, and when emptied, is drawn through the wound, the pedicle tied, and the tumour cut off. In a table of nine cases of this operation, given by Dr Clay, five were successful, from which he infers that it is more fatal than the more formidable one.

Page 327, line 1 from the bottom, add a reference to the following note :—

Cysts containing blood, tubercles, and other diseases of the placenta, as well as obstruction in the cord, may cause abortion, without producing any material change in the external appearance of the fœtus.

Page 328, add to the last paragraph,—The os uteri may be so open as to allow the under part of the ovum to be felt, and yet gestation may go on.

Page 335, Add to the note,—

In some cases, the ovum seems to dissolve, and come away without any solid appearance, or attendant troublesome symptom.

Page 356, line 6, dele from the word "heart," to the words "as if," line 13.

Page 391, line 12, for "feebleness," read "weakness."

Page 414, line 6, for "knee," read "knees."

Page 422, line 13, for "Valpeau," read "Velpeau."

Page 447, line 30, for "point," read "points."

Page 452, line 16 from the bottom, for "efficient," read "inefficient."

Page 453, line 18, dele "cease to."

Page 454, line 26, for "fibre," read "fibres."

Page 468, line 8, place a comma after "time."

Page 477, last line, for "Ruisch," read "Ruysch."

Page 488, line 7, for "and," read "add."

Page 511, add—Dr Ippolito, after Galbiati, divided the bodies of the ossa pubes, and rami of the ischia, with a saw, but the patient died. This operation has been named Pelviotomy.—Brit. and For. Rev. xxix. p. 347.

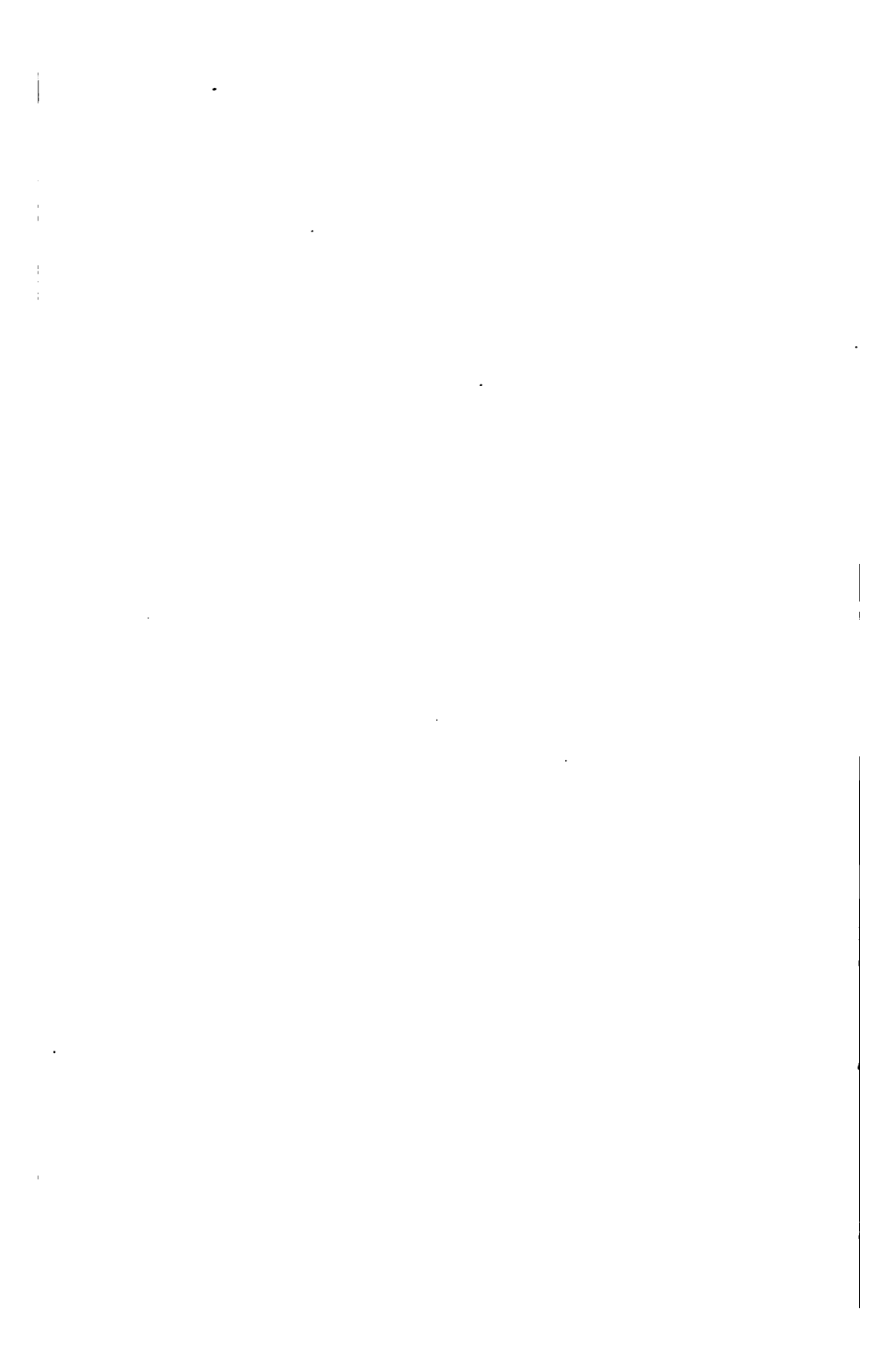
Page 531, add to the note,—

Dr Mitchel relates a case of rupture of the cervix, cured, chiefly, by opium.—Dub. Journ. xxii. p. 336.

Page 627, line 14 from bottom, for "bronchii," read "bronchi."

Page 661, line 14 from the bottom, for "ecthymata," read "ecthyma."

Page 771, for "Chapter XI." read "Chapter IX."



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THE
PRINCIPLES
OF
M I D W I F E R Y.

BOOK I.

OF THE STRUCTURE, FUNCTIONS, AND DISEASES OF THE PELVIS AND
UTERINE SYSTEM, IN THE UNIMPREGNATED STATE,
AND DURING GESTATION.

CHAP. I.

Of the Bones of the Pelvis.

SECTION FIRST.

THE practical precepts and rules in Midwifery, are easily understood, and readily acquired. They are drawn, from the structure and actions, of the parts concerned in parturition ; and whoever is well acquainted with this structure, and these actions, may, from such knowledge, deduce all the valuable and important directions, which constitute the Practice of Midwifery.

One of the first, and not the least important, of the parts concerned in parturition, is the pelvis, which must be examined, not only on account of its connexion with the uterus and vagina, but also of its own immediate relation to the delivery of the child, and the obstacles which, in many instances, it opposes to its passage.

The pelvis consists, in the full grown female, of three large bones, two of which are very irregular, having no near resemblance to any other object; on which account they have been called the ossa innominata. These form the sides and front of

the basin or pelvis. The back part consists of a triangular bone, called the os sacrum, to the inferior extremity, or apex, of which, is attached, by a moveable articulation, a small bone, which, from its supposed resemblance to the beak of a cuckoo, has been named the os coccygis.

The os innominatum, in infancy, consists of three separate pieces: the upper portion is called the ilium, or haunch bone; the under, the ischium, or seat bone; and the anterior, which is the smallest of the three, is called the os pubis, or share bone. These all join together in the acetabulum, or socket, formed for receiving the os femoris, and are connected by a very firm gristle or cartilage. This, before the age of puberty, is converted into bone, so that the three different pieces are consolidated into one, though the names given to the bones, originally, are still applied to the different parts of the united os innominatum. It has been observed, that women who have born children, have, after their fortieth year, the centre of the expanding portion of the ilium considerably thinner than those who have not.

The sacrum also, which seems to consist only of one curved triangular bone, is really made up of several pieces, which in the child, are nearly as distinct as the vertebræ, to which, indeed, they bear such a resemblance, that they have been considered as a continuation of them; but from their imperfect structure, and subsequent union, they have been called the false vertebræ.

The bones of the pelvis are firmly joined together, by means of ligaments and intermediate cartilages, and form a very irregular canal, the different parts of which must be briefly mentioned.

SECTION SECOND.

When we look at the pelvis, we observe, that the ossa innominata naturally divide themselves into two parts, the uppermost of which is thin and expanded, irregularly convex on its dorsum, or outer surface, hollow on the inside, which is called the costa, and bounded by a broad margin, extending in a semicircular direction from before backwards, which is called the crest of the ilium. The under part of the os innominatum is very irregular, and forms, with the sacrum, the cavity of the pelvis. The upper expanded part has little influence on labour, and serves, principally, for affording attachment to muscles, and supporting the viscera. In the under part, we have several points to attend to.

1st. The upper and under parts, form an angle with each other, marked by a smooth line, which is a continuation of the margin of the pubis, or anterior part of the bone. It extends

from the symphysis pubis, all the way to the junction of the os innominatum with the sacrum, and is called the linea iliopectinea. It is quite smooth and obtuse at the sides, where the two portions form an angle; but at the anterior part, where the upper portion is wanting, it is sharp, and sometimes is elevated into a thin spine like the blade of a knife.

2d. The upper portion is discontinued exactly about the middle of this line, or just over the acetabulum; and at the termination, there is, from this portion, an obtuse projection overhanging the acetabulum, which is called the inferior spinous process of the ilium, to distinguish it from a similar projection about half an inch higher, called the superior spine.

3d. The under part of the bone is of the greatest importance, and in it we recognise the following circumstances. Its middle is large, and forms, on the outside, a deep cup or acetabulum, for the reception of the head of the thigh bone. On the inside, and just behind this cup, it forms a smooth polished plate of bone within the cavity of the pelvis, which is placed obliquely with regard to the pubis, and has a gentle slope forward. The cone of the child's head, in labour, moves downwards, and somewhat forwards, on this, as on an inclined plane; it may be called the plane of the ischium, although a part of it be formed by the ilium.

4th. Standing off from the back part of this, about two inches beneath the linea ilio-pectinea, is a short projection, called the spine of the ischium, which seems to encroach a little on the cavity of the pelvis, and is placed, with regard to the pubis, still more obliquely than the plane of the ischium. It must, consequently, tend to direct the vertex, as it descends, still more towards the pubis.

5th. Beneath this, the ischium becomes narrower, but not thinner; on the contrary, it is rather thicker, and terminates in a rough bump, called the tuberosity of the ischium.

6th. Next, we look at the anterior part of the bone, and find, that just before the plane of the ischium, there is a large hole in the os innominatum. This is somewhat oval in its shape; and at the upper part within the pelvis, there is a depression in the bone, which, if followed by the finger or a probe, leads to the face of the pelvis. The hole is called the foramen thyroideum.

7th. Before this hole, the two ossa innominata join, but form with each other, on the inside, a very obtuse angle, or a kind of smooth rounded surface on which the bladder partly rests. The junction is called the symphysis of the pubis.

8th. The two bones, where they form the symphysis, are joined with each other for about an inch and a half; then they divaricate, forming an angle, the limbs of which extend all the way to

the tuberosity of the ischium. This separation or divarication is called the arch of the pubis, which is principally constructed of the anterior boundary of the foramen thyroideum, consisting of a column or piece of bone about half an inch broad, and one fourth of an inch thick, formed by the union of the ramus of the pubis, and that of the ischium.

9th. At the upper part of the symphysis, or a very little from it, the os innominatum has a short obtuse projection, called the tubercle of the pubis, into which Poupert's ligament is inserted; and from this, there runs down obliquely, a ridge on the outside of the bone, which reaches all the way to the acetabulum, and overhangs the foramen thyroideum.

10th. When we return to the back part of the os innominatum, we find, that just after it has formed the plane of the ischium, it extends backwards to join the sacrum; but in doing so, it forms a very considerable notch or curve, the concavity of which looks downwards. When the sacrum is joined to the bone, this notch is made much more distinct. It is called the sacro-sciatic notch or arch, for one side is formed by the ischium, and is about two inches long, the other is formed chiefly by the sacrum, and is about half an inch longer. In the recent subject, strong ligaments are extended at the under part, from the one bone to the other, so that this notch is converted into a regular oval hole.

11th. Lastly, this notch being formed, the bone expands backwards, forming a very irregular surface for articulation with the sacrum; and the bones being joined, we find that the os innominatum forms a strong, thick, projecting ridge, extending farther back than the spinous processes of the sacrum. This ridge is about two inches and three quarters long, and is a continuation of the crest of the ilium, but is turned downwards; whereas, were the crest continued in its former course, it would meet with the one from the opposite side, behind the top of the sacrum, forming thus a neat semicircle; but this ridge, if prolonged on both sides, would form an acute angle, the point of junction being opposite the bottom of the sacrum. From this, strong ligaments pass to the sacrum, to join the two bones.

SECTION THIRD.

The sacrum forms the back part of the pelvis. It is a triangular bone, and gently curved; so, that, whilst a line drawn from the one extremity to the other, measures, if it subtend the arch, about four inches, it will, if carried along the surface of the bone, measure full half an inch more. The distance between the first or straight line, and the middle of the sacrum, is about one inch. The breadth of the base of the sacrum, considered

as an angular body, is full four inches; the centre of this base is shaped like the surface of the body of one of the lumbar vertebræ, with the last of which it joins, forming, however, an angle with it, called the great angle or promontory of the sacrum. From this the bone is gently curved outward on each side, toward the sacro-iliac junction, contributing to the formation of the brim of the pelvis.

The upper half of the side of the bone is broad and irregular, for articulation with the os innominatum. The anterior surface of the bone is smooth and concave; but often we observe transverse ridges, marking the original separation of the bones of the sacrum. Four pair of holes are found disposed in two longitudinal rows on the face of the sacrum, communicating with the canal which receives the continuation of the spinal marrow; through these the sacral nerves issue. These holes slope a little outward; and betwixt the two rows, is a smooth surface, for the attachment of the rectum. The posterior surface of the bone is very irregular; and, we observe, 1st. The canal extending down the bone, for receiving the continuation of the spinal marrow. 2d. At the upper part of this, are two strong oblique processes, which join with those of the last lumbar vertebra. 3d. On a central line down the back of the canal, there is an irregular ridge analogous to the spines of the vertebræ. 4th. The rest of the surface is very irregular and rough; and we observe, corresponding to the holes for transmitting the sacral nerves on the exterior surface, the same number of foramina on this posterior surface, but, in the recent subject, they are covered with membrane, leaving only a small opening for the exit of nervous twigs.

The coccyx is an appendage to the sacrum, and as it is inclined forwards from that bone, the point of junction has been called the little angle of the sacrum. It is, at first, altogether cartilaginous, and cylindrical in its shape, but it gradually ossifies and becomes flatter, especially at the upper part which has been called its shoulder. In men it is generally ankylosed with the sacrum, or at least moves with difficulty, but it almost always separates by maceration. In women it remains mobile, and, during labour, is pressed back so as to enlarge the outlet of the pelvis. By falls or blows it may be luxated; and if this be not discovered, and the bone replaced, suppuration takes place about the rectum, and the bone is discharged.

CHAP. II.

Of the Articulation of the Bones of the Pelvis, and their occasional separation.

SECTION FIRST.

THE bones of the pelvis are connected to each other, by intermediate cartilages, and powerful ligaments. The ossa innominata are united to each other at the pubis, in a very strong and peculiar manner. It was supposed that they were joined together by one intermediate cartilage; but Dr Hunter* was, from his observations, led to conclude, that each bone was first of all covered at its extremity with cartilage, and then betwixt the two was interposed a medium, like the intervertebral substance, which united them. This substance consists of fibres disposed in a transverse direction. M. Tenon† is of opinion, that sometimes the one mode and sometimes the other obtains.

The anterior, posterior, and upper surfaces of the symphysis, are covered by a strong ligamentous or fibrous substance, which seems like a continuation of the pubic ligament. In other words, we find the bones covered by a strong capsule, which is the chief security. Each end of the os pubis is covered by a layer of cartilage, adhering strongly to it, and to the pubic ligament and the capsule, with both of which it is identified. Between the two cartilages is interposed a thin layer of reddish substance. The fibro-cartilaginous intermedium sometimes enlarges posteriorly, and, together with the capsule, encroaches a little on the diameter of the pelvis.

Anchylosis sometimes takes place, though Dr Hunter says he never met with it. I have seen it.

The pubic, or rather subpubic ligament, is a strong, short band, stretched across, immediately below the symphysis, and which adds to the security. It is not purely ligamentous, but more fibro-cartilaginous, somewhat like the interosseous substance. It is, at least, a quarter of an inch broad, and extends down the rami, becoming thinner as it proceeds. It is covered by, or included in, the fibrous capsule of the symphysis.

SECTION SECOND.

The articulating surface of the ossa innominata and sacrum are covered by a thin layer of cartilaginous substance; that belonging to the sacrum is the thickest: both are rough, and betwixt

* Vide Med. Obs. and Inq. Vol. ii. p. 333.

† Vide Mem. de l'Institut. des Sciences, Tome vi. p. 172.

them is found a thin layer of fibro-cartilaginous substance. In infancy, the intermediate substance is soft, if not synovial, and this is sometimes the case in pregnancy. The connexion of the two bones, therefore, so far as it depends on this medium, cannot be very strong; but it is exceedingly strengthened by ligamentous fibres, forming the sacro-iliac ligament, which serve as a capsule; and behind, several strong bands pass from the ridge of the ilium to the back of the sacrum; sometimes the bones are united by ankylosis. At the lower part, additional strength is obtained by two large and strong ligaments, which pass from the ischium to the sacrum, and therefore are called the sacro-sciatic ligaments. The innermost of these, arises from the spine of the ischium and is very strong, but at first not above a quarter of an inch broad; it gradually expands, however, becoming at its insertion about an inch and a quarter in breadth. It passes on to the sacrum, and is implanted into the lower part of the side of that bone and the upper part of the coccyx. It converts the sacro-sciatic notch into a regular oval hole, the inferior end of which, owing to the neat expansion of the ligament, is as round and exact as the upper. As it makes a similar expansion downwards, its margin, as it goes to the coccyx, is lunated. The outer ligament may be said to arise from the side of the sacrum, and, like the other, is broad at that part. It runs, for some time, in contact with the inner ligament, and parallel to it; but afterwards it separates, passing down to be inserted in the tuber ischii; and, when the ligaments separate, their surfaces are no longer parallel to each other. There is, in consequence of this separation, a small triangular opening formed betwixt the ligaments; or rather there is an aperture like a bow, the string being formed by the under ligament, and the arch partly by the spine of the ischium, and partly by the upper ligament.

SECTION THIRD.

The pelvis is joined to the trunk above, by means of the last lumbar vertebra; to the extremities below, by the insertion of the thigh bones into the acetabula; and it is so placed that when the body is erect, the upper part of the sacrum and the acetabula are nearly in the same descending line. The brim of the pelvis, then, is neither horizontal nor perpendicular to the horizon, but oblique. This obliquity has been variously estimated, at from 35° to 60° , that of the outlet from $5\frac{1}{2}^{\circ}$ to 18° . Nægelé makes the first from 59° to 60° , the second from 10° to 11° ; the point of the coccyx seven or eight lines above the summit of the arch of the pubis;* the sacro-vertebral angle three inches and nine

* Out of 500 well formed women, the point of the coccyx was higher than the top of the arch in 454, lower in 26, and level with it in 20.

lines higher than the pubis. He mentions two extreme cases; in one, the brim was almost perpendicular, and the organs of generation directed so backward as to reverse the mode of sexual intercourse; in another, the brim was more horizontal, the organs directed forward, and the anus forward.* A very slight attention to the greater or less curve of the lumbar vertebræ in different individuals, may satisfy any one that the obliquity of the pelvis must vary. Were the ligaments of the pelvis loosened, there would, from the obliquity, be a tendency in the sacrum to fall directly towards the pubis, the ossa innominata receding on each side. But the structure of the part adds greatly to the power of the ligaments; for it is to be observed, that in standing, and in various exertions of the body, the limbs react on the pelvis; and the heads of the thigh bones pressing on the two acetabula, force the ossa innominata more closely on each other at the symphysis, and more firmly on the sacrum behind. It is not possible, indeed, to separate the bones of the pelvis, unless the connecting ligaments be diseased, or external violence be applied, so as to act partially or unequally on the pelvis.

SECTION FOURTH.

By external violence, the symphysis has, in perfect health, been wrenched open, as was the case with Dr Greene;† or the sacro-iliac junction may be separated, as in the case of the young peasant, related by M. Louis.‡

Some have subdivided the condition now to be considered, into simple relaxation, and actual separation; and this last into congenital, from defect of bone, and accidental.

By some morbid affection of the symphysis, it may yield and become loosened during pregnancy, or may be separated during labour. Some have been inclined to consider this as a uniform operation of nature, intended to facilitate the birth of the child. Others, who cannot go this length, have nevertheless conjectured, that the ligaments do become somewhat slacker; and have grounded this opinion on the supposed fact of the pelvis of quadrupeds undergoing this relaxation. But the truth is, that this separation is not an advantage, but a serious evil; and in cases of deformed pelvis, where we would naturally look for its operation, did it really exist, we do not observe it to take place.§

* Archives, xiv. 259. See also a case by Moreau, (*Traité, &c.*, T. i. p. 76,) where the vulva was directed backward; the cavity was, from the flatness of the sacrum, only three and a-half inches in the antero-posterior diameter; the outlet in the same diameter only two and a-half, and otherwise contracted. The crotchet was used, but death took place.

† Phil. Trans. No. 481. ‡ Vide Mem. de l'Acad. de Chir. Tome iv. p. 63.

§ Desault and Beclard maintain that the articulations loosen, and Boyer says that in one case, he found the sacro-iliac connexion separated to the extent of half

Still there is no doubt that often the articulations do soften, and that the symphysis is more easily divided than formerly; but no separation takes place.

When a person stands, pressure is made upon the symphysis, and therefore, if it be tender, pain will then be felt. In walking, pressure is made on the two acetabula alternately, and the *ossa innominata* are acted on by the strong muscles which pass from them to the thighs, so that there is a tendency to make the one os pubis rise above the other; but this, in a sound state of the parts, is sufficiently resisted by the ligaments. In a diseased state, however, or in a case of separation of the bones, there is not the same obstacle to this motion: and hence, walking must give great pain, or be altogether impossible: even attempts to raise the one thigh above the other in bed, must give more or less pain, according to the sensibility or laxity of the symphysis. Standing has also an effect on the symphysis, as I have mentioned; but sometimes the person can, by fixing one os innominatum, with all the muscles connected with it, and throwing the chief weight of the body to that side, stand for a short time, easier on one leg than on both. This is the case when one os innominatum has been more acted on than the other, at the sacro-iliac junction. The person can stand easiest on the soundest side. The patient also, especially if the relaxation be accompanied with any degree of relaxation of uterine attachments, instinctively crosses her legs when standing, thereby obtaining relief.

From these observations, we may learn the mischievous consequences of a separation of the bones, and also the circumstances which will lead us to suspect that it has happened. If the bones be fully disjoined, then, by placing the finger on the inside of the symphysis, and the thumb on the outside, we can readily perceive a jarring, or motion, on raising the thigh.

an inch; Chaussier, that he found the symphysis of the pubis separated to a greater degree, in an easy labour. Gardien observes that it only happens where there is a predisposition, for the head is too soft to force asunder the bones of the pelvis. Paré and Louis, and more lately Piet, suppose that the separation proceeds from swelling of the cartilages and simple extension of the ligaments; an opinion which Chaussier says he has confirmed by dissection. Baudelocque, on the other hand, asserts that it proceeds from extension of the ligament alone, the cartilages remaining the same in thickness. Pinault thought that the process of relaxation might be promoted by the use of baths and blood-letting; but this is correctly denied by Gardien, although both imagine that the relaxation is beneficial. Yet the continental calculators admit, that, in order to gain two lines in the antero-posterior diameter, there must be a separation of the pubis to the extent of one inch. Perhaps to obviate an objection which might be brought against the benefit of this natural separation, Plessman says, that all the three articulations relax simultaneously, and thereby a greater advantage is gained, with less injury to the individual joinings. Maygrier is of the same opinion. Morcau says he has always found a thickening and suppleness of the cartilages and ligaments.

The rectus muscle is implanted, into the upper margin of the pubis, by a thin but strong tendon, whilst an aponeurosis, proper to the muscle, rises from the bone, and extends for an inch and a half up its inner surface. This is further lined by a sheet of fascia, continuous with the deep pelvic fascia, and fascia transversalis. Farther, there is sent off from each rectus, a band of tendinous substance, which goes to the tubercle of the opposite side, and is continuous with Poupart's ligament. These decussate each other, and at the point of decussation, they not only are united to each other, but to the termination of the linea alba, or union of the recti, so as to form a kind of arch, which binds down the muscle here, and also, when distended, will tend to tighten Poupart's ligament. Exterior to the implantation of the recti, the tendon of the internal oblique is inserted into the margin of the pubis, whilst a decussation of the pillars of the external oblique, of the opposite sides, is spread over the face of the symphysis. Owing partly to distention of the fibrous texture, and partly, perhaps, to increased action consequent to pregnancy, the parts about the pubis, and especially the bladder and urethra, and even the whole vulva, may become very sensible. This tender state may be communicated to the symphysis; or some excitation, less in degree than that I have mentioned, may exist, which, in particular cases, seems to extend to the articulation, producing either an increased effusion of interstitial fluid in the intermediate cartilage, and thus loosening the firm adhesion of the bones, or a tenderness and sensibility of the part, rendering motion painful. In either case exertion may produce a separation; and certainly, in some instances, has done so. The separation is always attended with inconvenience, and often with danger, especially when it occurs during parturition; for abscess may take place, and the patient sink under hectic fever; or inflammation may be communicated to the peritoneum, and the patient die in great pain.

When this evil occurs during gestation, it sometimes takes place gradually, in consequence of an increasing relaxation of the articulation, from slow but continued excitation. In other instances it happens suddenly after some exertion. It may occur so early as the second, or so late as the ninth month, and is discovered by the symptoms mentioned above; such as pain at the pubis, strangury, and the effects of motion. In some instances, considerable fever may take place, but in general the symptoms are not dangerous, and I do not know any case which has terminated fatally before delivery. A state of strict rest, the application of a broad firm bandage round the pelvis, to keep the bones steady, and the use of the lancet and antiphlogistic regimen, if there be fever or much pain, are the chief

points of practice. Nor must it be forgotten for a moment, that although by these means, the symptoms be removed, the patient is liable, during the remaining term of gestation, or at the time of delivery, to a renewal of the relaxation or separation, from causes which, in other circumstances, would have had no effect. So far as I have been able to learn, a woman who has had this separation in one pregnancy, is not, necessarily liable to a return of it in a subsequent pregnancy, but there are unfortunately, instances of a repetition.*

When it happens during parturition, it sometimes takes place in a pelvis apparently previously sound; but, in most instances, we have, during some period of gestation, symptoms of disease about the symphysis; and, so far from making labour easier, the woman often suffers more, when the symphysis is previously relaxed. The primary and immediate effects are the same as when the accident happens during pregnancy; but the subsequent symptoms are frequently much more severe and dangerous, the tendency to inflammation being strong. The pain may be either trifling or excruciating at the moment, according to the sensibility of the parts. But even in the mildest case, great circumspection is required, violent inflammation having come on so late as a fortnight after the accident. The means used in the former case are to be rigidly employed, and the patient should keep her thighs together, and lie chiefly on her back. If the separation have been slight, re-union may take place in a few weeks, sometimes in a month;† but if great injury have been sustained, it may be many months, perhaps years, before recovery be completed: and, in such cases, it is probable, that at last, an anchylosis is sometimes formed. The cold shower bath, which is more convenient in this case than the plunge, is of service in promoting the recovery; and the bandage should be kept carefully applied.

Either owing to the violence of the accident, or the peculiar state of the parts, it sometimes happens, that inflammation takes place to a very considerable degree in the symphysis; but it is to be remarked, that the symptoms are by no means uniformly proportioned in their severity to the degree of the separation. Inflammation is known by the accession of fever, with acute pain

* Dr Denman mentions an instance, where the patient, in three succeeding pregnancies, was progressively worse, and did not, until the lapse of eight years, recover by the third delivery. *Introd.* Vol. i. p. 18. See also a case by Moreau, where after two years, there was a considerable amendment, destroyed however by a subsequent pregnancy. *Traité*, T. 1. p. 51.

† In one case, where the symphysis was divided, the patient was able to walk on the 15th day.—In Dr Smollet's case, although in the 8th month of gestation, the bones were found to rise above each other, yet the woman recovered in two months after delivery. *Smellie*, Vol. ii. Col. i. n. i. c. 2.

about the lower part of the belly, greatly increased by motion, succeeding to the primary effects; or, sometimes from the first, the pain is very great, and not unfrequently it is accompanied by sympathetic derangement of the stomach and bowels, such as vomiting, nausea, looseness, &c. Presently matter forms, and a well marked hectic state takes place. The patient is to be treated, at first, by the usual remedies for abating inflammation, such as general and local evacuation of blood, fomentations and laxatives. When matter is formed, we must carefully examine where it is most exposed, and let it out by a small puncture.*

The inflammation may be communicated to the peritoneum, producing violent pain in the lower belly, tumefaction and fever, and almost uniformly proves fatal; though frequently the patient lives until abscess takes place in the cellular substance within the pelvis. If anything can save her, it must be the prompt use of blood-letting and blisters.

In almost every case of separation of the pubis considerable pain is felt in the loins, even although the junction at the sacrum be entire, and the ossa pubis be very little asunder. But when the separation is complete, and in any way extensive, then the articulation of the sacrum with the ossa innominata,† especially with one of them, is more injured,‡ and the person is

* As an illustration of this disease, I shall relate the outlines of a case mentioned by Louis, in the Memoirs of the Royal Academy of Surgery. A woman in the 2d month of her pregnancy, after pressing in a drawer with her foot, felt a considerable pain at the lower part of her belly, greatly increased by every change of posture; and along with this she complained of strangury. She was bled, and purged, and kept at rest, by which means, especially the last, she grew better. But in the two latter months of pregnancy, the symptoms were renewed, so that presently she could neither walk, nor even turn in bed, without great pain; but her greatest suffering was caused by raising the legs to pull on her stockings, as then the bones were more powerfully acted on. A slight degree of hectic fever now appeared. Her delivery was accomplished easily; but on the evening of the 3d day, when straining at stool, after having received a clyster, the pain, which had troubled her little since her labour, returned with as much severity as ever. On the 5th day the pulse was very weak and frequent, she sweated profusely, and had a wildness in her countenance, with symptoms of approaching delirium. In the afternoon the pulse became full and tense, with vertigo and throbbing of the arteries of the head. The pain at the symphysis was excruciating, and although she was fomented and bled seven times, she obtained no relief. On the 8th day the pain abated, but diffused itself over the rest of the pelvis, particularly affecting the left hip and the sacrum. On the 11th day she died. On opening the body, there was found a separation of the bones of the pubis, but the capsule was entire, and much distended. It contained about an ounce and a half of matter. Whether the timely evacuation of this matter might have saved the patient, is a question worth our consideration. I am disposed to answer it in the affirmative, from observing, that wherever the patient has recovered in such circumstances, it has uniformly happened, that a discharge of matter has taken place.

† Dr Lawrence showed Dr Smellie a pelvis, where all the bones were separated to the extent of an inch.

‡ In a case related by De la Malle, the pain did not appear till the 14th day after delivery, and was felt first in the groin. The patient was unable to move

lame in one or both sides, and has acute pain about the posterior ridge of the ilium,* and in the course of the psoas and glutei muscles. The mischief may also commence in the sacro-iliac articulation, and the symphysis may be little affected. The general principles of treatment are the same as in the former case. When suppuration takes place about the sacro-iliac articulation, the danger is greatly increased.

A slight straining of the sacro-sciatic ligament is sometimes combined with a similar condition, only to a greater degree, of the muscles, the levator ani, for instance, or the pyriformis, or both. This is productive of pain in walking, shooting as it were directly back along the side of the pelvis at the outlet, or near the perineum and inside of the thigh, or, in the case of the pyriformis, it goes more round the trochanter. Rest and the use of a roller are the best remedies.

In all cases of separation, when the patient has recovered so far as to be able to move, the use of the cold bath accelerates the cure; the general health is to be carefully attended to, and any urgent symptom intervening, is to be obviated by suitable remedies.

CHAP. III.

Of the Soft Parts which line the Pelvis.

SECTION FIRST.

VARIOUS strong, and large, muscles, pass from the spine and pelvis to the thigh bones, and act as powerful bands, strengthening, in a very great degree, the articulations of the pelvis. These it is not requisite to describe, but it will be useful, briefly to notice the soft parts which line the pelvis, and which may be acted on by the child's head during labour.

1st. When we remove the peritoneum and fascia from the cavity of the pelvis, we first of all are led to observe, that all the under portion of the os innominatum, and part of the sacrum,

the leg, and had acute fever, which proved fatal. The sacrum was found separated three lines from the ilium.

In the operation of dividing the pubis in a parturient woman, it was found that one side yielded more than the other, and consequently that side would suffer most at the sacrum. Baudelocque *L'Art, &c.* 2063.

* Dr Smellie relates an instance, where, during labour, the woman felt violent pain at the right sacro-iliac symphysis. On the 5th day this pain was extremely severe, and attended with acute fever; but the symptoms were abated by blood-letting, and a clyster, and fomentations, which produced a copious perspiration. She was not able to walk for five or six months without crutches, but was restored to the use of the limb, by the means of the cold bath. *Col. l. n. i. c. l.*

is stretched broadly between the ischium and coccyx, covering and supporting there, the levator and sides of the rectum, and connected with the sacro-sciatic ligaments. Thus, the outlet of the pelvis is everywhere shut up, and the parts within, supported by muscular fibres and fascia, and the strong and broad sacro-sciatic ligaments, excepting at the orifices of the canals. The rectum is, indeed, shut up by its sphincter, whilst the oblique direction of the vagina, and its connexions render a sphincter less necessary, although it be not altogether wanting. The importance of this inquiry will be understood, when we attend to the production of prolapsus uteri. In pregnancy, some of these parts must be more or less stretched and relaxed; and in labour both the muscles and fascia may be greatly stretched. But as the anus is brought forward during the passage of the child's head, the fibres of the levator passing along the vagina are not so much distended as they would otherwise be; still there is a risk of a feeling of want of support, or of bearing down, being experienced after parturition. When the head has entered the pelvis in labour, we sometimes feel the fascia behind, stretched like a ligament across the front of the rectum, and extending to the sides of the pelvis, and sometimes fæces collecting in the rectum above this vagino-rectal reflection, may produce a kind of sac. If carried a little more forward, by being stretched, it may be pressed down as well as backward, which should be its only direction, and then it not only affords some resistance to the forehead, and we know how any slight resistance sometimes retards labour, or causes an unfavourable position, but also is greatly extended, and contributes afterwards to the production of prolapsus.

2d. External to the levator, on each side, we have, arising from the membrane that fills up the thyroid hole, and also from the margins of the hole, and the inner surface of the ischium, the obturator internus, which forms at that part a soft cushion of flesh, the fibres running backwards and downwards, and terminating in a tendon, which passes over the sacro-sciatic notch, running on it as on a pulley, in order to reach the root of the trochanter.

3d. We find the pyriformis, arising from the under part of the hollow of the sacrum, and also passing out at the notch, to be inserted with the obturator; and in laborious parturition, the injury or pressure which these muscles sustain, is one cause of the uneasiness felt in moving the thighs.

4th. From the spine of the ischium, originates the coccygeus, which runs backward to be inserted into the side of the coccyx, in order to move and support it. This gradually becomes broader, as it recedes from its origin, and is spread on the inside

of the sacro-sciatic ligament. Thus, the cavity of the pelvis is lined with muscular substance, whose fibres are disposed in a very regular order, and which are exhibited when the peritoneum and its cellular substance are removed.

5th. When we look at the upper part of the os innominatum, we find all the hollow of the ilium, occupied with the iliacus internus, the tendon of which passes over the fore part of the pelvis, to reach the trochanter of the thigh. Part of this muscle is covered by the psoas, which arises from the lumbar vertebræ, and passes down, by the side of the brim of the pelvis, to go out with the former muscle: though, just, upon the brim, it does not encroach on it, so as perceptibly to lessen the cavity. These muscles afford a soft support to the intestines and gravid uterus.

SECTION SECOND.

Running parallel with the inner margin of the psoas muscle, and upon the brim of the pelvis, along the posterior half of the linea ilio-pectinea, we have the iliac artery and vein; the artery lying, for the upper half of its course, above the vein, and for the under half, on the outside of it; when filled, they, especially the vein, encroach a little on the brim. About three inches from the symphysis, they quit the brim, running rather more outward, over the part which forms the roof of the acetabulum, and pass out with the psoas muscle. The great lash of arteries and veins connected with the pelvis, and inferior extremities, is placed on the sacro-iliac junction. The iliac vessels are so situated, that they escape pressure during labour, when the head enters the cavity of the pelvis; but the hypogastric vessels may be more or less compressed, according to the size or position of the head, yet the circulation is never interrupted.

SECTION THIRD.

The nerves are of much importance. First, we attend to the last dorsal nerve, which, on tearing off the peritoneum, is seen running along the lower margin of the last rib. It divides into two or, often, three branches, which go to the abdominal muscles, and one turns out on the crest of the ilium, to the fascia and skin, covering the gluteus, tensor, &c. The lower intercostal nerve also sends branches to the upper part of the abdominal parietes. Second. The first lumbar, subdivides into two; one, called the ilio-lumbar, gets between the internal oblique and transversalis, pretty far back, runs forward about half an inch above the crest, and is lost in the abdominal muscles; another, the ilio-pubal, also goes forward to the back of the crest, but runs not above it, but along its inside. It is hid by the iliac-

fascia till it reach the middle of the crest, when it, presently, gets between the internal oblique and transversalis muscles, which it supplies; and then its continuation pierces the former, runs on between it and the tendon of the external oblique, reaches the upper margin of the round ligament, and issues with it at the inferior aperture of the inguinal canal, to be distributed to the pubis and labium. Third. The second lumbar gives off the external cutaneous nerve which runs down on the iliacus muscle, and is seen through the fascia, tending to the space between the superior and inferior spinous processes of the ilium, where it issues to supply the side of the thigh all the way to the knee. Fourth. The same lumbar nerve also gives off the genito-crural, which runs more inward than the external cutaneous. It divides soon into two branches, one of which enters the superior aperture of the canal with the round ligament, and goes with it to the labium. The other passes out under Poupart's ligament to the groin. Fifth. The continuation of the second, joins the third and fourth lumbar nerve, to form the anterior crural, which runs between the psoas and iliacus muscles, and issues from under Poupart's ligament, to be distributed to the skin and muscles of the thigh, and even the leg. Sixth. From the third and fourth lumbar, comes off the obturator nerve, which runs along the side of the cavity of the pelvis, about three quarters of an inch below the brim, to the foramen thyroideum, where it passes out, deeply covered by the muscles of the thigh. Seventh. The three uppermost sacral nerves, with the fifth and part of the fourth lumbar, join to form the sacral plexus, which is nearly an inch broad, and about an inch and a quarter long, resting chiefly on the pyriform muscle. The sacral nerves do not, however, arise from the region of the sacrum, but come off from the lumbar portion of the spinal marrow, a fact to be remembered in the treatment of some diseases. Now, this plexus, besides giving off the gluteal nerves, forms the great sacro-sciatic nerve, and also gives off the pudic, which follows the course of the artery, and on re-entering the pelvis, gives off branches to the rectum, &c. &c., then proceeds, as will be afterwards described. Eighth. The third sacral nerve not only joins the plexus, but sends a branch to unite with the fourth, and form the hæmorrhoidal nerves, which, with a hæmorrhoidal branch from the pudic, go to the anus, and cellular substance round it. Ninth. The fifth sacral nerve goes to the coccygeus, &c. Lastly. The lumbar ganglia of the sympathetic nerve, lie on the vertebræ at the inner margin of the psoas muscle, and communicate with the spinal nerves, each, by the reception of a pretty large branch. The sympathetic nerve passes down into the pelvis, deep, in the hollow between the psoas muscle and the promontory of the sacrum, so that it is not in-

jured in labour. The sacral ganglia lie on, or a little to the outside of, the foramina, by the side of the rectum.

The connexion of the sympathetic, with the spinal nerves, is of consequence in explaining many diseases. Affections of the lower sacral nerves have much influence in producing distressing sensations, such as that of bearing down, even although there be little relaxation; and, doubtless, such affections may, by debilitating the muscles, prove an actual cause of prolapsus uteri, or relaxation of the vagina. Neuralgia of the pudic nerve, or excitation and sensibility of the parts supplied by it, will afterwards be noticed. The last dorsal nerve and its branches, as well as those from the upper lumbar, are often the seat of pain in the course of pregnancy, and, I doubt not, in several puerperal diseases. Different nerves are acted on in different stages of labour. In the commencement, the anterior crural nerve, or the nerves forming it, may be irritated or excited, producing pain in the fore part of the thigh; next, the obturator, producing pain in the inside; then, the great plexus, causing pain in the back of the thigh or cramps of the legs. In severe labour the nerves, especially the sciatic, may suffer so much, as to cause, afterwards, much pain, or lameness, or even palsy. Friction, the warm bath, and, if the tenderness be great externally, cupping are proper at first. Afterwards, repeated small blisters, a well applied roller, and, ultimately, cold sea water may be used in perfecting the cure.

SECTION FOURTH.

The lymphatics in the upper part of the pelvis follow the course of the iliac vessels, forming a large and very beautiful plexus, from Poupert's ligament to the lumbar vertebræ. These are out of the way of pressure during labour. Numerous glands accompany them, which are sometimes enlarged by disease, but they do not interfere with parturition. The lymphatics of the cavity of the pelvis have glands in the course of the vagina and rectum; and these, if enlarged, may impede delivery.

CHAP. IV.

Of the Dimensions of the Pelvis.

SECTION FIRST.

THE pelvis has been divided into the great and the little, the first being formed by the expansion of the ilia, the second, comprehending all that part which is called the cavity of the pelvis, and which lies below the linea ilio-pectinea. The cavity

of the pelvis is the part of the chief importance in Midwifery, and consists of the brim, or entrance, the cavity itself, and the outlet. The brim of the pelvis, owing to the projection of the top of the sacrum behind, and the flatness of the ossa pubis before, has no regular shape, but approaches nearer the oval than any other. The short diameter of this, extends from the symphysis of the pubis to the top of the sacrum. This has been called the conjugate, sacro-pubic, or antero-posterior diameter, and measures four inches. The lateral diameter measures from five inches and a quarter, to five and a half, or sometimes to six; and the diagonal diameter, or a line drawn from the sacro-iliac symphysis to the opposite acetabulum, measures from five inches, to five and a half; but, as the *psœ* muscles, and iliac vessels, overhang the brim a very little at the side, the diagonal diameter, in the recent subject, often appears to be the longest. In a well-formed dry pelvis before me, the conjugate diameter is four and a half, the transverse five and a half, the oblique five inches. The diagonal, or oblique diameter, is called right or left, as drawn from the right or left sacro-iliac articulation. From the sacro-iliac symphysis to the crest of the pubis, on the same side, is four inches and a half. From the top of the sacrum, to that part of the brim which is directly above the foramen thyroideum, is three inches and a half. The line, if drawn to the acetabulum, in place of the foramen, is a quarter of an inch shorter; a line drawn across the fore part of the brim, from one acetabulum to another, is nearly four inches and a quarter.

The outlet of the pelvis, is not so regular as the brim, in its shape, even when the soft parts remain; but it is then somewhat oval. The long diameter extends from the symphysis pubis to the coccyx, and measures, when that bone is pushed back, as in labour, five inches, but an inch less when it is not. The transverse diameter, from the end of one tuberosity of the ischium to the other, measures four inches. But a little higher, or farther back, near the spine, above the insertion of the sacro-sciatic ligament, it measures from half an inch, to seven-eighths more. Farther forward, where the rami begin, the distance is only two inches and three quarters.* The outlet of the pelvis differs materially from the brim, in this respect, that its margins are not all on the same level; an oval wire will represent the brim, but, if applied to the outlet, it must be curved. The outlet, from the symphysis pubis to the tuberosity of the ischium, is semi-oval; but behind, it becomes more irregular, and bends upwards and backwards. The arch of the pelvis, or the fore part of the out-

* The pelvis of the Negress is smaller in all its dimensions. That of an Egyptian mummy, dissected by Dr Granville, measured five and a half inches, in the lateral, and four and a half in the antero-posterior diameter.

let, is four inches broad at its base; and a perpendicular line, dropped from its centre to the base is fully two inches long. The top of the arch will permit a circular body to come in contact with it, whose diameter is an inch and a quarter. The length of each limb of the arch is three inches and a quarter. The outlet is arched to a height of about three inches, and the pillars of this arch recede gradually toward the tuberosities. The latero-posterior boundaries formed by the sacro-sciatic ligament, represent on each side, an oblique line running inward and backward, whilst between these, the coccyx forms a peak directed forward. This irregular aperture is longer than it is broad, but is by no means oval. When the soft parts are added, and we connect it with the cavity of the pelvis, we then say, that in labour it forms an ovoid opening of an ovoid tube, but the shape of the aperture will vary according to the stage of propulsion.

SECTION SECOND.

The cavity of the pelvis is the next part to be attended to; and the most important observation to be made, is, that it is of unequal depth. At the back part, it measures from five to six inches, according as the coccyx is more or less extended; at the side, a line drawn from the brim to the tuberosity of the ischium, measures three inches and three-fourths. At the fore part, the depth of the symphysis pubis, from its upper margin to the under margin of the pubic ligament, is two inches. When the surface of the child's head, then, is parallel to the lower edge of the symphysis, the head is still far from having entered fully into the cavity of the pelvis; it cannot be considered in the cavity, until it be lodged fairly in the hollow of the sacrum.

It may be proper to notice the dimensions of different parts of the cavity itself. An oblique line, drawn from the sacro-iliac junction, on one side, down to the opposite tuberosity, measures six inches; and the long axis of the child's head, before it takes the turn forwards, is nearly in this line. From the ramus of the ischium, to the opposite sacro-iliac junction, is five inches. From the posterior margin of the inclined plane of the ischium, or anterior margin of the sacro-sciatic notch, to the opposite side, is six inches, or six and a quarter. The diameter of the anterior margin, or edge of the thyroid hole, at the same level, is four and three-quarters. The plane, therefore, at the lower part, is two inches nearer the opposite side before, than it is behind, or at its posterior margin. From the top of the arch of the pubis, or orifice of the urethra, to the second bone of the sacrum, is from four inches and five-eighths, to five inches and three-eighths, according to the curvature of that bone. A line drawn from the top

of the arch to the top of the sacrum, is about a quarter of an inch more than the antero-posterior diameter of the brim. From the top of the arch to the spine of the ischium, is three inches and a half. From the tuberosity of the ischium to the centre of the sacrum, is four inches. From the back part of the tuberosity to the sacro-iliac junction on the same side, is three inches and a half. From the extremity of the tuberosity to the spine of the ischium, is two inches. From the spine to the sacrum is two inches, and from the top of the arch of the pubis to the plane of the ischium, is two inches. The breadth of the plane itself is two inches, so that a line traversing these different parts, from the symphysis to the sacrum, would measure, including its slight irregularities, six inches. From the tuberosity to the inferior part of the thyroid hole, is an inch and a half. The long diameter of the sacro-sciatic notch, is two inches and three-eighths; the short, one inch and three-quarters. The cavity from the brim to the root of the spinous process of the ischium, although not quite circular, is much more nearly so than at first would appear. But when we come down to the point of the spine, the lateral diameter is contracted, and still more in relation to the passage of the head, which can project from under the arch.

In the living subject, we can readily recognise these different parts of the pelvis; and by the relation which one bears to the rest, we can ascertain, by careful examination with the finger, not only the relative position of the head with regard to any one spot, and consequently its precise situation and progress in the pelvis, but also the shape and dimensions of the pelvis itself.

SECTION THIRD.

The shape, extent, and dimensions of the great pelvis, or that part which is above the brim, must be mentioned likewise, especially as these are of importance in estimating the deformity of a pelvis. From the symphysis pubis to the commencement of the iliac wing, at the inferior spinous process, is nearly four inches. From the inferior spinous process to the posterior ridge of the ilium, a line subtending the hollow of the costa, measures five inches. The distance from the superior spine is the same. From the top of the crest of the ilium to the brim of the pelvis, a direct line, measures three inches and a half. The distance betwixt the two superior anterior spinous processes of the ilium, is fully ten inches. A line drawn from the top of the crest of the ilium to the opposite side, measures rather more than eleven inches, and touches, in its course, the intervertebral substance betwixt the fourth and fifth lumbar vertebræ. A line drawn from the centre of the third lumbar vertebra, counting from the sacrum, to the upper spine of the ilium, measures six inches and

three-quarters. A line drawn from the same vertebra to the top of the symphysis, measures seven inches and three-quarters, and when the subject is erect, this line is exactly perpendicular.

To conclude my observations on the dimensions of the pelvis, I remark, that the shape is different in the child and the adult. The dimensions of the brim are reversed in these two states; the long diameter of the foetal pelvis, extending from the pubis to the sacrum. By slow degrees, the shape changes. These changes, however, must be affected by the general growth of the body, and the term of puberty. At nine years, the conjugate diameter is two inches and seven-eighths, the lateral an eighth less; at ten years of age, the antero-posterior diameter is three inches and a quarter, the lateral is an eighth more; at thirteen, the former is still the same, but the latter has increased to three inches and three quarters; at fourteen, the former is three and three quarters, the latter four inches. Just before puberty, perhaps so late as eighteen, the antero-posterior diameter is three inches and seven-eighths, the lateral four and a half. These measurements I give, however, from individual pelvises. If a girl should very early become a mother, the shape of the pelvis may occasion a painful and tedious labour.

SECTION FOURTH.

Finally, we are to remember, that the brim, and the outlet of the pelvis, are not parallel to each other, but placed at a considerable angle. The axis of the brim will be represented by a line drawn from near the umbilicus, downwards and backwards to the coccyx; that of the outlet, by a line drawn from the orifice of the vagina to the first bone of the sacrum. The precise points, however, which these lines will touch, must vary a little, according to the conformation and obliquity of the pelvis, and the prominence of the abdomen. Each different part of the cavity of the pelvis has its own proper axis, and the line of motion of the child's head must always correspond to the axis of that part of the pelvis in which it is placed. A pretty good idea of this subject, with regard to labour, may be obtained, by placing a male catheter, of the usual curvature, in the axis of the brim, and making its extremity pass out at the axis of the outlet.

CHAP. V.

Of the Head of the Child, and its progress through the Pelvis in Labour.

SECTION FIRST.

THE head of the child is made up of many different bones, and those of the cranium are very loosely connected together by membrane. The frontal, temporal, parietal, and occipital bones, compose the bulging part of the cranium, and their particular shape regulates the direction of the sutures. The occipital bone is connected to the parietal bones, by the lambdoidal suture, which is readily discovered through the integuments, by its angular direction. The parietal bones are joined to the frontal bone, by the coronal suture, which is distinguished by its running directly across the head; and they are connected to each other by the sagittal suture, which runs in a direct line from the occipital to the frontal bone: as the os frontis, in the fœtus, consists of two pieces, it can sometimes be easily traced with the finger, even to the nose. Let the sagittal suture be divided into three equal parts. From the middle one, which I call the central portion, a line or band may be drawn to the lateral part of the lower jaw, and which will traverse the parietal protuberance and the external ear. The upper and anterior angles of the parietal bones, and the corresponding corners of the two pieces of the frontal bone, are rounded off, so as to leave a quadrangular vacancy, which is filled up with tough membrane. This is called the great, or anterior fontanel, to distinguish it from another smaller vacancy at the posterior extremity of the sagittal suture, which is called the small fontanel. The first is known by its four corners, and by its extending forward a little betwixt the frontal bones; and whenever it is felt, in an examination, we may expect a tedious labour; for the head does not lie in the most favourable position. The little fontanel cannot, during labour, be perfectly traced, as it is lost in the angular lines of the lambdoidal suture, which, however, ought to be readily discovered. The head is of an oblong shape, and its anterior extremity at the temples is narrower than the posterior, which bulges out at the sides, by a rising of the parietal bones, called the parietal protuberances: from these the bones slope backwards like an obtuse angle, to the upper part of the occiput, which is a little flattened, and is called the vertex. The general shape of the back part is hemispherical. From these protuberances, the head

also slopes downwards and forwards to the zygomatic process of the temporal bone, becoming, at the same time, gradually narrower.

SECTION SECOND.

The longest diameter of the head is from the vertex to the chin, and this is near five inches. From the root of the nose to the vertex, and from the chin to the central portion of the sagittal suture, measures four inches. From the one parietal protuberance to the other, a transverse line measures from three inches and a quarter, to three inches and a half. From the nape of the neck to the crown of the head, is three inches and a half. From the one temple to the other, is two inches and a half. From the occiput to the chin, along the base of the cranium, is four inches and a half. From one mastoid process to the other, along the base, is about two inches; from cheek to cheek is three inches, or from that to three and a half, or in large children even four inches. The most unyielding, if not also the longest part, is the base of the cranium, taken from the root of one zygomatic process, to that of the other. This is often nearly four inches. Although these may be the average dimensions of the head, yet owing to the nature of the sutures, they may be diminished, and the shape of the head altered. The one bone may be pushed a little way under the other, and, by pressure, the length of the head may be considerably increased, while its breadth is diminished; but these two alterations by no means correspond, in a regular degree to each other.

The size of the male head is generally greater than that of the female. Dr Joseph Clarke,* an excellent practitioner, upon whose accuracy I am disposed fully to rely, says that it is a twenty-eighth or thirtieth part larger. It is a well established fact, that owing to the greater size of male children, women who have the pelvis in any measure contracted, have often a more tedious labour, when they bear sons than daughters;† and many who have the pelvis well formed, suffer from the effects on the soft parts. Dr Clarke supposes, that one half more males than females are born dead, owing to tedious labour, or increased pressure on the brain; and owing to these causes, a greater number of males than females die, soon after birth. In twin cases, again, as the children are smaller, he calculates, that only one-fifth more males than females are stillborn. Dr Bland‡ says, that out of eighty-four stillborn children, forty-nine were males,

* Phil. Trans. Vol. lxxvi.

† The cranium of the female is more rounded or projecting at the sides, and behind, than that of the male, which is flatter there.

‡ Phil. Trans. Vol. lxxi.

and thirty-five, females. In Glasgow, two years ago, the proportion was as 404 to 316.

SECTION THIRD.

By comparing the size of the head with the capacity of the pelvis, it is evident that the one can easily pass through the other. But I apprehend that the comparison is not always correctly made, for the child does not pass with the long diameter of its cranium parallel to a line drawn in the direction of the long diameter of the brim of the pelvis; but it descends obliquely, the chin being directed toward the sternum, so that less room is required. The length of a line drawn from the nape of the neck, to the crown of the head, is three inches and a half; a line intersecting this, drawn from the one parietal protuberance to the other, measures no more. We have, therefore, when the mere cranial part of the head descends, in natural labour, a circular body going through the brim, whose diameter is not above three inches and a half; and thus, no obstacle or difficulty can, at this stage, arise from the size of the pelvis. There is so much space, superabounding, betwixt the pubis and sacrum, as to prevent all risk of injury from pressure on the bladder, urethra, or rectum; and as the long diameter of the head is descending obliquely, the sides of the brim of the pelvis are not pressed on. This is so certainly the case, that the head may, and actually often does, enter so far, without any great additional pain or difficulty, although the capacity of the pelvis be a little contracted. The largest and most unyielding part of the head, we have seen to be near the base, across from the zygomatic processes, and here it stops, if there be any resistance from a contracted pelvis. The upper part of the ear, is below the level of the brim, but the resisting bones are above. In natural labour, when the shoulders, which measure five inches across, come to pass, then the brim is completely occupied. If, however, any contraction should take place in the lateral diameter, the child would still pass, the one shoulder descending obliquely before the other.

It is of great consequence to understand the passage of the child's head in natural labour; for upon this depends our knowledge of the treatment of difficult labour. The head naturally is placed, with the occiput directed towards the acetabulum, usually the left. The forehead, owing chiefly to the action of the promontory of the sacrum, is turned in the same degree, towards the opposite sacro-iliac junction. As its short or vertical diameter, or axis, corresponds to that of the brim, the head must be oblique with regard to the horizon, and some part of the parietal bone, is felt nearly in the axis of the brim of the pelvis. There is a flat or slightly shelving portion of the bone at

the under part (in the uterine position), between the squamous and lambdoidal suture. This is generally the presenting part, but sometimes the parietal protuberance presents. The sagittal suture, if felt, is directed backward, and the little fontanel is toward the left acetabulum. When labour advances, and the head comes to descend, the chin is laid on the throat or top of the sternum, and either the shelving portion of the parietal bone, or the parietal protuberance, is felt by the finger, nearly in the axis of the brim of the pelvis. When, by the contraction of the uterus, the head is forced a little lower, its apex comes to touch the plane of the ischium. Upon this the posterior sloping part of the parietal bone slides downwards and forwards, as on an inclined plane, the head being turned gradually, so that, in a little time, the face is thrown toward the hollow of the sacrum, and either the vertex, or parietal bone near it, present at the orifice of the vagina. The natural direction of such a body as the head of the child, in going down the inclined plane, would be forward upon the foramen thyroideum, and then forward and downward by the inside of the ramus of the ischium. At the same time the other end of the ellipsis formed by the head would be acted on by that substance, which fills the sacro-sciatic space. The direction of this is obliquely backward toward the side, and then toward the hollow of the sacrum. The side of the forehead would thus be directed as on a plane, downward and backward toward the third bone of the sacrum. It then meets the ligament at the back part and slopes down, and more completely back on it, so that either the front, or side, of the forehead rests on the coccyx. The vertex, at the same time, is guided forward by the oblique position of the ramus of the ischium, but it does not always present exactly at the arch of the pubis, for the parietal protuberance may take the lead. In the end, the surface of the distended coccyx and soft parts connected with it and the perineum, having the head resting on them as an inclined plane, direct it forward as in the birth.

The complete turn of the head is not accomplished till it have got entirely into the cavity of the pelvis. The shape of the head and its difference in obliquity, in different presentations, will explain why, in this the natural position, the head both turns more readily, and descends faster than in malposition.

As the basin is shallow at the pubis, and the head enters obliquely, it is felt near the orifice of the vagina, and even touching the labia and perineum, before the turn be completed, and when the ear is still at the pubis. The whole of the cavity of the pelvis is so constructed, as to contribute to this turn, which is further assisted by the curve of the vagina, and the action of the lower part of the uterus, on the head of the child. The

head, whilst its long diameter lies diagonally, continues to descend in the axis of the brim of the pelvis; but when it is turned, it passes in the axis of the outlet. When the turn is making, the direction of the motion is in some intermediate point; and this fact should, in operating with instruments, be studied and remembered. When the pelvis is narrow above, and the sacrum projects forward, the hemispherical part of the head is long of reaching the inclined plane of the ischium; and when the head is lengthened out, so as to come in contact with it, we find, that although the projection of the sacrum directs the vertex sometimes prematurely a little forward, yet, the tendency to turn fully, is resisted by the situation of the bones above; a great part of the cranium, and all the face, being above the brim, and, perhaps, in part locked in the pelvis. By a continuation of the force, the shape of the head may be altered: even the vertex may be turned a little to one side, its apex not corresponding exactly to the extremity of the long diameter of the head; the integuments may be tumefied, and a bloody serum be effused between them, so as greatly to disfigure the presentation. As, therefore, in tedious labour, occasioned by a deformed pelvis, the skull may be much lengthened and mis-shapen, we are not to judge of the situation of the head, by the position of the apex of the tumour which it forms; but we must feel for the ear, which bears a steady relation to that part of the head which presents the obstacle.—The back and upper part of the head are compressible, but the base of the skull and the face are firm. A line drawn from the neck to the forehead, passing over the ear is to be considered as the boundary betwixt these parts of opposite character; and therefore we attend to the relative situation of the ear, as it ascertains both the position of the head, and its advancement through the brim.

CHAP. VI.

Of Diminished Capacity, and Deformity of the Pelvis.

SECTION FIRST.

THE pelvis may have its capacity reduced below the natural standard, in different ways. It may be altogether upon a small scale, the different bones, being well formed, and correct in their relative proportions and distances. This may occasion painful or even impracticable labour.* This may depend on the growth or

* M. Otto informed M. Nægelé, that in one winter, out of 45 female pelvises he

expansion ceasing, although the dimensions change, to the adult proportion. Many however think it a consequence of disease. Nægelé admits two species, in one, the bones in all respects, except size, are those of adults, in another, in point of thickness, strength, size, &c., they resemble the bones of children, as, for instance, in dwarfs. He says, that without disease all the diameters can be more than an inch less than usual. Sometimes the bones are all of their proper size, but the sacrum is perfectly straight, by which, although both the brim and outlet are sufficiently large, yet the cavity of the pelvis is lessened; or when all the other parts are natural, the spines of the ischium may be exuberant, encroaching on the lower part of the pelvis.

The side of the sacrum may be originally wanting, and the ilium united to that bone, near the median line, and thus contraction produced. The brim is turned awry, or to one side: this has been described by Nægelé, under the name of "*pelvis oblique ovata*." I had an opportunity of examining his specimens at Heidelberg.* The character is, that the pubis is directed more or less to one side, and the oblique diameter, especially on the side opposite the deficiency, is diminished. In Van der Kolk's specimen at Utrecht, the ankylosis is on the left, and the oblique diameter, on that side, is four and a-half, whilst on the right, it is only three inches. Nægelé says it has never been detected during life, and that all those who suffered in childbirth, were stout, and otherwise well formed. But some marks may warrant suspicion. If a line be dropped from the last lumbar vertebra, and from the pubis, and these do not correspond, but the one is more to a side than the other, the pelvis is oblique. But it is to be remembered, that the pelvis may be oblique, without this congenital defect. The tuberosity of the ischium is carried farther back on the ankylosed side, and the posterior spine of the ilium is lower than on the other side. If a greater distance intervene between the posterior spine of the left ilium, and the tuberosity of the right ischium, the defect is on the left side, and *vice versa*. This conformation not only diminishes the capacity of the pelvic cavity, but impedes the turns of the head.

Congenital shallowness of the acetabula, allows the head of the femora to go out, widens much the arch of the pubis, and flattens the front, by the continued action of the obturators, and other muscles.†

had collected, not one was perfectly formed, and 25 deserved to be placed in the museum.

* See an account of this deformity by Dr Rigby, in Lond. Med. and Surg. Journ. Vol. vii. p. 365; and of Nægelé's work in British and Foreign Med. Rev. Vol. xi., p. 167. It is now translated into French by M. Danyau.

† There is a fine preparation of this kind in Dr Hunter's museum; Dr Van der

Another cause of diminished capacity, is the disease called rickets, in which the bones, in infancy, are defective in their strength, the proportion of earthy matter entering into their composition being too small. In this disease, the long bones bend, and their extremities swell out; the pelvis becomes deformed, the back part approaching nearer to the front, and the relative distance of the parts being lost. The distortion may exist in various degrees. Sometimes the promontory of the sacrum only projects forward a very little more than usual, or is directed more to one side than the other;* and the curvature of the bone may be either increased or diminished. If the sacrum project only a little, without any other change, the capacity of the brim alone is diminished; but if the curvature be at the same time smaller than usual, the cavity of the pelvis is lessened; but unless the ischia approach nearer together, or the lower part of the sacrum be bent forward, the outlet is unaffected; and in most cases of moderate deformity, the outlet is not materially changed. In greater degrees of the disease, the anterior part of the brim becomes more flattened, the linea ilio-pectinea forming a small segment of a pretty large circle. The sacrum forms part of a concentric circle behind; and thus the brim of the pelvis, instead of being somewhat oval, is rendered semicircular or crescentic, and its short diameter is sometimes reduced under two inches. The promontory of the sacrum may either correspond to the symphysis pubis, or may be directed to† one side,

Kolk, at Utrecht, also showed me one or two good specimens. There is another in the museum at Bonn.

* It is not necessary to give examples of every degree of deformity; but it may be useful to select some specimens of the different kinds. The slighter degrees do not require to be particularized. I shall, first of all, give the dimensions of a dried pelvis, so contracted, as to prevent a child at the full time from passing without assistance. From the pubis to the sacrum, it measures three inches; from the acetabulum to the sacrum on the right side, two and a half inches; on the left, two inches and seven-eighths; from the brim above the foramen thyroideum, to the opposite sacro-iliac junction, five inches; from the same part of the brim on one side, to the same on the opposite, three inches and a half; transverse diameter, four inches and seven-eighths; from the arch of the pubis to the hollow of the sacrum, five inches; from one tuberosity of the ischium to the other, four inches and a half; from one spine to another, four inches and a half; the arch of the pubis is natural. The distance from the face of the third lumbar vertebra to the spine of the ilium on both sides, is six inches. These dimensions may be compared with those of the well-formed pelvis. The symphysis pubis has the cartilage in the inside, projecting like a spine, which added to the smallness of the pelvis when recent. The linea ilio-pectinea also, on the left side, is for the length of two inches as sharp as a knife; and from these two causes, the cervix uteri and bladder were torn in labour.

† In a pelvis of this kind, which I shall describe, the vertebræ and sacrum lean much to the left side. The line from the promontory of the sacrum to the part of the pubis opposite, is barely an inch and a half; but an oblique line drawn to the symphysis, which is to the right of the promontory, is near two inches. From the promontory, to the side of the brim, at the ilium, on the left side, is two inches

rendering the shape of the brim more irregular, and the dimensions smaller on one side than the other. In some instances, the shape of the brim is like an equilateral triangle; and although the diameter from the pubis to the sacrum be not diminished, yet the acetabula being nearer the sacrum, the passage of the head is obstructed. (Compare this with malacosteon.)

There may be great general deformity with an ample pelvis. There is a skeleton at Rome, (Sped. Sp. San.) in which there is not a handbreadth between the sternum and pubis, but the pelvis is large. The ilia are partly absorbed.

SECTION SECOND.

The pelvis is likewise sometimes distorted by malacosteon, or softening of the bones of the adult. This is supposed to be most frequent in manufacturing towns, and yet, though rickets be common in Glasgow, malacosteon is exceedingly rare. This is a disease which sometimes begins soon after delivery, and very frequently during pregnancy. It is, indeed, comparatively rare in those who do not bear children, and it is always increased in its progress by gestation. It must be carefully attended to, for, to a negligent practitioner, it has at first very much the appearance of chronic rheumatism. It generally begins with pains about the back, and region of the pelvis. These pains are almost constant, or have little remission. They are attended with increasing lameness, loss of flesh, weakness, and fever; but the distinguishing mark is diminution of stature, the person gradually becoming decrepit. In the well known case of Mad. Supiot, where the disease began after a fall, the patient, at last, was only twenty-three inches high. Her skeleton is still preserved in the museum of L'école de Médecine. In the museum of Strasburg, there is a skeleton just 28 inches high. The fingers touch the ground. In malacosteon, the pelvis suffers, but the distortion is generally different from that produced by rickets; for whilst the top of the sacrum sometimes sinks lower in the pelvis, and always is pressed forward,* the acetabula are pushed backwards and in-

and three-tenths; on the right side, three inches and four-tenths. On the left side, from the lateral part of the sacrum to the acetabulum, is nine-tenths of an inch; on the right side, fully two inches. Now, in this pelvis, when the soft parts are added, we shall find an oval body may pass on the right side, whose long diameter is three inches and a half, and whose short diameter is barely two inches.

In a pelvis with a semicircular brim, whose short diameter, at the middle and each side, is one inch and a half, an oval body could pass, when the soft parts are added, whose long diameter is about two inches and a quarter; and the short one about an inch and a quarter.

* In a well-formed pelvis, a line drawn transversely along the brim, and in contact with the sacrum, either touches at its two extremities, the sacro-iliac junctions, or the linea ilio-pectinea, about half an inch before them; but in a very deformed

wards, towards the sacrum and towards each other;* so that, were it compatible with life, for the disease to last so long, these parts would meet in a common point, and close up the pelvis, or at least convert its cavity into three slits. The ossa pubis form a very acute angle; so that the brim of the pelvis, instead of being a little irregular as in slight cases of rickets, or semicircular as in the greatest degree of that disease, consists, when malacosteon has continued long, of two oblong spaces on each side of the sacrum, terminating before, in a narrow slit, formed betwixt the ossa pubis.† In this narrow space, when the woman is advanced in her pregnancy, the urethra lies with its orifice sometimes drawn up and directed backward, and the bladder resting upon the pendulous belly: so that, if it be necessary to

pelvis, such a line will touch the brim, at, or even before the acetabula. In a well-formed pelvis, a line drawn from the middle of the linea ilio-pectinea on one side, to the same spot on the opposite side, is about an inch, or an inch and a half distant from the sacrum. But in a deformed pelvis, this line would either pass through the sacrum, or altogether behind it.

In the museum at the Jardin du Roi, Paris, I found the skeleton of an Egyptian mummy, where the right side of the pelvis is straiter or more forced in than the left, and the acetabulum absorbed toward the pubis. Nægélé considers it as the oblique pelvis.

* The following are the dimensions of a pelvis of this kind, which I select as a specimen. From the spinous process of the ilium on one side to the other, is eight inches and three-fourths. From the lumbar vertebræ to the spinous process of the ilium on the right side, six inches; on the left side, one inch and seven-eighths. From the spinous process of the ilium back to its ridge, two inches and a half. From the symphysis pubis to the sacrum, one inch and three-fourths. From the right acetabulum, to the sacrum, six-tenths of an inch; from the left, seven-eighths of an inch. From the brim above the foramen thyroideum, to the same point on the opposite side, seven-eighths of an inch. From the same part of the brim, to the opposite sacro-iliac junction, three inches and a half on both sides. From the tuberosity of one ischium to that of the other, two inches and a half. From the tuberosity to the coccyx, three inches. From the spine of one ischium to that of the other, three inches and a half. From the lower part of the symphysis pubis to the hollow of the sacrum, four inches; distance of the rami of the pubis, five-eighths of an inch.

This pelvis has a triangular brim; for it will be observed, that the brim above the foramen thyroideum measures nearly an inch across, and therefore there is a considerable space betwixt the two ossa pubis, gradually, however, becoming narrower toward the junction of the bones; but little advantage in delivery can be gained from this. When we examine it with a view to determine what bulk may be brought through the brim, we find that it is by its shape virtuously divided into two cavities, one on the right, and the other on the left side, and the short diameter of the one is six-tenths of an inch, and that of the other seven-eighths of an inch; therefore no art can bring a child at the full time through it.

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pass the catheter, we must sometimes use one made of elastic materials, or a male catheter, directing the concavity of the instrument towards the pubis. If the instrument be large, and the ossa pubis very near each other, it may be jammed betwixt them, if it be incautiously introduced. In this disease, as well as in rickets, it is to be remembered, that the promontory of the sacrum may overhang the contracted brim, so as more effectually to prevent the head from entering it.

The danger of a deformed pelvis is increased, if the brim of the pelvis be sharp. In the Musée Dupuytren is the skeleton of a woman who had the Cæsarean operation performed. The pelvis is *altogether* small, the pubis thin like a paper-folder. All the bones are diminutive, and the thighs short and bent.

Rickets being a disease, which is at its greatest height in infancy, we have not at present to consider the treatment. Malacosteon is, on the contrary, a disease of the adult; and, generally, affecting women about middle age. It is a constitutional disease allied to the nature of osteo-sarcoma, and, like it, attended with considerable pain in all the affected parts. Like it also, it is incurable in the present state of medical science. As there is a very great deficiency of earth in the bones, it has been proposed to give the patient phosphate of lime, but little advantage has been derived from it; and, indeed, unless we can change the action of the vessels, it can do no good to prescribe any of the component parts of bone. We have, in the present state of our knowledge, no means of rendering the action more perfect, otherwise than by endeavouring to improve the general health and vigour of the system, by the use of tonics, the tepid bath, and attending to the state of the bowels. Anodyne frictions, and small blisters, sometimes relieve the pain.* As gestation, uniformly, increases the disease, a separation from the husband should take place.

SECTION THIRD.

The pelvis may be deformed externally, and yet its capacity may be diminished without any osteostosis from some of the bones;† or, it may be affected with the presence of a fracture of the acetabulum, from extensive and pointed ossifications in the neighbourhood of the bones, virtually semicircular, the pubis being so trifling as not to merit consideration here is one inch, exclusive of the small diameter of this pelvis is very much curved, and the

and for tables of many particular cases, in referring the reader to the works of the author, and extensive knowledge.

Cæsarean operation, and references to the lumbar vertebræ, or pubis, may be found in the 449.

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In this pelvis, the sacrum has fallen so forward at the top, that in a standing posture the face of that bone is almost horizontal, and its under part with the coccyx is bent forward like a hook. The vertebræ are much distorted. In a pelvis preserved in one of the museums in Paris, the sacrum almost rests on the acetabular portion.

† This is the case in a pelvis where the distance from the part of the brim above the foramen thyroideum on one side, across to the same part on the opposite side, is only five-eighths of an inch. From the right acetabulum to the sacrum is an inch and three-eighths. From the left is one inch. This pelvis at the brim is externally

pass the catheter, we must sometimes use one made of elastic materials, or a male catheter, directing the concavity of the instrument towards the pubis. If the instrument be large, and the ossa pubis very near each other, it may be jammed betwixt them, if it be incautiously introduced. In this disease, as well as in rickets, it is to be remembered, that the promontory of the sacrum may overhang the contracted brim, so as more effectually to prevent the head from entering it.

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SECTION THIRD.

The pelvis may be well formed externally, and yet its capacity may be diminished within, by exostosis from some of the bones;† or, it may be affected in consequence of a fracture of the acetabulum, from which I have seen extensive and pointed ossifications

triangular, but it is, from the near approximation of the bones, virtually semicircular, the space betwixt the two ossa pubis being so trifling as not to merit consideration; and the diameter of the brim here is one inch, exclusive of the small slit betwixt the bones. The sacrum in this pelvis is very much curved, and the outlet small.

* Upon the subject of deformity of the pelvis, and for tables of many particular instances of distortion, I have great pleasure in referring the reader to the works of Dr Hull, a practitioner of sound judgment, and extensive knowledge.

† A case of this, by Dr Leydig, requiring the Cæsarean operation, and references to other cases of exostosis from the sacrum, lumbar vertebræ, or pubis, may be found in the Edinburgh Journal, Vol. xxxv. p. 449.

stretch for nearly two inches into the pelvis; or, steatomatous or scirrhus tumours may form in the pelvis, being attached to the bones or ligaments, of which I have known examples.* An enlarged ovarium,† or vaginal hernia,‡ may also obstruct delivery, even so much as to require the crotchet; and therefore, although they be not indeed instances of deformed pelvis, yet as they diminish the capacity of the cavity, as certainly as any of the former causes which I have mentioned, it is proper to notice them at this time. Vesical hernia, or prolapsus of the bladder, may impede labour. Enlarged glands in the course of the vagina, polypous excrescences about the os uteri or vagina, scirrhous of the rectum, and firm encysted tumours in the pelvis, may likewise afford an obstacle to the passage of the child. Some tumours, however, gradually become diffused by pressure, but reappear after the child is born; others burst, and have their contents effused into the cellular substance. A large stone in the bladder may also be so situated during labour, as to diminish very much the cavity of the pelvis; and it may be even necessary to extract the stone before the child be delivered, if it have not been pushed above the brim in proper time.

Tumours in the pelvis are produced either by enlargement of some of its contents, as for instance the uterus§, ovarium, or glands; or, by new formed substances. The ovarian kind are often moveable; the others generally fixed, and they may consist of fatty or fibrous substance, or fluid contained in a cyst.|| Some

* Dr Denman mentions a fatal case of this kind, to which Dr Hunter was called. The child was delivered by the crotchet, but the patient died on the fourth day. A firm fatty excrescence, springing from one side of the sacrum, was found to have occasioned the difficulty. Vide *Introd.* Vol. ii. p. 73.—Baudelocque in the 5th Vol. of *Recueil Periodique*, relates a case, where, in consequence of a scirrhus tumour adhering to the pelvis, the crotchet was necessary. In a subsequent labour, the Cæsarean operation was performed, and proved fatal to the mother. Dr Drew records an instance where the tumour adhered to the sacro-sciatic ligament, and was successfully extirpated during labour. It was 14 inches in circumference. Vide *Edin. Journal*, Vol. i. p. 23.

† A fatal case of this kind occurred to Dr Ford, and is noticed by Dr Denman, Vol. ii. p. 75.—Another fatal instance is recorded by M. Baudelocque, *L'Art.* section 1964. See also a case by Dr Merriman, *Med. and Chir. Trans.* iii. 47. This ovarium contained a fluid, and probably might have been opened during labour with advantage. Of the proposal to extirpate the ovarium, I shall hereafter speak.

‡ Several cases of this kind have been met with, and in one related by M. Brand, and noticed by Dr Sandifort in his *Obs. Anat. Path.*, the woman died undelivered.

§ In Dr Beatty's case, a large tumour obstructed delivery, but at last he got it so far pressed up, as to succeed in bringing down the child, which presented the breech. The tumour at first did not allow a finger to pass between it and the pubis. He believes that it was a fibrous tumour of the uterus, which was gradually elevated by muscular contraction, in the long diameter. The mother recovered. He quotes a case somewhat similar, by Mr Antrobus. *Dub. Journ.* xvii. 411.

|| A very important case of this kind is related by Mr Jackson, in the *Med. Rep.*

of these have only cellular attachments, and are removed easily by making an incision through the vagina, and turning out the tumour, or evacuating its contents.* Other tumours are cartilaginous, and instead of being connected only by cellular matter, are attached to the pelvis firmly, or grow from it. They adhere either by a pedicle, or by an extensive base. In the first case the tumour is more moveable than in the second, where the fixture is firmer. These can only be extirpated by cutting deeply into the cavity of the pelvis, and the incision requires to be made through the perineum and levator ani, like the incision in the operation of lithotomy in the male subject. We are much indebted to Dr Drew for the first case of an operation of this kind; and as the tumour adhered by a neck, it was easily cut off, and the success was complete.

In a dreadful case which I met with some years ago, the attachments were extensive, and the tumour so large as to fill the pelvis, and permit only one finger to be passed between it at the right side of the basin. It adhered from the symphysis pubis round to the sacrum, being attached to the urethra, obturator muscle, and rectum; intimately adhering to the brim of the pelvis, and even overlapping it a little towards the left acetabulum. It was hard, somewhat irregular, and scarcely moveable. The patient, Mrs Broadfoot, was in the ninth month of pregnancy. There was no choice, except between the Cæsarean operation,

for March, 1826. The tumour, which was very large, was situated behind the rectum, and filled the sacrum so completely, as only to permit of bringing down the child by the feet, with great difficulty. The finger inserted into the rectum, after delivery, ascertained the existence of fluctuation between the rectum and coccyx: a puncture was made, and six pints of straw-coloured fluid evacuated, and the patient recovered completely, but not without great suffering from pain of the head, tenderness of the vertebrae, numbness of the lower extremities, quick pulse, &c. From these symptoms the collection seems to have been connected with the sacral portion of the spinal cord, or at least with the nerves given off by it, and those situated behind the rectum.

* M. Peletan details several cases of tumours within the pelvis, some of them fatty or fibrous, and easily turned out, merely by making an incision over them, through the vagina; one, encysted, containing puriform matter; and one about an inch long, of a cartilaginous nature, adhering to the descending branch of the pubis, the vagina being divided, it was cut off with scissors. *Clinique Chirurgicale*, Tom. i. 203, 206, 224, 228, 250. Mr Park likewise relates several cases, chiefly of tumours, containing liquid or soft contents, and which were pierced from the vagina during labour. *Med. Chir. Trans.* ii. 293. See also a valuable paper on the same subject by Dr Merriman, in the 10th Vol. of that work, p. 57, and in his *Synopsis*, p. 57, and remarks by Dr Davis in his *Elements*, p. 105. Also a case by Boyer, *Traité*, Tom. x. p. 394. I will notice Dr M'Kibbin's case under "Cæsarean operation." See also Nægél's work with notes by Danyau. Puchelt in his *Commentatio*, &c, embraces tumours of all descriptions, whether from the pelvis, uterus, rectum, &c. He gives 17 cases of tumour in the cellular tissue, 9 of which were hard. Of 31 cases of labour interfered with, by ovarian tumour, 13 recovered, 1 died during labour, 14 a little after it, 3 later; 21 children were still born. Danyau, in *Archives Generales*, Avril, 1842. See also a valuable paper on pelvic tumours by M. Lever, in *Guy's Hosp. Rep.* No. xiv. p. 71.

and the extirpation of the tumour. The latter was agreed on ; and with the assistance of Messrs Cowper, Pattieson and Russel, I performed it on the 16th of March, a few hours after slight labour pains had come on. An incision was made on the left side of the orifice of the vagina, perineum, and anus, through the skin, cellular substance, and transversalis perinei. The levator ani being freely exposed, the tumour was then touched easily with the finger. A catheter was introduced into the urethra, and the tumour separated from its attachments to that part. It was next separated from the uterus, vagina, and rectum, partly by the scalpel, partly by the finger. I could then grasp it as a child's head, but it was quite fixed to the pelvis. An incision was made into it with a knife, as near the pelvis as possible ; but from the difficulty of acting safely with that instrument, the scissors, guided with the finger, were employed when I came near the back part ; and instead of going quite through, I stopped when near the posterior surface, lest I should wound the rectum, or a large vessel, and completed the operation with a spatula. The tumour was then removed, and its base, or attachment to the bones, dissected off as closely as possible. Little blood was lost. The pains immediately became strong, and before she was laid down in bed they were very pressing. In four hours she was delivered of a still-born child, above the average size. Peritoneal inflammation, with considerable constitutional irritation, succeeded ; but by the prompt and active use of the lancet and purgatives, the danger was soon over, and the recovery went on well. In the month of May the wound was healed. On examining per vaginam, the vagina was felt adhering as it ought to do, to the pelvis, rectum, &c. The side of the pelvis was smooth ; and a person ignorant of the previous history of the case, or who did not see the external cicatrix, could not have discovered that any operation had been performed. After a lapse of more than fifteen years, she still continued well, but had never been again pregnant.

Firm tumour, if not attached to the bone, may by labour be squeezed out of the way, and has even been said to become soft.*

The practical remarks which I would offer on this subject, are, 1st. That whenever the tumour is moveable, it ought to be pushed above the brim of the pelvis in the commencement of labour, and prevented from again descending before the child's head.

* Dr Outrepoint gives a case, where the tumour was hard and painful, extending from the inner surface of one ischium, to nearly the other side, and so occupying the pelvis, as to prevent the uterus being felt : when labour proceeded, the tumour seemed to soften, and at last the foot, which presented, was got down. The head was ultimately delivered by the forceps, and the child lived. Ten weeks after the delivery, the tumour was removed by an operation. It was fibro-cartilaginous, and not connected with the bone. *British and Foreign Journ.* xi. 531.

2d. That on a principle to be hereafter more fully inculcated, we ought never to permit the labour to be long protracted, but should early resort to means for relief. By a contrary conduct the child indeed may be ultimately expelled by nature, or be brought away by art, but the mother is in great danger of perishing, either from subsequent inflammation, or exhaustion, or hemorrhage.

3d. As it is impossible to decide with certainty on the nature or contents of many of these tumours, we ought, in all cases where we cannot push them up, to try the effect of puncturing from the vagina with a trocar. If the contents be fluid, we evacuate them more or less completely; if solid, we find that the canula, on being withdrawn, is empty, or filled with clotted blood; if fatty, or cheesy, the end of the tube retains a portion; and we are thus informed of its nature.

4th. When the size of the tumour cannot be sufficiently, or considerably diminished by tapping, or by the pressure made in labour, I am inclined, from the unfavourable result of cases where the perforator has been used, and from the severe and long continued efforts which have been required to accomplish delivery, to recommend, when practicable, the extirpation of the tumour, rather than the use of the crotchet; and this may be accomplished best and most safely by the mode adopted in the case of Mrs Broadfoot. There may, however, be situations where the incision ought to be made in the vagina: but these are rare. But extirpation cannot in any mode be proposed, if firm cohesions have been contracted between the tumour and vagina or rectum.

5th. If the extensive connexions, bulk, or nature of the tumour, or danger from hemorrhage, prohibit extirpation, or the patient will not submit to it, and if it have been early ascertained that tapping is ineffectual, I deem it an imperative duty to urge the perforation of the head, or extraction of the child, as soon as the circumstances of the case will permit.

6th. Much, and justly, as the Cæsarean operation is dreaded, it may with great propriety be made a question, whether in extreme cases, that, would not be less painful, and less hazardous to the mother, than those truly appalling sufferings which are sometimes inflicted by the practitioner, for a great length of time, when the crotchet is employed; whilst it would save the child, if alive at the time of interference. I am aware that it may be objected to this opinion, that in those cases, the tumour being softer than bone, the same injury will not be sustained as if the soft parts had been pressed with equal force, and for the same time, against the bones of a contracted pelvis, and that in point of fact, recovery has taken place, although the strength of two able practitioners was exerted, during several hours, so as to be

exhausted; but such an instance cannot establish the general safety of the practice. The induction of premature labour, when the state of the pelvis is known, is proper.

7th. It is scarcely necessary for me to add, that there may be inferior degrees of encroachment, which admit of the safe and successful application of the forceps; and of this matter we judge by the size of the tumour, and capacity of the pelvis. It will hereafter be explained that a very small degree of obstruction may retard delivery, rather by influencing the action of the uterus, than by the mechanical resistance opposed. When the feet present, or, even, the breech, more aid can be given.

SECTION FOURTH.

In order to ascertain the degree of deformity, and the capacity of the pelvis, different instruments have been invented. Some of these are intended to be introduced within the pelvis, and others to be applied on the outside, deducting in the latter case, three inches for the thickness of the pubis, sacrum, and soft parts. If an instrument, or line, be carried from the arch of the pubis, to the top of the sacrum, about half an inch is to be deducted from the measured distance on account of the obliquity of the line. But this method is so uncertain, that I do not know any person who makes use of it in practice. The hand is the best pelvimeter, and must in all cases, where an accurate knowledge is necessary, be completely introduced within the vagina. By moving it about, and observing the number of fingers which can be passed into different parts of the brim, or the distance to which two fingers require to be separated in order to touch the opposite points of the brim, or the space over which one finger must move in order to pass from one part to another, we may obtain a sufficient knowledge, not only of the shape of the brim, cavity, and outlet of the pelvis, but also of the degree to which the soft parts within are swelled, as well as of the position and extent of any tumour which may be formed in the pelvis. We may be further assisted by observing, that in great degrees of deformity or contraction, the head does not enter the brim at all; in smaller degrees it engages slowly, and the bones of the cranium, form an angle more or less acute, according to the dimensions of the brim, into which it is squeezed. An examination, by the introduction of the finger into the vagina, even in labour, is quite useless, for we can, in this way, obtain no information. So far from touching the promontory of the sacrum, we can reach only a little way along that bone, or above the coccyx. Even if the finger be laid from the point of the coccyx, in the dried pelvis, it will only touch the third bone of the sacrum. In front, if we push the finger high, we can, if the bladder

be empty, and the parts lax, feel the upper margin of the pubis.

As in many cases of deformed and contracted pelvis, it is necessary to break down the head in order to get it through the cavity, it will be proper to subjoin the dimensions of the foetal head when it is reduced to its smallest size. When the frontal, parietal, and squamous bones are removed, which is all that we can expect to be done, in a case requiring the crotchet, we find that the width of the base of the cranium, over the sphenoid bone, is two inches and a half. The distance from cheek to cheek is three inches. From the chin to the root of the nose is an inch and a half; and by separating the symphysis of the jaw, the two sides of the maxilla may recede, so as to make the distance even less. From the chin to the nape of the neck, when the chin is placed on the breast, is two inches and three-quarters. When, on the contrary, the chin is raised up, and the triangular part of the occiput laid back on the neck, the distance from the throat to the occiput is two inches. The smallest part of the head, then, which can be made to present, is the face; and when this is brought through the brim, the back part of the head and neck may, although they measure two inches, be reduced by pressure so as to follow the face. The short diameter of the chest when pressed, is an inch and a half; that of the pelvis is the same. The diameter of the shoulder is one inch.

CHAP. VII.

Of Augmented Capacity of the Pelvis.

A VERY large pelvis,* so far from being an advantage, is attended with many inconveniences, both during gestation and parturition. The uterus, in pregnancy, does not ascend at the usual time out of the pelvis, which produces several uneasy sensations; it is even apt, owing to its increased weight to be prolapsed; or, if the bladder be distended, it may readily be

* The following are the dimensions of a very large pelvis which I possess. The conjugate diameter is four inches and three-fourths; the lateral five inches and five-eighths; the diagonal, five inches and a half. From the symphysis pubis to the sacro-iliac junction, five inches. From the top of the arch of the pubis to the sacrum, is five inches and three-eighths. From one tuberosity of the ischium to the other, is five inches and a half; and the arch is very wide. Depth of the pelvis at the sacrum without the coccyx, five inches. Breadth of the sacrum at the top, four inches and seven-eighths. Depth of the pelvis at the sides, four inches. There is a pelvis in the museum of St Bartholomew's, the measurements of which are as large, although the spine is very much distorted.

retroverted. At the very end of gestation, the uterus may descend to the orifice of the vagina; and, during labour, forcing pains are apt to come on before the os uteri be properly dilated, by which both the child and the uterus may be propelled, even out of the vagina; and, in many instances, although this may not happen, yet the pains are severe and tedious, especially if the practitioner be not aware of the nature of the case.

CHAP. VIII.

Of the External Organs of Generation.

SECTION FIRST.

PART of the symphysis pubis, and insertion of the recti muscles, are covered with a very considerable quantity of cellular substance, which is called the mons veneris. From this the two external labia pudendi descend, and meet together about an inch before the anus; the intervening space receiving the name of perineum. On separating the great labia, we observe a small projecting body about a finger's breadth above the pubic ligament. This is the clitoris, and it is surrounded by a duplicature of skin called its prepuce. From this duplicature, or rather from the point of the clitoris, we find arising on each side, a small flap, which is continued obliquely down on the inside of the labia, for about an inch and a quarter. These receive the name of nymphæ, or labia minores or interna. On separating them, we observe, about nearly an inch below the clitoris, the extremity of the urethra; and, just under it, the orifice of the vagina, which is partly closed up, in the infant state, by a semilunar membrane called the hymen. These parts are all comprehended under the general name of vulva, or external organs of generation.

The labia and perineum are covered with a firm subcutaneous fascia, proceeding, as formerly noticed, from that of the gluteus muscle and inside of the thigh. It covers the erector clitoridis, and, going quite round by the arch of the pubis, helps to fix the external parts firmer to the bones, and this fixture, is greatly aided by the internal layer, which proceeds from within the pelvis. The perineal fascia, is stronger than that, which covers the labia.

SECTION SECOND.

The labia have nothing peculiar in their structure, for they

are made up of cellular and fatty substance, covered by a fascia. Their outer surface has the appearance of the common integuments; and at the age of puberty, is, together with the *mons veneris*, generally covered with hairs. Their inner surface is covered by the mucous membrane of the vulva. They are placed closer together below than above; and at their junction behind, a small bridle called the *fourchette*, extends across, which may be considered also as the anterior margin of the perineum. It is generally torn when the first child is born. There may be only a semilunar margin formed by the fold of mucous coat.

The *nymphæ*, at first, look like duplicatures of the inner surface of the labia, but they are, in fact, very different in their structure. They are distinct vascular substances, enclosed in a duplicature of the skin, which descends from the extremity of the clitoris. When injected, by filling the pudic artery, each nymphæ is found to be made up of innumerable serpentine vessels, forming an oblong mass. This at the upper part joins the clitoris, to which, perhaps, it serves as an appendage, whilst the loose duplicature of skin in which it is lodged, by being unfolded, permits the labia to be more safely and easily distended, during the passage of the child. They generally become narrower as they descend toward the vagina, and terminate opposite its orifice, or that of the urethra.

SECTION THIRD.

The clitoris is a small body resembling the male penis, surrounded by a prepuce, but having no urethra. It consists of two *corpora cavernosa*, which arise from the rami of the ischia and pubes, and unite on the symphysis of the pubes. Immediately below, and before each of these, is an oval flattened protuberance of erectile tissue, called by Mr Taylor the semi-bulb. These are continued forward to assist in forming the clitoris. They are furnished with two muscles analogous to the *erectores penis* of the male. When the *crura* and *nymphæ* are filled with wax, we find on each side, two vascular injected bodies, one of them in close contact with the bones, the other more internal with regard to the symphysis of the pubes. When the one is injected, the other is injected also, and both are connected together at the upper part. The clitoris, formed by the junction of its *crura*, projects, apparently, about the eighth part of an inch, a part of it not being seen, and it is supported by a pretty strong suspensory band, which arises from the symphysis. If we pull out the point of the clitoris, we raise the membrane, so as to form a kind of cylindrical prolongation to the upper commissure. The cellulo-fibrous band is contained within it. When

distended with blood, it becomes rounder, and a little more prominent. It is endowed with great sensibility, and its surface covered by a multitude of nervous papillæ. It is placed on the face of the symphysis pubis, about three quarters of an inch, above the upper margin, of the orifice of the urethra.

SECTION FOURTH.

On separating the nymphæ, we find a smooth channel, or vestibulum, in which are glandular openings, extending down from the clitoris, for about three quarters of an inch; at the termination of this, and just above the vagina, is the orifice of the urethra, which, although not one of the organs of generation, deserves particular attention. The bladder is lodged in the fore part of the pelvis, immediately behind the symphysis pubis; but when distended, it rises up, and its fundus has been known to extend even to the umbilicus. It is connected to the fore and upper part of the vagina, for an inch, or an inch and a half, by dense cellular substance, and a fascia which passes off from the one to the other. Then, from the implantation of the vagina, just above the anterior lip of the os uteri, it adheres to the front of the cervix, sometimes merely to its termination in the lip, but oftener for about an inch up from the os uteri. There, the vesical fascia, passes off to the front of the cervix, or body of the uterus, and at the point of this reflexion, the peritoneum also is reflected. Inflating the bladder, scarcely raises the peritoneum, higher, from the face of the uterus. In the collapsed state of the bladder, the peritoneum lines the symphysis to its bottom, and is connected to its inner surface, by lax cellular substance. But when distended, the peritoneum rises with it, and is carried above the pubis.*

The urethra is from an inch, to an inch and a half long, and passes along the upper part of the vagina, which is thicker and more corrugated in its tract, so that we have the deceptive feeling, of the urethra being felt through the vagina, like a thick fleshy cord. This, doubtless is, also, partly, dependent on the cellular and venous tissue round the canal. It adheres to the fore or upper part of the vagina, till it terminate in the neck of the bladder, which consists of an elastic fabric, acting, though not apparently muscular, like a sphincter. The adherence of the two canals, is so intimate, that, although we can separate them by dissection, yet, at first, they seem as if connected by a common septum. Beyond this, the vagina adheres to the bladder. A kind of fascia passes off from the vagina, to the urethra and bladder, connecting them firmly at the sides. The levator ani,

* See retroversio uteri and prolapsus vesicæ.

embraces the urethra and side of the vagina, and a layer of fascia also covers this muscular sheet here. The structure of the urethra is extremely simple, for it consists of a continuation of the internal coat of the bladder, covered with a dense but dilatable substance, of about the thickness of parchment. On slitting up the canal, numerous mucous lacunæ may be discovered in its course, and two of these, considerably above the orifice, are peculiarly large. The urethra is very vascular, and, when injected and dried, its orifice is perfectly red. In the unimpregnated state, it runs very much in the direction of the outlet of the pelvis; so that a probe, introduced into the bladder, and pushed on in the course of the urethra, would, after passing for about three inches and a half, strike upon the fundus uteri, and, if carried on for an inch and a half farther, would touch the top of the second bone of the sacrum. But, a little deviation of the urethra upward, directs the probe to the promontory of the sacrum.

When we trace the upper or anterior face of the vagina, curving upward towards the symphysis, we discover an irregular slit or the orifice of the urethra, where the rugous vagina ends, and the smooth vestibulum begins. The canal of the urethra runs first a little downward within the prolongation, and then, when it comes to the orifice of the vagina itself, it runs in its course. It is, therefore, not quite straight, but slightly curved, at its extremity, unless the vagina be much drawn up. The uterus being much connected with the bladder at its lower part, it follows, that when it rises in pregnancy, the bladder will also be somewhat raised, and pressed rather more forwards, and the vagina being elongated, the urethra, which is attached to it, is also directed a little more upward, and perhaps brought nearer the inside of the symphysis pubis. In those women who, from deformity of the pelvis, or other causes, have a very pendulous belly, the bladder, during pregnancy, is sometimes turned over the pubis, the urethra curved a little, and its opening somewhat retracted within the orifice of the vagina.

When it is necessary to pass the catheter, it is of consequence to be able to do it readily, which is by no means difficult. The woman ought to be placed on her back, with her thighs separated, and the knees drawn a little up: a basin is then to be placed betwixt the thighs, or a bladder may be tied, firmly, to the extremity of the catheter to receive the urine. The instrument is then to be conveyed under the thigh, and the labia and nymphæ, being separated with the finger, it is to be run gently down the fossa, under the clitoris, that leads to the orifice of the urethra, which is easily distinguished, like an irregular depression situated just above the entrance to the vagina, higher or lower from the orifice, according as the vagina is in its natural

state or retracted. The point of the instrument is to be moved lightly down the fossa after the finger, and it will readily slip into the urethra. It is then to be carried on in the direction of the axis of the outlet of the pelvis, and the urine drawn off. The catheter may also be readily introduced by placing the point of the finger just on the orifice of the vagina, and the instrument being then glided along the finger, it either at once, or by the slightest motion upward and downward, slips into the urethra. This operation ought always to be performed in bed, and the patient is never to be exposed. In cases of fractures, bruises, &c., where the woman cannot turn from her side to her back, the catheter may be introduced from behind, without moving her. When the bladder is turned over the pubis, as happens in cases of great deformity of the pelvis, it is sometimes requisite to use either a flexible catheter, or a male catheter, with its concavity directed forward. When the uterus is retroverted, if we cannot use a silver catheter, we may employ a gum catheter. When the head of the child in labour has entered the pelvis, the urethra is pushed close to the symphysis of the pubis; then the flexible or flat catheter must be introduced parallel to the symphysis, and the head of the child may be raised up a little with the finger. This, indeed, of itself, frequently permits the urine to flow, and when the urine is retained after delivery, it is often sufficient to raise up the uterus a little with the finger.

SECTION FIFTH,

The orifice (strictly) of the vagina is nearly opposite to the anterior part of the tuberosity of the ischium, about an inch and a half below the symphysis of the pubis, and in the direction of the axis of the outlet of the pelvis. It is, in all ages, but more especially in infancy, considerably narrower than the canal itself, and is surrounded by a sphincter muscle, which is about three quarters of an inch broad, and divided from the levator ani by a slight sulcus. It may be said to arise, behind, from the sphincter ani and transversales perinei, and to be connected, before, with the clitoris. It is accompanied with a vascular plexus, called plexus retiformis. The sphincter is sometimes spasmodically contracted, and the nerves so sensible that pain is felt in coitu, and at last some degree of permanent circular stricture is produced. The cure, in all stages, is division in a lateral direction of the constricted part. When this is neglected coition sometimes produces phlegmon or abscess. In children, the orifice is always shut up by a membrane called the hymen, at the upper part of which there is a semilunar vacancy, intended for the transmission of the menses. Sometimes it is imperforated, at other times it is cribriform, or partially or totally absorbed. In

adult virgins, the hymen is situated three-eighths of an inch in from the fourchette; at the bottom, it is fully a quarter of an inch broad, and its sides, or horns, ascend by the side of the vagina to the side of the urethra, like small nymphæ, ending there, as the nymphæ do in the prepuce of the clitoris. It is formed by the duplicature of that fascia which covers the labia. The mucous membrane of the fossa navicularis is traced up over this, whilst that of the vagina goes up on its inner surface, the two becoming continuous at the margin. The hymen has been supposed to be originally formed of four angular portions, but often in the adult no trace of such boundaries is to be found, though sometimes we see on each side a paler and thinner line, as if it would rupture more easily there.

Immediately behind the orifice of the vagina, between it and the fourchette, there is a short transverse hollow or sinus within the labia, which extends farther back than the vagina. This has been called the fossa navicularis. It is quite smooth, whereas the vagina is rugous. The boundary is often marked by a smooth transverse fold or band. In it are two lacunæ, described by Bartholin, opening by small orifices. These, as well as the glands of the vestibulum, furnish a clear mucus with a peculiar smell.

The pudic nerve, after re-entering the pelvis, gives off several small branches, which go to the obturator internus, sphincter ani, and extremity of the rectum. It then divides into two. The trunk, as it may be called, runs forward, with the artery, to the clitoris, covered, as it proceeds along the rami of the pubis, by the erector. The other division is distributed to the perineum and vagina. It approaches the vagina, nearly in a line with its junction with the perineum, and subdivides and ramifies, on the end of that passage, but chiefly on its orifice. This nerve is often preternaturally sensible, so as to cause great pain in coitu, as well as at other times. It may be exposed, by cutting through the skin and fascia, at the side of the labium and perineum, beginning on a line with the front of the vaginal orifice, and carrying the incision back for two inches. The nerve being blended with cellular substance, is not easily seen in such an operation; but it may be divided, by turning the blade of the knife, and cutting through the vagina to its inner coat, but not injuring that. It may be more easily divided by cutting from the vagina. Slitting, merely, the orifice of the vagina, will not do. We must carry the incision fully half an inch up from the orifice, and also divide the mucous membrane freely in a lateral direction. It is not necessary to particularize the distribution of the pudic artery. It is found running within the ischium, between that and the vagina, if the finger be introduced to about the second joint. It runs nearly an inch and a quarter above the bare point of the

tuberosity, and may be felt pulsating. It is higher than the nerve.

SECTION SIXTH.

The perinæum is that space which intervenes between the anus and orifice of the vagina, or rather the margin called fourchette. It is from an inch, to an inch and a quarter broad, and consists, first, of thick skin, beneath which is dense cellular substance; then, there is a strong fascia covering a muscular substance more or less distinct, within which there is again cellular substance, but not very dense, and last of all, there is the under surface of the extremity of the vagina. The angle formed, by the passing forward of the vagina, from the termination of the rectum, is filled with cellular substance, but, tracing behind, we find that as soon as the two canals meet, they become united, as will be afterwards explained. This union forms the recto-vaginal septum. The muscles consist of levator ani, within, as already described, and which, winding by the back or under surface of the vagina, unites with the portion from its opposite side, and also with the sphincter ani, and end of the rectum. The transversalis perinæi is not always distinct, but is sometimes strong. The external sphincter ani, passes from the coccyx, round the extremity of the rectum, and terminates in the perinæum in such a way, that the portions from the opposite sides, whilst they pass forward, also cross each other, and are lost in the transversalis. Another muscle arises from all this intermixture in the perinæum, and encircles the orifice of the vagina. It is found within the labia, like a band, on each side of the vagina, extending forward towards the clitoris. It is the constrictor vaginæ. The perinæal arteries from the pudic ramify amongst these muscles. The firmness of the perinæum and the support it affords, as well as its resistance to the passage of the child, depend not only on the muscles and rigidity of the skin, but still more on the strength of the fascia.

CHAP. IX.

Of the Internal Organs of Generation, and Rectum.

SECTION FIRST.

THE internal organs of generation consist of the vagina, with the uterus and its appendages.

The vagina is a canal, which extends from the vulva to the

womb. It consists, principally, of a peculiar dense cellulo-fibrous substance, of a grayish colour, endowed with elasticity. This substance becomes laxer as we proceed upward, and everywhere it is vascular, but the veins are particularly numerous, especially behind. Near the orifice, a plexus retiformis is formed. This is covered by a thin sheet of muscle, the sphincter, and that by the levator ani and fascia. The dense coat, is identified with the upper part of the lips of the os uteri, and connected, by cellular substance, to the parts the vagina passes along. It is lined by a continuation of the mucous coat from the inner surface of the labia; and this internal coat, which is as thick as parchment, and strong as well as elastic, forms numerous transverse rugæ, on the anterior and posterior sides of the vagina; but near the orifice they do not extend across, but are short oblong elevations. Often, in virgins, we see a slight longitudinal ridge of the mucous coat, and also one at the back part, all ending in or near the inner surface of the hymen. Sometimes the posterior ridge bifurcates over the hymen, and is implanted by two limbs into it. About a quarter of an inch back from the urethra, on each side, is a little projection or caruncle of the mucous coat. There is also sometimes one, in front, just under the urethra, and, more frequently, one behind. The inferior one may partly, perhaps, be formed by the inner member of the hymen when ruptured. But these eminences or folds are not very regular. They are called *carunculæ myrtiformes*, and are most distinct after the hymen is torn, the base or origin of which may, perhaps, increase their size. Near the uterus the vagina is smoother. The rugæ are peculiar to the human female, and are most distinctly seen in the virgin state; but after the vagina has been distended, they are more unfolded, and sometimes the surface is almost smooth. In the whole course of this coat, may be observed the openings, sometimes pretty large, of numerous glandular follicles, which secrete a mucous fluid. In the foetus this is white and milky; in the adult it is nearly colourless, thinner, and more abundant, than that furnished, by the uterus. The mucous coat is reddish near the orifice, higher it is grayish, and at the top it is often mottled, as if there were patches of echymosis. The vagina is very vascular; and when the parts are well injected, dried, and put in oil of turpentine, the vessels are seen to be both large and numerous. Just below the symphysis pubis, we observe a great congeries of vessels surrounding the urethra and upper part of the vagina. Exterior to the proper tissue of the vagina, is a coat of cellular substance, connecting it to the neighbouring parts.

A little way within the orifice, is, on each side, a large lacuna, into which the duct of Cowper's gland enters. These glands have

been long known, but have lately been, more particularly, described by Mr Taylor, (*Dub. Journ.* xiii. p. 104.) On dissecting off the sphincter vaginæ and deep fascia, behind what he calls the semi-bulb of the corpus cavernosum, the gland may be felt and seen. Its long diameter is placed from above, downward, and, from the anterior and inferior margin, a duct, about an inch long, passes upward and inward to open into the lacuna.

The vagina forms a curved canal, which runs very much in the course of the axis of the outlet and cavity of the pelvis. It is not round, but considerably flattened; it is wider above than below, being in young subjects much contracted about the orifice. Near puberty, the orifice may be less than half an inch in diameter, whilst, within that, the canal is nearly three quarters. Hence, the marks of stuprum violentum, in the virgin, and more especially if puberty have barely arrived, must be sought for in the condition of the orifice of the vagina, and some swelling or redness of the nymphæ and inside of the labia. The hymen is torn, its fragments bloody, and if complete penetration have been effected at such an age, and under such circumstances, even the orifice of the vagina will probably be partly torn, the fourchette also perhaps injured. After a short time the inflammation produces muco-purulent discharge. I notice here only the local symptoms, and say nothing of the others, such as detection of semen, &c.* The fore part of the orifice is continued obliquely up, toward the vestibule, and the junction is perforated by the urethra, whilst the back part terminates more abruptly. At its upper end, it does not join the lips of the os uteri directly, but is

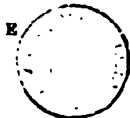
* Wagner says, spermatazoa may be detected, alive, amidst the mucus of the vagina, for hours, or even days, after coition; neither does blood kill them. It is of great importance to examine the female as early as possible after the alleged injury; for, at a later date, purulent, or muco-purulent discharge may be the only consequence of the violence. It is also to be remembered, that there may have been violation, without leaving marks of local injury, not merely in married women, but also in virgins. Some lawyers consider full penetration as necessary to constitute the crime of rape. How absurdly, will appear from the fact, that conception may take place without penetration, and the act which may impregnate, is, on every principle of common sense, violation.

With regard to the state of the vagina in prostitutes, information may be obtained in the work of Parent-Duchatelet on Prostitution in Paris, a work alike valuable to the physician and the moralist. One woman aged fifty-one, who had been a prostitute from the age of fifteen, had the vagina small as that of a virgin. Two girls, one of whom, especially, had all the appearance of a virgin, complained of an assault, but were discovered to have been "inscribed." He mentions that children, as young as ten or twelve, were public; and from a document I have seen, it appears that, in this city, they have been found diseased as young. The average duration of their appearance is stated, in this paper, at five years. The greatest number commence from fifteen to twenty, and that, at first, not from necessity. They have "no sense of religion," and it is a melancholy fact, that the Magdalen Asylum, here, was given up, from only one case of reformation (and that doubtful) occurring.

attached a little above them, higher behind than before, so that the posterior lip of the uterus is better felt than the anterior. In the infant, the vagina is attached still farther up, and the lips of the uterus project in it something like a penis. The length of the fore part of the vagina is, when not extended, about three inches.

The inner coat of the vagina is reflected over the lips of the uterus, and passes into its cavity, forming the lining of the uterus. The junction of the uterus and vagina, is so intimate, that we cannot make an accurate distinction betwixt them, but may say, that the one is lost in the other. The vagina adheres, before, very intimately, to the urethra; and when that terminates, it is adherent to the bladder, for about an inch and a half, by thin cellular substance. These are also bound together by a common fascia. Behind, it meets the rectum, and their connexion forms the recto-vaginal septum. There is, if stretched, nearly an inch of the vagina between the os uteri, and where it is connected to the rectum. If not stretched, the extent is sometimes only half an inch. This portion is covered by a reflection of the peritoneum, and within that, by a thin fascia, reflected from the face of the rectum, to the vagina and cervix uteri. At the side, the peritoneum descends a little lower. From the junction, nearly to the extremity of the vagina, the two canals are connected by thin cellular substance, in which is a vascular plexus, particularly of veins, and, when separated from each other, the surface of both is seen to be smooth. The extremity is connected to the rectum, at the front of the perinæum, by firm fibrous substance, which shuts up all connexion with the perinæum itself. We can easily separate the canals from one another from this point, upward, to the reflection of fascia at the top of the vagina, when again we shall have a barrier. We can, therefore, see how a cyst of fluid could easily be formed, in the tract of the recto-vaginal septum, and how this fluid should be shut out from the perinæum, and also from the abdominal cavity, not merely by peritoneum but by fascia. Matter forming under the perineal fascia, might also, for a time, be prevented from extending up, along, or within the septum.

When the finger is introduced into the vagina *in situ*, the urethra is felt on its fore part, resembling a firm fleshy cylinder. Behind, the rectum can be traced down to the point of the coccyx. At the side, the ramus of the ischium and of the pubis, together with the obturator internus muscle, are to be distinguished. In a well-formed pelvis, the finger cannot easily reach beyond the top of the coccyx, or lower part of the sacrum; during labour, however, the parts being more relaxed, the bone may be felt a little higher.



SECTION SECOND.

The uterus is a flat body, somewhat triangular in its shape, being considerably broader at its upper, than at its under part. It is divided by anatomists into the fundus, or upper part, which is slightly convex, and lies above the insertion of the Fallopian tubes: the cervix, or narrow part below; the body, which comprehends all the space between the fundus and cervix; and last of all, the os uteri, which is the termination of the cervix, and consists of a small transverse chink, the two sides of which have been called the lips of the uterus. The uterus contains a flat cavity of a triangular shape, which opens into a narrow channel formed in the body, and this again ends in the cervix, which is continued down to the os uteri. At the upper angles may be perceived the openings of the Fallopian tubes. Both the cavity and the channels are 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 smooth, and the membrane which covers it is very soft and vascular, and, with that lining the tubes, furnishes clear mucus. The surface of the cervical channel, again, is rugous, and the rugæ, which exist even in the fœtus, go off from a longitudinal and median fold of the membrane, and are often disposed in a beautiful manner, so as to have some resemblance to a palm tree; but sometimes the surface is merely irregularly wrinkled. 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. This is clear but viscid, and even tenacious. Some deny the existence of an internal membrane distinct from the proper tissue of the uterus. Where the cavity of the body of the uterus terminates in the channel of the cervix, there is a slight contraction of the passage.

For the purpose of more readily recognising the changes which the uterus undergoes, either after impregnation, or in disease, it will be useful to give the following detail:—The length of the uterus, from the margin of the lip, to the top of the fundus, is $2\frac{1}{4}$ inches. Breadth, between the insertion of the tubes at the fundus, from $2\frac{3}{8}$ to $2\frac{1}{2}$. The middle of the fundus, rises $\frac{1}{2}$ above a line drawn from the insertion of the one tube to that of the other. The commencement of the body is $1\frac{1}{2}$ broad. Its thickness is an inch. The breadth of the wall is half an inch; but at the fundus it is about $\frac{1}{2}$ of an inch less. The thickness of the part of the cervix which projects into the vagina, including the coat of that canal which is reflected over it, is $1\frac{1}{2}$. Its breadth $1\frac{1}{2}$. The breadth of the termination, or lips of the os uteri, $1\frac{1}{2}$. Thickness, including both lips, $\frac{1}{2}$. The length of

the transverse chink, or os uteri, from $\frac{3}{8}$ to $\frac{1}{2}$, and the tip of the finger can barely be admitted between the lips. Each lip is $\frac{3}{8}$ thick, though the posterior is said to be thinnest. The lips are smooth and uniform in the virgin, but, after bearing children, they may be slightly fissured, without disease. The lips are covered by a continuation of the mucous coat of the vagina, which enters into the uterus and lines it. They also exhibit several small lacunæ, over their surface. The vagina is attached about $\frac{1}{4}$ above the anterior lip, but higher behind, about $\frac{1}{2}$ above the posterior lip. The uterus ought not to project more into the vagina, so as to allow the finger to go higher, either before or behind, without pressing the vagina unduly up. But, when there is any degree of relaxation, the uterus often hangs down, so that the vagina seems attached much higher; but it is merely inverted, or corrugated, to that extent. From the margin of the lip, to the top of the cervix, is an inch; but sometimes only $\frac{3}{4}$, or even less. From the top of the triangular cavity of the fundus, to the commencement of the narrow cylindrical cavity of the body, is $1\frac{1}{2}$. The extreme breadth of the top of the cavity, stretching from the entrance of one tube to that of another, nearly $1\frac{1}{2}$. The distance between the end of the triangle and commencement of the cervix, is $\frac{3}{8}$. This cavity is narrow, particularly where it ends in the commencement of the cervix. There, it barely admits the passage of a common probe; above that, it is a little wider. The cavity of both the body and fundus, is lined with smooth mucous membrane.

Some healthy uteri are larger, being, for instance, above 3 inches long. The breadth of the lips, outwardly, $1\frac{1}{4}$, the thickness $\frac{3}{8}$, the length of the anterior lip $\frac{1}{2}$, of the posterior, $\frac{3}{4}$.

In infancy, the shape of the uterus varies: at the fifth month of uterine life, it is angular, as in the adult; at the ninth month it is also angular, fully $\frac{3}{4}$ long and $\frac{1}{2}$ broad at the fundus. The most of it is above the pelvis, but hid by the bladder; at seven years it is $1\frac{1}{4}$ long, flattened and almost of uniform breadth, till we come near the fundus, which assumes an angular appearance, more from the prolongation of the tubes, than its own shape. The cavity of the body and fundus, is lined with smooth whitish membrane. That of the cervix, which is more than one half of the whole, is reddish and foliated. At fourteen, the uterus is still small, being an inch and a half long, and one broad at the fundus. The cavity of the cervix is near an inch long. The chink, or os uteri, is $\frac{3}{8}$ long, the lips altogether about half an inch. Before puberty, perhaps at fifteen, the length is $2\frac{1}{2}$. The breadth of the fundus $1\frac{3}{4}$. In old age, the uterus becomes smaller and denser, especially at the body and fundus. Breschet says, that in women from eighty to a hundred, the

uterus is divided into two, by a septum between the body and fundus.

The substance of the uterus is made up of numerous fibres, disposed very irregularly, and having a considerable quantity of interstitial fluid interposed, with many vessels ramifying amongst them. A dense succulent texture is thus formed, which constitutes the substance of the uterus. On opening the womb, several irregular apertures may be perceived on the cut surface: these are the venous sinuses. The fibres which we discover are muscular; but we cannot, in the unimpregnated state, observe them to follow any regular course.

The arteries of the uterus are four in number, with corresponding veins. The two uppermost arteries arise either high from the aorta, or from the emulgent arteries. They descend, one on each side, in a serpentine direction, behind the peritoneum, and are distributed on the ovaria, tubes, and upper part of the uterus. These are called spermatic arteries. The two lowermost, which are called uterine, arise from the hypogastric arteries. They run, one on each side, to the uterus, fully half an inch above the lips. They supply the cervix and upper part of the vagina. Thus, the fundus uteri is supplied by the spermatic arteries, and the cervix, by the uterine arteries; and these, from opposite sides, send across branches which communicate one with the other. But besides this distribution, the uterine artery is continued up the side of the uterus, and meets with the spermatic, so that, at the two sides, we have arterial trunks, from which the body of the uterus is liberally supplied with blood. The veins correspond to the arteries, but are uppermost.

17-19. The nerves of the uterus are derived from two sources, the sympathetic, and the sacral nerves, particularly the third, with filaments from the fourth, and sometimes the second. The sacral nerves intermix with the sympathetic, forming plexuses for the uterus, vagina, &c. Do these two sets of nerves perform separate functions? Are the sympathetic branches functional, and the sacral sensitive? In certain cases of uterine diseases, the sacrum about the second bone is tender when pressed. The spermatic plexus, is formed on the face of the aorta, at the origin of the spermatic artery, and descends along with it to the ovarium and tube. The most important plexus is called, by Tiedeman, the great superior lumbar plexus, and is situated before the fifth lumbar vertebra, and the common iliac artery. Accompanying the uterine artery, it supplies the body of the uterus, and sends down a branch to communicate with the sacral portion. The superior, and inferior, lateral plexuses, go to the cervix uteri, vagina, bladder, and rectum.* There is a particular sympathy

* Tiedeman, Tab. Nerv. Uteri, 1822, or Home's Lectures, Vol. vi. Plates 19

between the nerves of the cervix and os uteri, and the stomach. I have known even touching the os uteri in the early stage of labour, or in the end of pregnancy, with the finger, uniformly produce sickness and violent retching.

The lymphatics, in the unimpregnated state of the uterus, are small and not easily discovered. Those, from the upper part of the womb, and from the ovaria, run along with the spermatic vessels, terminating in glands placed by the side of the lumbar vertebræ. Hence, in diseases of the ovaria, there may be both pain and swelling of the glands. But the greatest number of lymphatics, run along with the uterine artery, several of them, passing to the iliac and sacral glands, and, some, accompanying the round ligament. This may explain why, in certain conditions of the uterus, the inguinal glands swell. Others run down through the glands of the vagina; and hence, in cancer of the womb, we often feel these glands hard and swelled, sometimes to such a degree, as almost to close up the vagina.

The ureter passes by the side of the cervix, to enter the bladder nearly on a line with the os uteri.

The uterus is covered with the peritoneum, which passes off from its sides, to reach the lateral part of the pelvis, a little before the sacro-iliac symphysis; and these duplicatures, which, when the uterus is pulled up, and the bladder empty, seem to divide the cavity of the pelvis into two chambers, are called, very improperly, the broad ligaments of the uterus. In the male, the peritoneum passes from the pubis and antero-lateral part of the brim of the pelvis to the bladder, dips down along its back part, and thence is reflected off at the sides towards the cavity of the pelvis, and behind on the rectum. Hence, when the bladder is either distended or pulled up, the hand can be slidden down, between it and the rectum, into a deep recess, extending from one side of the pelvis to the other. This is visible when the empty bladder is pulled up, but not when it is distended with air or water, for then the back of the bladder is in contact with the face of the rectum, and the recess can only be discerned by gliding the fingers down between these two viscera. The same recess exists in the female, with this difference, that the peritoneum is continued from the bladder to the uterus, covers it, and passes down along its back, and a little way along the vagina, and thence is reflected to the rectum and sides of the pelvis. It descends lower by the sides of the vagina and rectum, and, also, at the very back, where these join, than at the latero-posterior part, therefore, we have a fold there, at each side,

and 21, and Mr C. Hawkins, in *Phil. Trans.* 1825, p. 70. See also Dr Lee's *Anatomy*, with two plates, and his paper on the Ganglia, *Phil. Trans.* for 1841, p. 269.

forming a kind of pouch, between the rectum and vagina, and likewise, we have two slight lateral prolongations of the recess. In the unimpregnated state, when the bladder is empty, and the intestines pulled up, out of the pelvis, we see it sloping backward and downward, till it meet the anterior part of the cervix uteri. It covers the uterus, descends for about three-quarters of an inch, on the back of the vagina, from which it passes, as in the male, to the rectum, on which it mounts. In the collapsed state of the bladder, if the uterus be not raised, so as to show the posterior chamber, we would suppose that a hollow sheet of peritoneum might, without interruption, be traced from the pubis along the base or outlet, and up in front of the sacrum. When the bladder is distended, the peritoneum is scarcely raised, that is, reflected higher from the face of the uterus. The uterus is somewhat, but not much, raised along with the bladder. It is so placed, that in general nothing can enter between it and the rectum; but it may happen that some folds of the intestine do get between the uterus and rectum, and the slight pressure thus produced is sufficient to cause a disturbance of the intestinal functions, and even some degree of obstruction to the passage of the stools, either through the fold, or through the rectum; and in this, as well as in some other cases, clysters do not pass up, but the rectum is, when they are thrown in, pressed anteriorly against the tumour formed by the fold, and by the uterus, and a kind of invagination takes place within the gut. The os uteri is nearly in its natural situation, but the presence of the intestine gives a thickened feel to the cervix, which it does not really possess. In obstinate constipation from this cause, the whole hand should be introduced into the vagina, and the uterus and intestine pressed up, at the same time that a saline clyster is thrown into the rectum through a flexible tube, cautiously introduced to near the top of the sacrum. The intestine may descend still lower, and push forward, or even evert, a part of the vagina, or may descend more by its side; thus we have vaginal, or perineal hernia produced, according to the direction taken.

In the erect posture, the uterus corresponds, nearly, with the axis of the brim of the pelvis, and, consequently, forms an angle more or less obtuse with the vagina, in which the os uteri is felt directed backward.

If the finger be fully introduced into the rectum, we can feel through it, the posterior lip, and part of the back of the cervix uteri. In the natural position, we cannot touch the body, and a probang must be introduced, to the extent of from above three and a half, to sometimes even five inches from the anus, generally fully four, in order to get on a line with the top of the fun-

dus. This lies nearly at the height of the top of the second bone of the sacrum, or a little higher, or lower, according to circumstances.

At all times when the finger is introduced into the rectum, the extremity of the uterus may be felt pressing on it. In some cases of enlargement or prolapsus, the pressure seems to be productive, not only of more or less obstruction to the passage of the stools, but also of uncomfortable sensations, tenesmus, &c. In greater displacement of the uterus, (anteversion or retroversion, for instance,) the pressure is sometimes such as to produce almost complete obstruction, feculent vomiting, and a lingering death; and in some of these cases, the os uteri appears on an examination per vaginam, much more in its proper situation, than would be believed, without experience.

When the uterus is raised, and the lateral duplicatures of the peritoneum, called the broad ligaments, are stretched out, we observe, that at the upper part they form two transverse folds or pinions, one before, and the other behind. In the first of these, the Fallopian tubes are placed; in the second, the ovaria. These folds become broader toward their extremity, so that they have an angular shape, the broadest part being fully $1\frac{1}{2}$ broad; that is, there is that distance between the end of the tube and the ovarium.

Besides these duplicatures, we likewise remark one on each side, which extends from the fundus uteri, just before the entrance of the tube, to the linea ilio-pectinea at the side of the pelvis, and then runs on to the groin. This contains, a pretty thick cord, which arises flatly from the fundus uteri, and passes out at the inguinal canal, being then lost in the labium pudendi. These cords, which are called the round ligaments of the uterus, consist of numerous blood-vessels, some lymphatics, small nerves, and cellular matter. They pass by the side of the bladder, crossing over the ureter.

The Fallopian tubes, in quadrupeds, are merely continuations of the horns of the uterus: but in the human female, they are very different in their structure from the womb. They appear to consist in a great measure of spongy fibrous substance, which, as Haller observes, may be inflated like the clitoris. They are hollow, forming canals, lined with a continuation of the internal coat of the uterus; and as they lie in the anterior pinion of the broad ligaments of the uterus, they are covered of necessity with a peritoneal coat. They originate from the upper corners of 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. The internal surface of the canals is plaited, the plicæ running lon-

gitudinally.* The extremity of the tube, is curved by the pinion of the broad ligament, so that it cannot be pulled straight. In its curved state, the tube is about four inches long. The canals are so indistinct, at birth, and for some months after it, that their existence then has been denied.

The ovaria† lie in the posterior pinion of the broad ligament. They are two flattened bodies, from an inch and a quarter, to one and a half long, somewhat oval, but generally broader at the remote, and narrower at the near end. The broadest part is from half, to five-eighths of an inch: the thickness a quarter. The substance of the ovarium, called stroma, is cellular, more or less dense and fibrous, and furnished with small vessels. It is covered by a firm thick coat, called the albuginea, and this again by the peritoneum, or indusium. The cells are innumerable, and little septa seem to extend some way amongst them from the albuginea. These cells contain, more or less distinctly, a

* Purkinje, Valentine, and Sharpey, have observed in rabbits, after impregnation, minute portions of the mucous membrane moving briskly and whirling round their axis. These motions, called ciliary, are supposed to propel the ovum.

† In birds, we find that the ovaria contain a great number of yolks of different sizes. Those which are nearest the wide canal called the oviduct, which leads to the cloaca, are largest, while those remote from it are very minute. The full-grown yolk, is detached from the ovarium, and in its passage down is furnished both with the albumen and the necessary membranes and shell. In viviparous fishes, as the skate, ray, &c., the same structure obtains. These animals have two ovaria, containing eggs of different sizes; the smaller are white, the larger yellowish, and they pass down to an oviduct, which contains a glandular body that furnishes the covering of the egg. Each ovary has a separate oviduct, which forms a vast sac, that terminates in the sides of the cloaca, by orifices that have a duplicature like a valve. The cloaca itself forms an ample reservoir, that seems more like a continuation of the oviduct than the termination of the rectum. In oviparous fishes, the ovaria are known under the name of roes, and all the visible eggs are of the same size, and so numerous, that some contain above 200,000. They are enveloped in a fine transparent membrane; and septa from this envelope, divide the internal parts, and furnish points of attachment to the ova, which are expelled previous to fecundation. These are called oviparous fishes; and have, properly speaking, no oviduct. The ovaria of frogs resemble those of fishes, and the ova are, previous to expulsion, enveloped in a glairy fluid. In the slug we find both testicles and ovaria. The ovarium is a grape-like tissue, containing numerous small grains, or ova, attached by pedicles, which are canals that lead into the oviduct. This is a serpentine canal, that after having adhered to the testicle, opens in the common cavity of generation, in which also the penis or duct from the testicle opens, and during copulation, the two individuals mutually impregnate each other. The ovaria of the adder are like strings of beads.

The ovarium of the ornithorhyncus, contains yolk bags like the fowl, but covered by a firm membrane. In the opossum, these are imbedded in the ovarium. The hedgehog has an ovarium like a bunch of grapes; and the ovarium of the civet has a knotted surface, and resembles a packet of little spheres; the common sow has also an ovarium somewhat resembling, externally, that of oviparous animals. Most other quadrupeds have an ovarium more smooth and somewhat oblong in shape, and in general the tube and ovarium are unconnected, as in the human female; but in the otter, my brother observed, that both were contained in a kind of capsule formed by the peritoneum, so that ventral extra-uterine pregnancy cannot take place in this animal.

germinal vesicle, which is supposed to be the first formation. These germs are countless, and exist even at birth. They become developed, in succession, in little cysts or *Graafian vesicles*, which are largest, and most complete, toward the surface of the ovarium, where, from fifteen to twenty, may be seen distinctly. Many vesicles with their contents, never come to maturity. Many ova are removed by absorption, or, escape by the opening of the vesicle. With regard to the ovum itself, I shall say nothing at present. It is first lodged in a cell in the stroma, and this cell contains a clear fluid, in which are numerous granules, and some oil-like globules. This has been termed the *ovisac*, by Dr Barry,* and it forms round the granules, and ovum. Then, around this, a second coat is formed, which becomes vascular, and adheres to the stroma. These two coats now constitute the Graafian vesicle. Next, within these, the granules come to form a lining, or third coat, called the *membrana granulosa*, by Baer. Besides this, Dr Barry says, that a spherical aggregation of granules, surrounds the ovulum, which he calls the *tunica granulosa*. The ovulum is at first in the centre of the Graafian vesicle, amongst the granules contained in the fluid; and, between its *tunica granulosa*, and the *membrana granulosa*, lining the follicle, cords of granules extend. These he calls *retinacula*, and supposes that they keep the ovule in its place. Then, by the disappearance of these on one side, and their shortening on the opposite side, the ovule is brought to the periphery of the vesicle, and always to that surface next the peritoneum. Baer describes the ovum, when it has arrived at the surface, as lodged in a disc of granules, thick in the centre, and surrounding the ovule, like the form of a lens, and thin at the sides. The former portion, he calls the *cumulus*, the latter, the *discus proligerus*. The first, according to Dr Barry, is chiefly made up of the *tunica granulosa*, and the central portion of the *retinacula*, the second of its bands or cords. Without proceeding farther at present, as to the ovum, I state, that in the season of heat, in animals, there is not only increased general vascularity of the parts, but certain vesicles become enlarged and vascular, and the fluid more viscid. After impregnation, the vesicle opens, and the ovum with its granular coat is pushed out, and received by the fimbriated mouth of the tube which grasps the ovarium. When an ovum is expelled, after conception, certain effects are produced on the Graafian vesicle. The ovarium is much larger, owing to a protuberance, or *corpus luteum*, in the situation of the vesicle. This is very vascular, and, if the ovarian artery be injected, vessels penetrate from the circumference, to

* Phil. Trans. 1838, p. 305.

the centre of the ovum. The arteries predominate at the surface. The substance is rounded, and within, of a brownish yellow colour, and at first contains a cavity, communicating with an irregular opening, on the surface. Afterwards, this is filled with a white, or grayish, radiated substance, with yellowish plicæ around. Dr Montgomery, who has paid great attention to the subject, never found a cavity later than six months after impregnation. At the time of delivery, the corpus luteum, is neither so large, nor so vascular as formerly. It is above half an inch long, more than a quarter broad, and the yellow rim about an eighth broad. In three or four months it disappears. Dr Montgomery says, he never found it exist beyond four months after delivery.* Dr Hunter gives no opinion respecting the formation of the corpus, but describes it well. In his museum are corpora, with a cavity from the size of a hazel nut downwards. In the largest, the walls thin, but thickening, and radiating, as the cavity diminishes. The parietes are vascular, but the central whitish substance obliterating the cavity, not injected. In his manuscript description, he says, with regard to the cavity in the early months, "when the uterine vessels have been injected, I have observed that the wax very easily extravasates into that cavity." Baer, believes the corpus luteum to be a thickening of the internal membranes of the vesicle.† Dr Lee, that it is external to both layers, and therefore between the remains of the follicle, and the stroma.‡ Dr Paterson, that it is developed between the membranes of the vesicle, the internal becoming thicker and whiter, from effusion of lymph on its internal surface.§ Dr Montgomery, that the internal layer becomes intensely vascular, and on its external surface, between it and the external layer, is poured out a substance, partly blood, partly lymph, of a yellowish red colour. This is antecedent to the expulsion of the ovum, and one means of accomplishing it. It afterwards serves to obliterate the cavity. The cavity is not always, even at first, equally large; it may be small, and often, if not always, originally contains blood. Dr Barry,|| that the primitive ovisac is lost, but its covering thickens, and an inverted portion of it, like a mammillary process, rises up from the centre of the cavity, and forms the corpus luteum. The corpus has been, with no small probability, supposed not to be, merely, the mechanical result of the expulsion of the ovum, or only to be formed for obliterating the vesicle, which does not require such a production, but also for some purpose, connected with the support, and progress of the ovum. This is rendered more probable, from finding that the

* Signs of Pregnancy, p. 229.

† De Ovi. Genesi, &c.

‡ Med. Chir. Trans. Vol. iv. 2d Series.

§ Edin. Med. Journ. Vol. 53, 54, and 55.

|| Phil. Trans. 1839, p. 229.

process of this formation, is commenced before the expulsion, and, a priori, would lead us to expect that the internal membrane was mainly concerned. It is now almost universally admitted, that as no impregnation can take place, without the formation of a corpus luteum, so, no corpus luteum can be formed, without impregnation of an ovum. But, as ova are destroyed or absorbed, without impregnation, it comes to be a question, if there can be no analogous effect produced, or in other words, whether there may not be, in the virgin, spurious corpora formed. This is now also no longer doubtful, and Dr Montgomery has well stated the difference between the two. There is no prominence of the ovarium over the spurious corpora, there is seldom any external cicatrix, they are not vascular, and their texture is either like the remains of coagulum, or like the stroma. They have no central cavity, nor do they exhibit the radiated white line, resulting from its closure. They are often triangular or square, and several are frequently found in the same ovarium, nor are they necessarily connected with a vesicle. Such corpora may therefore be produced by some disease of the ovarium, quite unconnected with any change of the vesicle. A genuine corpus luteum, the result of impregnation, is very vascular, has a yellow stellated or plicated rim, enclosing a grayish substance in the centre, where there had formerly been a cavity. I need scarcely say, that in after life the absence of a corpus luteum is no proof that the female had never conceived, nor can we tell how often she had, by the number of supposed cicatrices.

SECTION THIRD.

The rectum deserves attention here, as its diseases become frequently the object of consultation. Its structure is similar to that of the other intestines, but it is only covered by the peritoneum in part. This membrane, forms its outer coat, so far down as its connexion with the vagina, then, it only proceeds some way down its lateral part. Beneath the peritoneum, and all the way to the orifice, we have a muscular coat, consisting chiefly of longitudinal fibres in the upper part, and principally of circular fibres in the under third. These become more distinct, as we approach the anus, so that the intestine is surrounded as it were by a belt of muscle for two inches, whilst higher, the fibres become less strong. This has been called the internal sphincter, but it may be considered as a stronger part of the muscular coat. The external sphincter, surrounds the orifice, it is flat and broad, and its extremities decussate one another in the perineum. It arises from a ligamentous band, which extends from the extremity of the coccyx, to the back part of the rectum at the anus, and which serves as a support, in so far, to the rectum. This band, more distinct in some cases than others,

may be described as merely a thicker part, in the median line, of that general fascia, already explained, which extends from the sacrum and coccyx, to the ischium and perineum. In all cases, at the top of the internal sphincter, or, where the fibres are becoming weaker, there is, in both sexes, a slight invagination or descent of the mucous coat, sometimes of the whole thickness of the rectum, felt distinctly when the finger is introduced. This often becomes the earliest seat of disease or induration, and then bears some resemblance to an os uteri. In its natural state, I have known it mistaken for a stricture; and whilst this invagination is felt within, there is sometimes a partial distention of the gut above, so as to form a diverticulum turning over the reflection of the pelvic fascia, in which, when a portion of fæces lodges, a serious obstruction may be produced; and, felt from the vagina, it may resemble a part of an enlarged uterus. If the finger about this point, or higher or lower, according to the position of the uterus, be directed forward, the os uteri is distinctly felt pressing on the intestine, the posterior lip is felt as distinctly, almost, as the sound is in the male urethra through the rectum, and when the uterus is tender, pain is produced by touching it from the rectum. In some cases of slight prolapsus, the pressure of the uterus, aided by the weight and impaction of the small intestines in the pelvis, on the face of the rectum, affords some resistance to the passage of the stools, but this is greater when the uterus is retroverted, even in a slight degree, for then the obstruction is sometimes complete. It is not supposable, by an inexperienced person, how slight a pressure will obstruct the rectum, and give rise to obstinate costiveness, emaciation, vomiting of feculent matter, and at last death. I therefore particularly call the attention of the young practitioner to this subject, and to the effect of very slight displacement, of any kind, of the uterus. Another circumstance connected with the rectum, particularly with the sphincter, demands notice. I mean a species of spasm, or stricture, accompanied with great sensibility of the hæmorrhoidal, and, perhaps, also of the pudendal nerves; in the latter case, the sphincter of the vagina is often spasmodically contracted, and there is pain in coitu. When the sphincter ani alone is affected, there is great pain at the time of having a stool, often of the burning kind, shooting up the sacrum and back, and continuing for an hour or two after a motion. It is sometimes so bad as to produce, in hysterical habits, fainting or hysteric fits; any examination with the finger causes great pain, which lasts a considerable time. This state is generally connected with a local irritation, such as a fistula, or excrescence within the anus, or a mere fissure of the orifice, not seen till it be opened, by pressing its sides, with the finger, from one another. In this case, blood is often discharged by stool, and the case passes for one of in-

ternal piles. In some instances, no fissure exists, but only the painful sensibility of the sphincter, and this may be the case at a very early period of life. Keeping the bowels regular, and injecting a little olive-oil, often mitigates the complaint, and I have even known these means cure it. But the most certain remedy is that proposed by Boyer,* namely, dividing the sphincter with a bistoury; and he remarks what I know to be true, that it is not necessary to divide it in that exact spot where the fissure exists. I need scarcely say that in the case of complication with fistula, the operation for that disease also divides the sphincter more or less. After the division, the wound is to be filled with lint, as in the operation for fistula.

Within the muscular coat is a dense cellular layer, called by some the mucous coat, and in this the glands are lodged. The internal coat is a mucous membrane, and this by the contraction of the circular muscular fibres, is often thrown into longitudinal plicæ. The nerves of the lower part of the rectum are numerous, and the vessels of this intestine are both large and numerous, so that in laceration of the recto-vaginal septum, and other lesions, the hæmorrhage is often considerable, and requires the plug to stop it. Excrescences often form on the surface of the rectum, and prove serious, both from pain and hæmorrhage. They produce very nearly the same symptoms with the fissure already described, but by straining, they are discovered. They ought to be protruded and removed. But the most formidable disease met with here is scirrhus, generally of a cancerous nature. For a description of this, I refer to works on surgery, and as to the practice, it ought to be purely negative, that is, we should avoid everything which can excite either the system, or the part. The bowels are to be kept regular, and the stools soft, by a mild laxative, sometimes aided by a clyster of tepid water cautiously administered, and in the latter stages, anodynes are required to allay pain, and sometimes injections of water, to remove acrid, and foetid matter. Medicated injections seldom do much good, and the hip bath is only useful as a temporary soother, when it allays pain. A suppository consisting of cicuta and opium, is often of more service. The operation of extirpation has lately been performed, and we are told with success, by M. Lisfranc.†

* Boyer, Tome x. p. 125.

† Rev. Med. Juin, 1826.

CHAP. X.

Of the Diseases of the Organs of Generation.

SECTION FIRST.

THE labia are subject to several diseases: of these, the first which I shall mention, is phlegmonoid inflammation. This may occur at any period of life, and under various circumstances, as, for example, along with the irritable state of the sphincter already described; but frequently it takes place in the pregnant state, especially about the sixth and seventh month of gestation, and it may suddenly occur, oftener than once in the same pregnancy. Occasionally, it makes its attack in childbed, in consequence of the violence which the parts may have sustained in labour. It is marked by the usual symptoms of inflammation, namely, heat, pain, throbbing, and more or less swelling, not unfrequently attended with fever. The swelling is sometimes hard and moveable, like a gland, especially when the progress is slower than usual. In general, the course of the disease is rapid, the pain and inflammation are at first very acute, and the part swells speedily. In a few hours, especially if a poultice have been applied, the abscess begins to point at the inside of the labium, and the nymphæ either disappears, or if it remain, it is pushed out of its place. Sometimes it bursts within thirty-six hours from its appearance. By means of cold saturnine applications, and gentle laxatives, the inflammation may perhaps be resolved, but most frequently it ends in suppuration, which is to be promoted by fomentations and warm cataplasms. If necessary, an opiate may be given to abate the pain, and a pillow must be placed between the knees, to keep the part from pressure. If possible, the abscess ought not to be punctured; but, if the pain and tension be unbearable, we must indulge the patient by making a small opening; a good deal of blood will in this case come with the matter. After the abscess bursts, the parts may be dressed with any mild ointment. Should the opening of the abscess be higher than its bottom, it will be necessary, if the discharge continue,* to lay it open, after which it will speedily heal. Owing to the subcutaneous fascia of the labia, these abscesses never break outwardly.

Sometimes an elastic, small, but tedious tumour, ending in abscess, forms near the nymphæ, and is exquisitely painful to the touch. A poultice must be applied, and the patient remain on a sofa.

* Vide Mr Hey's Surgical Observations, p. 138.

SECTION SECOND.

The internal surface of the labia, is often the seat of ulceration or excoriation, which may generally be avoided by the daily use of the bidet. The usual form under which excoriation appears, is that of a raw surface, as if the cuticle had been peeled from a blistered part. Most frequently these sores are the consequence of acrimony, produced by inattention to cleanliness, especially in children; and in their case the labia, if care be not taken, may cohere. The treatment consists in keeping the parts clean, bathing the sore with a weak solution of sulphate of zinc, and preventing cohesion. Should the parts not heal readily, they may be washed with brandy, or a very weak solution of nitrate of silver, or touched with caustic. When adhesion takes place, it may, if slight, be destroyed, by gently pulling the one labium from the other; if firmer, the parts must be separated with the knife. In either case, reunion must be prevented by washing the surface frequently with solution of alum, and interposing a small piece of lint spread with simple ointment. Simple itching of the parts may be removed by the tepid bath, a dose of castor oil, and fomenting the parts with milk and water.

Psoriasis, marked by its usual character, may affect the labia and spread to other parts even extensively. It is most frequent in elderly women, and the itching is often intolerable, whilst the duration is not short. If plethoric, or if there be general excitement, venesection should be premised, then, we give sarsaparilla, with alteratives and mild laxatives. Lotions of emulsion of almonds, containing a little sulphate of zinc, or of muriate of mercury, may be used, or the parts bathed with tincture of opium. But often emollient applications do more good, such as decoction of bran, or of poppies, or linseed tea, or butter-milk, or cream, &c., or cloth spread with lard.

Sometimes we meet with deeper ulcerations, which it is of great importance, to the domestic happiness of individuals, to distinguish from chancre. Nothing seems easier in a book, than to make the diagnosis, but in practice it is often very difficult. A well-marked chancre begins with circumscribed inflammation of the part; then a small vesicle forms, which bursts, or is removed by slough, and displays a hollow ulcer, as if the skin had been scooped out; its surface is not polished, but rough, and covered with pus, which is generally of a buff or dusky hue; the margins are red, and the general aspect of the sore is angry. But the most distinguishing character of the chancre, is considered to be a thickening or hardness of the base and edges of the ulcer. The progress of the sore is generally slow either towards recovery or augmentation. When remedies are used, the first

effect produced is removing the thickening by degrees, and lessening the discharge, or changing its nature, so that the surface of the sore can be seen ; it has then, in general, a dark fiery look, which continues until all the diseased substance be absorbed, and the action of the part be completely changed. Now, from this description, we should, it may be supposed, be at no loss in saying whether a sore were venereal ; but in practice, we find many deviations from this description. The thickening may be less in one case than in another, and may not be easily discovered, yet the sore may be certainly venereal. Peculiarity of constitution, or of the part affected, can modify greatly the effects of the virus. There may be extensive inflammation, or phagedænic ulceration ; and yet the action may be venereal. It is, however, satisfactory to know in these cases, that in a little time, unless extensive sloughing have taken place, the appearance of the sore becomes more decided, the proper character of chancre appears, and the usual remedy cures the patient.

Phagedæna is a very troublesome, and sometimes a formidable disease, especially to infants. I shall here only notice that form which appears in adults, and which, as it is infectious, may be mistaken for syphilis. It commences with a livid redness of the part, succeeded speedily by vesication and ulceration, which extends laterally, and sometimes penetrates deep. The ulcer has an eating appearance, is painful, discharges a great quantity of matter, and very often is attended with fever. A variety of this disease is attended with superficial sloughing, which may be frequently repeated, and is generally preceded by a peculiar appearance of cleanness in the sore. This is not to be confounded with sloughing, produced by simple inflammation or irritation of the parts, which is similar in its nature and treatment to common gangrene. We must foment the sore with decoction of camomile flowers, mixed with a little tincture of opium, and then apply mild dressings. Rest is essential to the cure : and if a febrile state exist, it is to be obviated by venesection or laxatives, according to its type and severity, mild diaphoretics, and decoction first of sarsaparilla, and then of bark. Extract of cicuta internally, is often of service, and a poultice of hemlock is a good application. If a bubo form, it is to be treated in the same way. In cases where the pain is considerable with sloughing, and the mild treatment has not speedily proved effectual, it is of service to destroy the surface by wetting it with strong nitrous acid. This gives great pain for a little, but an opiate relieves it, and it does not return. Solution of chloride of lime, afterwards, forms a good application. If there be no fever, mercury, or the nitrous acid, often effectually change the action of the parts, but must always be given with caution.

Sometimes irritable sores appear on different parts of the labia, or orifice of the vagina, in succession, healing, slowly, one after another. These have an inflamed appearance, the margins are sometimes tumid, and the surface is at first irregular and depressed, but afterwards it forms luxuriant granulations. There is another sore met with on the inside of the labium, and which generally spreads to the size of a sixpence. The surface is quite flat, and sunk, a little, below the level of the surrounding parts. The margins are thickened, and sometimes callous, the discharge thin, and the ulcer not in general painful, the surface soft and spongy without a hard base. These sores generally agree best with stimulants, especially caustic and escharotics. When they do not yield to this treatment, it will be proper to have recourse to a cautious course of mercury. Some of these, like the phagedæna, are infectious.

Some of these sores are, occasionally, productive of secondary symptoms, such as ulcers in the throat. When these succeed a sore, which has run its course, differently, from chancre, and been healed without the use of mercury, it is allowable to suppose, that they also may be cured, merely, by attending to the general health, and perhaps by local applications. But if they continue without amendment, or threaten danger to any important part, we must not delay making trial of mercury.

SECTION THIRD.

Sometimes after a slight degree of inflammation, producing heat and itching of the parts, numerous excrescences appear within, or on, the labia. These are either soft and fungous, or hard and warty. Both of these states may be induced by previous venereal inflammation; but they may also occur independently of that disease. Even where there is an offensive discharge from the fungi or warts, we are not always to conclude that they are syphilitic, but be guided in our judgment by concomitant circumstances. Warty excrescences are most readily removed, by the application of savin powder by itself, or mixed with red precipitate; and during its operation, the parts may be washed with lime water. The powder must be applied to the root of the warts, for their substance is almost insensible. Fungous excrescences may sometimes be removed by ligature; but when the parts are sensible, they must be destroyed, by applying a strong solution of caustic with a pencil, or sprinkling them with escharotic substances. If these cannot be borne, we must first abate the sensibility by tepid fomentations with decoction of poppies, or water with a little tincture of opium, or decoction of cicuta, or weak infusion of belladonna. Should there be ground for suspecting a syphilitic action, mercury must be given, at the same

time that we make suitable local applications; but in doubtful cases, I have seen this medicine given without any benefit. These excrescences, from their appearance, their great pain, and foetid discharge, may suggest an opinion of their being cancerous; but they begin in a different way, and generally yield, though sometimes slowly, to proper applications.*

SECTION FOURTH.

Solid tumours may form in the labia, and are distinguished by their hardness, and by their moving under the skin, until adhesion from inflammation take place. These tumours are sometimes scrofulous and have little pain, even when they have gone on to suppuration. Often, however, they are cancerous; and these are distinguished from the former, by their great hardness and inequality, and by their shooting pain. If they are not removed, the cancerous abscess points to the inner surface of the labium, its top becomes dark-coloured, sloughs off, a red fluid is discharged, and presently the margin becomes retorted. At an early stage, the glands at the top of the thigh, and sometimes those in the course of the vagina, swell. If all the diseased parts can be removed, an operation must be performed.† If they cannot, we must palliate symptoms by proper dressing and opiates. Other tumours are dense and fibrous, not malignant, but perilous from their size.‡

SECTION FIFTH.

Soft fleshy appendiculæ, or firm polypous tumours, sometimes spring from the labia. Both of these, especially the latter, may give trouble by their weight or size. They may also, by being fretted, come to ulcerate, and the ulceration is always of a disagreeable kind. They ought to be therefore early removed by the knife or the ligature. If the base be broad, the double ligature must be employed: but the knife is always to be preferred,

* Mr Lever mentions a case, where the warts on the labia and at the orifice of the vagina, consequent to gonorrhœa, caused agonising pain in labour. After delivery they began to slough off, and were separated by the second day. *Guy's Hosp. Rep. No. xiv. p. 138.*

† An enormous tumour which covered the two upper thirds of the thigh, and extended along the vagina and rectum, was extirpated by M. Goutayron. *Boyer, Traité, Tom. x. p. 397.*

‡ Mr Lawrence extirpated a very large tumour, extending from the left labium along the buttock, and behind the coccyx, and also up the vagina. As the vaginal portion was not entirely removed, the tumour regenerated after marriage, but it did not interfere with delivery. It was again removed with success. *Med. Chir. Trans. xvii. p. 11.* See a case also by Mr Lever, where the tumour extended up the vagina. It had formerly been removed. Labour was obstructed, but at last was accomplished. Hæmorrhage took place from the vagina, but was restrained by pressure. The tumour reappeared. *Guy's Hosp. Rep. vol. vii. p. 136.*

especially, if there be any hardness about the part, where the ligature must be applied.

Encysted tumours may form in the labia. They are elastic, and contain a glairy fluid. The cyst may be laid open, or it is to be dissected out.

Sir Charles Clark* describes, under the name of the oozing tumour of the labium, an enlargement which affects, particularly, fat women, and which, although it may extend even to the mons veneris, does not project above a line or two above the surface, and undergoes little change of colour. It discharges, however, from its surface an abundant quantity of water or serum, which may, by fretting the part, produce excoriation, or cause erysipelas. He advises the application of starch powder alone, or mixed with astringents, but thinks spirits still better. Temporary relief may be obtained by cold water. If the health suffer, and bark do no good, the parts have been extirpated. As the disease seems to consist in a serous secretion from the follicles of the skin, a solution of nitrate of silver, so strong as to act as a mild caustic, might be useful.

SECTION SIXTH.

Œdematous tumour of the labium, is either a consequence of pregnancy, or a symptom of general dropsy. The tumour is variable in its size. When it depends on pregnancy, it is seldom necessary to do anything: and even in time of labour, although the tumour be great, we need be under little apprehension, for it will yield to the pressure of the child's head. But if, at any time, during gestation, the distention be so great as to give much pain, then, one or two punctures may be made, in order to let out the fluid; but this is very rarely necessary. Gentle laxatives are generally useful. Blisters applied to the vicinity of the part have been proposed; but they are painful, and even dangerous. When the swelling depends on dropsy, diuretics are to be employed: but if the woman be pregnant, they must be used cautiously.

SECTION SEVENTH.

Pudendal hernia is formed in the middle of the labium. It may be traced into the cavity of the pelvis, on the inside of the ramus of the ischium, and can be felt as far as the vagina extends, and, generally, the tendinous margin of the origin of the levator ani, can be felt, as a band, at the top of the tumour. It is sometimes difficult, from the tumour, to feel the os uteri, or it is more or less displaced. It differs, farther, from inguinal hernia, which also lodges in the labium, in this, that there is no tumour discoverable

* On Discharges, Part ii. p. 127.

in the course of the round ligament from the groin. It sometimes goes up in a recumbent posture, or it may by pressure be returned, but if it be large, or have been long down, I have known the patient miserable until it came down again. A pessary has little effect in keeping it up, unless it be made inconveniently large. It is not easy to adapt a truss to it, but some good is done with a firm T-bandage, or one similar to that used for prolapsus ani. If it be not reduced, we must support it by a proper bandage, which is not to be drawn too tight. An operation as in other cases of hernia may be required. The incision is made in the labium, and the stricture at the levator ani divided.

Sometimes the labia are naturally very small, at other times uncommonly large; one side may be larger than the other.

Laceration of the labia is to be treated like other wounds. When the hæmorrhage is great, the vagina, if the vessel cannot be seen, must be plugged, and a firm compress applied externally, with a proper bandage.

SECTION EIGHTH.

The most frequent disease to which the nymphæ is subject, is elongation. When the part protrudes beyond the labia, it becomes covered with a white and more insensible skin. But sometimes it is fretted, on which account, or from other causes, women submit to have the nymphæ cut away. This is done at once by a simple incision; but as the part is exceedingly vascular, we must afterwards restrain the hæmorrhage, either with a ligature or by pressure. By neglect, the patient may lose blood, even *ad deliquium*. In some countries, this elongation of the nymphæ is very common.* In others, the nymphæ, together with the preputium clitoridis, are removed in infancy.† The nymphæ are subject to ulceration, tumour, and other diseases, in common with the labia.

Sometimes by falls, but oftener‡ in labour, the vascular struc-

* The females among the Bosjesmans have the nymphæ sometimes five inches long. Their colour is a livid blue, like the excrescences of a turkey. Vide Barrow's Travels in Africa, Vol. i. p. 279, Med. Chir. Trans. Vol. vii. p. 154. See also an account of the Hottentot in the Lancet, No. 478. p. 147.

† On the shores of the Persian Gulf, among the Christians in Abyssinia, and in Egypt among the Arabs and Copts, girls are circumcised. Niebuhr says, that at Kahira, the women who perform this operation are as well known as midwives. Travels, Vol. ii. p. 250.—Dr Winterbottom, in his account of Sierra Leone, Vol. ii. p. 239, says it is practised among the Mandingo, Foola, and Soosoo women.

‡ M. Casaubon has inserted a memoir on this subject, in the 1st Vol. of *Revue Periodique*, which contains several useful cases. In one of these, the tumour was produced on the seventh month by a kick, and terminated fatally by hæmorrhage.—In another, given by Sedillot, the labia became prodigiously distended during labour, and the head of the child could not be touched. The labia were torn by the attendant. Afterward the child was delivered with the lever.—In cases related by Baudelocque, Brasdor, &c., the tumours were opened, and the vagina

ture of the nymphæ is injured, and a great quantity of blood is poured out into the cellular substance of the labium, producing a black and very painful tumour.* This may take place even before the child is expelled; and, in a case of this kind, the midwife, mistaking the swelling for the protruded membranes, actually perforated the labium, and caused a considerable discharge of blood.† More frequently, however, the tumour appears immediately after delivery,‡ and the attention is directed to it both by its magnitude and its sensibility, which is sometimes so great as to cause syncope. It is tense, throbbing, and may also be accompanied by severe pain in the legs, and violent bearing-down efforts,§ as if another child were to be born, or, as if the womb were inverted. It has, however, been known to advance so slowly, as not to attract attention for two days. There are also instances where the inflammation runs high, and, the recto-vaginal septum sloughing, fæces are discharged by the vagina.|| Sometimes either in this complaint, or by laceration of a vessel in the pelvis, blood collects along the side of the vagina, forming a kind of false aneurism in the pelvis.

In the course of a short time the tumour bursts, and clotted and fluid blood is discharged.¶ This process should be hastened by fomentations and poultices, and the pain be abated by opiates; but if it be very great, relief may be obtained by making a free opening in the inside of the labium,** which may prevent the parts from sloughing. Whether the tumour burst, or be punctured, the previous inflammation may close the vessels so as to

plugged, whilst the wound was stuffed with lint dipped in solution of alum, to prevent hæmorrhage.

* In a case related by Mr Reeve, the tumour, which I suspect proceeded from the rupture of the nymphæ, was perceived first in perineo, but soon occupied all the left labium, which was enormously distended. The pain at first was so great as to cause syncope. The parts sloughed, and discharged pus and clotted blood. Bark was given, and she got well. *Lond. Med. Jour.*, Vol. ix. p. 119.

† Vide Case by Dr Maitland, in *Med. Comment.* Vol. vi. p. 95.—Dr Perfect relates a case, where it burst itself before the child was born, and discharged much blood, Vol. ii. p. 63.—In another, which ended fatally, the tumour burst after delivery, and discharged five pounds of blood. Vide *Plenk Elementa*, p. 111.—Case by M. Sedillot, in *Recueil Period.* Tom. i. p. 260.

‡ Vide Cases by Dr Macbride in *Med. Obs. and Inq.* Vol. v. p. 89.

§ In Mr Blagden's case, related by Dr Baillie, the woman, soon after delivery, had violent bearing-down pains, as if another child were to be born. A monstrous swelling appeared in the right labium, extending to the perinæum. A large incision was made, which did not heal till the 21st day. *Med. and Physical Journal*, Vol. ii. p. 42.

|| Vide Fichet de Flechy, *Observ.* p. 375. The patient was cured by introducing a compress into the vagina, and dressing the sore with digestive ointment.

¶ In Mr Humpage's case, the tumour burst during labour. *Med. and Phys. Jour.* v. 53.

** Le Dran relates a case, where above 20 ounces of blood were evacuated by incision. *Consultations*, p. 413. See also Mr Baillie's case, *Med. and Phys. Jour.* xi. 42.

prevent hæmorrhage ; but if it do not, the vagina is to be gently filled with a soft cloth to prevent the fluid from extending along the sides of the pelvis. A compress is also to be firmly retained externally, to check all hæmorrhage from the aperture. If inflammation run high, it is to be abated by the usual means. If the discharge be fœtid, it is to be washed out by syringing first with tepid water, and then with a weak solution of chloride of lime.

Wounds of this part are peculiarly dangerous, from the great quantity of blood which may be lost. I have been favoured, by Dr Corkindale, with an account of four cases of murder, effected by stabbing, apparently with scissors, at the side of the nympha. In one case, the wound entered the cavity of the abdomen, in the rest, it did not go deep. In none, was there any distinct vessel wounded, but in all, the loss of blood proved speedily fatal. All the women were under the influence of ardent spirits at the time, and one of them was pregnant.

SECTION NINTH.

The clitoris may become scirrhus, and even be affected with cancerous ulceration. In this disease, it is generally thickened, enlarged,* and indurated, and the patient complains of considerable pain. Presently, ulceration takes place, and the margins are everted. This is sometimes combined with scirrhus uterus. Spongoid disease may affect the clitoris.† A large warty looking tumour has followed a venereal affection.‡ Unless the whole of the diseased part can be removed, we must be satisfied with palliating symptoms, but if an operation can reach the whole of the disease, it should be performed. As the upper part of the nympha almost always participates in the disease, and must be cut, considerable hæmorrhage may be expected. Erysipelatous inflammation is apt to follow, or the bladder or uterus may become inflamed.

The clitoris sometimes becomes preternaturally enlarged.§

* Mr Simmons cut off a clitoris, which formed a tumour nine inches in length, and fourteen in circumference, at the largest end. The circumference of the stem was five inches. *Med. and Phys. Journal*, Vol. v. p. 1. In a case related by Kramer, where the clitoris was enlarged, with cauliflower-like excrescences, and the right nympha indurated, the parts were successfully removed by the knife, after failing with the ligature, which produced unsupportable pain.—Schmucker's *Miscel. Surg. Essays*, Art. xxiii. In Dr Auchincloss's case, part of the urethra was removed with the clitoris. *Glasgow Journal*, Vol. ii. p. 165. See also Dr Macfarlan's Report.

† Dr Hirtz removed a tumour of the kind as large as the fist, the patient recovered, but as in other cases, the disease returned in the glands, and she died. *Gazette Med. de Paris*, Jan. 1, 1841.

‡ Mr Lewis' case, *Med. and Phys. Journ.* xv. 236.

§ Upon this subject, see Arnaud on Hermaphrodites.

In a child aged three years, I found the mons veneris prominent, and, as well

This is said to be most frequent in warm climates; and in these, extirpation is sometimes performed. Haller assigns a cause for the enlargement. More frequently the enlargement is congenital, and especially if accompanied with other confusion of parts, the person may pass for an hermaphrodite. The clitoris may be affected with disease rather of a scirrhus than cancerous nature. I have seen it several inches long, thickened and expanding towards the extremity, into polypous-looking enlargements, covered with smooth mucous membrane in some places ulcerated. It is doubtful, in many cases, whether the disease be really in the clitoris, or only in its prepuce.

SECTION TENTH.

The most frequent disease of the hymen is imperforation; but this is not so common as is supposed, for, in many cases the orifice of the vagina is closed by a strong membrane,* and by careful examination, the hymen with its natural perforation may be seen closely applied to the face of this. In consequence of this occlusion, whether by the hymen or not, the menses are retained. The uterus is seldom distended, at least to a great degree, but it is raised up, and the vagina prodigiously distended, so that a tumour is formed in the hypogastrium, like the uterus in the sixth or seventh month of pregnancy. When an opening is made, the vagina is then found to be the chief seat of the collection, and the os uteri is felt enlarged in a lateral direction, the lips are extended laterally, and the opening is much larger, but the finger cannot be carried into the cavity of the uterus. In this disease, the orifice of the vagina is always prominent, and sometimes so much so, as to resemble polypus, or a

as the labia, covered with a considerable quantity of red hair. The labia were large and thick, like those of a grown woman, but shorter. Their inner surface was white and rugous, until near the orifice of the vagina, where the skin was red. At the top, the labia divaricated, and showed a large clitoris, which hung down like the penis; it was upwards of an inch long, and about half an inch in diameter, and furnished with a thick wrinkled prepuce. It had a distinct glans, at the end of which was observed something like a perforation; but on raising it up, this was seen to be only the extremity of a deep sulcus, which extended all the way to the urethra, or orifice of the vagina. It resembled the male urethra slit up. The sides of this were formed by the nymphæ. A little before the orifice of the urethra, there was a longitudinal eminence, like the *veru montanum*. The vagina was shut up by the hymen. The uterus was large, like that of a girl of fourteen years of age, and was shaped like hers. The ovaria were of corresponding size; one of them lay on the *peoas* muscle, the other was loose in the pelvis. The tubes were fimbriated at their extremity, but in their course were knotted and serpentine, like the commencement of the *vas deferens*. The uterus was very vascular, and had an inflamed appearance. Its mouth was apparently impervious.

* The same effect may be produced, by a continuation of the skin being extended over the parts. It must be cut up. See a case by M. Larrey, in *Rapport General de la Société Philomatique*, Tom. ii. p. 86.

prolapsus uteri;* or it becomes fretted and covered with scabs. Even the perinæum may be stretched, as if the head of a child rested on it.† Menstruation is generally painful, and pains like those of labour come on, especially about the menstrual period;‡ such a case may, therefore, by inattention, be mistaken for parturition.§ The sufferings of the patient are, in some instances increased by the addition of painful retention of urine,|| or pain in passing the fæces,¶ or convulsions.** When the catheter is required, it is easy to see that it often must be directed upwards, owing to the distention of the vagina. Imperforated hymen, as it is called, is by no means uncommon, and the treatment is very simple, for the part is easily divided.†† The retained fluid is thus evacuated, sometimes in very great quantity. It has very rarely the appearance of blood, being generally dark-coloured, and pretty thick, or even like pitch. Febrile and inflammatory symptoms may follow the operation,‡‡ as in the opening of other shut cavities; on this account, (though I have never met with the event) it may be proper, first of all, to make a small aperture, and in a few days after the evacuation, to enlarge it.

* Vide Case of a patient of Dr Chamberlain's, in Cowper's Anatomy.—Case by Mr Fryer, in *Med. Facts and Obs.* Vol. viii. p. 132.

† Case by Mr Sherwin, in *Med. Records, &c.*, p. 279.

‡ Case by Mr Kæymer, in *Med. Annals*, Vol. vi. p. 347. By Mr Eason, in *Med. Comment.* Vol. ii. p. 187, and a variety of other cases. This, in every instance I have known, has been the greatest complaint.

§ Dr Smellie candidly acknowledges, that in one instance he took the protrusion of the hymen for the membranes of the ovum forced down by labour pains. These pains were accompanied with suppression of urine. He let out about two quarts of blood. *Coll. i. n. i. c. 6.*

|| In a case related by Benevoli, the belly was very much swelled, and the urine suppressed. He attempted to pass the catheter, but without success. Next day he repeated his endeavour, and pushing with more force than prudence, considering his object, he ruptured the hymen, and immediately a great quantity of dark matter was evacuated, even to the extent of 32 pints.—See also Mr Fryer's case.—Mr Warner relates the case of a little girl, where the hymen was continued half way over the orifice of the urethra. The effects were at first attributed to stone in the bladder; but the nature of the case being made out, she was cured by dividing the hymen. *Cases*, p. 75.

¶ In a case by Mr Bardy, the patient, who was fifteen years of age, had every month, for some days, pain in the uterine region. The external parts were greatly protruded and stretched as in labour, and the nymphæ formed merely two lines. The anus was thrust backward and distended, and she passed the urine and fæces with great pain; the hymen from irritation was covered with scab; the health had suffered. Six pounds of thick gelatinous matter were evacuated by incision. *Med. and Chir. Review* for September, 1807.

** Vide Case by Mr Fynney, in *Med. Comment.* Vol. iii. p. 194.

†† In Mr Fynney's case, the part to be divided was very thick; and in Dr M'Cormick's case, the vagina seemed to be in part impervious. *Med. Comment.* Vol. ii. p. 188.—In general the membrane is thin.

‡‡ Vide Mr Niven's case, in *Med. Comment.* Vol. ix. p. 330.—The symptoms gradually abated. In a case related in the *Medical Gazette*, No. 142, fatal peritoneal inflammation took place on the third day.

The hymen, although perforated as usual, is sometimes so strong as to impede the sexual intercourse; yet in these cases impregnation has taken place, and the hymen has been torn,* or cut in the act of parturition. Conception, it has been supposed, may take place, although the hymen be imperforated,† but in such cases it is asserted that a small aperture existed.‡

When the hymen is torn in coitu, some blood is evacuated, which, in many countries, is considered as a mark of virginity. But, as even the presence or absence of a hymen, cannot be looked upon, as affording any certain proof relative to chastity, this test must be considered as altogether doubtful. When the hymen is ruptured, and there is an inflammation about the external parts, some have, in cases of alleged rape, considered the crime as proven. But whoever attentively examines the subject must admit, that these are not infallible marks; that they may exist without that crime having been committed; and that a woman may have, if previously stupified, been violated, without exhibiting any mark of injury. Practitioners therefore ought, in a legal question of this nature, to be cautious how they give any opinion, especially if they have not seen the person immediately after the crime has been committed.§ See p. 48.

SECTION ELEVENTH.

The perinæum may be torn during the expulsion of the head, or arms, of the child. In many cases, the laceration does not extend farther back than to the anus, nor even so far. This is a very simple accident, and requires no other management than rest, and attention to cleanliness, by which the parts unite, at least to such an extent, as, in general, to prevent inconvenience. But as the recto-vaginal septum is carried forwards and downwards, when the perinæum is put on the stretch, previous to the expulsion of the head, it sometimes happens, that the laceration extends along this septum, and a communication is formed betwixt the rectum and vagina. In some cases, the sphincter

* M. Baudelocque mentions an instance where the hymen resisted, for half an hour, the strong action of the uterus. Note to Section 341.

† Vide Ambrose Paré, *Hildanus*, cent. iii. ob. 60.—Ruysch. ob. 22.—Mauriceau, ob. 439. In a case published by Champion, the urethra was greatly dilated, and had served as a substitute for the vagina, notwithstanding which the female became pregnant, and was delivered by dividing the hymen. *Jour. de Med.* Tome lxviii. p. 84. Moreau assures us that he found a girl six months pregnant, although on inspection, the hymen was entire. *Traité*, T. i. p. 110.

‡ This small aperture was enlarged, I believe, by Dr Mackinly. *Lancet*, March, 1841, and in various previous cases.

§ Vide Baudelocque, *l'Art*, &c., sec. 342, et Foderé *Med. Legale*, Tome ii. p. 3.

ani remains entire, although the rectum be lacerated, that is to say, the rent passes by the side, sometimes both sides of the orifice, and of the sphincter, and yet may extend up the septum. But in almost every instance, where the septum is lacerated, the sphincter also is torn. This accident is attended with considerable pain and hæmorrhage, and succeeded by an inability to retain the fæces, which pass rather by the vagina than the rectum. Prolapsus uteri is also in some instances, a consequence of this laceration. This accident is sometimes produced by attempts to distend the parts previous to delivery, or by the use of instruments; but it may also take place, even to a great degree, in a labour otherwise natural and easy, and in which no attempts have been made to accelerate delivery. At the same time, I must say, that I have never known the septum torn, in any woman, who was delivered alone. The most effectual way to prevent laceration, is by supporting the perinæum when it is stretched, and keeping the head from being suddenly forced out. When the parts have been actually torn, our first attention is to be directed to the repressing of the hæmorrhage, which is sometimes considerable, and this is best effected by temporary compression, which favours the formation of coagula. Next, we are to consider how the divided parts may be united. Rest, and retaining the thighs as much together as possible, along with frequent ablution, in order to remove the urine, which sometimes for a few days flows involuntarily, or the lochia and stools, are requisites in every mode of treatment. Indeed, when the urine can be retained, but seems to irritate the parts, when voided, it should, for some time, be drawn off with the catheter. As there is nothing in the structure of the parts, to prevent their reunion, it has very feasilily been proposed, to induce a state of costiveness and prevent a stool for many days. But with only one or two exceptions, this method has failed, the subsequent expulsion, of the indurated fæces, tearing open the parts, if adhesion had taken place. An opposite practice, that of keeping the bowels open, and the stools soft or thin, by gentle laxatives, has been much more successful, the rent, in some instances, healing in a few weeks; and this is the practice I would recommend to be adopted, taking care, at the same time, to keep the parts in contact, by confining the patient to bed, with the thighs kept together. During this period, the stools are, at least for a time, passed involuntarily; but in other instances, they can from the first be retained, if the patient keep in bed. Sutures have been frequently employed, and, although they are never in the first instance to be resorted to, nor till the tender condition of the parts have gone off, yet, they ought certainly, at last to be had recourse to, if reunion cannot otherwise be effected. The

edges of the divided parts must previously be made raw. If the laceration in the septum be extensive, it may be requisite to apply either one or two stitches there, by using a speculum vaginae, and a needle, fixed in a handle, with the eye at the sharp end. If the rent be small, it may be sufficient to place two stitches in the perinæum. When the sphincter ani remains entire, but the septum is torn, some have considered it necessary to divide that muscle; but others, with more reason, omit this practice. During the cure, some introduce a canula into the vagina, to support the parts, and others apply compresses dipped in balsams; but it is better to apply merely a pledget, spread with simple ointment to the part. If the radical cure fail, the patient must use a compress, with a spring bandage, if the stools cannot be retained. But it sometimes happens that the torn extremity of the rectum, or the anterior part, containing a fragment of the sphincter, or a portion of the internal sphincter, as it has been called, forms a kind of flat valve, which rests on the posterior surface, at the coccyx, so that the orifice now resembles a slit, and the fæces, unless very liquid, remain in the hollow of the sacrum, and do not pass through the valvular orifice, till an effort be made to expel.* Sometimes the perinæum unites, but the septum does not, and the inner surface of the rectum protrudes into the vagina.† In this case the edges of the septum must be made raw, and stitches used. When an opening takes place between the two passages, not by laceration but ulceration, from chancre or other causes, the same treatment must be adopted. In one case, under the care of Dr Gibb, the aperture became considerably contracted, by the use of the actual cautery.

When the laceration does not extend into the rectum, but takes a more lateral direction, distress is often produced, rather by the feeling of falling down, or weight in the rectum, or by its actual protrusion, than by uterine bearing down. The front of the gut and back part of the vagina are turned forward and downward, and excoriation of the skin adds to the evil, whilst pain and heat are felt extending down the inner side of the thigh. We can only, as a radical cure, have recourse to

* Upon this subject, vide La Motte's *Traité*; and Cases and Observations by Noel, Saucerote, Trainel, and Sedillot, in the fourth and seventh Vol. of the *Recueil Periodique*. Merriman's *Synopsis*, p. 104. *Edin. Journal*, Nov. 1823. Both Petit and Gardien notice the fact, that the stools may ultimately come to be retained, but do not seem aware that this depends on the formation of a valve. They think it owing to the sphincter regaining its power. See also a paper in *Archives*, xvii. p. 284. Harvey notices a mare where the perinæum was torn.

† Dr Nicol's case, *Edin. Journal*, xxxii. 24. The operation was performed three times, and ultimately with success. There was profuse hæmorrhage in the second attempt. M. Roux has repeatedly used the stitches with success. On removing the ligature, a small fistulous opening remained for some time between the rectum and vagina, but in a seventh case, the union was complete at first.

sutures, after paring the edges. Should these fail, we must use a compress and spring-support.

The perinæum may be perforated, the fourchette and anus remaining entire. This generally heals well by keeping the part clean, and directing the discharge through the orifice of the vagina.*

SECTION TWELFTH.

The vagina may be unusually small. I have known it not quite three inches long, and sometimes it is very narrow. The size, if necessary, may be enlarged with a tent of prepared sponge.† Should pregnancy take place before it be fully dilated, we need be under no apprehension with regard to delivery: for, during labour, or even long before it, relaxation‡ takes place. Sometimes the vagina is wanting,§ or impervious, or all the middle portion of the canal is filled up with solid matter. More frequently, however, there is only a firm septum stretched across, behind the situation of the hymen, or higher up in the vagina; and this, which has usually a small perforation,|| it may be necessary to divide. The finger is to be introduced to the septum, and along it a probe or director is to be carried, and the septum explored to discover an aperture.¶ Then, by means of a probe-pointed bistoury, or curved scissors, the part is to be divided. If there be no perforation we dare not operate unless there be very distinct fluctuation from retention of the menses. In this case the obliteration is generally near the orifice, or there is

* M. Nedej, 1778, sent a case of this to the Academy of Surgery at Paris. Dr Denman has described it, and a discussion on this accident by Moreau and Capuron, is to be found in the Archives, T. xxiii. p. 282—294. See also Moreau, *Traité*, T. ii. p. 462. The patient was perfectly cured in five weeks, and had a second child without injury to the cicatrix.

† Vide Van Swieten Comment. in Aph. 1290.

‡ In a case where the vagina would not admit the point of the little finger, the child was delivered after eighteen hours' labour. *Plenk Elementa*, p. 113. See also Van Swieten.

§ Where it is deficient altogether, then a sound introduced into the urethra is felt by the finger from the rectum with merely a thin septum interposed. In one case, related by Boyer, even the external parts were almost entirely wanting, and the breasts were very small.

|| This may produce bad effects, from the retention of the menses. M. Magnan relates the case of a girl, aged twenty-two years, who had been subject to monthly colics and suppression of urine. An incision was made through the membrane, and two pounds of blood let out. *Hist. de la Société de Med. pour 1776*, art. ii. —I sometime ago saw a lady who before marriage had the hymen divided on account of imperforation. But she was ever afterwards subject to great pain during the menstrual period. The discharge came away very slowly, and was dark and ill-smelled. A septum was found near the os uteri, and, toward one side, a small opening was discovered, through which a director was pushed, and then the part divided by a bistoury, the greatest portion of the blade of which was wrapped up in lint. The operation was successful.

¶ The aid of the speculum may be useful.

no orifice, but a fibrous septum, and sometimes the whole canal is very hard. Fatal inflammation may follow the operation. When there is a contracted vagina, with stricture at one part, there is usually pain in coitu, and sometimes during menstruation. The stricture may be carefully divided, but nothing can alter the unusual contraction from indurated texture. In some cases, there is a great confusion of parts, and indeed it is impossible to describe the varieties of conformation; for the vagina may follow a wrong course, or communicate with the urethra, or the rectum* may terminate in the vagina, &c. Malformation does not always prevent pregnancy,† but it usually occasions much pain about the menstrual period, and where there is a deficiency of the canal, and the menses are still secreted, they are retained, and the hypogastrium becomes swelled and painful.‡

SECTION THIRTEENTH.

In consequence of very severe labour, or other causes, inflammation, followed by ulceration or gangrene of the vagina, may be produced. Sometimes there are only cicatrices, partially, contracting the canal, or, there may be one or more bands, stretching across, formed, partly, by lateral tightening of the vagina, partly, by deposition of lymph. The passage may be wholly shut up, or only a very small opening left, through which the menses can ooze, or impregnation take place; add to this, the bladder may be opened, either above or below the contraction, the extent of which is very variable. Sometimes calculous concretions form beyond the adhering part,§ or even without any apparent previous disease. In some instances the whole vulva has

* In this case the *faeces* do not always pass continually. The patient has been known not to have a stool once in a fortnight, which probably depended on the *faeces* being indurated, and the communication small.

† In the 33d Vol. of the *Phil. Trans.* p. 142, there is a case related, where there was a kind of double vagina, separated by a transverse septum or membrane. The orifices were very small. During labour the pain was so great as to produce convulsions. She was delivered, by laying the two passages into one. Chapman relates a case of malformation, where the woman was impregnated, and in labour all the forcing was felt at the anus. From this an opening was made through into the vagina, and the child was born per anum. Portal mentions a girl, who had only a very small aperture at the vulva, for the evacuation of the urine; the menses came from the rectum; nevertheless she became pregnant. Before delivery, the orifice of the vagina appeared, and she bore the child the usual way. *Precis de Chirurgie*, Tom. ii. p. 745.

‡ De Haen relates a case of this kind, where an operation was unfortunately performed. The patient died, and it was found that the bladder had been opened by the incision, and the discharge, mistaken for retained menses, had been urine and blood. The uterus was unopened and distended with menses. Boyer mentions two cases, where attempts were made to puncture, in the one from the rectum, in the other from the neck of the vagina. Both proved fatal from inflammation.

§ Vide Puzos *Traité*, p. 140.—Case by Mr Purton, in *Med. and Phys. Journ.* Vol. vi. p. 2.

be afterwards pointed out. The cure is effected by the application of the ligature, more solito, or, after a ligature has been put round the peduncle, the polypus may be cut off.

SECTION FIFTEENTH.

Inversion, or prolapsus, of the vagina, is easily known by the fulness within the orifice in slight, or the actual protrusion, especially at the back part, in great degrees. At first, the tumour is soft, but if it be allowed to remain long protruded, the surface may become firm, and more like skin, or it may inflame or be fretted. The whole circumference of the canal, may be relaxed and descend, but it is usually the posterior part, at the recto-vaginal septum, which is most affected. The whole length of the canal may be relaxed, and in that case the uterus descends more or less; but, in what is generally called inversion of the vagina, it is chiefly the part near the orifice, which is relaxed, or rather, to speak more correctly, which is deprived of its due support, by extension of the fascia at the outlet of the pelvis, and defective action of the levator ani. The bladder and urethra are seldom much affected, but in those cases where the anterior part of the fascia, at the pubis, and the levator there, are relaxed, the bladder does descend a little, and the urethra is corrugated, and perhaps somewhat altered in its direction. The rectum, in every degree, is more or less drawn down, and brought forward, sometimes so much so, as to form a kind of pouch in the protruded vagina. This being a disease of the connexions of the vagina, rather than of the vagina itself, applications to that passage cannot be depended on. Still, astringent injections, or lotions, may be tried. But we must trust more to the cold hip-bath, and strict attention to the bowels, in order to prevent accumulation in the rectum, and a spring-support similar to that used for prolapsus ani. It is seldom useful or expedient to remove a portion, or section of the side, of the protruded part, with a view to make it contract, or to use the actual cautery. Excision of the whole is neither safe nor necessary. Pregnancy at first rather increases it, but in the latter stage it is relieved. As it is apt to return after delivery, we must keep the patient for some time in a recumbent posture, and must also, during delivery, by due support, prevent the parts from being too much pressed down.*

* Burton relates a case, where the prolapsed vagina was mistaken for part of the placenta, and rudely pulled, by which it and the bladder were torn. *System*, p. 170.

Stollers relates a case, where this was complicated with calculi. These being removed, the parts were reduced, and a cure obtained. *Cases*, Obs. 2.

SECTION SIXTEENTH.

Water sometimes passes down from the abdominal cavity, betwixt the vagina and rectum, protruding the posterior surface of the vagina in the form of a bag; or, it appears at the side of the labium. The accumulation of water, in the cavity of the pelvis, is sometimes so great as to obstruct the flow of the urine, or produce strangury. When the person lies down the swelling disappears. If large, a candle held on the opposite side, sometimes shows it to be transparent; and in every case, fluctuation may be felt. As this symptom is connected with ascites, the usual treatment of that disease must be pursued, and, if necessary, the water may be drawn off by tapping the abdomen, or rather by piercing* the tumour, which is to be rendered tense, by pressing it with the finger. Dr Kennedy mentions a curious case, where the vagina being shut up by adhesion, the menses got down in this direction, and the fluid was let out by puncturing the labium.

SECTION SEVENTEENTH.

Sometimes the intestine passes down betwixt the vagina and rectum, forming perineal hernia, or protrudes either at the lateral, or posterior, part of the orifice of the vagina, like the watery tumour; but it is distinguished from it by its firmer and more doughy feel, and by the manner in which it can be returned, which also shows that it is not an encysted tumour. By handling it, a gurgling noise may be heard, and sometimes indurated fæces may be felt. Sometimes the protruded or everted surface of the vagina is ulcerated. As the os uteri is pushed forward, and the posterior part of the vagina occupied by the herniary tumour, this complaint may put on some appearance of retroverted uterus. A case of this kind is mentioned by Dr John Sims, in Sir

* Mr Henry Watson, in the *Med. Communications*, Vol. i. p. 162, called the attention of practitioners to this disease. In a case he relates, he drew off in the month of June, four gallons of fluid, by tapping the vagina; and immediately after this, she passed the urine freely, which she could not do before. She required again to be tapped in two months, and died in November. The left ovarium was found to be converted into a cyst about the size of a sow's bladder, but it had not been touched by the trocar. In one case, he punctured with a lancet instead of a trocar, but this was succeeded by troublesome hæmorrhage. The good effects of tapping are also seen in a case related by Mr Coley, in *Med. and Phys. Journal*, Vol. vii. p. 412. In this, two gallons of water were drawn off, and she continued well for five months, after which dropsical symptoms returned, and although diuretics gave her some relief, yet she was at last cut off. In the case of Mrs Jarritt, related by Sir W. Bishop, in *Med. Commun.* Vol. ii. p. 360, pain was felt in the right side of the belly, after parturition, accompanied with tæmefaction. In two years the vagina became prolapsed, the tumour being four inches in diameter. The tumour was punctured twice; the first time 46 pints, the second 51, were drawn off. Diuretics had no effect. In a case related by Dr Denman, the woman was pregnant, and no operation was performed. On the fourth day after her delivery, after a few loose stools, she expired. *Introd.* Vol. i. p. 150.

A. Cooper's work on Hernia. In other cases, it is impossible to touch the os uteri, and the feeling is much like what one should expect, were the uterus, itself, turned upside down into the hernia. Indeed, I have reason to believe that I have seen this happen. This complaint is frequently attended with a bearing-down pain; and on this account, as well as from its appearance, it has also been mistaken for prolapsus uteri. Sometimes the tumour does not protrude externally; but symptoms of strangulated hernia may appear, the cause of which cannot be known, unless the practitioner examine the vagina. In a case occurring to Dr Mac-laurin, and noticed by Dr Denman, the patient died on the third day, and the disease was not discovered till the body was opened. Should a woman have vaginal hernia during pregnancy, we must be careful to return it before labour begin, for the intestine may become inflamed, and the fæces obstructed, by the head entering the pelvis; or the labour itself, if the head cannot be raised and intestine returned, may be impeded so much as to require the use of instruments. Vaginal hernia requires the use of a pessary, or a spring-support. But I must add, that I have known so much distress follow the reduction, that the patient was happy to get the hernia reproduced.

The rectum sometimes protrudes into the vagina, and always does so, more or less, in an *inversio vaginæ*. It forms a kind of sac or dilatation on the front of the gut, and comes forward on, or over, the perinæum, and permits of a lodgment of fæces. This is remedied by the globe pessary, after all the indurated fæces have been removed. The farther accumulation is prevented by laxatives. It is possible for partial distention of the rectum, in front, or at the sides, to take place higher up, and cause obstruction to the fæces, or tumour in the vagina, but this I mention not on my own authority. The upper part of the rectum, is really not a straight gut, but curves to the left side, and if the attachment be lax, a portion may, if distended with indurated fæces, form a greater curve, or kind of pouch, productive of pressure on the fundus uteri, and obstruction to the stools.

SECTION EIGHTEENTH.

Indolent abscess, or encysted tumours, may form betwixt the vagina and neighbouring parts. These, are distinguished from hernia and watery tumours, by being incompressible, and not disappearing by change of posture. The history of the disease assists the diagnosis, and examination discovers the precise seat and connexions of the tumour, though it cannot with certainty point out the nature of the contents. I have formerly explained, how a fluid could be confined, between the rectum and the vagina, in the septum. These tumours seldom afford obstinate resistance

to delivery; by degrees they yield to the pressure of the head, but sometimes they return after delivery. The treatment is similar to that required in other cases of tedious labour, and the tumour must be opened, if we cannot deliver the woman otherwise, with safety to the child. Even in the unimpregnated state, if it cause irritation, or if the bulk of the tumour be so great as to impede the evacuation of urine or fæces, an opening must be made, or the tumour dissected out. After delivery, in those cases where no operation is performed, the tumour sometimes inflames and indurates, even so low as the perinæum. Friction on the perinæum, has in these circumstances done good.

Varicose tumours of a knotted form, disappearing or becoming slack by pressure, and aneurismal tumours distinguishable by their pulsation, may form about the vagina, and ought not to be interfered with, except by supporting them with a globe in the vagina. If inflammation of the veins take place, labour may be very painful, or one of the varices may burst. The hæmorrhage must be restrained by pressure.

SECTION NINETEENTH.

A very dreadful disease, which I have called spongoid tumour, may form either within the pelvis, or about the hip-joint, or tuberosity of the ischium, and spread inwards, pressing on the bladder and rectum, sometimes so much as to require the use of the catheter. We recognise the disease, by its assuming, very early, the appearance of a firm elastic tumour, as if a sponge were tied up tightly in a piece of bladder. Presently, it becomes irregular, and the most prominent parts burst, discharging a red fluid, which is succeeded by fungous protrusion. But I have never known it proceed to this last stage within the pelvis. I know of no remedy, and would dissuade from puncturing, except in the very last extremity. I have never met with a case where it was necessary.

SECTION TWENTIETH.

The orifice of the vagina, together with the labia, and indeed the whole vulva may be affected by erysipelatous inflammation. This appears under two conditions: *1st*, it may originate in the vulva, and spread inwards, even to the uterus; or, *2dly*, it may begin in the womb, and extend outwards. The parts are tumid, painful, and of a dark red colour. The second affection is most frequent after parturition; but the first may occur at any age, and under a variety of circumstances. It may be confined to the external parts alone, or it may quickly spread within the pelvis, and destroy the patient, for this disease generally terminates in gangrene. Vigarous* says, this state may be distinguished from

* *Maladies des Femmes*, Tom. ii. p. 169.

abscess of the labium, by both labia being equally affected. The general history of the case, and proper examination, will point out the difference. When the disease is confined to the external parts, we may hope for a cure, and even for the preservation of the parts, by giving early, quinine and opium internally, and applying to the surface, pledgets dipped in weak solution of sulphate of zinc, with the addition of a tenth part of camphorated spirit of wine. When this application gives continued pain, fomentations with milk and water, or with decoction of chamomile flowers may be substituted.

A highly sensible or inflamed state of the parts* may occur in nymphomania, or libidinous madness, either as a primary or secondary affection; and should the patient die under the disease, the parts are generally found black. The tepid bath and fomentations give relief, and sometimes saturnine applications are beneficial. The acetate of lead has also been given internally. Some advise rubbing the parts over with nitrate of silver. If the patient be feverish she ought to be bled, and have cathartics administered, and put on spare diet. Nauseating doses of tartar emetic, or full doses of the medicine, given so as to operate briskly, are of service, especially if followed by sleep. Strict and prudent attention must be paid to the mind.

I have (page 45,) noticed a highly sensible state, of the orifice of the vagina, from the condition of the nerve. It produces great pain in coitu, and in virgins, as well as in the married, there is pain in walking, and making water, and often a feeling of bearing down, though the womb be in its place. There is also often a white discharge. The introduction of the finger gives great pain. This is sometimes cured by rubbing the orifice, occasionally, with a stick of nitrate of silver. If this do not succeed, the part must be divided, as directed at page 45. Sometimes there is contraction or tenderness farther up, and this part must also be divided. The relief thus obtained is great.

A constant heat and tenderness of the parts, if not occasioned by uterine disease, may be relieved by bathing with solution of sulphate of zinc, and using laxatives.

Prurigo, is often symptomatic of disease in the uterus, or irritation in the neighbouring parts; and in these cases can only be removed by acting on the cause. When it is not dependent on any evident local disorder, it is allayed, or cured, by keeping the

* In the disease described, by some, as catarrh of the uterus, the mucous coat is inflamed, and the disease begins by itching of the vulva, vagina, and uterus, increasing to a great degree, and attended with frequent desire to make water, and sometimes nymphomania. Pain of the hypogastrium comes on, with fever. In some days a discharge of muco-purulent matter takes place, but the cure is not completed for many weeks, and it may end in obstinate fluor albus. Venesection, tepid baths, laxatives, and diaphoretics, are the proper remedies.

bowels open, for costiveness often causes it, avoiding stimulants, and applying, to the affected parts, unguentum hydriacum nit. or bathing, frequently, with tincture of myrrh diluted with rose water, or very weak solution of muriate of mercury in emulsion of almonds, or the same salt mixed with lime water, or lime water alone, or solution of sulphate of zinc alone, or with laudanum, or of nitrate of silver; or acetate of lead dissolved in emulsion of almonds, or decoction of chamomile flowers, or of bran, or of poppies, &c. This affection may attend the early period of pregnancy, or the cessation of the menses. Sometimes, especially during pregnancy, the itching and heat are attended with some inflammatory swelling of the labia, with or without a turbid serous oozing, and perhaps with redness and tenderness of the orifice of the vagina. Besides venesection, the use of laxatives, rest, and mild diet, we may bathe the parts with weak solution of sulphate of zinc, or of copper, or one of the lotions just mentioned, or dust the parts with calamine, alone, or mixed with white lead.

Prurigo affecting the anus alone, or along with the pudendum, may arise from ascarides or other removable irritations; but, in elderly females, this symptom should always lead to an examination of the rectum, for it often attends stricture or alteration of the intestine, which should be early attacked by suitable means. So far as itching and local uneasiness require prescription, nothing often succeeds better than a suppository, consisting of three grains of extract of hemlock and one of opium.

SECTION TWENTY-FIRST.

The vagina is always moistened with a fluid, secreted by the lacunæ on its surface. To this is added the secretion from the glands of the cervix uteri, and from the membrane of the uterine cavity. The natural appearance of these discharges has already been noticed. Naturally, the balance between secretion and absorption is such, that except on particular occasions, no fluid is discharged from the vagina. But in a diseased state, the quantity of the secretion is greatly increased, and the discharge, whether proceeding solely from the vagina, or partly also from the womb, receives the name of fluor albus, or leucorrhœa. Some confine the term, strictly, to a discharge from the inner surface of the womb, and in order to determine whether the secretion proceeds from the uterus or not, it has been proposed to stuff the vagina completely for some time, and then inspect the plug, to ascertain whether that part corresponding to the os uteri be moistened. But this test is not satisfactory, and will seldom be submitted to. The speculum has been used for the same purpose.*

* This valuable instrument should be used in all doubtful cases of uterine or vaginal affection. It has been well observed by Dr Simpson, that this can be

When the discharge proceeds from the womb, it sometimes injures the function of that organ so much, or is dependent on a cause influencing the uterus so strongly, as to interfere with menstruation, either stopping it altogether, or rendering it too abundant or irregular in its appearance; and in such cases, the woman seldom conceives. Very frequently, however, the menses do continue pretty regularly; and in these cases, the other discharge disappears during the flow of the menses, but is increased for a little before and after menstruation. When the menses are obstructed, it is not uncommon for the fluor albus to become more abundant, and to be attended with more pain in the back, about the monthly period. In such cases it has been thought that the leucorrhœa served as a substitute for menstruation, and that it was dangerous to check it. If a woman who has uterine leucorrhœa conceive, the discharge stops, but a vaginal secretion is, on the contrary, not unfrequently increased. This it has been thought dangerous to check suddenly, but it ought not to be allowed to continue profuse, as it causes abortion.

On this subject it may be well to attend to the following circumstances: 1st, Simple excitation, can increase the natural secretion without changing it. 2d, A continued increase of action, more particularly if accompanied with any degree of irritation, changes the appearance. 3d, As affections of the uterus and vagina, can act on the nerves, and produce not only pain in the back, and more remote and extensive effects, so, affections of the nerves, produced directly, or sympathetically, can cause discharge. On this principle, many females have leucorrhœa, for some time, before menstruating at puberty, and others have it, always, for a day or two before the monthly period.

It is a general law, that all increased discharges from mucous membranes, are produced by increased excitation, either, by direct stimulation, persistent or temporary, or, by a continued abnormal action, generally more or less inflammatory, or by sympathy, or by the state of the nerves. We have an instance of the last, in the effect of the mind, on the genital organs. This view is important, in as much as it directs attention, especially at first, to an excited state, or, perhaps inflammatory condition, and will prevent the indiscriminate use of astringent injections, &c., and it leads us to inquire, particularly, as to the local sensations, and, if necessary, to ascertain the degree of sensibility of the cervix uteri, or its appearance when the speculum is used, though the first will generally supersede the necessity of the second. There is often in chronic inflammation a feeling of

done without any exposure. The patient is placed on her side, at the edge of the bed. The speculum is introduced into the vagina under the clothes, and then only its extremity requires to be seen. Light can be thrown in by a taper.

bearing down without the reality. This arises from the sensitive state of the parts at the top of the vagina.

Fluor albus may occur in two very different states of the constitution, a state of plethora, or disposition to vascular activity, and a state of debility. The one is marked by a full habit, a good complexion, and a clear healthy skin. The other by a pale countenance, a sallow surface, a feeble pulse, and generally a spare habit. The one may be attended with vertigo, or disease produced by fulness. The other by dyspepsia, palpitation, and those complaints which are connected with debility.

Scrofula gives a strong predisposition to this disease, as well as to affections of mucous membranes elsewhere, and often seems to operate without the aid of any evident exciting cause.

The discharge is produced either by the lacunæ of the vagina, or the glandular and exhalent apparatus of the uterus. Most frequently, I believe, the os and cervix uteri, are, originally, the chief seat of the complaint; but, in varying degrees, the cavity of that organ, and the whole tract of the vagina, come to participate, and the last often furnishes the greatest quantity of the discharge. It may also be confined in some cases to near the orifice, or, exclusively, to the canal.

The discharge itself may consist, simply, of the natural mucus of the part increased in quantity, in which case it is glairy and transparent; or, it may be so far changed as to become opaque, and white, like starch, diffused in cold water, or creamy, which is particularly the case when the organs of secretion of the upper part of the vagina and cervix uteri are affected; or it may be muco-purulent. We also occasionally meet with a discharge like jelly, sometimes turbid, sometimes clear and amber-coloured. It proceeds from the cavity of the uterus, particularly its cervix, and seems to depend on a state produced by present, or previously existing, inflammation. After death, by pressing the uterus, we squeeze out from it a gelatinous looking substance, probably albumen. This may happen in acute fever, but also as a chronic affection, in which case the female is sterile as long as it lasts. The thin glairy transparent discharge, is justly considered as the mildest degree, and it is favourable when the discharge, having been previously white, or green, or yellow, returns to this state. In all cases when the discharge is white, and particularly when there is pain in the region of the uterus or back, the state of the cervix uteri should be ascertained. These discharges, may all, occasionally, be mixed with a little blood from the uterine vessels, if there be a tendency to menorrhagia, but not otherwise, unless there be organic disease. In those cases where the discharge is yielded by diseased structure, it is modified by the nature of that structure, and by the existence of ulceration and erosion. When

it proceeds from the morbid part itself, and not from the irritating effects of that part on the vagina, by sympathy, it is generally fœtid, and purulent, often of a dark colour, mixed with blood, and alternated by uterine hæmorrhage. There is often heat about the parts, and other symptoms of disease. In all ambiguous, and in every chronic case, it is necessary to examine carefully the state of the uterus and vagina, not only with the finger, but with the speculum.

Fluor albus is usually accompanied with pain, and sense of weakness in the back, very often, with pain at the edge of the ribs on the left side, and, not unfrequently, with a feeling of bearing down. The functions of the digestive organs, are always ultimately injured, and in those women who are of a weak habit, they are impaired from the first. In them, the discharge adds greatly to the debility, and all the diseases arising from that state increase, such as indigestion, derangement of the hepatic secretion, torpor of the bowels, palpitation, swelling of the feet, &c. In the more plethoric patients, the debilitating effects are longer of appearing, but they are not exempted from affection of the stomach.

Vaginal discharges may be divided into three classes, dependent on three different sets of causes, acting on the secreting apparatus. *First*, the symptomatic, produced by an irritation existing in the vagina, or its neighbourhood. Of this kind is the discharge produced by prolapsus, and other displacements of the uterus, polypus, the early stage of scirrhus, ascarides, costiveness, &c. *Second*, that produced by the action of causes, directly, on the apparatus, and this is more idiopathic. Amongst the causes, especially in scrofulous constitutions, we may notice such as excite increased vascular action, or a state bordering on inflammation, if not actually inflammatory; as, for example, pessaries, stimulating applications to the passage, excessive venery, especially if accompanied with intemperance in eating or drinking, exposure to cold, perhaps in the same way as catarrh is produced. Such causes as induce a combination of debility and excitation may also occasion it, as, for instance, abortion when not well recovered from, and hence, also, it often exists in that state, which gives rise to menorrhagia. Frequent parturition can only act, in this way, when it leads to some disordered action of the parts, for oftener it acts by causing some degree of prolapsus. The *third* division includes those cases, where the origins of the nerves influencing the secretion are affected. When the functional nerves of the uterus are impaired, or disordered, in their action, as, for instance, in the state of amenorrhœa, the nerves which influence the vaginal secretion are often affected, and an increased discharge produced. The original state, in this case, may have

been produced by a direct affection of the uterus itself, or, indirectly, by sympathetic influence. We may in consequence of remote sympathy, as, for instance, alteration in the action of the nerves of the stomach, bowels, or other viscera, have, by the connexion of their origins with those of the uterus and vagina, alteration produced in the latter, and the effect thereby induced can only be removed by discovering and removing the remote cause. In describing the nerves of the uterus, I have noticed the strong sympathy which exists between the stomach and the os uteri. 52. The state of the spinal cord in the sacral region, is also a frequent cause of discharge, and it will hereafter be mentioned that it is capable of producing pain in the uterine organs and pelvic cavity, as certainly as if a cause of inflammation or excitement had been directly applied to the parts. This state seldom exists without pain in the lower part of the back, and tenderness on pressing the sacrum; at the same time I admit that discharges, arising from causes operating directly on the secreting surfaces, are sometimes attended with pain in the back, but seldom unless there be either some degree of prolapsus, or very considerable local irritation. Debility has been enumerated as a cause of leucorrhœa, but we find many degrees of weakness without this concomitant, and it is very difficult to conceive how it should act in any other way than as a predisposing cause. In this way, particularly in scrofulous constitutions, it renders very slight exciting causes efficient.

In the treatment of the *first* class, we must consider the primary cause of the disease, for it would be vain to expect a cure till that be removed. Our object must be, to remove the local cause, to improve the general health, and aid, by topical applications, particularly, mild astringent injections. When the patient has been habitually costive, or piles or ascarides in the rectum are detected, the usual remedies must be resorted to. When prolapsus exists, proper support must be employed.

In the *second* class, we must endeavour to discover, and check, the operation of the immediate exciting cause, and use such general remedies as the state of the constitution seems to require. Should the patient be plethoric, or robust, it is necessary, in the first instance, to diminish the fulness and activity of the vessels, by mild, and perhaps, spare diet, by moderate doses of laxative medicine, but rarely, by the lancet. Then, we give bitters with alkali, to improve the state of the stomach and bowels, and employ an injection of solution of acetate of lead, which is to be thrown three or four times a-day into the vagina, and this may afterwards be exchanged for one of a more astringent quality. If the os and cervix uteri, be tender on pressure, or redder than usual, and softer and more swollen, leeches applied there, are of

great service, or when this cannot be done, they may be applied to the groin, or blood taken from the loins by cupping. The tepid bath is useful, and generally, in the early stage, it is proper to keep to a recumbent posture. No astringent injection should be used. Tepid water is the best injection. In protracted cases, the use of the baths, and water, at Ems is beneficial, and the health may be confirmed afterwards, by the moderate use of the neighbouring water at Schwalbach.

If the disease occur in a weak habit, or if the plethoric or inflammatory state, though it existed at one time, have now been removed, the internal remedies should be more directly tonic, and injections of various astringents must be employed; of these the two best are solution of sulphate of alumin, and decoction of oak bark. We may also use solution of sulphate of copper, nitrate of silver, or sulphate of zinc. Port wine alone, or with a little brandy, may be tried, or water slightly acidulated with nitrous acid, or infusion of chamomile flowers, with the addition of a little tincture of opium. But a general rule to be attended to, is not to use any injection so strong as to irritate.* It has been proposed to rub the surface of the vagina with nitrate of silver, but I cannot speak of this with so much confidence as the French do. The action of cold and damp is to be avoided, as these are hurtful in every affection of mucous membranes, whether chronic or acute. Of the internal remedies, some are intended to act on organs sympathizing with the secreting parts, as emetics, others as general tonics. Emetics, on account of their operation on the stomach and alimentary canal, where these organs are in fault, are accordingly advised by most writers;† but they are not to be employed during the existence of plethora, and, are useless in the swollen state of the uterus; and, indeed, are only to be administered, in such cases, as would otherwise require them, from the state of the stomach. Purges have also been used,‡ in order to carry off noxious matter; but they are only to be given, so as to keep the bowels regular,§ for brisk and repeated purging is hurtful.|| Tonic medicines, and those which improve the action of the chylopoietic viscera, such as lime water, bark, steel, sarsa, iodine, especially

* No injection should be thrown in with so much force, if the syringe be fully introduced, as to enter the uterus freely. It is established that fluid may pass from the cavity along the tubes, and fatal inflammation has been induced.

† Smellie, Vol. i. p. 67.—Vigarous, Tome i. p. 261.—Mead, Med. Precepts, chap. xix. sect. 3d.—Denman, Vol. ii. p. 104.—See also Etmuller, Riverius, &c. &c.

‡ Chambon Malad. des Filles, p. 107.—Mead, Med. Precepts, chap. xix. sect. 3d.

§ Stoll Prælectiones, Tomus ii. p. 383.

|| Vigarous, Malad. des Femmes, Tome i. p. 261.

the tincture combined with a bitter, &c., are also of utility, and along with them we may, with great advantage, employ the cold bath, particularly sea-bathing, which is also aided by the change of air, which attends its use. The same might be said with regard to Tunbridge, and some other watering places. Schwalbach or Spa are proper, if the circumstances of the patient permit. Kino has been advised by Vigarous and Gardien, and when astringents are proper, it may be employed in the form of tincture. Ergot is proposed by Dr Ashwell internally, and its infusion as an injection. The diet is to be light and nourishing, and the patient ought not to indulge in too much sleep.

Various medicines have been proposed with a view of acting specifically on the secreting parts, such as cicuta, balm of Gilead, diuretic salts, calomel, guaiac, copaiba, cantharides to the extent of producing strangury, electricity, arnica, &c.; but they have very little good effect, and sometimes do harm. Of all these, the tincture of cantharides, essential oils, and cubebs, by exciting the vessels in chronic secretions, seem to be the best, but no internal medicine can be much depended on, in this view. By suckling a child, the discharge has in some instances been removed. Plasters and liniments have been applied to the back, and sometimes relieve the aching pains. Opiates are occasionally required, on account of uneasy sensations. When it has succeeded to some eruptive disease, sulphureous preparations have been advised.

In the *third* class, much attention is required to discover the cause of the disease, and when discovered, it is not always easy to remove it. In doubtful cases we cannot go wrong, at least in employing all the ordinary means for the general improvement of the health. When the sacral nerves are affected, the cervix uteri is often tender, as in cases of chronic inflammation, but there is either no swelling, or very little, and there is often pain or numbness in the thighs or limbs. It is to be managed in the first stage, by the warm seawater hip-bath, laxatives, rest, avoiding all irritation, and by bleeding, promptly, either generally, or topically from the sacrum, according to circumstances. Leeches applied to the os uteri, when that is red or tender, are decidedly useful. Issues on the side of the last lumbar vertebra are sometimes of use. After the tender state is nearly subdued, and the discharge has become more chronic, the cold bath, tonics, and mild vegetable astringent injections, are proper. If it still continue, we may use the copper pill, or bismuth with sarsaparilla, internally. In this, however, as in all other cases, if chalybeates or tonics excite, they must be discontinued. When the digestive organs are in any way affected, it is of the greatest importance to remove that affection, by the sedulous and early use of tonics,

antacids, purgatives, and other proper remedies. Disease, organic or functional, of the liver, has been known to produce this discharge, and pain in its region often accompanies it.

Purulent discharge implies previous inflammation, and the present existence either of sinus, ulceration, or a morbid change of a secreting surface. Ulceration may be ascertained by examination. Sinus, is more difficult to discover, for the aperture may be small, but, in general, the discharge is very offensive, and in greater quantity at one time than another. The part is also tender to the touch. The last is attended by smarting in making water, and other symptoms excited by the action of a virus. To this species belongs the gonorrhœa, a purulent discharge from an inflamed surface. Gibert says, that although the urethra be inflamed, yet coexistent with this, is an inflammatory state of the cervix uteri. In some, the vagina was for a time red, but in a large majority it was unaffected. Ricord says, that uterine, is to vaginal blennorrhagia, as 27 to 32. It is frequently, he says, accompanied or followed by erosion, or granular ulceration of the os uteri. It is to be cured by mild laxatives, and injections, first of acetate of lead, and then of sulphate of zinc, dissolved in water. Gaudriot uses a suppository, containing five drops of liquid chloride of zinc, to ℥iii. of paste, with a very little morphia. The two first states are to be managed according to the causes which give rise to them.

Some consider uterine discharge as the most frequent, and divide it into the acute and chronic, dependent on inflammation of the mucous coat. The acute marked by fever, pain in the uterine region, tenderness of the os uteri, and glairy discharge. The chronic, by the absence of uterine pain, and by a milky discharge, seen by the speculum to proceed from the uterus. The first is treated by leeches, the hip-bath, light diet, and douches per vaginam. The second they treat by tonics and astringents. Others, consider the clear discharge, to proceed from the cavity of the uterus, and use astringent injections into that cavity; when the discharge is more opaque, they place its source in the follicles of the cervix and os uteri, which is red, swollen, and tender, and sometimes ulcerated; M. Melier says the ovaria often become affected. Astringent injections, and the application of nitrate of silver to the os uteri, are the remedies used. It is admitted by them, that in such cases, the woman is barren so long as the complaint continues; but it is notorious, that innumerable instances occur, of conception taking place during the existence of leucorrhœa, a clear proof, on their own principles, that it must have been vaginal, and therefore that the cavity of the uterus is not so invariably the seat of the disease as they maintain.

SECTION TWENTY-SECOND.

The bladder is subject to several diseases. The first I shall mention is stone. This excites very considerable pain in the region of the bladder, remarkably increased after making water. There is also irritation about the urethra, with a frequent desire to void the urine; but it does not always flow freely, sometimes stopping very unexpectedly. The urine deposits a sandy sediment, and is often mixed with mucus. These symptoms lead to a suspicion that there is a stone in the bladder, but we can be certain only by passing a sound. By means of the warm bath, opiates, and the medicines improperly called lithontriptics, much relief may be obtained, and very often the stone may be passed, for the urethra is short and lax, so that calculi of great size have been voided. But when these means fail, the stone must either be removed by dilating the urethra, or by lithotomy. Lithotomy has been performed during pregnancy.* Sometimes the stone makes its way, by ulceration, into the vagina.† It has even been known to ulcerate through the abdominal integuments.‡

In many cases the symptoms of stone are met with, although none can be found in the bladder. This is frequently the case with young girls, previous to the establishment of the catamenia, or with women of an irritable habit; and when they are elderly, it leads to a dread of the existence of cancer of the womb. There is no organic disease, nor have I ever known it, in such people, end in a diseased structure of the bladder or kidneys; indeed, they rarely complain of uneasiness about the kidneys: In many cases there is only a frequent desire to void water, attended with pain or smarting. In others, the vesical, or urethral, affection is combined with much sensibility, but no inflammation of the orifice of the vagina. The pain may be about the neck of the bladder, but often it is referred, chiefly, to the course of the urethra. I have tried many remedies, such as soda, uva ursi, narcotics, anti-spasmodics, tonics, and the warm and cold bath, but cannot promise certain relief from any one of these.§ In process of time, the disease often subsides and disappears. If there be much tenderness about the urethra on touching it, or if its orifice appear red, it will be proper to commence with the application of leeches to the part, and then apply a poultice of linseed meal, with the addition of laudanum. If this do no good, a bougie should be introduced daily, and retained for a

* Deschamps *Traité de l'Oper. de la Taille*, Tome iv. p. 9.

† Hildanus, cent. i. obs. 68 and 69.

‡ Vide Case by M. Caumont, in *Recueil Period.*

§ In a case of this kind, described by Mr Patton as a spasmodic affection of the neck of the bladder, calomel appeared to cure the complaint. *London Med. Journal*, Vol. x. p. 560.

quarter of an hour. When that fails, the application of nitrate of silver to the internal surface of the urethra is useful. It should be introduced like a bougie, and retained for half a minute. If the vagina be tender, and pain be felt on introducing the finger, division of the side of the mucous coat at the orifice of the vagina is the best practice, as advised at p. 45.

Contraction of the orifice of the bladder, with an irritable state of the urethra, may succeed labour, or attend female diseases, and occasions great pain in voiding the urine. It requires anodynes, tepid fomentations, laxatives, and sometimes the gentle introduction of the catheter.

Induration, or scirrhus of the bladder, produces symptoms somewhat similar to calculus, but there is a greater quantity of morbid mucus mixed with the urine; and blood with purulent matter is discharged, when ulceration has taken place. No stone can be found, but the bladder is felt to be hard and thick. Sometimes it is much enlarged, with such appearances, as give rise to an opinion, that the uterus is the part principally affected.* The scirrhus and ulceration may extend to the uterus and vagina. In this disease we must shun all stimulants, and put the patient on mild diet; avoid every thing which can increase the quantity of salts in the urine; keep the bowels open, with an emulsion containing oleum ricini; and allay irritation by means of the tepid bath and opiates. Mercury, cicuta, uva ursi, &c., with applications to the bladder itself, have seldom any good effect, and sometimes do harm.

Chronic inflammation of the mucous membrane of the bladder, produces frequent desire to void urine, and the discharge of viscid mucus, which sometimes has a puriform appearance. Cicuta and balsam of copaiba seem to be the best remedies, along with the warm hip-bath. If the uterus at the same time form morbid adherence, the pressure may cause retention of urine.†

Polypous tumours‡ may form within the bladder, producing

* Morgagni relates an important case, where there was a hard painful tumour in the hypogastric region, accompanied with fluor albus, uterine hæmorrhage, and stillicidium of urine. After death, the bladder was found very large and scirrhus, with two large bodies in the cervix, preventing the urine from being retained. The uterus was diseased only in consequence of its vicinity to the bladder. *Epist. xxxix. art. 31.*

† Dr Hunter was of opinion that the pressure of the os tincæ on the bladder, was the cause of retention, in a woman, whose uterus and bladder are in the museum, but the bladder is evidently also diseased. The catheter could not be passed till she was bled, which was done 300 times, in the course of five years. She became dropsical.

‡ Of this disease I have never seen an instance; but Dr Baillie mentions a case, in which the greater part of the bladder was filled with a polypus. *Morbid Anat. p. 298.* Fungous tumours are much more frequent.

the usual symptoms of irritation of that organ. Most dreadful sufferings have been caused by worms in the bladder.

In consequence of severe labour, or the pressure of instruments, part of the bladder may become gangrenous, and a perforation take place by sloughing.* The woman complains of soreness about the parts, and does not void the urine freely. In from five, to ten days, the slough comes off, and then the urine dribbles away by the vagina. The aperture, which most frequently is transverse, may be in the upper part of the urethra, or in the portion of bladder which is connected with the vagina, or in that, which adheres to the lower part of the uterus, but the first and last are more rare. In all cases of severe labour, and indeed in every case when the urine does not pass freely and at proper intervals, and, especially, if there be tenderness of the parts, we must draw off the water, in order to prevent distention and farther irritation of the bladder; and the parts must, if there be a tendency to slough or to ulcerate, be kept very clean, and be regularly dressed, in order to prevent improper adhesions. If the bladder should give way, or have been actually torn, we are, if the opening be not extensive, warranted to expect a cure by keeping a catheter, having a receiver attached to it, constantly in the bladder, to prevent the water from flowing by the aperture. If this have been done early, and the parts be kept clean, and inflammation subdued, when it existed, by suitable means, the bladder heals in a period, varying from one, to three months, according to circumstances.† If neglected, the urine constantly oozes from the orifice of the vagina, though, sometimes, the fistula is so small, that it can with difficulty be detected with the finger, or the nail, or a probe, after a director or staff has been introduced by the urethra. The patient in a recumbent posture can retain some water, and void it partly by the natural orifice. In such cases, where the state has been of long duration, we may still have a faint hope for a cure by the catheter; but if we fail, then we take the aid of the application of nitrate of silver to the edges, which is both intended to make them raw, and also to promote contraction.‡ The exact situation of the fistula may be discovered by using a speculum. Instead of caustic the actual cautery has been employed by Dupuytren. The catheter is not to be discontinued. Some propose to introduce a sponge into the vagina, to press on the fistula, or to fill the vagina with a caout-

* Puzos maintains, that it is always the bladder, and not the urethra, that suffers.

† This succeeded in a very bad case related by Sedilliot, *Recueil Period.* Tome i. p. 187. Many have been recorded since. See also Dr Cumin in *Edin. Jour.* xxi. 62.

‡ Lallemand cured a patient by applying nitrate of silver, and, when the eschar fell and the edges were raw, using la sonde-airigne. *Archives*, 1836, p. 482.

choue bottle, having a piece of sponge* fixed to that part of its surface which corresponds to the fistula, but it is more likely to irritate than to do good.† In extensive openings it has been proposed to make the sides raw, and then retain them by means of needles, or by stitches, whilst a catheter was also employed.‡ In a case I met with, there was an attempt by nature, to plug up the opening.§

Sometimes, after a severe labour, the woman is troubled with incontinence of urine, although the bladder be entire. This state is often produced directly by pressure on the neck of the bladder; sometimes it is preceded by symptoms of inflammation about the pelvis, and, in such cases, the os uteri is often found, afterwards, to be turned a little out of its proper direction, and the patient complains much of irregular pains, about the hypogastrium and back. When she is in bed, some of the urine collects in the vagina, and comes from it when she rises; after she is up, it comes from the urethra alone, which distinguishes this from the complaint last described. Time sometimes cures this disease. The cold bath is useful, unless it increase the pain; and in that case, the warm bath should be employed. It may be proper to use the bougie daily, and also tincture of cantharides, and pressure.

Delicate females may have involuntary discharge of pale urine, containing ammoniaco-magnesian phosphate, connected with, or dependent on, disorder of the digestive and nervous system. Attention to the state of the bowels, regulation of the diet, due exercise, the cold bath, and the use of tincture of cantharides, generally effect a cure.

The bladder may descend, in labour, before the uterus, producing much pain; or it may prolapse for some time previous to labour, attended with pains resembling those of parturition,

* *Medico-Chir. Trans.* Vol. vi. p. 583.

† Dr Balmanno, showed me a patient who derived much comfort, from having a hollow tin globe, like a pessary, inserted into the vagina. It was perforated at the upper part like a pepper-box, and from the under, a catheter descended, which entered into a flat flask, suspended between the thighs. Little or no urine escaped by the vagina. This plan might be combined with the use of a catheter in the urethra. Dr Kennedy has tried applying a long piece of sponge on end on the orifice of the vagina, the other turned up toward the groin to convey the urine upon the principle of capillary attraction.

‡ Lallemand in *Archives Générales*, Avril, 1825. This operation proved fatal on the tenth day, owing to inflammation, in a case under M. Roux. *Jour. Hebd.* 1830. Stitches, however, have succeeded, though not often. *For. and Brit. Med. Rev.* x. 282.

§ The patient to whom I allude, had, I understood, four years before her death, been delivered with the forceps, and soon afterwards had incontinence of urine. I found a large perforation in the bladder, exactly resembling the fauces without an uvula. The uterus was a little enlarged and indurated; and its mouth, which was ulcerated and fungous, lay in this opening, projecting into the bladder, and closing up the communication betwixt the bladder and vagina.

and sometimes with convulsive or spasmodic affections,* especially when the catheter is neglected. When the prolapsus vesicæ takes place as a temporary occurrence during labour, or antecedent to parturition, we must be careful not to mistake the bladder for the membranes, for thus irreparable mischief has been done to the woman. It has also been mistaken for a hydrocephalic head. The bladder, when protruded, is felt to be connected with the pubis. It retires more or less when the pain goes off. If the patient be not in labour, the uneasiness is to be mitigated by keeping the bladder empty, and allaying irritation with opiates, and taking a little blood, if feverish or restless. If labour be going on, the bladder must likewise be kept empty, and may, during a pain, be gently supported, by pressing on it with two fingers in the vagina, by which the bladder is preserved from injury. This prolapsus vesicæ, may also take place, in the unimpregnated state, for a portion of the bladder rests on, and is connected with the upper and anterior part of the vagina. If this part be relaxed, so as to permit of inversion of it, then, the bladder must descend with it, and form a tumour, of a size varying with the fulness of the bladder.

From a relaxation, or laceration, of the continuation of the pelvic fascia, the bladder may descend betwixt the vagina and pelvis, so as to form a tumour within the vagina, or at the anterior or lateral part of its orifice. This is called a hernia of the bladder. There is some degree of bearing-down pain in walking, particularly when the bladder is full. Some patients complain of pain in the groin, others at the navel, and some suffer little or no inconvenience, except pain about the bladder when it is distended. If the disease have continued long, or if the procidentia of the anterior part of the vagina be considerable, the os uteri is directed backward: and when the finger is introduced into the vagina, the anterior part of that canal can be pushed up farther than usual over the fore part of the cervix uteri, which then appears to be elongated, and perhaps in some cases the anterior lip is actually lengthened. This hernia† is often attended with suppression of urine. If inattentively examined, it may be taken for prolapsus uteri; but it will be found to diminish, or even disappear, when the urine is voided, and, by pressure, the urine may be forced through the urethra. In a case dissected by my brother, the bladder was found to form

* In a case related by Sandifort, the suppression of urine was always attended with convulsive cough. Lib. i. cap. 5. And in a case related by Dr J. Hamilton, where prolapsus took place before parturition, the muscles of the body were spasmodically agitated. Cases, &c. case 9.

† Vide the Memoirs and Essays of Verdier and Sabbatier, and Hoin. Sandifort, Diss. Anat. Path. lib. i. cap. iii.; and Cooper on Hernia, part ii. p. 66.

a hernia on both sides of the pelvis, hanging like a fork over the urethra.

Both in prolapsus, and hernia, of the bladder, we have recourse to the use of a globe pessary, or one of an egg-shape; and if there be much relaxation of the vagina or parts of the outlet of the pelvis, astringent injections and an elastic support acting on the perinæum will be useful. Straining and all muscular exertion should be avoided. Sometimes it is combined with calculus in the bladder. In this case, it has been proposed to open the bladder, extract the stone, and keep up a free discharge of urine through the urethra, in order to allow the communication with the vagina to heal. Deschamps advises, that the opening should be made near the pubis, and not at the posterior part of the tumour, lest that part of the bladder be cut, which, when the tumour is reduced, would communicate with the abdominal cavity. I can see no necessity for making any change in the mode of extracting the stone on account of the proclivitas. The urethra may be dilated as proposed by Sir A. Cooper, or the stone may be broken.

SECTION TWENTY-THIRD.

Excrescences may, notwithstanding the opinion of Morgagni, form in the course, or about the orifice of the urethra,* and generally produce great pain, especially in making water; on which account the disease has sometimes been mistaken for a calculous affection. The pain is of the burning kind, and not only affects the part itself, but, in irritable females, produces a sensation up the spine compared to a shivering, and sometimes causes a cold fit. The agony is at times so great, as to excite convulsions, and it is not uncommon for the patient to have an increase of her suffering about the menstrual period. Sexual intercourse does not increase the pain, but sometimes relieves it. The tumour is vascular, florid, moveable, and exceedingly tender. When excrescences grow about the orifice of the urethra, they are readily discovered; but when they are high up it is much more difficult to ascertain their existence. Dr Bailliet† says, they cannot be known, but by the sensation, given by the catheter passing over a soft body, but this I never have been able to corroborate. They however, in one case, were discovered, by turning the instrument to one side, so as to open the urethra a little.‡ A pair of small forceps introduced into the urethra and

* Mr Sharp mentions a case where they grew in small quantity upon the orifice, producing excruciating torment till they were extirpated. *Critical Inq.* p. 188.

† *Morbid Anatomy*, p. 321.

‡ In the instance related by Mr Warner, the urine was voided in drops with great pain, especially about the menstrual period, and there were sometimes even

then opened, will readily show the canal. When their situation will permit, it is best to extirpate them with the knife or scissors; or if near the orifice, as they generally are, a ligature may be applied. Sometimes they have yielded to the bougie, though they had returned after excision.* But when small and numerous, I have found it better to introduce a bit of lint, first moistened, and then lightly covered with powdered nitrate of silver. It is to be withdrawn in half a minute. The removal of large excrescences has occasionally been attended with very severe symptoms.† The daily use of the bougie, for some time after extirpation, is of service.‡

The same pain, &c., may be produced without excrescence, merely by a sensitive state of the orifice. If the application of caustic and the use of the bougie do not give relief, the sides of the orifice should be slit a little or scarified.

Sometimes the urethra is partially or totally inverted,§ forming a tumour of the vulva, attended with difficulty and pain in voiding urine. A slight inversion may be relieved by a bougie; when there is a considerable prolapsus, resisting the use of the bougie, the part may be cut off. The bladder sometimes is everted, and protrudes at the orifice of the urethra. It is distinguished from eversion of the urethra, by being surrounded by

convulsions. He dilated the urethra, by inclining the catheter to one side, and thus saw two excrescences near the upper end. He divided or laid open the urethra, and cut off the excrescences successfully with scissors. Cases, p. 309.

* Broomfield's Surgery, Vol. ii. p. 298.

† In the patient of Mr Hughes, the disease was taken at first for prolapsus uteri, for there was a substance filling the *os externum*, and appearing without the vulva. It was a spongy excrescence, from the whole circumference of the *meatus*. It was drawn out with a thread passed through it, and then cut off. Strangury, with pain about the pubis, and fever, took place, on which account the catheter was introduced. Suppression of urine repeatedly occurred; and as it was often difficult to introduce the catheter, the *semicupium* was employed, and always with advantage; but once after it, she became faint, and the limbs were convulsed. A stricture being suspected at the upper part of the urethra, a bougie was introduced, and kept in the canal, which removed the symptoms. *Med. Facts and Obs.* Vol. iii. p. 26.

‡ In Mr Jenner's case, the irritation of the bladder was great, and the menses were irregular. A fungus was found, filling the orifice of the urethra; this was cut off, and the bougie used for an hour every day for a fortnight; a little before the extirpation, a hæmorrhage took place from the excrescences. *Wide Lond. Med. Journal*, Vol. vii. p. 160.

§ M. Serain relates a case of a girl, eleven years of age, who from her fifth year had been subject to frequent attacks of difficulty in voiding the urine. He had an opportunity of examining her after a violent attack, and found a cylindrical body, four inches long, projecting from the vulva; and whenever she attempted to make water, this projection swelled up. It was amputated with success. *Recueil Period.* Tom. xvii. p. 304. Seguin relates a case which was reported to be strangulated hernia. A black and red tumour of considerable size was found between the labia; the catheter being first introduced into this, a ligature was bound over it, and the tumour came off on the fourth day. *Nouv. Journal*, Tome vi. p. 228.

its orifice. It can be returned, and then a large bougie should be used. The urethra is sometimes contracted by a varicose state of its vessels, or by a stricture; but these are not common occurrences. In continued irritation of the urethra, with difficulty of voiding water, the bougie is often of great service, even although there should be no contraction of the canal itself. If this do not give relief, there is reason to suppose that the disease depends on the state of the nerves, coming off from the lower part of the spine, and a savin issue should be applied there. Sometimes the urethra is preternaturally dilated,* but this does not necessarily cause incontinence of urine.

The mucous coat of the urethra is sometimes thickened, and its vessels become varicose. This produces general swelling of the urethra, felt by the finger in the course of it, pain on pressure, and *in coitu*, with a discharge of mucus, and tormenting desire to make water. When the patient bears down, the urethra is partially everted, and appears swelled and vascular. These vessels should be scarified, the part bathed with an astringent lotion, and gentle pressure made with a thick bougie.

In a case, where, after a fall, the urethra became very wide, and the bladder lost its power of retention, a cure was effected, by cutting out part of the canal, and reuniting the sides of the wound by stitches.‡

SECTION TWENTY-FOURTH.

The uterus may be larger than usual, or uncommonly small,‡ or it may be altogether wanting.§ Unless these circumstances

* In Dr Chamberlain's patient who had the hymen imperforated, the urethra was so dilated as to admit the finger; and Portal found it, in an analogous case, dilated so as to form a cul-de-sac, admitting the point of the thumb. *Cours d'Anat. Medicale*, Tom. iii. p. 476.

† Mr Hobart, *Med. and Phys. Jour.*, lxiv. 283.

‡ Morgagni mentions a porter's wife, in whom the uterus was found not above an inch long, and without any ovaria. The pudendum was extremely small, and there was scarcely any appearance of a clitoris. In the *Phil. Trans.* for 1805, there is a case where the uterus of a woman, twenty-nine years of age, was not larger than in the infant state, and scarcely any appearance of ovaria. She ceased to grow at ten years of age, had no hair on the pubis, never menstruated, and had an aversion to men. I have seen the uterus of the adult not larger than that of a child; the woman never menstruated, and had very flat breasts.

§ Columbus dissected a woman who always complained of great pain in coitu. The vagina was very short, and had no uterus at its termination. See also *Revue Med.* 72. p. 179.

Fromondus relates an instance, where the place of the os externum was occupied with a cartilaginous substance.

Morgagni was consulted by a barren woman, whose vagina was only a third part of the usual length, and its termination felt firm and fleshy. He advised a dissolution of the marriage.

M. Meyer in Schmucker's *Essays*, mentions a case where the vagina and uterus were wanting, but the ovaria existed. The labia and clitoris were small, and

be combined with some deficiency, or unusual conformation of the external parts or vagina, the peculiar organization is not known till after death. It is, however, not uncommon for the external parts to be very small, when the uterus is of a diminutive size; and when it is altogether wanting, the vagina is either very short, or no traces of it can be found. In either of these cases, no attempt should be made to discover a uterus by incisions, unless, from symptoms of accumulation of the menses, we be certain that a uterus really exist.* In some instances, the skin at the point, corresponding to the situation of the orifice of the vagina, has been pressed in, so as to form a short sac, which in the erect posture, prolapsed like a bag. This has been cut in search of the uterus, and nothing found but cellular substance. It has been supposed that peculiar feelings about the monthly period, or the existence of sexual desire, indicated the presence of ovaria. These have sometimes been found attached to a mass of cellular substance, or even to the bladder.

The uterus may be double:† in this case there is sometimes a double vagina, but generally only one ovary and tube to each uterus. This conformation does not prevent impregnation.

The uterus is sometimes divided into two, by a septum stretching across at the upper part of the cervix;‡ or the os uteri is almost, or altogether shut up,§ by a continuation of the lining of the womb or vagina, or by adhesion, consequent to ulceration, or by original conformation; and in this last case, the substance of

there were no nymphæ. Mr Ford dissected a child who had no vagina, uterus, or ovaria. The urethra and rectum terminated close to each other. *Med. Facts*, Vol. v. p. 92.

* Nabothus mentions a rash operator, who undertook, by incision, to find the uterus; but after cutting a little he came to some vessels which obliged him to stop.

† Vide *Hist. de l'Acad. de Sciences*, 1705, p. 47.—Haller *Opusc. Path.* 60. *Acrell's cases*.—Purcell in *Phil. Trans.* lxiv. p. 474.—Canestrini in *Med. Facts*, Vol. iii. p. 171.—Valianeri met with a double uterus and double vulva. *Opera*, Tom. iii. p. 338.—Dr Pole describes a double uterus in the 4th Vol. of *Mem. of Medical Society*, p. 92. See above 40 references in *Plonquet's Digesta*. In Dr Lee's case, in the *Medico-Chir. Trans.* the uterus of a woman who died in childbed was divided into two lateral portions, opening into a cervix common to both, and having an orifice of the usual form. Each horn or division had its own ovum and tube.—Breschet's case, in the *Musée*, Dnpuytren, has a double vagina. Geisa mentions a case where there was a child in each uterus, both of whom lived.

‡ Baillie's *Morbid Anatomy*, chap. xix. There are two preparations in the Hunterian Museum, where there is stricture in the cervix uteri, a quarter of an inch broad.

§ Littre found it almost closed, by a continuation of the inner surface of the vagina, *Mem. de l'Acad. des Sciences*, 1704, p. 27; and in the seventh month of pregnancy, closed by a glandular substance, 1705, p. 2.—Morgagni found it shut with a membrane. *Epist.* xlv. art. 17.—Boehmer quite shut up. *Obs. Anat.* fasc. 2. p. 62.—Ruysch saw it so small as scarcely to admit a pin; and Sandifort so well closed, that nothing but air could be forced through it. *Obs. Anat. Path.* lib. ii. c. ii. p. 67.

the os uteri is sometimes almost cartilaginous. The menses either come away more or less slowly, according to the size of the aperture, or are entirely retained when there is no perforation. As long as the menses are discharged, nothing ought to be done; but if they be completely retained, and violent and unavailing efforts made for their expulsion, an opening must, as a matter of necessity, be made from the vagina. In such cases, the uterus has been tapped with success;* but it has also happened, that fatal inflammation has succeeded the operation.

The vessels are sometimes enlarged; and I have seen the spermatic veins extremely varicose, in an old woman who had been subject to piles; but I do not know that any particular inconvenience results from the venous enlargement.

SECTION TWENTY-FIFTH.

578. The uterus is very subject to inflammation after parturition, and this is to be considered in another part of this work. But here, it is to be remarked, that inflammation, simply, or combined, in different degrees, with irritation, may attack the uterus in the unimpregnated state, and if I can call the attention of the young practitioner early to this formidable disease, I shall have performed what will amply reward me for writing this work. The disease may attack the young, and especially the married, or those who are more advanced in life, particularly about the time when the menses become irregular. One of the most frequent causes is exposure to cold, by light dress, for instance, during the menstrual period; but the use of strong injections, or any other irritation of the uterus may excite it. It is very apt to be brought on by a long walk, or other exertions, in delicate or irritable females during menstruation, and then the attack is very sudden. There is a constant pain in the lower part of the belly, or near the pubis, and sometimes extending to the back and groins. This pain is permanent, but not unbearable, although most annoying. It is aggravated by pressure above the pubis, and also in attempts to make water, and sometimes also in going to stool, for which there may be frequent abortive calls. The cervix is sensible, and, sometimes, in one spot, acutely so, when touched, and, generally, the position is lower than it ought to be. The pulse is generally accelerated, and the skin is hot, but sometimes the pulse is feeble, and the skin cool, or the feet and hands cold, the bowels rather constipated, and the stomach irritable, and there is great thirst, with a dry hard tongue; any attempt to sit up, often produces syncope. Violent and even bearing-down pains come on in paroxysms, not indeed

* The menses being retained, and great pain excited, they were let out with a trocar by Schutzer. Vide Sandifort, p. 69.

of very long duration, but often repeated at short intervals, and these, with the other symptoms, render it impossible to mistake the case. If the disease make its attack during menstruation, the discharge is immediately checked; if in the interval, it does not come on at the usual time unless the disease be removed. Retroversion or anteversion of the womb may also take place, in which case suppression of urine is added to the other symptoms. Headach, globus, and other sympathetic, but not essential, symptoms may add to the distress. It is of the utmost consequence to remove this early, and at once, not that it proves rapidly fatal, unless the inflammation extend to the intestines or peritoneum,* but because it lays the foundation of organic disease in the uterus, which no art can afterwards cure. It is indeed impossible to say how many cases of chronic inflammation, as it is called, or of troublesome enlargement, or of scirrhus-cancer of the uterus may be dated from an attack, perhaps an ambiguous one, of inflammation, and which might, with all its train of evils and disasters, have been prevented by attention to that primary cause. When there is fever, the lancet ought not to be omitted, but it must not be pushed far, as it seldom completes the cure. Leeches, to the number of eighteen, or two dozen, applied to the pubis or the lower part of the back, are of decided efficacy, and may require to be repeated, either there, or to the top of the sacrum and groin. Some of the French surgeons prefer their application, directly, to the uterus per vaginam, and this when it can be conveniently done is useful. They think that their external application is hurtful. Scarification has been substituted for leeches. The hip-bath is useful, and then the application of a poultice to the hypogastrium. It has been objected to the bath, both in this and other uterine diseases, that it tends to draw more blood to the part. I look on this more as a theoretical opinion than as one founded on experience: whatever soothes, generally, does good. The bowels are to be freely opened, and when the symptoms have abated, opiates alone, or combined with diaphoretics, are proper. The continuation of the paroxysms of pain, is best prevented by anodyne clysters. Constant but slight pain, remaining after the use of these remedies, will require the application of a blister above the pubis. I need scarcely enjoin the recumbent posture. 116.

When the mucous membrane is the chief seat of the inflammation, a purulent secretion takes place, and may be confined, for a considerable time, within the cavity, and the uterus becomes

* Even in this case, the patient may live for many weeks, and after death I have found the uterus enlarged and suppurated, the round ligament swollen in the inguinal canals, and the intestines not only matted, but adhering to the peritoneum, lining the abdominal parietes.

enlarged. This is to be distinguished by the history, and if a spontaneous discharge do not take place, relief may be obtained by introducing a small bougie into the os uteri, and on to the cervix. This is at least safe if done gently. The use of the hip-bath, and the application of warm poultices to the hypogastrium, accelerate the progress and give relief.

Sometimes, as a consequence of inflammation, more or less distinctly marked, but occasionally without any very distinct indication of uterine disease, we find part, or the whole of the womb softened, and its substance very easily torn. This is met with in both the gravid and unimpregnated state, and in the latter, we often find pus, either infiltrated into the substance, or contained in numerous, but small, abscesses. More rarely, it is contained in a kind of deciduous membrane, lining the cavity of the uterus. It also is found in the veins. The causes of this disease, and its nature, are not yet well understood, and its existence is not known certainly till after death. A modification of the ramollissement affects the mouth rather than the body of the uterus, converting it into a black and fœtid putrilage. I think it is rare as a primary disease, for usually there is an affection of some of the neighbouring parts. In such cases as I have seen, the substance of the uterus has been more vascular than natural. The mucous coat thickened but not injected, and near the os uteri dark in colour. Either one or both lips have been gangrenous, and sometimes in the cervix, one or more small cavities are seen filled with black fluid.

An insidious inflammation of the whole uterus, or of the cervix, is not uncommon. It may be called a chronic inflammation, and sometimes follows the acute form, but oftener comes on more slowly. There is more or less pain in the uterine region, varying from a mere feeling of weight, heat, or uneasiness, to actual pain. When the uterus is considerably enlarged, there is more or less prolapsus, or anteversion or retroversion, or lateral obliquity, in different degrees, and attended with the usual symptoms. But there may be great feeling of bearing down, without any prolapsus. This depends on the tender state of the cervix, and its connexions, on the latter of which, the mere weight of the uterus produces an unpleasant effect. The four chief marks are, a feeling weight, or pressing down, generally, at first, without any prolapsus; some enlargement of the cervix and os uteri; more or less pain on pressing these; and a discharge of white mucus, which sometimes becomes puriform, and this often is mixed with blood; or there may be considerable hæmorrhage. The countenance becomes sallow or unhealthy, the appetite is impaired, and the digestion suffers; and very often the most prominent symptom is pain in some part of the abdomen, distant from the

uterus, most frequently in the vicinity of the liver. The strength declines slowly, but there is little fever, but often a complication of hysterical and anomalous affections. Examination discovers the uterus to be enlarged, but not indurated. The cervix is more or less increased in circumference. The os uteri is soft, open, and tender to the touch, particularly at one spot, and its lips sometimes feel rough, as if the skin were abraded, and very frequently both a little broader and longer. If examined, by the speculum, the colour is generally redder than natural, or the vessels are seen more numerous, which is not usually the case in scirrhus. The disease for a time seems to be of a simple nature, for on cutting the uterus, its substance does not seem materially altered in texture, though increased in quantity, but in process of time, change of organization takes place, too often that of scirrhus-cancer.

Bearing in mind then, the formidable consequences of continuance, we must, in all doubtful cases, make an early and careful examination per vaginam, and if we find any symptoms, or indication, of the existence of this disease, use early means for its removal. So long as there is any thing like increased activity of the vessels, and increased sensibility, we may hope to obtain benefit by the application of leeches to the groins, or uterus itself, and by the regular use of mild saline laxatives, the tepid saltwater hip-bath, and light diet, with abstinence from all stimulants of every kind, and a state of as much rest as is compatible with health. The injection of a continued stream of warm water into the vagina has been advised by Gardien, but it has not been used by others. All concomitant symptoms must be attended to, and relieved by the appropriate means, and pain is to be allayed by an opiate or by cicuta.* We view this affection as a slow but simple inflammation, and we employ the usual plan for its removal, resting confident, that if we succeed in this, we remove also the swelling. A gentle and cautious use of mercury is proper. A state of rest in the horizontal position is necessary.

In this stage, which may continue longer than is generally supposed, no medicines have the power of producing direct absorption, and thereby lessening the size. If we subdue and remove the inflammation, or the existing action, we remove that which has caused and kept up the swelling, and the absorbents, by the power of nature alone, will do their part of the duty. It is thus that in many other local inflammations, topical bleeding,

* The introduction of five grains of extract of cicuta at night into the vagina may give relief. Pain about the groin is relieved by leeches, or a blister kept open by savin ointment.

or venesection when required, speedily removes swelling; and it is thus that in certain dropsical affections, the lancet, in a few days, produces a perfect absorption, whilst the vessels had till then remained uninfluenced by the most powerful medicines. But we must not push this doctrine too far, or carry the leeching, &c., beyond the bounds both of utility and safety.

When the disease has become still more chronic, the chance of cure is less, for the texture is more altered, but still we may succeed. If the cervix be felt thickened, but not indurated, and the pain be not of the stinging kind, or the constitution much broken down, we may still attempt the removal. If asked, how? the natural reply would be, by promoting absorption, and then we would look into the *Materia Medica*, for the list of alteratives, and the medicines which are there authorized to excite absorption. But there are no medicines of any decided virtue in this way, in so far as tumours are concerned, or which excite the absorption of a tumour, without also, at least, acting in an equal degree on every other part of the body. Those which seem to act directly on a tumour, often do so by destroying or removing that condition which kept up the local disease, and thus permitting nature to go on with absorption. Mercury does this in a venereal bubo, and, in certain affections of the testicle, it promotes absorption, either by destroying the remaining inflammatory action, or by acting injuriously on the new-formed substance, and rendering it unable to live, or thrive. It may excite the new substance more than it can bear with impunity, and then we get rid of it. Iodine, if it have any effect on bronchocele, acts in the same way. We must, therefore, in the case under consideration, trust to general, not to specific remedies. The great rule of practice is to lessen the determination of blood to the uterus, and to diminish inordinate action. We may still, if we gain any ground, employ leeches, (especially, if applied to the os uteri,) so long as these do not debilitate or injure the system. We avoid all stimulants, and therefore enjoin a strict diet, but do not starve or weaken the patient. We allay sensation and soothe, by the use of the tepid hip-bath, and perhaps anodynes. We use means for improving the health without exciting the system; and, particularly, we direct our attention to the state of the bowels. By keeping up their action, and increasing that of the kidneys, we sometimes promote general absorption; and if we have previously so far removed the inflammatory condition of the tumour, but left it in a kind of ambiguous state, this plan may prove beneficial. On this principle, the use of saline mineral waters may be resorted to; muriate of lime has been extolled as an alterative, but it is only in this way that it acts, when it does any good at all. Mercury,

on the principle already noticed, may also do good, but its effects should be carefully watched; for if it do no good, it does harm, and may exasperate a tumour which might have otherwise remained quiet. Iodine has been recommended by Dr Ashwell when the cervix and os uteri, being glandular, are affected. He gives it internally, and also rubs the part, from the vagina, with an ointment composed of ℥ii of hydriodate of potash, and ℥iiss. of simple cerate. The size of a nutmeg is to be used at a time. If the body of the uterus be the seat of disease, he expects no benefit from it.

This condition is sometimes complicated with a very sensitive state of the nerves, amounting almost to neuralgia. In this case carbonate of iron, arsenic, &c., may be tried, but if they, especially the former, excite, or increase the pain, they must be given up, and leeches be applied. After a time, cold water may be cautiously tried, and if it agree, the cold bath should be used. When the patient can sit up, or stand, a support is useful; but if the feeling of bearing-down or pain be considerably increased, rest must still be persisted in.

Some women who have borne several children, and more especially if of a strumous constitution, have the uterus rather bulky, and its lips swollen, and perhaps fissured, but they are not preternaturally hard nor tender. Such a state is often attended with feeling of bearing-down, and with leucorrhœa. Irritating applications should be avoided, and the general health improved by mild tonics, cold bathing, &c.

Wounds of the uterus are dangerous in proportion to the inflammation they excite.*

SECTION TWENTY-SIXTH.

There is a state of preternatural sensibility, productive of uneasiness in the uterine region, accompanied with the sensation of bearing-down, arising rather from an affection of the origin of the pelvic nerves, than from any inflammation or displacement of the womb itself. The attention of the patient is called to it, by pain in the hypogastric region, and in one or both groins, a sense of bearing-down, accompanied with a discharge of white mucus. The painful sensation, is not always confined

* In one instance the woman was murdered by thrusting a piece of glass up the vagina; and Haller notices a fatal case, in which a piece of lead was thrust into the uterus. Crouzet relates an extraordinary instance of a silver needle being introduced into the uterus during pregnancy, with a view, it would appear, of abstracting blood locally. It could not be got out again: abortion took place; and the needle was afterwards discharged by an external abscess. Archives Generales, Tom. iii. p. 80. After much suffering from metritis succeeding abortion, a hard substance was discovered and extracted from the substance of the uterus by M. Maisonneuve. The tumour of the womb gradually abated. Gazette Med. Avril, 1841.

the os uteri is sometimes almost cartilaginous. The menses either come away more or less slowly, according to the size of the aperture, or are entirely retained when there is no perforation. As long as the menses are discharged, nothing ought to be done; but if they be completely retained, and violent and unavailing efforts made for their expulsion, an opening must, as a matter of necessity, be made from the vagina. In such cases, the uterus has been tapped with success;* but it has also happened, that fatal inflammation has succeeded the operation.

The vessels are sometimes enlarged; and I have seen the spermatic veins extremely varicose, in an old woman who had been subject to piles; but I do not know that any particular inconvenience results from the venous enlargement.

SECTION TWENTY-FIFTH.

578. The uterus is very subject to inflammation after parturition, and this is to be considered in another part of this work. But here, it is to be remarked, that inflammation, simply, or combined, in different degrees, with irritation, may attack the uterus in the unimpregnated state, and if I can call the attention of the young practitioner early to this formidable disease, I shall have performed what will amply reward me for writing this work. The disease may attack the young, and especially the married, or those who are more advanced in life, particularly about the time when the menses become irregular. One of the most frequent causes is exposure to cold, by light dress, for instance, during the menstrual period; but the use of strong injections, or any other irritation of the uterus may excite it. It is very apt to be brought on by a long walk, or other exertions, in delicate or irritable females during menstruation, and then the attack is very sudden. There is a constant pain in the lower part of the belly, or near the pubis, and sometimes extending to the back and groins. This pain is permanent, but not unbearable, although most annoying. It is aggravated by pressure above the pubis, and also in attempts to make water, and sometimes also in going to stool, for which there may be frequent abortive calls. The cervix is sensible, and, sometimes, in one spot, acutely so, when touched, and, generally, the position is lower than it ought to be. The pulse is generally accelerated, and the skin is hot, but sometimes the pulse is feeble, and the skin cool, or the feet and hands cold, the bowels rather constipated, and the stomach irritable, and there is great thirst, with a dry hard tongue; any attempt to sit up, often produces syncope. Violent and even bearing-down pains come on in paroxysms, not indeed

* The menses being retained, and great pain excited, they were let out with a trocar by Schutzer. Vide Sandifort, p. 69.

of very long duration, but often repeated at short intervals, and these, with the other symptoms, render it impossible to mistake the case. If the disease make its attack during menstruation, the discharge is immediately checked; if in the interval, it does not come on at the usual time unless the disease be removed. Retroversion or anteversion of the womb may also take place, in which case suppression of urine is added to the other symptoms. Headach, globus, and other sympathetic, but not essential, symptoms may add to the distress. It is of the utmost consequence to remove this early, and at once, not that it proves rapidly fatal, unless the inflammation extend to the intestines or peritoneum,* but because it lays the foundation of organic disease in the uterus, which no art can afterwards cure. It is indeed impossible to say how many cases of chronic inflammation, as it is called, or of troublesome enlargement, or of scirrhus-cancer of the uterus may be dated from an attack, perhaps an ambiguous one, of inflammation, and which might, with all its train of evils and disasters, have been prevented by attention to that primary cause. When there is fever, the lancet ought not to be omitted, but it must not be pushed far, as it seldom completes the cure. Leeches, to the number of eighteen, or two dozen, applied to the pubis or the lower part of the back, are of decided efficacy, and may require to be repeated, either there, or to the top of the sacrum and groin. Some of the French surgeons prefer their application, directly, to the uterus per vaginam, and this when it can be conveniently done is useful. They think that their external application is hurtful. Scarification has been substituted for leeches. The hip-bath is useful, and then the application of a poultice to the hypogastrium. It has been objected to the bath, both in this and other uterine diseases, that it tends to draw more blood to the part. I look on this more as a theoretical opinion than as one founded on experience: whatever soothes, generally, does good. The bowels are to be freely opened, and when the symptoms have abated, opiates alone, or combined with diaphoretics, are proper. The continuation of the paroxysms of pain, is best prevented by anodyne clysters. Constant but slight pain, remaining after the use of these remedies, will require the application of a blister above the pubis. I need scarcely enjoin the recumbent posture.

When the mucous membrane is the chief seat of the inflammation, a purulent secretion takes place, and may be confined, for a considerable time, within the cavity, and the uterus becomes

* Even in this case, the patient may live for many weeks, and after death I have found the uterus enlarged and suppurated, the round ligament swollen in the inguinal canals, and the intestines not only matted, but adhering to the peritoneum, lining the abdominal parietes.

enlarged. This is to be distinguished by the history, and if a spontaneous discharge do not take place, relief may be obtained by introducing a small bougie into the os uteri, and on to the cervix. This is at least safe if done gently. The use of the hip-bath, and the application of warm poultices to the hypogastrium, accelerate the progress and give relief.

Sometimes, as a consequence of inflammation, more or less distinctly marked, but occasionally without any very distinct indication of uterine disease, we find part, or the whole of the womb softened, and its substance very easily torn. This is met with in both the gravid and unimpregnated state, and in the latter, we often find pus, either infiltrated into the substance, or contained in numerous, but small, abscesses. More rarely, it is contained in a kind of deciduous membrane, lining the cavity of the uterus. It also is found in the veins. The causes of this disease, and its nature, are not yet well understood, and its existence is not known certainly till after death. A modification of the ramolissement affects the mouth rather than the body of the uterus, converting it into a black and fœtid putrilage. I think it is rare as a primary disease, for usually there is an affection of some of the neighbouring parts. In such cases as I have seen, the substance of the uterus has been more vascular than natural. The mucous coat thickened but not injected, and near the os uteri dark in colour. Either one or both lips have been gangrenous, and sometimes in the cervix, one or more small cavities are seen filled with black fluid.

An insidious inflammation of the whole uterus, or of the cervix, is not uncommon. It may be called a chronic inflammation, and sometimes follows the acute form, but oftener comes on more slowly. There is more or less pain in the uterine region, varying from a mere feeling of weight, heat, or uneasiness, to actual pain. When the uterus is considerably enlarged, there is more or less prolapsus, or anteversion or retroversion, or lateral obliquity, in different degrees, and attended with the usual symptoms. But there may be great feeling of bearing down, without any prolapsus. This depends on the tender state of the cervix, and its connexions, on the latter of which, the mere weight of the uterus produces an unpleasant effect. The four chief marks are, a feeling weight, or pressing down, generally, at first, without any prolapsus; some enlargement of the cervix and os uteri; more or less pain on pressing these; and a discharge of white mucus, which sometimes becomes puriform, and this often is mixed with blood; or there may be considerable hæmorrhage. The countenance becomes sallow or unhealthy, the appetite is impaired, and the digestion suffers; and very often the most prominent symptom is pain in some part of the abdomen, distant from the

uterus, most frequently in the vicinity of the liver. The strength declines slowly, but there is little fever, but often a complication of hysterical and anomalous affections. Examination discovers the uterus to be enlarged, but not indurated. The cervix is more or less increased in circumference. The os uteri is soft, open, and tender to the touch, particularly at one spot, and its lips sometimes feel rough, as if the skin were abraded, and very frequently both a little broader and longer. If examined, by the speculum, the colour is generally redder than natural, or the vessels are seen more numerous, which is not usually the case in scirrhus. The disease for a time seems to be of a simple nature, for on cutting the uterus, its substance does not seem materially altered in texture, though increased in quantity, but in process of time, change of organization takes place, too often that of scirrhus-cancer.

Bearing in mind then, the formidable consequences of continuance, we must, in all doubtful cases, make an early and careful examination per vaginam, and if we find any symptoms, or indication, of the existence of this disease, use early means for its removal. So long as there is any thing like increased activity of the vessels, and increased sensibility, we may hope to obtain benefit by the application of leeches to the groins, or uterus itself, and by the regular use of mild saline laxatives, the tepid saltwater hip-bath, and light diet, with abstinence from all stimulants of every kind, and a state of as much rest as is compatible with health. The injection of a continued stream of warm water into the vagina has been advised by Gardien, but it has not been used by others. All concomitant symptoms must be attended to, and relieved by the appropriate means, and pain is to be allayed by an opiate or by cicuta.* We view this affection as a slow but simple inflammation, and we employ the usual plan for its removal, resting confident, that if we succeed in this, we remove also the swelling. A gentle and cautious use of mercury is proper. A state of rest in the horizontal position is necessary.

In this stage, which may continue longer than is generally supposed, no medicines have the power of producing direct absorption, and thereby lessening the size. If we subdue and remove the inflammation, or the existing action, we remove that which has caused and kept up the swelling, and the absorbents, by the power of nature alone, will do their part of the duty. It is thus that in many other local inflammations, topical bleeding,

* The introduction of five grains of extract of cicuta at night into the vagina may give relief. Pain about the groin is relieved by leeches, or a blister kept open by savin ointment.

requiring the use of the catheter for more than a week at a time. These go off, when the pressure of the tumour, is directed to another course. Incontinence of urine may next arise, either from ulceration of the bladder, or loss of contractibility in the orifice, from a participation of disease. In some cases the bowel suffers, and a communication may take place with the rectum, whereby much bloody, or brown, foetid matter is discharged by stool, mixed with clots of blood. The thigh and leg may swell, and become hard or tense. Pain, fever, want of rest, discharge and loss of blood, ultimately exhaust the patient; and death terminates at once both her hopes and sufferings.

At first, by examination per vaginam, the uterus is felt as if it were enlarged; the cervix is apparently expanded, and the os uteri hard, open, irregular, and generally more sensible to the touch, a circumstance which causes pain in coitu. A little blood is often observed on the finger after an examination. In some time after this, the os uteri is turgid, with irregular projections, as if it contained small cysts, and, presently it is felt to be ulcerated. The surface is hollow, or excavated, with hard retorted margins, so that there is considerable breadth.

The cervix uteri is sometimes totally indurated, and considerably enlarged, before ulceration take place, but in other cases, the augmentation is much greater after ulceration, than before it.* We also sometimes meet with a circumscribed induration imbedded in the substance of the cervix, which is apparently healthy, though it seldom continues long so. Such a tumour may become as large as the fist, adhering to the pelvis, so that it cannot be moved, and pressing so much on the rectum or bladder, according to its situation, as to give rise to much obstruction to the evacuations from either of these parts. The uterus itself, is seldom so much enlarged, in genuine cancer as in tubercle, and very often, even when altogether affected, it is not above double its natural size; but, occasionally, we do find the tumour so large, as to be felt, during life, like a child's head in the abdomen. The tubes and ovaria may participate in the disease, or it may begin in the ovarium.†

In some patients, the disease proves fatal very early, if there be profuse hæmorrhage; in others, great devastation takes place,

* Vide Stalpart Vander Wiel. obs. 87.—Segerus in *Mis. Cur.* 1671, obs. 121. Notwithstanding these cancerous excrescences about the os uteri, a woman may conceive. Dr Denman relates a case where there was a large excrescence in the gravid state, with profuse bleeding. The head of the child was lessened, but the woman died undelivered. *Vol. ii. p. 65.* When the os uteri has been affected with scirrhus, and the woman has conceived, the uterus has sometimes been ruptured, or the woman died undelivered. Hildanus, cent. i. obs. 67. Horstius Opera, Tom. ii. lib. 2. obs. 5. *Blancard Anat. p. 233. Hist. de l'Acad. des Sciences, 1705, p. 52.*

† Vide Prochaska Annot. Acad. fasc. 2d.

and the bladder* or rectum† are opened. Some live five, six, but most die within two years, after the decided manifestation of the disease. Mr Lever says he has known death take place in three months, but this must have been under peculiar circumstances, if the commencement were accurately ascertained.

In many cases, the vagina becomes hard and thickened, or irregularly contracted, with swelled glands, in its course. The position of the uterus is often natural, but sometimes it is inclined to one or other side, or approaches to a state of retroversion, or anteversion.

On examining the diseased part after death, it is found to be thickened and indurated, and sometimes the uterine cavity is enlarged. The substance is of a whitish or brownish colour, intersected with firm membranous divisions; and betwixt these, there are, frequently, numerous small cysts, the coats of which are thick and white. They contain a vascular substance, which, when wiped clean, assumes a light olive colour. In proportion as the disease advances, some of the cysts enlarge and thicken still more; and, when opened, are found to contain a bloody lymph, and to have the inner surface covered with a spongy vascular substance, similar to that which fills the small cysts, but rather more resembling fungus. Presently, some of these cysts, augment so much, as to resemble abscesses, though they are not, properly speaking, abscesses, and soon afterwards they burst. It is rare for a cyst to burst, on the exterior surface of the uterus, which is covered with the peritoneum.

This disease, especially when confined to the cervix, does not altogether prevent pregnancy.‡

As this disease is apt to be mistaken for fluor albus, menorrhagia, nephritis, or dyspepsia, it is of great importance that the practitioner should be on his guard, and examine early and carefully per vaginam. The speculum has been employed in this case, but the finger is quite sufficient to ascertain the existence

* Le Dran attended a patient who had all the symptoms of scirrhus uterus, and, by examination, fungous excrescences were found shooting down into the vagina. The pain was continual, and could only be mitigated by the constant use of opium. Urine was discharged by the vagina, and after death the bladder was found to be perforated. The fundus and body of the uterus were not much diseased.

† M. Tenon found, in a case of cancerous uterus, all the posterior part of the womb ulcerated, the rectum diseased, and a communication formed betwixt them.

‡ Several cases of this are recorded. Some time ago, I was consulted respecting a patient, who had, most distinctly, carcinoma of the cervix and os uteri, but believed herself to be pregnant. From the well-marked local disease and induration, I did not believe this, and neglected to use the stethoscope. She had a premature labour. Dr Puchelt gives 32 cases of pregnancy, in one of which the whole uterus was said to be affected; the cervix in 11; the cervix and os in 5; and the os alone in 6. See also the note in the preceding page.

of the disease. Much harm is done by the use of astringent injections, meant to cure the supposed fluor albus.

This is a very hopeless disease, but still much may be done to check its progress, or mitigate its symptoms. When uneasy sensations, about the cessation of the menses, indicate a tendency to uterine disease, we find advantage from the use of laxative waters,* and spare, or at least mild, diet,† and flannel dress.‡ If by examination, we discover any alteration in the shape, size, or sensibility of the womb, we must have recourse, to the daily use of from two to three drachms of sulphas potassæ cum sulphure; and if this lose its effect, some other laxative must be ordered. The tepid bath every night is likewise useful, so long as it allays uneasy sensations. I have never known it drive more blood to the part, or accelerate the progress. When there is much sense of throbbing, heat, or pain about the pelvis, taking blood from the loins by cupping, or from the pubis and groins by leeches, is of service, and the patient should keep in a horizontal posture as much as possible. Leeches have been applied to the part itself, and the bites are said to heal kindly. I have no experience of their utility in this case. I can conceive their mitigating the condition in an early stage, but not their curing a genuine cancer. Every excitation, both of the part and of the system, should be avoided.

When the disease has evidently taken place, we must proceed on the principle of avoiding such causes as excite action in general; for the longer we can keep a scirrhus from going into a state of activity and inflammation, the longer do we keep the disease at bay. It is therefore scarcely necessary to add, that if the patient be married, she must not sleep with her husband. The most rational, almost only useful, practice is, to adopt such a mild system as shall keep down action, and prevent the parts from passing on to ulceration. I wish to impress on the reader, that we, in many cases, have this in our power, although we cannot, by any specific remedy, check, far less destroy, the disease. It is, however, not sufficiently active in the opinion of some, nor splendid enough in that of others, and, therefore, useless, or even hurtful, drugs, such as mercury, conium, aconitum, arsenic, &c., are prescribed. Whilst every stimulus is shunned,

* Roeslerer relates a case where scirrhus swelling was cured by keeping the bowels open, and giving every third evening, from ten to twenty grains of calomel.—Haller Disp. Med. Tomus iv. p. 678. The utility of calomel is doubtful.

† Absolute abstinence has been recommended by Ponteau, Œuvres Post. Tom. i. p. 105. He relates a case, which was cured by confining the patient to *eau de glace*.—Mr Pearson, p. 113, gives two successful cases. In the first, the uterus was enlarged and retroverted, but by very spare diet, was restored to its natural state.

‡ An issue in the arm or leg has been advised, and in plethoric habits, or when there are wandering symptoms, it may be useful, but not otherwise.

we may, in the more vigorous constitutions, find it useful to enjoin abstinence in diet, forbidding also such articles of food, or beverage, as ferment in the stomach, as this state of the aliment aggravates the symptoms. On the other hand, if we find that the abstemious plan, in any case, by weakening too much, permits the morbid action to make progress, we must at once change the regimen. Our object is to avoid excitement, whilst we shun debility.

When ulceration has taken place, the matter should be washed away, morning and evening; or, if the syringe do not give pain, tepid water, or weak solution of chloride of lime, may be injected. It has been said that phosphoric acid, so diluted, as not to be stronger than very weak vinegar, allays pain, but I fear that, as yet, we know nothing more to be depended on, in this view, than the different preparations of opium given internally. The addition of from half a dram, to a dram of powdered valerian, to the opiate, makes it often more beneficial. We guard against the constipating effects, and never give a larger dose than is absolutely necessary.

An operation has been proposed, under two different circumstances; first, when the disease is supposed to be confined to the lower part of the cervix uteri, and consequently when the excision is partial; second, when the whole or the greater part of the uterus is affected, and it is entirely removed. Dr Oslander, of Gottingen, was among the first, who proposed to pull down the cancerous neck, by transfixing it with a ligature, and then to cut off the diseased part. He performed the operation nearly thirty times, but it is said abandoned the practice before his death. Altogether, the operation has been performed above a hundred times, with varying results.* There are two material objections to the operation, independent of the immediate danger. The one is, that the patient seldom applies to an operator till the disease have gone too far, even granting it to have been originally confined to the os, or cervix, uteri, to permit of hope that it is quite removeable, or that we can safely extirpate all the unsound structure. The second is, that it is notorious that there may be a tendency to, nay a certainty of, disease spreading, although, the immediate vicinity of the morbid texture seem sound. In the case of a cancerous breast, it is most dangerous to trust to apparent soundness, and make it a general rule to be satisfied with partial extirpation. In the case of the uterus, we cannot be sure that we have got beyond the indurated part, till

* Lisfranc publishes a case where the woman afterwards became twice pregnant, and was delivered at the full time. Archives, T. xix. 42. In a memoir he says, that out of 99 cases, he cured 84, but this statement has been contradicted by Pauly, who avers that to his knowledge 19 died speedily out of 28.

the operation be performed, and if we have not, then, unless we go to a most dangerous extent, we have done worse than nothing. Operation-mongers will ridicule these objections, but the more sober-minded part of the profession, will come to the conclusion, that either cancer of the uterus, is very different from cancer of other parts, or, that when the os and cervix uteri, have been extirpated, with apparent success, the disease has been quite of a different nature from that of cancer. The same remark applies to reputed cures effected by caustic,* a treatment even worse in genuine cancer, than excision. It is pled, that although the disease may not have been cancer, yet it would have ended in that. Perhaps it might not.

The second circumstance, under which we have to operate, is that in which it is necessary to remove the whole uterus. I need not enter into a detail of the steps, as these belong to another department, but I remind the reader that we must always do here, what we must sometimes do in the first case, in order to remove the disease; viz., open the peritoneal cavity. We have not only the risk arising from hæmorrhage, which may indeed be got over by a ligature, applied on the course of the vessels going to the uterus, but we have the greater danger, arising from the shock to the system, or the induction of peritoneal inflammation. Should the patient escape these immediate dangers, we have not only the great hazard, still to look to, of a return of the complaint, from the contamination of the glands, or other parts within the pelvis, but we have also serious, and even fatal consequences, arising from changes in the position of the bowels, and the effects of a moderate degree of inflammation on the bowels, so altered, in producing obstruction or mortal constipation. This, we are not prepared to look for, from the effect of extirpating the uterus when it is inverted, but, in that case, the cavity of the belly is not opened, nor is the intestine so much altered in its position.†

In two instances, the uterus was extirpated by making an in-

* Lisfranc used one part of nitrate of mercury, dissolved in eight of nitrous acid, for the destruction of large bloody cancerous excrescences. In more simple ulceration, he diluted this with twelve parts of water. The part was wet with it by means of lint fixed to stalk.—I fear the French make too free with caustic in uterine disease.

† Vide Dict. des Sciences Medicales, art. Matrice et Hysterotomie, and cases by Sauter, Recamier, Græfe, Holscher, Velpeau, Lisfranc, Lagenbeck, Dupuytren, &c. Palette seized an ulcerated womb with pincers and drew it down, then cut the vagina round the tumour, and detached it with little loss of blood. Inflammation took place, and the patient died on the third night. Rev. Med. Tom. x. p. 89. Dr Blundel extirpated the uterus, by opening the peritoneal cavity from the vagina, in four cases, all of which proved fatal, though one of the women lived a year. Lond. Med. Gazette, ii. 294, 733, 780. and iii. 797. See also a case by Mr Banner, Vol. ii. p. 582. Recamier Archives Generales, xxi. 78. Roux. Bulletins, Oct. 1820, and a good paper in Edin. Journal, xxxiii. 377.

cision above the pubis. It is scarcely necessary to add, that both proved rapidly fatal.

SECTION TWENTY-NINTH.

Tubercles are common in the uterus, after middle age, inso-much that M. Bayle says, that in seven months he met with fourteen cases, and is of opinion that no unmarried woman after the age of forty is without them! They consist at first of dense fibrous substance, but in process of time they become more like cartilage, or even bony, especially on their surface.* On examining the tumour, it is sometimes found to be intersected with membranous divisions; and a section always exhibits a compact, granulated, or laminated, whitish surface without vessels, and occasionally with ossific portions. A tubercle may take place in one spot, and all the rest of the uterus may be healthy, and nearly of the natural size, or a great part of that organ may be involved. The magnitude of the tubercle is very variable, and it may either project on the outer surface,† or within the cavity of the womb; and in this last case, the adhesion to the surface of the cavity may be slight‡ after the tubercle has fully projected. In this it differs, even in its most detached state, from poly-pus, which is attached not by cellular substance, but by a pedicle. One or more of these may be thrown off, with pains like those of labour. In other instances, the tubercle, if it do not originate from the mucous membrane, at least interests it so, that it seems to extend from it, into the cavity of the uterus on the one hand, and the substance or parietes, on the other, so that when a section is made, the membrane seems to divide the tubercle into two portions. Sometimes there are a great many tubercles, which are found in various stages of projection, and the uterus may become greatly enlarged, and very irregular externally.§

* Sandifort Obs. Anat. Path. lib. i. cap. viii.—Bayle in Jour. de Med. Tome v. p. 62.—Murray de Osteosteatomate, p. 14. et seq. Gardien, Tome i. p. 421. From Dr Bostock's analysis, the ossific part seems to be formed chiefly of phosphate of lime, with a little animal matter and carbonate of lime. Med. Chir. Trans. Vol. xix. p. 91. In the same Vol. is a paper by Dr Lee on fibro-calcareous tumour of the uterus.

† A steatome is described by Kummer, which sprang from the fundus uteri, by a pedicle only an inch thick. It weighed 40 pounds, was 46 inches in circumference, and 19 in diameter. Quarterly Journal for Oct. 1822. Sometimes several tubercles are imbedded between layers of uterine substance, whilst in other places many hang by pedicles from the outer surface.

‡ Baillie's Morbid Anatomy, chap. 19. In the Museum of the Dublin College, is a very large uterus, with many tumours on the surface, in the substance, or projecting into the cavity, all so loosely connected, as to permit of having been easily turned out.

§ I have found the uterus much larger than a child's head of a year old, with many projections and tubercles.—Peyer has a similar case, Parerg. Anat. p. 131. We also find it extending towards the umbilicus, like the gravid uterus in the 6th and 7th month. One uterus weighed nearly 40lb.

It may project partly into the vagina like a polypus, but still fill and greatly enlarge the uterus.*

In one case, the size of the womb was large, and two thick hard ridges could be felt in the abdomen, extending obliquely up by the sides of the umbilicus. The lower and anterior part of the womb was large, and filled the brim of the pelvis like a child's head, whilst, near the promontory of the sacrum, the os uteri was felt healthy, though compressed. This woman had no complaint except what proceeded from bulk; the bladder, contrary to expectation, was not in any degree affected; the stools easy, and menstruation regular. In some cases, we find the os uteri pressed towards the pubis.

I have never seen the tubercle end in ulceration, nor the substance of the uterus, though thickened, have abscess formed in it.† This observation I find confirmed by other practical writers, who state that it tends not to suppuration but ossification. The effects of this disease are chiefly mechanical, and often altogether trifling, for I have known it exist many years, without injuring either the health or the complexion; at other times, we have pain in the back, and sometimes in the hypogastrium, which, if there be much enlargement of the womb, is swelled, hard, and irregular, dyspeptic symptoms, leucorrhœa, and at length feverishness, and gradual loss of strength. There may also be ante- or retroversion with their attendant symptoms. The progress is generally slow, unless the cervix uteri, which is almost always sound, with regard to this disease, be affected with phagedena or cancer, or, unless simple inflammation be excited, by pressure on some neighbouring part. That is to say, this disease, occurring by itself, is seldom directly hurtful, except by mechanical or sympathetic irritation or hæmorrhage. During the active stage, pain is perhaps felt, but it goes off when the tumour ceases to grow, which it often does. Tubercle rarely begins in the cervix, but it may commence in the lower part of the body of the uterus, and extend downwards as well as outwards, so as to appear to have begun in the cervix.‡ Menstruation may be rendered irregular, but often continues unaffected. Menorrhagia is sometimes a very early attendant, and when it takes place repeatedly, and severely, in the progress of the disease, it comes to constitute the chief source of danger. Such tumours, especially

* A good example of this is recorded by Mr Ingleby in the *Edin. Med. Journ.* xli. 75. The patient had little hæmorrhage, and enjoyed good health.

† In the Museum of the College in Dublin, is a preparation where the fibrous tumour contained a cavity, lined by smooth membrane, and filled with bloody sanies. This communicated with the jejunum.

‡ In Dr Hunter's Museum is a double tumour, that, in the fundus, the smaller of the two; from this, by a neck, proceeds upwards, a mass of 21 inches in circumference. The cervix, tubes, and ovarium, are sound.

when on the outer surface of the uterus, do not always prevent pregnancy.

This disease can only be confounded with diseased ovarium, but it is harder when felt through the belly, not so moveable at first, and a difference may generally be felt per vaginam. It may be combined with tumour of the ovarium. On introducing the finger into the vagina in the early stage, the uterus is felt enlarged, and bulging either before or behind. The lump is a little painful when pressed; it is felt to make a part of the womb, and very often is situated on the anterior surface, in contact with the bladder. The cervix may be a little developed, but is generally healthy.

No remedy has any power in removing the substance of genuine tubercle, and therefore our treatment consists in palliating symptoms, especially, in attending to the bladder and bowels. We also, upon general principles, keep down activity, and guard against inflammatory action. The antiphlogistic regimen should be pursued in moderation. The bowels, especially, should be kept open, every source of irritation removed, and the constitution kept as healthy as possible. If a violent attack of pain take place, we apply leeches, and then a warm poultice, and give an opiate. Women may live a long time, even although these tumours acquire considerable magnitude, more especially if no great sanguineous discharge take place, or, if we be careful always to moderate or check that, by the plug and other means.

Pregnancy may take place, notwithstanding, the existence of these tumours, and not only may great difficulty be experienced in labour, but the tumours, themselves, may suffer from pressure. They are likely to do so, the more, from their having been rendered more active, by the increased vascularity of the uterus in which they are imbedded, which also increases their growth. Unhealthy suppuration is expected to take place within them, and fatal peritoneal inflammation to follow delivery. On these accounts, Dr Ashwell recommends the induction of premature labour. This can only be defended, on the ground, that at an early period of pregnancy, the tumour is less excited, and more inactive, than at a later, and that its situation is such, as to interfere with the passage of the head. Mr Ingleby (*Facts and Cases*, p. 158), mentions two fatal cases, in which there was no change in the tumour, except a mere softening of the interior. As a general rule, I would advise delay. Spontaneous abortion may take place.

Sometimes the whole uterus is a little enlarged, and changed into a white cartilaginous substance, with a hard irregular surface; or it may be enlarged and ossified,* either in its substance,

* Vide Mem. de l'Acad. de Chirurg. Lieutaud relates a case of a woman who

or as a shell on the surface, and these ossifications may take place even during pregnancy.* Steatomatous or atheromatous tumours of various sizes,† or sarcomatous‡ or scirrhuslike§ bodies, may be attached to the uterus. All these diseases sometimes at first give little trouble. Even their advanced stage has no pathognomonic mark, by which they can be discovered, as they produce the usual effects of uterine irritation. I must also add, that they are very little under the power of medicine. The most we can do, is to palliate symptoms, by which, however, we greatly meliorate the condition of the patient.

A general enlargement, or *hypertrophy*, of the womb, sometimes takes place, either from chronic inflammation, or some more obscure cause. The bulk is altogether increased, but there is no decided induration of the cervix. Indeed, no part which can be felt, seems harder than natural. The cervix and os uteri, may be the chief seat, or, may be little affected, but generally there is increased mucous discharge. If examined after death, the structure, though firm, is not hard, but during life, the diagnosis is difficult, and rests very much on the equability, and comparative softness, of the swelling. Unlike the tubercle, it may be diminished, or sometimes cured. I have known the cervix thicker, the body evidently swollen, and if not deluded, the fundus rising above the pubis, and yet the tumour disappear. In such cases, which have been confounded with tubercle, it is supposed, that the first step in recovery, is softening or pitting of the tumour.¶ This may, or may not, be preceded by inflammation, requiring the usual treatment. It is not to be overlooked that the nature of the disease may change, and malignant ulceration of the cervix then take place. The internal remedies are first, a very gentle course of mercury, marking carefully its effects, and then a course of iodine. If there be pain and tenderness, blood should be taken from the back by cupping, or leeches may be

had a tumid belly, and complained of great pain. The womb was not much larger than usual, but it was almost bony. *Hist. Anat. Med.* p. 320.—Grandchamp found an osseous tumour, as large as the fist, enclosed in a sac, betwixt the uterus and bladder. It produced constant ischuria, relieved only by lying on the back. *Med. and Phys. Journal*, Vol. iii. p. 587. In Mr Arnot's case, the tumour was large, and as hard as marble. The patient died in consequence of an injury. *Med. Chir. Trans.* xxiii. 109. See also a paper by Dr Lee, Vol. xix.

* Vide *Observ. on Abortion*, 2d edition, p. 37.

† Vide Rhodius, cent. iii. ob. 46.—Böhmer *Obs. Anat. fasc. 2d.*—Stoll *Ratio Med.* part ii. p. 370.

‡ Vide Friedus, in Sandifort's *Observ.* lib. i. c. viii. and a case by Sandifort himself, where the tumour adhered by a cord, lib. iv. p. 113.

§ Baader *Obs. Med.* ob. 29. p. 170.

¶ Dr Hamilton says this occurred in an uterine tumour, as large as the womb is in the fifth month, and which was removed. *Pract. Obs.* p. 65.

applied to the os uteri. Sometimes small blisters over the pubis are useful. Dr Ashwell in "hard tumours of the uterus," praises the topical application of iodine to the os and cervix uteri, when these are affected, but has little confidence, except in arresting the further progress, in it when the walls of the uterus are the seat.*

Strumous affections of the uterus, are not uncommon, and are sometimes considered as scirrhus, but there is no stinging pain, and often indeed little sensation, except that of bearing-down. There is also fluor albus, and sometimes menorrhagia. The cervix is found enlarged, but not painful nor ulcerated. Attention to the bowels, the use of a spring-support, such as is employed in prolapsus uteri, and sea-bathing, are the most beneficial remedies. Iodine may be given, alternated with chalybeates.

Tuberculous matter may be deposited in the substance of the uterus, or on the inner surface. In some instances the uterus enlarges so much as to be felt above the pubis, and is not only tender to the touch, but the seat of much pain, especially during the night. This is, in such cases, not easily distinguished from scirrhus, but often, after continued leucorrhœa, alternated with moderate sanguineous discharge, there is voided, per vaginam, a thick or caseous looking substance. Such cases have always proved fatal, quite independent of tubercles in the lungs, which often accompany the uterine deposition.

Lastly. I may here notice a tumour, in its structure, much resembling some cases of diseased ovarium. It is of a consistence like very soft liver, of a light reddish colour, and containing cysts of various sizes, filled with bloody serum. It adheres to the inner surface of the uterus, to a greater or a less extent, according to its duration, and sometimes, when the uterus is as large as an adult head, there may be a non-adherent tract, from the os uteri to the fundus, not more than an inch or two broad. If the uterus be slit open in the tract, the tumour, at first, looks like a large polypus, and is, perhaps, smeared with a layer of clotted blood. It is covered here, by a thick smooth coat, which is reflected off to the uterus, at the line of adhesion. It can also be traced between the tumour and the uterus, and, when the soft proper texture of the tumour, is torn off from it, we should almost think, that it was an inner layer of the uterus, or a thickening of the mucous membrane. It indeed would seem, as if it had grown in the substance of that membrane, and to be, everywhere, covered by it, in a very thickened state. The substance of the uterus, is not thicker than usual, and is of a pale colour.

* Guy's Hosp. Rep. Vol. i. p. 136. The size of a nutmeg of the following ointment is rubbed on the os and cervix, morning and evening. ℞. Iodin. Pur. gr. xv. Potas. Hydr. ℥ii. Ung. Cetacei ℥iss. ℥.

The peritonæal coat is healthy, but the ovarian vessels large. In some places the uterus feels soft and elastic, as if a fluid were contained. The uterine vessels are enlarged, particularly the sinuses, several of which are covered by the tumour, just as they are by the decidua, in the gravid state. The arteries can, by injection, or by being filled with fibrine, be more readily, than the veins, traced into the tumour. This is not productive of pain; but, like the polypus, the chief danger is from repeated attacks of hæmorrhage, which may at last sink the patient. The treatment is to be directed, principally, to the prevention, or immediate moderation of these, and the improvement of the general health. It is most important to remember, in this, and many other diseases, both of adults and children, incurable in their nature, that life may long, and with tolerable comfort, be prolonged, by supporting the strength, avoiding all exciting causes of aggravation, and resorting to the means for removing every bad symptom, or checking any debilitating discharge, as promptly and as diligently as if we were confident of, thereby, effecting a perfect cure.

SECTION THIRTIETH.

The uterus is more frequently affected with spongoid tumour than is supposed, many cases of that disease passing for cancer. This is a tight, but soft and elastic tumour, the substance of which, bears some resemblance to brain, and contains cysts of different sizes, filled with red serum or blood, or bloody fungus, according to circumstances. There is no certain way of distinguishing or discovering this disease, in its early stage, for it often gives very little trouble, and any symptoms, which do occur, are common to other diseases of the womb. The tumour, however, enlarges, and can at length be felt through the abdominal parietes. It is soft and elastic, and on the first application of the hand, feels very like a tense ventral hernia. There may be two or more tumours, of unequal sizes, in different parts of the belly, which can be felt to have a connexion with each other, and may frequently be traced to the pubis. *Per vaginam*, the state varies in different cases; but by pressing on the external tumour at the same time, we discover its connexion with the womb below. We may find ulceration, or the os uteri soft, and tumefied, and opened, or the posterior lip may be lost in a soft elastic tumour, and quite obliterated, whilst the anterior one, after a pretty careful examination, is felt high up, and apparently sound. Pressure seldom gives pain, till ulceration be about to take place, and no blood is usually observed on the finger after examination, unless a fungus have protruded. So far as I have seen, fluor albus is a rare attendant on this disease in the early

stage, and little inconvenience is at that period produced, except what may sometimes result from pressure on the bladder, causing strangury or suppression of urine, attended with fits of considerable pain, like those excited by a stone. Slight discharges of blood generally attend the formation of the disease; and at this early stage, the os uteri, and sometimes the cervix, may be felt tumid, smooth, and elastic. The complexion is sallow, but the health is tolerably good, till ulceration or inflammation take place. Ulceration may occur in different parts; it may be directed to the vagina, and then we have fœtid bloody discharge, or sometimes considerable hæmorrhage, and ultimately the bladder or rectum is involved in the destruction: or, bloody fungus may protrude from the exterior surface of the uterus into the general cavity of the abdomen, and at length the bowels become inflamed and glued together: or, the tumour may adhere to the parietes of the abdomen, and the skin after becoming livid gives way, and a fungus shoots out from the belly. As the disease advances towards ulceration, the health is more impaired, hectic fever takes place, and the patient is ultimately cut off.

The whole treatment, I am sorry to say, consists in palliating such sympathetic or local symptoms as may arise in the course of the disease.

SECTION THIRTY-FIRST.

Earthy concretions are occasionally formed in the cavity of the uterus, and produce the usual symptoms of uterine irritation; and Vigarous considers them as very apt to excite hysterical affections. Dr Bostock found these, sometimes, to consist chiefly of carbonate of lime, oftener, the phosphate predominated. As in the bladder of urine, the constant presence of a calculus tends to thicken its coats, so the irritation of a stone in the uterus can excite a disease of the substance of the womb, and produce ulceration, which may extend to the rectum. The disease in question is very rare, and can only be discovered by feeling the concretion with the finger, or a probe introduced within the os uteri, which is sufficiently open to permit of this examination. Nature, it would appear, tends to expel the substance;* and we ought to co-operate, if necessary, with this tendency. We must also relieve suppression of urine,† or any other urgent symptom which may be present.

* Gaubius relates a case where it was complicated with prolapsus uteri. After a length of time, severe pains came on, and in an hour a large stone was expelled; next day a larger stone presented, but could not be brought away until the os uteri was dilated. From time to time after this, small stones were expelled; but at last she got completely well. See also a case by Bouvet, in Roux. Jour. de Med. T. xli.

† This proved fatal in a child of five years old.

SECTION THIRTY-SECOND.

Polypous tumours are not uncommon, and may take place at any age, even in infancy; but they are not often met with in very young women. They are most frequent in married women whilst the menstrual function still exists. The greatest number of cases seems to occur between thirty and forty, and next to that, in the succeeding ten years.* They always affect the health, producing to a greater or less degree, want of appetite, dyspeptic symptoms, uneasiness in the uterine region, a variable swelling of the abdomen, aching pain in the back, bearing-down pains, perhaps retention or incontinence of urine, tenesmus or obstinate and continued costiveness, and a dragging sensation at the groins. At first, there is generally a mucous discharge; but at length blood is discharged, either from the rupture of some of the veins of the tumour, or in part from the uterine vessels themselves, in which case it is often in greatest quantity at the menstrual period; the permanent discharge not unfrequently becomes foetid. Sir C. Clarke, in his work, very justly notices, that the blood often coagulates over the polypus, and comes off like a ring. The discharge of blood and mucus, and the constitutional disorder often produced, cause great debility, emaciation, frequency of pulse, and ultimately death.

By degrees, the polypus descends, without pain, from the uterus, or painful efforts are made, more quickly, to expel the tumour, the body of which passes into the vagina,† and sometimes occasions retention of urine,‡ or it may, when at stool, or otherwise, be forced out of the vagina, and project from its orifice. It may however be long retained, and acquire a great size in utero.§ In those cases, where the polypus arises from

* Dupuytren gives a different account. Out of 57 cases, 23 were between the age of 40 and 49 : 19 between 30 and 39 : 10 between 20 and 29 : and only one at 60 or upwards.

† In a case which occurred to the late Mr Hamilton of this place, the polypus was expelled by labour pains, but the woman died exhausted.—In a case related by Vater, it was expelled when the woman was at stool. Haller, *Disp. Chir.* Tom. iii. p. 621. See also a case in the same work, p. 611, by Schunckius.—In the patient of Vaccoussain, the polypus was expelled after severe pain; its pedicle was felt to pulsate very strongly, but a ligature being applied, the tumour was cut off. Instantly the ligature disappeared, being drawn up within the pelvis, but on the third day it dropped off. *Mem. de l'Acad. de Chir.* Tom. iii. p. 533.

‡ Vide case by Vater, in Haller, *Disput. Chir.* Tom. iii. p. 621.—In the case furnished by M. Espagnet, an attempt was made to introduce the catheter; but a straight one being employed instead of a curved one, or an elastic catheter, it was found necessary previously to make an incision in the fore part of the polypus, which had protruded. *Mem. de l'Acad. de Chir.* Tom. iii. p. 531.

§ Lallemand found a polypus weighing ten pounds in the cavity of the uterus, and adhering near the fundus. *Annuaire Med. Chir.* 575.

the cervix uteri, it generally comes into the vagina with little pain, or irritation, beyond, merely, what causes mucous discharge.* But when it is attached to the cavity of the uterus, expulsive pains are more likely to occur, and, both before and after the descent into the vagina, bloody discharge like menorrhagia takes place. The pedicle remains in utero, and the bad consequences formerly produced still continue, except in a few cases, where the tumour has dropped off,† and the patient got well. In such cases it has been supposed that the os uteri acted as a ligature; and to the same cause is attributed the bursting of the veins, which produces, in many instances, copious hæmorrhage. But although hæmorrhage be most frequent, after the polypus has descended, yet it may take place whilst it remains entirely in utero.

It sometimes happens that the uterus becomes partially inverted,‡ before, or after, the polypus is expelled into the vagina; and this circumstance does not seem to depend altogether on the size of the polypus, or its weight. Polypus may also be accompanied with prolapsus uteri.§ In many cases, after the descent of the polypus, the uterus is rather shortened,|| its sides are not thickened, and the size and shape of the cavity, will, in some degree, be modified, by the size and situation of the attachment.

Polypi may be attached to any part of the womb, to its fundus, cervix, or mouth; and it has already been observed that there is less tendency to hæmorrhage, when they are attached to the cervix, than either higher, or to the os uteri itself. There are then three situations where polypi may be formed. In the second, they must project into the vagina sooner than in the first. In the third, they are, from the commencement, in that canal. The polypus, in this case, may be connected either by a narrow pedicle, or, one of the lips of the os uteri, seems thickened and elongated to form the stalk, or, it may grow from all the circumference of the os uteri.¶ Hæmorrhage, though less frequent in the last, than in the first situation, may occur in all, and also before the polypus issue from the uterus. If there be an union

* In the Museum of the College of Surgeons in Dublin, there is an immense polypus, hanging by a narrow pedicle from the cervix. It fills the vagina, and, the perineum was as much distended, as by the head, just before delivery.

† Mem. de l'Acad. de Chir. Tom. iii. p. 552.

‡ Vide Case by Goulard, in Hist. de l'Acad. des Sciences, 1732, p. 42.—Dr Denman, in his engravings, gives two plates of inversion, one from Dr Hunter's Museum, the other from Dr Hamilton.

§ Med. Comment. Vol. iv. p. 228.

|| In Dr Hunter's Museum is a large polypus in the vagina, the uterus is decidedly shorter, its orifice small and embracing the pedicle, which is not above half an inch broad, and little more than a quarter long.

¶ See a case of this kind where the ligature proved fatal, in Gooch. p. 273.

betwixt the os uteri and the tumour,* or if they be in intimate contact, polypus may pass for *inversio uteri*; but the history of the case, and attentive examination, will point out the difference, which will be noticed when I come to consider inversion and prolapsus of the uterus. It has been supposed that we may always distinguish an inverted uterus by its being sensible, whilst the polypus is not. But the uterus is not very sensitive to the touch, but it always is when a ligature is applied. This produces great pain.

Polypi, are of different kinds. The most frequent kind is of a firm fibro-cartilaginous structure, covered with a production of the inner membrane of the womb; and indeed it often proceeds chiefly from a morbid change of that membrane, and a slow subsequent enlargement of the diseased portion. It may, however, originate in the substance of the uterus itself,† like a tubercle; and some imagine that the polypus is merely an exuberant growth of part of the uterine tissue. The enlargement is generally greatest at the farthest extremity of the tumour, and least near the womb, so that it is pyriform, and has a kind of pedicle formed, which contains distinct blood vessels. A slender prolongation, like a worm, occasionally depends from the os uteri to the extent of an inch or two, and of equal thickness throughout. But if the membrane of the uterus be affected to a considerable extent, and especially if the substance of the uterus be diseased, then, the neck, or the attachment of the polypus, is broad,‡ and there have been instances of the polypus having more attachments than one, which has been attributed to adhesion consequent to inflammation; for a polypus may not only inflame, but suppurate even in its centre. When the polypus is very large, and does not protrude from the vagina, it may either distend, or push up, the uterus, so as greatly to enlarge the abdomen.

The vessels are chiefly confined to the surface, but they, especially the veins, are sometimes considerable. These give a mottled appearance to the surface, and are a source of hæmorrhage, which is greatest after the polypus is partially or totally expelled. At the same time, it is to be remembered, that blood often comes from the surface of the uterus itself. If the patient live long, the tumour is disposed to ulcerate. The ulcer is either superficial and watery, or it is hollowed out, glossy, with

* Mem. of Med. Society in London, Vol. v. p. 12.

† In Dr Hunter's Museum is a large polypus filling the vagina. It springs, by a broad pedicle, from the fundus uteri, and in the section made of it, the substance of the uterus, forks along the pedicle, as if it were prolonged on it.

‡ In the same Museum is a small spherical polypus broadly fixed to the surface, or substance, of the back of the cavity.

hard margins, or it is fungous. The two last varieties are most frequent.

Some polypi are soft and lymphatic, but these are rare in the cavity of the uterus. Vesicular, or soft cellular polypi, sometimes spring from the inside of the cervix. They are generally small and pedunculated, and bleed on being touched, indeed, a characteristic is hæmorrhage. Herbiniaux says, the pedicle is comparatively large, and some later writers are disposed to view these soft polypi as malignant, but this certainly is not invariably the case. Those little glandular bodies, often seen between the rugæ of the neck of the uterus, and supposed by Nabothus to be ova, may enlarge and form thick vascular cysts filled with lymph, or curdy matter, and are supposed to produce the vesicular polypus just noticed; but it is not established that they are the only source. Dr Lee gives a good drawing of this tumour in the *Med. Chir. Trans.* Vol. xix. Some polypi are firm without, but contain gelatinous fluid, or substance like axunge within. Some are solid, others cellular, with considerable cavities, containing glairy or fatty matter alone, or mixed with hair, or, blood alone, has been found in them.

Polypi are hurtful at first, by the irritation they give the uterus, and by sympathetic derangement of the abdominal viscera. In a more advanced stage, they are attended with debilitating, or fatal,* hæmorrhage, and often with febrile symptoms, especially if the discharge be offensive, or the surface ulcerated. The hæmorrhage is by no means proportional to the size. A very small polypus may occasion great loss of blood. Uterine inflammation may also prove fatal. It has, but I know of no case confirming the opinion, been supposed that a polypus might become cancerous, especially, after superficial gangrene.

Notwithstanding the existence of polypus, it is possible for a woman to conceive,† and we are even told that the placenta may be attached to the polypus. Either antecedent to, or after the commencement, of labour, the polypus may occupy the vagina; but, if delivery can be accomplished without difficulty, it is best to let it alone till recovery have taken place. If on the other hand the obstruction be great, we should tie the pedicle, and cut off the tumour.

Polypi were long ago described under the name of sarcosis, fungus, moles, &c., and by Smellie were considered to be enlarged glands. Some denominated them cerosis, or queue de la vulve, others, mal St Fiacre, &c. Various means were proposed for their removal, such as excision, tearing them away, or

* Mr Langstaff's case. *Med. Chir. Trans.* xvii. 63.

† In M. Guiot's case, the polypus was expelled.—M. Levret adds other cases, *Mem. de l'Acad. de Chir.* Tom. iii. p. 543.

burning them. Levret, first of all, gave a methodical account of the disease, and proposed, invariably, to employ the ligature. Since his time, the practice, of most surgeons, has been, to pass a ligature round the base, or footstalk, of the polypus, and tighten it, so firmly, as to kill the part. The ligature consists of a firm silk cord, or a well twisted hemp string, properly rubbed with wax, or covered with a varnish of elastic gum. This is better than a silver wire, which is apt to twist or form little spiral turns, which impede the operation, and may cut the tumour. It is difficult to pass the ligature properly, if the polypus be altogether in utero; and it ought not even to be attempted, if the os uteri be not fully dilated. On this account, if the symptoms be not extremely urgent, it is proper to delay until the polypus have wholly, or in part, descended into the vagina; and when this has taken place, no good, but much evil, may result from procrastination. It has even been proposed to accelerate the descent of the polypus, and produce an inversion of the uterus,* a most improper practice. Ergot has been given to promote expulsion,† and both Dupuytren and Hervez, have divided the os uteri.‡

A double canula, has been long employed, for the purpose of passing the ligature, one end of which, was brought through each tube, and the middle portion, forming a loop, was carried over the tumour, either with the fingers, or the assistance of a silver probe, having a small fork at its extremity. By practice and dexterity, this instrument may doubtless be adequate to the object in view; but without these requisites, the operator shall be foiled, the ligature twisting or going past the tumour, every attempt giving much uneasiness to the patient, and, not unfrequently, after many trials and much irritation, the patient is left exhausted with fatigue, vexation, and loss of blood. This is very apt to happen, if the polypus be so large as to fill the vagina.§ The process may be facilitated by employing a double canula, but the tubes made to separate and unite at pleasure,||

* M. Baudelocque observes, " Nous regardions ce renversement nécessaire pour obtenir la guérison de la malade." *Recueil Period.* Tome iv. p. 137.

† See a paper by Dr M'Farlane in *Glasgow Med. Journal*, Vol. i. p. 411. M. Moyle gives two cases where the polypus was expelled by contraction, brought on by ergot. In both, the separation took place without ligature, and in one, the debility from previous hæmorrhage was great. *Edin. and Lond. Journ.* i. 416. See a case by Dr Somerville, p. 570.

‡ Berard cut the os uteri, pulled down the polypus, and cut it off. *Archives Gen. Fevrier*, 1842, p. 242.

§ Dr Hunter after repeated trials, failed in a case where the polypus filled all the vagina. The pedicle in the preparation is long and as thick as the finger.

|| An instrument of this kind is proposed by M. Cullerier, and is described by M. Lefauchaux in his *Dissert. sur les Tumeurs Circonscrites et Indolentes du tissu cellulaire de la matrice et du vagin.*

by means of a connecting base, or third piece, which can be adapted to them like a sheath. The ligature is passed through the tubes, which are to be placed close together, and no loop is to be left at the middle. They are then to be carried up along the tumour, generally betwixt it and the pubis. Being slid up along the finger to the neck of the polypus, one of them is to be steadily retained in its situation, whilst the other is carried completely round the tumour, and brought again to meet its fellow. The two tubes are then to be united by means of the common base. The ligature is thus made to encircle the polypus, and if necessary, it may afterwards be raised higher, with the finger alone, or with the assistance of a forked probe. M. Graefe uses tubes, which admit of the pressure being, if necessary, either diminished, or altogether removed.

When the ligature is placed in its proper situation, it is to be gradually and cautiously tightened, lest any part of the uterus, which may be inverted, be included. If so, the patient complains of pain, and sometimes vomits; and if these symptoms were neglected, and the ligature kept tight, pain and tension of the hypogastrium, fever, and convulsions would take place, and in all probability the woman would die.* In some instances, however, the womb has been included without a fatal effect.† Dr Gooch advises, that in every case, the ligature should, for safety, be applied as near the body of the polypus as possible, believing that the remains of the pedicle will die like the umbilical cord. This opinion, however, wants confirmation. Dr Hunter had an uterus, in which there is still a short stalk, and he mentions that he was uncertain whether it were an incipient polypus, or the remains of one which had been extirpated.

Even when the uterus is not included, fever may succeed the operation, and be accompanied with slight pain in the belly; but

* Dr Denman, Vol. i. p. 94, mentions a young lady who had suffered long from uterine hæmorrhage. A polypus was found just to have cleared the os uteri; a ligature was applied, but as she felt severe pain, and vomited, it was slackened. Every attempt to renew the ligature had the same effect. In six weeks she died, and it was found that the uterus was inverted.

† M. Herbiniaux, Tom. ii. obs. 17, relates a case. The ligature seemed to act on an inverted portion of the womb, producing pain, fever and convulsions; it was slackened, but afterwards, notwithstanding a renewal of dreadful suffering, it was, with a perseverance hardly to be commended, employed so as at last to remove the polypus.—Dessault found, after having applied a ligature round a polypus, and cut the tumour off next day, that part of the fundus uteri was attached to the amputated substance; the patient did well. Baudelocque supposes that some cases, related as examples of amputation of inverted uteri, were merely polypi, accompanied with inversion. Recueil Period, Tom. iv. p. 115. A case is mentioned by M. Deguise, where a very large polypus, 17 inches in circumference, and weighing three pounds and a half, was removed by ligature, but not without pain, spasms, nausea, cold extremities, hiccup, and difficult respiration, with frequent pulse. Nouv. Journal, Tome ii. p. 199.

the symptoms are usually mild, and no pain is felt when the ligature is first applied. At the same time it must be admitted, that abdominal inflammation may unexpectedly supervene. Three cases of this kind are related by Dr Hamilton.

If the first tightening of the ligature, by way of trial, give no pain, it is to be drawn firmly so as to compress the neck of the tumour, sufficiently, to stop the circulation. It is then to be secured at the extremity of the canula; and as the part will become less in some time, or may not have been very tightly acted on at first, the ligature is to be daily drawn tighter, and in a few days will make its way through. After the polypus is tied, it is felt to be more turgid, and harder; and, if visible, it is found of a livid colour, and, presently, exhales a fœtid smell. These are favourable signs. The diet is to be light, and all irritation avoided during the cure. The bowels and bladder must be attended to, and if there be sympathetic irritation of the stomach, soda water is useful, with small doses of laudanum. The fœtor may be diminished, by injecting weak solution of chloride of lime. When the tumour is very large, it may be necessary, after it is detached, to remove it with a hook. If the polypus have protruded from the vagina, then, after a ligature has been applied round its pedicle, it may at once be cut off.

Excision has been lately revived by Osiander, Siebold, Dupuytren, and others. The tumour is seized with forceps, drawn down, and its neck divided; out of two hundred cases, Dupuytren says, he had occasion, only in two, to use the plug on account of hæmorrhage. The operation has also been successful here.

The small soft polypi, or those of any size which have a narrow neck, have been twisted off successfully, and this mode is preferred by Lisfranc.

Vaginal polypi require no special consideration. *M.*

SECTION THIRTY-THIRD.

There are other tumours still more dangerous,* as they end in incurable ulceration, and are so connected with the womb, that the whole of the diseased substance cannot be removed. These always adhere by a very broad base,† and cannot be moved freely,

* Vide Mem. de l'Acad. de Chir. Tom. iii. p. 538.—Herbinaux Observations, Tome i. ob. 39.—Baillie's Morbid Anatomy, chap. xix.—Vigarous, Malad. des Femmes, Tome i. p. 425.

† Dr Denman, Vol. i. p. 95, relates a case of polypus with broad stem, which was supposed to be a cancer of the uterus. The ligature was applied, and in eight or ten days it came away; but when the polypus was removed, another substance, nearly of the same size, was found to have grown into the vagina. The woman died in a month. I have seen the common polypus combined with an indurated thickening of the uterus, and fungous or flocculent state of the cavity. In one case of this kind, the uterus and rectum freely communicated by ulceration. See also some cases in Trans. of a Society, &c. Vol. iii.

or turned round like the mild polypus. They are sometimes pretty firm, but generally they are soft and fungous, or may resemble cords of clotted blood. When dissected they are found to be very spongy, with cells or cavities of various sizes; sometimes they are laminated. These, which have been called vivaces by M. Levret, are always the consequence of a diseased state of the womb; but they are not always, as that author supposes, vegetations from an ulcerated surface. They do, however, very frequently spring from that source, being generally of the spongy nature. Occasionally they have been mistaken for a piece of a retained placenta, and portions of fœtid fungi have been torn away, in attempts to extract the supposed placenta, or ovum, or the hand has been thrust far into the mass.

The hypogastric region is tumid, and painful to the touch, even more so than the tumour itself, which, felt per vaginam, is less sensible than the womb. Sometimes little pain is felt in this disease, except when the womb is pressed. The tumour often bleeds, discharges a sanious matter, and may shoot into the vagina: but in this it differs from polypus, that it comes into the vagina generally by growth, and not by expulsion from the womb, which does not decrease or become empty as the vagina fills. The treatment must be palliative; for extirpation does not succeed, the growth being rapidly renewed. Opiates and cleanliness are most useful.

SECTION THIRTY-FOURTH.

Moles* are fleshy or bloody substances contained within the cavity of the uterus. They acquire different degrees of magnitude, and are found of various density and structure.† They may form in women who have not born children,‡ or they may succeed a natural delivery,§ or follow an abortion, or take place in a diseased state of the uterus.¶ It is the opinion of many, that these substances are never formed in the virgin state, but always are produced from a blighted conception, and no case that I have yet met with, contradicts the supposition, for we are not to confound, with them, simple coagula discharged in dis-

* Sandifort Obs. Path. Anat. lib. ii. p. 78.—Schmid de Concrement. Uteri, in Haller's Disp. Med. Tomus iv. p. 746.

† Sometimes the mass appears to be putrid, and is expelled with great hæmorrhage. Vide case by Dr Blackburn, Lond. Med. Journal, Vol. ii. p. 122.—Sometimes it has a kind of osseous covering, as in the case by Hankoph, in Haller. Disp. Med. iv. p. 715, or it is hollow within, or contains vesicles.

‡ La Motte, chap. vii. This chapter contains several useful cases, one of which proved fatal from hæmorrhage.

§ Hoffman. Opera, Tomus iii. p. 182.—Stahl. Colleg. Casuale, cap. lxxvi. p. 797.

¶ With scirrhus of the uterus, Haller's Disp. Med. iv. pp. 751, et 753.

ordered menstruation. The symptoms produced by moles are, at first, very much the same with those of pregnancy, such as nausea, fastidious appetite, enlargement of the breasts, &c.; but the belly enlarges much faster, is softer, and more variable in size than in pregnancy, being sometimes as large in the second month of the supposed, as it is in the fifth of the true pregnancy. Pressure occasionally gives pain. Petit observes, that the tumour seems to fall down when the woman stands erect, but this is not always the case. Per vaginam, there is no ballottement, at the period when that should be perceived in pregnancy. It must be confessed, that the symptoms are, at first, in most cases, ambiguous, nor can we for some time arrive at certainty. In general, the mass is expelled within three months, or before the usual time of quickening in pregnancy, though there are instances of its being retained above a year. More or less pain and hæmorrhage accompany the process, which is very similar to that of abortion, and requires the same management.* Sometimes the expulsion may be advantageously hastened, by pressing the substance gently with the finger, but we must be careful not to lacerate it, and leave part behind. If the mole be retained beyond the usual time of quickening, we find that the belly does not increase in the same proportion as formerly, and the womb does not acquire the magnitude it possesses in a pregnancy of so many months' standing. There is also no motion perceived. Many of the symptoms may proceed from polypus; but in that case the breasts are flaccid, and the usual marks of pregnancy are absent. The os uteri is not, necessarily, small, in a case of polypus, whereas in that of a mole, if there have been no expulsive pains, it is generally so.

When a woman is subject to the repeated formation of moles, I know of no other preventive, than such means as improve and invigorate the constitution in general, and the uterus in consequence thereof. This is of no small importance, as a weak state of the uterine system predisposes to more formidable diseases, and may be followed by scirrhus of the womb, or of the breast.

SECTION THIRTY-FIFTH.

Hydatids may also enlarge the womb, and these frequently are formed, in consequence of the destruction of the ovum at an early period,† or of the retention of some part of the placenta, after delivery or abortion. We possess no certain diagnostic:

* Puzos advises blood-letting, *Traité*, p. 211.—Vigarous recommends emetics and purgatives, to favour the expulsion, *Tome* i. p. 115. Others rubbing the os uteri with ext. of belladonna, or the exhibition of ergot.

† In the *Hist. of Acad. of Sciences* for 1714, is the case of a woman who happened to fall in the third month of pregnancy. The belly, however, increased in

when they are formed in consequence of coagula, or part of the placenta remaining in utero, the symptoms must be such as proceed from the bulk of the womb, or from its irritation, as if by a polypus. The remarks in a preceding section are therefore applicable here; but in a great majority of cases, hydatids are formed in the placenta of a blighted ovum; and, accordingly, the symptoms at first are exactly the same with those of pregnancy. These cease when the ovum is blighted, and the time when this happens, is marked by the breasts becoming

size till the fifth, when it began to lessen. In the sixth she was delivered of a bag, as large as the fist, with a placenta and fœtus of the size of a kidney bean. In this case, hydatids were not formed; but in the History of 1715, is a case, where the woman falling in the second month, had the ovum converted into hydatids, which were expelled in the tenth month. As hydatids often succeed to genuine pregnancy, the symptoms may at first be exactly the same with those of pregnancy, nay, even motion may be felt, but afterwards the child may die, and hydatids form. Mr Watson, in the Phil. Trans. Vol. xli. p. 771, gives a case, where there was, for a long time before the expulsion of hydatids, a quantity of blood discharged every night; pains at last came on, and expelled many hydatids. In this case, the symptoms of pregnancy were evident from Nov. to Feb. When the ovum is blighted, the belly ceases to enlarge in the due proportion, and the breasts become flaccid.

Dr Denman gives an engraving of a deceased ovum; and Sir E. Home relates a case, where the patient, after being attacked with flooding, and vomiting, and spasm in the abdomen, died. On opening her, the womb was found filled with hydatids, and its mouth a little dilated. Trans. of a Society, &c. Vol. ii. p. 300. — Such cases as I have seen were attended with considerable discharge; but as a great part of it was watery, it made a greater appearance than the real quantity of blood would have caused.

In a case related by Valleriola, p. 91, the woman had at first her usual symptoms of pregnancy, but in the eighth month expelled hydatids.—Pichart in Zod. Med. Gall. an 3, p. 73, relates a similar case, but the hydatids were expelled in the fourth month without hæmorrhage. Other cases of hydatids are to be found in Tulpinus, lib. iii. c. 32. Schenkinius, p. 685, Mercatus, de Mulier. affect. lib. iii. c. 8. Christ. a Veiga, Art. Med. lib. iii. § 10. c. 13, relates an instance of sixty hydatids, as large as chestnuts, being expelled.

Stalpart Vander Wiel, Tom. i. p. 301, mentions a woman who, in the ninth month, after enduring pains for three days, expelled many hydatids, and the process was followed by lochia. Lossius, Obs. Med. lib. iv. ob. 16, mentions a widow who for several years had a tumid belly: after death, hydatids were found in utero. See also Mauriceau's Observations, obs. 367. Ruysch, Obs. Anat. Chir. p. 26. Albinus Annot. Acad. lib. i. p. 69, and tab. iii. fig. i. describes in an abortion of the commencement of this change. The vesicles are not larger than the heads of pins. Wrisberg describes a more advanced state in Nov. Comment. Gotting. Tom. iv. p. 73; and Sandifort, in his Obs. Anat. Path. lib. ii. c. 3. tab. vi. fig. 5, has a case extremely distinct. See also Haller Opusc. Path. ob. 48.

Vigarous Malad., &c. Tom. i. p. 385, proposes mercury to kill the hydatids. He knew an instance where the woman discharged hydatids always when she went *a la garde-robe*. Mr Mills relates a case, where the woman betwixt the second and third month, had symptoms of abortion, and afterwards, in the fifth or sixth, expelled above three pints of hydatids. Vide Med. and Phys. Journal, Vol. ii. p. 447.

When the mass is expelled, it is found either to consist entirely of small vesicles, or partly of vesicles, and partly of more solid remains of the ovum, or coagulum of blood. A mass weighing several pounds may be expelled at one time.

In Dr Hunter's Museum are, at least, a dozen and a half of fine specimens of placental hydatids. At an early period, they may form in the spongy chorion.

flaccid, and sickness and the sympathetic effects of pregnancy going off. The conception remains, and the belly either continues nearly of the same size, or, if it increase, it is very slowly. It is generally softer, and the uterus lighter than in pregnancy; of course there is no ballottement. Menstruation does not take place; but there may occasionally be discharges of blood in different degrees, and there often is at one period or other, a very troublesome discharge of water, so that cloths are required, and even with these, the patient is uncomfortable. No motion is perceived by the woman, and the size of the belly, and state of the womb, do not correspond to the supposed period of pregnancy. In some instances, the health does not suffer; in others, feverishness and irritation are produced. After an uncertain lapse of time, but usually longer than in the case of moles, pains come on, and the mass is discharged, generally in portions, at longer or shorter intervals, often with considerable, sometimes with profuse hæmorrhage, for they are connected to the uterus, by the remains of decidua or placenta, which receive vessels. This expelling process, may sometimes be advantageously assisted, by ergot, or by introducing the hand to remove the hydatids, or to excite the contraction of the womb; but this must be done cautiously, and only when hæmorrhage or some other urgent symptoms occur. These must be treated on general principles.

In some cases, milk is secreted after the hydatids are expelled. In others, a smart fever, with pain in the hypogastrium, follows. It requires laxatives and fomentations.—When hydatids form in a blighted ovum, their number varies greatly in different cases. In some, I have seen only a little bit containing vesicles, often only the under part, which had been, for some time, detached in a threatened abortion. In others, almost the whole is changed, and the mass much enlarged. This I presume, is connected with the womb, by the unchanged portions alone; and therefore, in examining the inner surface of such an uterus after the mass was expelled, we should expect to find it more or less similar to the gravid state, according to the greater or less change in the ovum. The relative magnitude of the vessels in the two states has not been ascertained, few opportunities being afforded of dissection in this disease. From the same cause, we do not know whether the corpus luteum, differs from its usual condition, at the same period, after conception.

Sometimes there is only one large hydatid, or, at most, a very few in the womb, and the preceding remarks will also be applicable, in a great measure, to this case. In the advanced stage, we find the belly swelled, as in pregnancy; but the breasts, although sometimes tense, are oftener flaccid, and no child can be discovered in utero, nor does the woman perceive any motion.

There may be pain in the abdomen, and obscure fluctuation is discernible externally, whilst per vaginam it is more distinct. The neck of the womb is small, and the case much resembles ovarian dropsy, except that the tumour occupies the region of the uterus. The duration of this complaint is uncertain; but the water is at last discharged suddenly, and after making some exertion. The bag afterwards comes away, and the process is not attended with much pain.* It is most prudent to be patient; but if the symptoms be troublesome, the fluid can be drawn off by the os uteri. This disease, a solitary hydatid, is oftener combined with pregnancy, or with a mole, than met with alone. The first combination† is not uncommon, and I have seen the hydatid expelled some weeks before labour. Hildanus gives an instance of the second, where the ovum was converted into a mole intimately connected to the uterus, and complicated with a collection of fluid to the extent of six pounds. In this case, so much irritation was given, as to exhaust the strength, and produce local inflammation. It may also happen that many small hydatids may be discharged, and yet pregnancy may go on to the full time. A case of this kind is mentioned by M. Thuillier, where discharges took place from the middle of pregnancy till the end, and at one time there were some bearing-down pains, but no dilatation of the os uteri.

SECTION THIRTY-SIXTH.

A different disease from that described in the last section, is an increased secretion from the uterus itself, or rather the glands of the cervix, accompanied generally with symptoms of uterine irritation, and if the woman menstruate, the menses are pale and watery. There may be a constant stillicidium of water,‡ or, from some obstructing cause, the fluid may be for a time§ re-

* Hildanus, I think, relates the history of a woman who was supposed to be pregnant, but *dum noctu cum marito rem haberet*, a sudden inundation swept away her hopes.

† Hildanus relates a case of this kind in his own wife, *dulcissima et charissima conjux mea*. Hydatids may also be combined with pregnancy. The same author tells us of a woman, who, in the fifth month, was delivered of a mola aquosa, or vesicle containing ten pounds of water; she did not miscarry, but went to the full time.

‡ Hoffman mentions a woman who had a constant stillicidium, a pint being discharged daily. It at last proved fatal. Opera, Tom. iii. p. 160.

§ Kirkringius, p. 28, considers dropsy of the uterus as impossible, and says, that every case of collection of water depends on a large hydatid. Dr Denman seems to be much of the same opinion. But we find instances where water is accumulated and repeatedly discharged, apparently from the removal of a temporary obstruction. Fernelius relates a case, where the woman always before menstruation discharged much water. Path. lib. vi. c. 15. And M. Geoffroy describes a case of repeated discharge. Vide Fourcroy, la Med. Eclaircé, Tom. ii. p. 287. A case is related by Turner, where the external membrane of the uterus was said

tained, and repeatedly discharged in gushes. When retained in considerable quantity, it constitutes what has been called dropsy of the uterus. Although this may be connected with an organic affection of the womb, or some substance within its cavity,* yet I have met with it where no hydatids were discharged, where the womb felt sound, and a cure was at last accomplished. We must always examine carefully, for it may proceed from hydatids, or from disease, or excrescences about the os uteri. If nothing can be discovered, we must in the case of stillicidium, proceed upon the principle of improving the health, and gently injecting mild astringents. I need scarcely caution the practitioner, not to confound a discharge of urine, from an injury of the bladder, with this complaint. In delicate females, there is sometimes a stillicidium, of pale inodorous urine, to a great degree daily, excepting at, or near the menstrual period. It is difficult for the patient to say, whether it come from the womb or the bladder, but the question is decided, by keeping her for some time in bed, with a catheter in the bladder. Improving the general health removes this. Tonics, sea bathing, if it agree, and the use of copaiba, or tincture of cantharides are of benefit. In retention of the fluid, or dropsy of the womb, it may be evacuated, by introducing a tube by the os uteri.

SECTION THIRTY-SEVENTH.

Worms† have been found in the uterus, producing considerable irritation; and generally, in this case, there is a fœtid discharge. We can know this disease only by seeing the worms come away. It is cured by injecting strong bitter infusions, or solution of chloride of lime.

SECTION THIRTY-EIGHTH.

Sometimes‡ air is excreted by the uterine vessels, and comes away involuntarily, but not always quietly. By introducing a small elastic-gum tube into the uterus, and retaining it there for some time, the air is discharged as fast as it is extricated, and the state giving rise to the production is ultimately removed. Air may also be retained in the uterus so as to distend it, and

to be distended with water. The menses were suppressed, and a secretion of whitish fluid took place from the breasts. Phil. Trans. No. 207. Dr Thomson describes a case where the uterus contained eight quarts of dark coloured fluid. Med. Chir. Trans. xiii. p. 170.

* Vesalius, Tom. i. p. 438, says, that he found an uterus containing 180 pints of fluid, and its sides in many places scirrhous. I wish he may not have mistaken the ovarium for the womb.

† Vigarous, Malad. Tom. i. p. 412.—Mr Cockson mentions a case, where maggots were discharged before the menstrual fluid. The woman was cured by injecting oil, and infusion of camomile flowers. Med. Comment. Vol. iii. p. 86.

‡ Vide Vigarous, Maladies, Tom. i. p. 401. Revue Medicale, Tom. iv. pp. 484. 485. Lond. Med. and Phys. Jour. Vol. lxi. p. 301.

swell the hypogastrium. This tympanitis may begin without any evident cause, but more frequently it succeeds to symptoms of hysteritis, produced partly by exposure to cold. The primary affection is to be relieved by bleeding and the application of tepid poultices or blisters, after which, the tube, if necessary, may be used for some time. It may also depend on the putrefaction of some retained substance, in which case the practice evidently ought to be, to wash that out with the syringe.

SECTION THIRTY-NINTH.

The prolapsus, or descent of the uterus, takes place in various degrees.* The slightest degree, or first stage, has been called a relaxation; a greater degree, a prolapsus; and the protrusion from the external parts, a procidentia. It is necessary, early, to attend to this disease, so as to ascertain its existence, as it may, if neglected, occasion bad health, as well as many uneasy sensations. The symptoms at first, if it do not succeed parturition, are ambiguous, for some of them may proceed from other causes, particularly, as has already been noticed, from an affection of the uterus, or its nerves, and in this last case, one part of the back is generally pained on pressing it.† They are, principally pain in the back, groins, and about the pubis, increased by walking, and accompanied with the sensation of bearing-down. There is a leucorrhœal discharge, and sometimes the menses are increased in quantity. In a more advanced state, there is stranguary, or the urine is obstructed, till the woman lay down, or press up the tumour, and she feels a tumour or fulness towards the orifice of the vagina, with a sensation as if the bowels were falling out, which obligea her instantly to sit down, or to cross her legs, as if to prevent the protrusion. This is accompanied with a feeling of weakness. There may also, during the course of the complaint, but especially after it has continued for some time, be added many symptoms, proceeding from deranged action of the stomach, and bowels, together with a variety of those called nervous. On this account, an inattentive practitioner may obstinately consider the case as altogether hysterical, until emaciation and great debility be induced.

* Vide Memoir by Sabatier, in 3d vol. of the Memoirs of the Academy of Surgery.

† The tenderness is sometimes at the very coccyx. On examination per vaginam, no part of the uterus is painful, but in pressing over the coccyx, and on its sides, the finger being introduced to the second joint, the patient complains, and the pain extends forward to the pubis, where there is often a fixed tenderness, or pain, on making water, although none be felt on going to stool. The bowels are inflated, and the limbs are weak. A suppository of five grains of extract of cicuta, with one of opium, should be introduced into the rectum every night for some time; and if this give no relief, the skin over the bottom of the sacrum must be blistered.

But if the patient have been recently delivered, there is less likelihood of the practitioner being misled. She feels a weight and uneasiness at the pubis and hypogastric region, with an irritation about the urethra and bladder, and sometimes a tenderness in the course of the urethra, or near the vulva. A dull, dragging, pain is felt at the groins, and when she stands or walks, she says she feels exactly as she did before the child was born, or, as if there were something full and pressing. Pains are felt in the thighs, and the back is generally either hot, or aches. The symptoms go off, in a great measure, when she lies down, though in some cases, they are at first so troublesome, as to prevent rest. In some instances, no pain is felt in the back; but whenever the patient stands, she complains of a painful bearing-down sensation, or sometimes of pressure about the urethra, or orifice of the vagina.

By examination, the uterus is felt to be lower than usual,* and the vagina, in one part or other, is always relaxed, and sometimes it is inverted. Unlike, however, the simple inversion, the vagina, in this case, is often most relaxed in front, coming down on, or before, the uterus. Next to this, it is most relaxed at the sides; frequently, but not invariably, least behind. From the connexion of the rectum with the pelvic fascia, that intestine, to a certain extent, is drawn down with the uterus. Sometimes, when the finger is pressed against the fore part of the vagina, near the uterus, we feel as if there were almost a rent of the fascia, or connexion above. Next, the os uteri descends so low as to project out of the vagina. In the greatest degree, or procidentia, the uterus is forced altogether out, inverting completely the vagina, and forming a large tumour betwixt the thighs.† The intestines descend‡ lower in the pelvis, and even may form part of the tumour, being lodged in the inverted vagina, giving it an elastic feel. In some instances, this unnatural situation of the bowels gives rise to inflammation, by which the intestines become connected together with cords of false membrane, and adhesions also may be formed with the bladder. The uterus is partially retroverted, for the fundus projects immediately under the perineum, and the os uteri is directed to the anterior part of the tumour. The ori-

* In the adult, the usual distance of the os uteri, from the posterior margin of the orifice of the vagina, is about three inches. From the orifice of the urethra, to the os uteri in front, is about two inches and a half.

† There is a cast of a very large procidentia in the great hospital in Rome.

‡ Sometimes the situation of the abdominal viscera is very much altered. In Mr White's case, the liver was found to descend to the lower part of the belly, and the diaphragm was lengthened so as to allow the stomach to reach the umbilical region. Vide Med. Obs. and Inq. Vol. iii. p. 1. In a complicated case, related by Schlincker, the pylorus hung down to the pubis. Haller, Disp. Med. iv. p. 410.

fice of the urethra is sometimes hid by the tumour, and the direction of the canal is perhaps changed; and the bladder, if it be not scirrhus, or distended with a calculus of large size, may be carried down into the protruded parts;* so that a catheter passed into it, must be directed downwards and backwards. It is, however, quite possible, for the uterus even to protrude, with little change in the situation of the bladder, or direction of the urethra. Of this, any one may satisfy himself, by experiments on the dead subject.

In some instances, instead of partial retroversion, there is a slight degree of anteversion. This is particularly the case when there is any fulness on the anterior part of the fundus, or it may be caused by certain conditions of the ovarium, or neighbouring organs. This state is attended with more pain in the back, and more bearing-down, in proportion to the degree of descent, than any other kind of simple prolapsus. The finger introduced into the rectum feels the os uteri resting on the extremity of that gut.

The procidentia, is attended with the usual symptoms of prolapsus uteri, and also with difficulty in voiding the urine, tenesmus, and pain in the tumour. If it have been long, or frequently, down, the skin of the vagina becomes hard, like the common integuments, and it very rapidly ceases to secrete. The mouth and neck of the womb also, in such cases, sometimes elongate, but, often, we see merely a round aperture, at the extremity, of the obtuse termination of the bag or tumour. Sometimes the tumour inflames, indurates, and then ulceration or sloughing takes place. This procidentia may occur in consequence of neglecting the first stage, and the uterus is propelled with bearing-down pains; or it may take place all at once, in consequence of exertion, or of getting up too soon after delivery; it may also occur during pregnancy, as I shall presently notice, and even during parturition. Sometimes it is complicated with stone in the bladder,† or with polypus in the uterus.‡

* This point is very well considered by Verdier, in his paper on hernia of the Urinary Bladder, in the first Vol. of Mem. de l'Acad. de Chir. See also a paper by M. Tennon, in Mem. de l'Institut, Tom. vi. p. 614.—Mr Paget relates a very interesting case of prolapsus uteri, in which the bladder became retroverted, lying above the uterus. It could not descend before it, or along with it, being filled with a calculus, weighing 27 ounces, and others of a smaller size. Some parts of the bladder were an inch thick; a catheter could not be introduced. Med. and Phys. Journal, Vol. vi. p. 391.

† Ruysch, feeling some hard bodies in the tumour formed by the protruded parts, cut out 42 calculi from the bladder. M. Tolet extracted fifty, and afterwards cured the woman with a pessary. Duverney met with a large calculus in the bladder, with procidentia uteri; and Mr Whyte relates a similar fact. Med. Obs. and Inq. Vol. iii. p. 1. See also Deschamps's *Traité de la Tallie*, Tom. iv. p. 158.

‡ Vide the case of a girl aged twenty-one years, related by Mr Fynney. The polyposus excrescence was extirpated from the os uteri, and then a pessary was employed. Med. Comment. Vol. iv. p. 228.

By experiments made on the dead subject, it is evident that the descent of the womb, is chiefly prevented, by the fascia which passes off from the cavity of the pelvis, to the upper part of the vagina. Greater degrees, are also checked by the fascia triangularis, which reaches to the orifice of the vagina; likewise by that of the perineum, and by the levator ani, and deep transversalis perinæi, for all these tend to support the canal. (See pp. 14—16.) If we pull down the uterus with a hook, we see the effect of different degrees; and, first, we find the fascia which is reflected to the vagina, stretched like a band on each side, in a direction downward, and forward, from the notch where the sciatic nerve issues. The round ligaments are sometimes but not always affected. The ureters are a little stretched. No effect is produced on the bladder, but the peritoneum, there, is a little wrinkled. The rectum is drawn down more or less, and if kept tightly up, resistance is afforded to the descent. The lateral reflections of fascia and peritoneum, from the top of the vagina to the rectum, are stretched, even if the rectum be not kept up. This will make the face of the gut come forward in prolapsus. If we dissect the perineum, we find that the fascia triangularis is a little protruded, and so is the levator ani, which we know is intimately connected with the vagina. That canal is, at its top, inverted to a greater or less degree, according to that of the prolapsus. Those parts, then, which are thus stretched in the dead, must in the living subject, be relaxed and elongated, to which I attribute the production of prolapsus.

The vagina is, primarily, affected in prolapsus. So long as it is quite in situ, and properly supported, especially at the top, no descent takes place. The support is the pelvic fascia, reflected to the top of the canal, to the uterus, and to the bladder. When this, where it passes off, to be reflected up, on these parts, is slackened, descent to a greater or less degree takes place, and when once produced, the uterus gets more into the axis of the outlet, and this facilitates the progress. But we must not overlook other causes or conditions. The levator ani and its accompanying fascia, if relaxed, lengthened, or torn, must afford less resistance, or yield less effective support. A slack perineum is, I believe, oftener a concomitant effect than a cause, for without relaxation of the connexion of the vagina, a lacerated perineum is not productive of prolapsus. Thus, there are chiefly two seats of the cause; first, the pelvic fascia at the top of the vagina, and near the os uteri; second, the fascia and levator, supporting the vagina in its under portion.

In complete procidentia, there must be prodigious relaxation, if not laceration of the fascia, not only at its reflection, but also where it extends with the levator, and on the vagina, &c.

Scarcely any perceptible increase can be made to the quantity of intestines in the pelvis, in ordinary prolapsus, or moderate descent, but, from the relaxation of the fascia, their pressure is more felt; and, although the rectum descend little, yet even that little, is sufficient from the direct influence on its extremity, and also from its sympathetic effect, on the sensation of the other intestines, to occasion a feeling of bearing-down. It is also easy to see how the sacro-sciatic nerves may, in certain cases, be affected, as the fascia connected with them is stretched. In greater degrees, approaching to procidentia, the round ligaments are stretched, but dividing these does not add much to the facility of drawing down the womb. Even the peritoneum, which we should, a priori, think too lax to afford much support, does contribute to the resistance, for, both the pelvic portion, and that which spreads over the top of the sacrum and lumbar vertebra, are tightened when the uterus is pulled down. The levator ani, and fascia at the outlet, are much more affected than in the slighter and more common degrees; but, still, the parts affording the greatest obstacle to the pulling down of the womb, are the fascia at the top of the vagina, and the other vaginal attachments.

In the supine posture, the axis of the uterus, is more in that of the outlet, and therefore should more easily descend; but in this position, there is no pressure from above. In the erect, or especially in the prone, it is more nearly in the axis of the brim, though the intestines may make the degree vary. The two last positions, are, in so far as that of the uterus has influence, the least favourable for increasing prolapsus, but then, on the other hand, in the erect, we have not only the weight of the uterus, but the pressure of the intestines.

Some have, from theory, denied the existence of prolapsus,* and others have disputed whether the ligaments were torn or relaxed. There can be little doubt, that when it occurs speedily after delivery, it is owing to the weight of the womb, and the relaxed state of the ligaments, fascia, and vaginal connexions. From these causes, getting up too soon into an erect posture, or walking, may occasion prolapsus, particularly in those who are weak or phthisical. Laceration of the perineum does not always cause it, for the connexions of the uterus, above, may remain firm or unelongated. In the unimpregnated state, it may be produced by dancing much during menstruation, by straining, or any long continued exertion, when there is a predisposition to it, from relaxation of the parts, caused by frequent parturition, de-

* Kirkringius says, *Nemo vidit, nemo sensit, decepti omnes imagine falsâ, alios decipiunt; laxitas quædam colli quæ extra pudendum prominat hæc nobis fecit ludibrio.* Opera, p. 48. Vide also Job a Meekren, *Observ. Chir. c. 51.* Bar-bette *Chirurg. c. 8.* Roonhuysen, *Obs. Chir. part i. ob. 2.*

bility, or stretching of the fascia and levator ani. Laceration of the fascia may also permit it. Fluor albus is considered to be a cause, but it is more frequently an effect. Sometimes a fall brings it on. No age is exempt from it.*

When symptoms indicating prolapsus uteri are present, we ought to examine the state of the womb, the patient having lately been, or rather being, in an erect posture. The symptoms sometimes, at first, turn the attention rather to the bladder or pubis, than the womb; but a practitioner of experience, will think it incumbent on him, to ascertain the real situation of that viscus. If we find that there is a slight degree of uterine descent, we must immediately use means to remove the relaxation of the vagina: for nothing can directly act on the fascia. These consist in the frequent injection of solution of sulphate of alumin, either in water, or in decoction of oak bark,† repeated ablation with cold water, and the daily use of the cold bath. By corrugating the vagina, and unless they do so, they do no good, astringents render it less lax, and more able to maintain its position, and if this can be done, the fascia and levator may recover their tone. But unless they do good soon, it is hurtful to persevere in their use, as they injure the mucous coat of the vagina. Tonics are useful, chiefly, in so far as they improve the general health, but laxatives are evidently indicated to keep the bowels regular, and prevent accumulation of fæces. All exertion is to be avoided, and a recumbent posture much observed, especially with the breech somewhat raised, and the body not supine, but on the side, or more or less prone and bent. Dr Hamilton objects to this, as injurious to the health, but the advice is not incompatible with such exercise as may be useful. This position it is evident, must, in the early stage, be the most effectual mean, as it allows time, and opportunity, for the parts to recover their tone or tightness. If these fail, or if the disease exist to a considerable degree, then, we must have recourse to the assistance of mechanical means for supporting the uterus, and taking off superincumbent pressure. One of the most useful of these, is, what I have long recommended, namely, a spring-truss, similar to that used for prolapsus ani, but with a larger pad, pressing on the perineum, and also perhaps a very little

* Dr Monro mentions a procidentia uteri, in a very young girl. It was preceded by bloody discharge. Works, p. 535. Another case is related by Saviard, Obs. 15, in which the prolapsed uterus was mistaken for the male penis; and as Goldsmith's soldier believed they would allow him to be born in no parish, so this girl was in danger of being determined to have no sex.

† Oslander advises the insertion, into the vagina, of a bag of fine linen, filled with powdered oak bark, at the same time that the patient is confined for three weeks to bed. The liberal use of tincture of kino, internally, has been advised, but it has no effect on the vagina or its connexions.

beyond it, on the orifice of the vagina.* This, in general, is more useful and more comfortable than a pessary, but, in bad cases, the latter may require to be conjoined. This, or a firm T-bandage, must also be employed, with a large globe pessary, where the perineum is greatly lacerated. But, in that case, it may be advisable to try, first, the plan of making the edges of the rent raw, and then using stitches; or, by applying caustic, to try and procure some more contraction by granulations. If we fail, we are not worse than before the trial.

The second object, or taking off pressure, is to be accomplished by the use of a broad belt, buckling round, and embracing and supporting the abdomen, with slight whalebones, at the sides, and behind, to keep it straight. It ought to have straps below, passing between the thighs, or be shaped there like the top of a pair of drawers, to keep it from slipping up. If necessary, shoulder straps may be added. A contrivance of this kind, is well known, under the name of Dr Hamilton's bandage.

Pessaries have been introduced into the vagina, with the view of allowing the uterus to rest on them, and thereby keeping it up. This can only be, in any degree, accomplished, if they be so broad as to stick in the canal, and like a platform, bear up the uterus; or, so long, as to rest on the perineum at one end, and support the womb at the other. The first kind are rarely, if ever, now employed. The second can evidently only do good, when the perineum is firm, and does not yield to their pressure, and where the relaxation is principally, or solely, at the upper part of the vagina. The spring-support, on the other hand, acts chiefly on the perineum and orifice of the vagina, preventing them from yielding, and thereby not only relieving much the sensation of bearing-down, but also contributing to the restoration of the relaxed, or elongated parts, to their natural state. Dr Hamilton in his late work, argues strongly against the use of pessaries, but I think carries his objection too far, and trusts too much to the T-bandage, which is with great difficulty kept firm and efficient. There are doubtless many cases where the spring-support alone is sufficient, but *when it is not*, the globe pessary may with advantage be conjoined, as we thereby act both on the perineum and uterus, and, also, by pressing on the posterior wall of the vagina, assist in preventing the lower part of the rectum from being drawn forward, by its connexion with that canal. Pessaries generally excite a mucous discharge from the vagina, on which account, as well as from the dislike many

* It is useful to have this connected to a pretty broad, but thin, plate, well lined or stuffed, and adapted, accurately, to the shape of the lower part of the back, and upper part of the pelvis. This is attached to a firm band, which buckles round the pelvis and body.

patients have to them, they are seldom employed in the commencement of the complaint, and, very properly, not till other means have failed. I have no confidence in them without the aid of external support.

Pessaries are made of wood, gilt silver, steel, or hair covered with elastic gum, &c., and are of different shapes, some oval, some flat and circular, some like spindles, or the figure of eight, others globular. Of all these, the globular pessary is the best, and, whilst it is not so large as to make injurious pressure on the rectum or urethra, it ought to be of such a size as to require a little force to introduce it into the vagina; that is to say, it must be so large as not to fall through the orifice, when the woman moves or walks. It is retained by the orifice of the vagina, rests on the perineum, and when it fits, often gives immediate relief. Both for the purpose of withdrawing it easily, and also for attaching it to a girdle, that it may not drop out at an inconvenient time, it has a tape attached to it. It ought to be taken out frequently and cleaned.* By diminishing gradually the size of the pessary, we may perhaps be able at last to dispense with it. If I were to write an aphorism on this subject, I should say that we have no means of acting, directly, on the seats of the immediate or efficient cause. The practice is negative, that is, we obviate as far as we can, mechanically, the effect.

It is farther necessary to mention, that the symptoms and treatment of prolapsus, may be modified, by circumstances which precede it, but with which it is not essentially connected. For instance, a tender or inflamed state of the uterus, and its appendages, may take place after delivery, and when convalescent, the patient may rise too soon, or sit up, striving to make the child suck, and thus bring on a degree of prolapsus. In this case, it is evident that the symptoms may be more acute or painful, and they cannot be removed by mechanical contrivances, until by rest, laxatives, and occasional fomentations, the morbid sensibility of the parts within the pelvis be got rid of. The uterus may also, independently of pregnancy, become very sensitive, along with prolapsus, so that whenever the patient sits quickly down, pain is felt darting through the pelvis to the back, and

* Morand relates the case of a woman who had foetid discharge from the vagina, accompanied with pain. On examination, fungous excrescences were discovered in the vagina, and amongst these a hard substance, which being extracted, was found to be part of a silver pessary. The vagina contracted at this spot, and thus though in a disagreeable way, prevented a return of the prolapsus. Pessaries have also ulcerated through into the rectum; and Mr Blair mentions a woman, in the Lock Hospital, who had introduced a quadrangular piece of wood into the vagina as a pessary, and which ulcerated through into the rectum, producing great irritation, *Med. and Phys. Journal*, Vol. x. p. 491. It is likewise necessary, if the pessary have an opening in it, to observe that the cervix uteri do not get into the opening, and become strangulated.

coition has the same effect. A recumbent posture, and small blisters applied to the lower part of the back, and, perhaps, leeches applied to the os uteri are useful.

Dieffenbach, who objects to pessaries, advises a portion of each side of the vagina to be cut out, and the edges brought together by sutures. The same effect, of contracting the vagina, may be produced by the actual cautery, but neither of these can act on the seat of the complaint. They can only prevent protrusion. This, in women past the menstrual period, has been also attempted, by altogether obliterating the orifice of the vagina. It has even been done at an earlier period. The operation has received the barbaric name of Episioraphy.

If a procidentia be large, and have been of long duration, the reduction of the uterus may disorder the contents of the abdomen, producing both pain and sickness. In this case, we must enjoin strict rest in a horizontal posture. The belly should be fomented, and an anodyne administered. Sometimes it is necessary to take away a little blood; and we must always attend to the state of the bladder, preventing an accumulation of urine. When the symptoms have abated, a pessary must be introduced,* and the woman may rise for a little to ascertain how it fits; but, as in other cases, she ought, for some time, to keep much in a horizontal posture, and avoid, for a still longer period, every exertion. If there have existed inflammation of the displaced bowels, during the continuance of the procidentia, serious consequences may result from the reduction, owing to the adhesions which have formed. Should there be much difficulty and pain attending the attempt to reduce, it ought not to be persisted in. Sir C. Clarke notices a case which proved fatal, from the inflammation of the contents of the bag, although no attempt was made to reduce. The intestines adhered to one another. Sometimes the omentum has adhered to the uterus.

If the tumour, from having been much irritated, or long protruded, be large, hard, inflamed, and perhaps ulcerated, it will be impossible to reduce it until the swelling and inflammation be abated, by a recumbent posture, fomentations, saturnine applications, laxatives, and perhaps even blood-letting.† After some days we may attempt the reduction, and will find it useful, previously, to empty the bladder. The reduction, in general, causes, for a time, abdominal uneasiness, which sometimes

* Dr Denman very properly advises, that a pessary should not be introduced immediately after the uterus is reduced. Lond. Med. Journal, Vol. vii. p. 56.

† M. Hoin, succeeded in reducing a very large, hard, and even ulcerated procidentia, by fomentations, rest, and low diet. Mem. de l'Acad. de Chir. Tom. iii. p. 365. M. Durant lately reduced, successfully, a prolapsus of 16 years' duration. Jour. de Chir. Prat. Fevrier, 1841.

increases to a great degree, accompanied with constipation, rendering it necessary to allow the tumour, again, to come down.

If the uterus cannot be reduced, and be much diseased, it has been proposed to extirpate the tumour. This has been done, it is true, with success,* but it is extremely dangerous; for the bladder is apt to be tied† by the ligature, which is put round the part; and as the intestines fall down above the uterus into the sac, formed by the inverted vagina, they also are apt to be cut‡ or constricted. As a palliative, Richter advises the use of a suspensory bandage.

A prolapsus uteri does not prevent the woman from becoming pregnant;§ and it is even of advantage that she should become so, as we thus, at least for a time, generally cure the prolapsus. But we must take care, lest premature labour|| be excited; for the uterus may not rise properly, or may again prolapse, if exertion be used.

Sometimes, especially after a fall,¶ when there is a wide pelvis, the uterus may prolapse during pregnancy, although the woman have not formerly had this disease. Our first care ought to be directed to the bladder,** lest fatal suppression of

* See Rossuet, Plater and Platner, *Inst. Chir.* section 1447. Wedelius de *Procid. Uteri*, c. 4. Volkamer, in *Miscel. Cur. an.* 2, ob. 226. Another case may be seen in *Journal de Med.* Tom. lxxviii. p. 195. Paré *Œuvres*, p. 970.—Carpus extirpated it with success. Vide Langii *Epist. Med. lib. ii. epist.* 39.—Slevogtius relates a distinct case, where the womb was found in the vagina, as if in a purse. *Dissert.* 12.—Benevenius says he saw a woman whose uterus sloughed off. *De Mirand. Morb. Causis*, cap. 12.—Dr Elmer supposes he has met with a similar case. *Med. Phys. Journal*, Vol. xviii. p. 344.—A distinct case is related by Laumonier. The patient was long subject to prolapsus uteri, but at last the womb, with the vagina, was forced out so violently, that she thought all her bowels had come out. At the upper part of the tumour there was a strong pulsation. It was extirpated chiefly by ligature. The woman died some years after this, and the womb was found wanting. *La Med. Eclairé, par Fourcroy*, Tom. iv. p. 33. M. Baudelocque, however, says, that the uterus was only partially extirpated. Vide *Recueil Period.* Tom. v. p. 332. See also cases by Marschall, Foederé, Langenbeck, and Recamier.

† This happened in Ruysch's case. *Obs. Anat.* vii. Delpech in a case of successful extirpation, separated the bladder from the vagina. In this case both the uterus and vagina were indurated and ulcerated.

‡ This occurred in a case related by Henry, ab Heers, *Obs. Med.* p. 192.

§ Harvy relates a case, where the tumour was as large as a man's head, ulcerated, and discharged sanies. It was proposed to extirpate the prolapsed uterus, but the following night a fœtus was expelled, *spithama longitudine*. *Opera*, p. 558. See also a case by Mr Antrobus, in *Med. Museum*, Vol. i. p. 88.

|| Vide Mr Hill's case, in *Med. Comment.* Vol. iv. p. 88.

¶ Dr Burton had a patient, who in the fourth month of pregnancy fell, and was thereafter seized with suppression of urine. The os uteri was found almost at the orifice of the vagina. He drew off about three quarts of urine, raised up the womb, and introduced a pessary. *System*, p. 166.

** Mr Dray mentions a case, where, in the fourth month of pregnancy, the woman was seized with pains, like those indicating abortion, accompanied with suppression of urine. The os uteri was very near the orifice of the vagina. This

urine take place.* Our next object is to replace the uterus, and enjoin a state of rest in a recumbent posture. When there is no protrusion, but a mere descent, rest, alone, is all that is necessary, and in neither case would I advise a pessary. If it cannot be reduced, † a very rare state indeed, the uterus must be supported by a bandage, ‡ until, by delivery, it be emptied of its contents. It is then to be reduced. I have never known any instance of protrusion; but I have found the uterus so far prolapsed as to have its orifice at, or a little beyond, that of the vagina. The neck, even in the beginning of the ninth month, in such cases, was conical, and less developed than usual, whilst the lips were thick and protuberant. The finger could be passed up beyond the lips, along the cervix, and excepting a feeling of bearing-down, no inconvenience was experienced, nor was there any difficulty in voiding the urine. The management of prolapsus, during labour, will be afterwards considered. 456.

If prolapsus be threatened, or have taken place after delivery, in consequence, for instance, of getting up too soon, we must confine the woman to a horizontal posture, till the womb regain its proper size and weight; and this diminution is to be assisted by gentle laxatives, particularly the daily use of the sulphas potassæ cum sulphure, in doses of from two to three drachms. The bandage, formerly noticed, is also useful and comfortable.

In some cases, the cervix uteri lengthens and descends lower in the vagina, though the body of the womb remain in situ.§ This is not to be confounded with prolapsus, for it is really a preternatural growth of part of the uterus; and this portion, or elongation, has been removed by ligature.

The anterior lip has descended to a great degree in labour, insomuch, that it has been mistaken for presentation of the placenta.

SECTION FORTIETH.

Inguinal herniæ of the uterus have been long ago described

disease proving fatal, the bladder was found to be thickened, enlarged, and in part mortified. Vide Med. and Phys. Journal, Vol. iii. p. 466.

* Reink mentions a woman who was pregnant of twins. In the fourth month the womb prolapsed, and caused a fatal suppression of urine. The vagina at the upper part, was corrugated and inverted. Haller, Disp. Chir. Tom. iii. p. 385.

† See a remarkable case of prolapsus in the gravid state, where the whole uterus protruded, and reduction was not accomplished till after delivery, by P. C. Fabricius, in Haller, Disp. Chir. Tom. iii. p. 434.

‡ Vide Memoirs by M. Sabatier, in Mem. de l'Acad. de Chir. Tom. iii. p. 370. A case was (1826) published by Siebold, in his Journal, of a large prolapsus in the pregnant state.

§ In the Museum of the Dublin College, is a preparation, supposed, during life, to be one of prolapsus. But it was found to be the cervix, elongated to more than two inches, and producing inversion of the vagina, which formed the greatest portion of the tumour.

by Sennert, Hildanus, and Ruysch, and more lately by Lallemand. This species of displacement may occur in the unimpregnated state, and the woman afterwards conceive; or it may take place when pregnancy is somewhat advanced. If it be possible to reduce the uterus, this must be done; and in one stage an artificial enlargement of the foramen, through which the uterus has protruded, may assist the reduction. If, however, gestation be far advanced, then an incision may require to be made into the uterus when pains come on, that the child may be extracted.* But it has happened, that even in this untoward situation, the natural efforts have expelled the child by the vagina, although the uterine hernia, protruding by a separation of part of the abdominal muscles, hung down, at first, so low as the knee.

SECTION FORTY-FIRST.

The ovarium is subject to several diseases, of which the most frequent is that called dropsy. The appellation, however, is not proper, for the affection is not dependent on an increased effusion of a natural serous secretion or exhalation. A very frequent species of this, originates in the Graafian vesicles. These enlarge, are filled with serous fluid, and their coats become less vascular, though still furnished with vessels. They change their nature so as to become simple cysts, scattered through the ovarium, and gradually enlarging in size, whilst the intermediate substance either remains with little alteration, or becomes increased in quantity and thickened. In the first case, it is not unusual for one, or at the most two cysts, to acquire a considerable size, whilst the rest make comparatively slow progress. But it is not always so. In the second, there is not any certain proportion between the size of the cysts, and that of the new-formed solid substance, nor does it appear necessary that the solid change should be preceded by cysts. They may be simultaneous in their origin. I believe that this form, which has been called, perhaps not very properly, cystic sarcoma, originates in the substance of the ovarium, and has cysts formed independent of the vesicles. A disease, analogous to this form, is met with in the male testicle. And I have, in the male, found, in consequence of a blow, the same kind of tumour increasing in the abdomen to a very great size. This second kind of cystic affection of the ovarium, consists in a peculiar change of structure,† and the formation of many cysts, contain-

* The latest instance of this was at Salamanca by M. Lindesma. The child lived for some time, and the mother recovered. It was not thought prudent to attempt the reduction of the uterus after the operation. *For. and Brit. Rev.* xii. p. 261.

† Le Dran says, this dropsy always begins with a scirrhus, and is only a symp-

ing sometimes watery, but generally viscid fluid, and having cellular, fibrous,* or indurated substance interposed between them, frequently in considerable masses. They vary in number and in magnitude. There is rarely only one large cyst containing serous fluid; most frequently we have a great many in a state of progressive enlargement; the small ones are perhaps not larger than peas, others are as large as a child's head, whilst the one which has made most progress may surpass in size the gravid uterus at the full time. The inner surface of the cyst may either be smooth, or covered with eminences like the papillæ of a cow's uterus.† Their thickness is various, for sometimes they are as thin as bladders, sometimes fleshy, and an inch thick. The fluid they contain is generally thick and coloured, occasionally fœtid, and in some instances, mixed with flakes of solid matter, or tufts of hair. Sometimes, it is altogether gelatinous, and cannot be brought through a small opening; or it contains masses of white substance, like boiled white of egg; or the thick fluid may vary at different stages of its flowing, being sometimes like oil, and sometimes yellow like bile, or brown. Occasionally, the whole quantity is nearly serous, as in ascites. The analysis of this has not led to any result of practical utility. It has been supposed, that in some cases, the fluid was contained in the distended covering of the ovarium, the substance of which, after being infiltrated, had been absorbed. I have never seen a case which confirmed this.

The tumour has been made up entirely, or in part, of hydatids,‡ forming a separate disease, or conjoined with the former. In the case of hydatids, the fluctuation must be obscure, but, even in cystic disease, until the size become large, and especially in more solid tumours, fluctuation cannot be discovered. There is no certain diagnosis, nor is this of great importance, as both are alike intractable, excepting in so far as the cysts may be, for a time, emptied by puncture.

Ovarian disease is more apt to affect those who have borne children, than the unmarried; and the latter very rarely till they are past the age of twenty-five, oftener not till considerably older. Scrofulous habits are most liable to it.

tom of it.—Dr Hunter says he never found any part of a dropsical ovarium in a truly scirrhous state, and he is right.

* Dr Johnston's patient had the right ovarium converted into a fleshy mass weighing nine pounds, and full of cysts. Med. Comment. Vol. vii. p. 265.

† I have seen the inner surface of the ovarium studded over with nearly two dozen of large tumours. M. Morand notices two cases, in which a similar structure obtained.

‡ Sampson, in the Phil. Trans. No. 140, describes an ovarium filled with hydatids, containing 112 pounds of fluid.—Willi mentions a tailor's wife whose ovarium weighed above 100 pounds, and contained partly hydatids, partly gelatinous fluid. Haller, Disp. Med. Tom. iv. p. 447.

The effects, or symptoms, of this disease of the ovarium, may all be referred to three sources, pressure, sympathetic irritation, and action carried on in the ovarium itself. It sometimes, though not often, begins with pretty acute pain about the groins, thighs, and side of the lower belly, with disturbance of the stomach and intestines, and occasionally syncope. A few patients, feel pain very early in the mammæ, and M. Robert affirms, that it is most frequently in the same side with the affected ovarium. In some cases milk is secreted.* But generally the symptoms are at first slight, or chiefly dependent on the pressure or irritation of the parts within the pelvis. The patient is costive, and subject to piles, or strangury, which, in a few instances, may end in a complete retention of urine; the bowels are inflated, and in almost every instance, from this cause, the belly is very early enlarged, and the circumscribed tumour is lost in the general fulness. Sometimes one of the feet very soon swells. We can rarely, either from the vagina or rectum, feel the ovarium, as it seldom falls lower than the top of the cervix uteri. But sometimes, especially, if there be any degree of prolapsus, a tumour may be felt betwixt the vagina and rectum, and the os uteri is thrown forward near the pubis; so that, without some attention, the disease may be taken for retroversion of the womb.† In some time after this, the tumour, in general, rises out of the pelvis,‡ and these symptoms go off. A moveable mass can be felt in the hypogastric, or one of the iliac regions.§ This gradually enlarges, and can be ascertained to have an obscure fluctuation. The tumour is moveable, until it acquire a size so great, as to fill, and render tense, the abdominal cavity. It then resembles ascites, with which it in general comes to be ultimately combined.¶ Little inconvenience is produced, except from the

* In a case detailed by Vater, the patient had symptoms of pregnancy, secreted milk, and even thought she felt motion. The belly continued swelled, and she had bad health for three years and a half, when she died. The abdomen contained much water, and the right ovarium was found to be as large as a man's head, containing capsules, filled with purulent-looking matter. The uterus was healthy but prolapsed, and the uroter was distended from pressure. Haller's Disp. Med. Tom. iv. p. 40. This was not a case of extra-uterine gestation, for the ovarium was divided into cells, and had no appearance of fœtus.

† Mr Home's case, related by Dr Denman, Vol. i. p. 130, had very much the appearance of retroversion.

‡ In some cases it does not ascend out of the pelvis, or if it do, the inferior part of the tumour sinks again into it. Morgagni relates an instance where the ovarium weighed 24 pounds; and the lower part of it filled the pelvis so well, that when it was drawn out, it made a noise like a cupping-glass when pulled away from the skin. Epist. 39. art. 39.

§ Swelling and induration of the iliac glands may somewhat resemble this disease; but they are more fixed, more irregular to the feel, and more painful on pressure.

¶ It may be combined with effusion of water in the abdominal cavity. Dr Bosch's patient had 16 pints of water in the abdomen, and both ovaria were en-

weight of the tumour, and the patient may enjoy tolerable health for years. But it is not always so, for the tumour sometimes presses on the fundus vesicæ, producing incontinence of urine, or on the kidney, making part of it to be absorbed; and it often irritates the bowels, causing uneasy sensations, or an acute pain, with vomiting or purging, and sometimes hysterical affections, all of which are most likely to occur, or be worst, at the menstrual period.* It augments in size and sometimes carries up the uterus with it;† so that the vagina is elongated, and this is especially the case, if both ovaria be enlarged,‡ but even if only one be diseased, the uterus may be elongated.§ In many instances, however, the uterus, in place of rising, prolapses, and occasions repeated attacks of retention of urine, by pressure on the orifice of the bladder, or it is pressed forward nearer the pubis, or turned somewhat oblique. In other cases it is little altered. The urine is not, in the commencement, much diminished in quantity, unless this disease be conjoined with ascites, and the thirst, at first, is not greatly increased. But when the tumour has acquired a large size, the urine is generally much diminished or obstructed. If, however, the bulk be lessened artificially, it is often for a time, increased in quantity, and the health improved. This is well

larged so as to weigh 102 pounds. This patient complained of great pain and weight in the lower belly, and over the right hip. She was much emaciated, but the menses were regular. When she was tapped, not above two tea-cupfuls of fluid were discharged. *Med. and Phys. Journal*, Vol. viii. p. 444.—Mr French met with a case of ascites and dropsy of the ovarium. The ovarium extended from the pubis to the diaphragm. This patient had voracious appetite. *Mem. of Medical Society*, Vol. i. p. 234.

* Case by Sir Hans Sloane, in *Phil. Trans.* No. 252.—Dr Pulteney's patient, whose ovarium weighed 56 pounds, had excruciating pain in the left side, spasms, and hysterical fits. *Mem. of Medical Society*, Vol. ii. p. 265.

† This point is well considered by M. Voison, in the *Recueil Period.* Tom. xvii. p. 371. et seq.—The bladder may also be displaced, as in the case of *Madoiselle Argant*, related by Portal, *Cours d'Anat.* Tom. v. p. 549.

‡ If only one of the ovaria be enlarged, or if both be affected, but only one much increased, the uterus is often not raised, because the ovarium turns on its axis, and the uterus lies below it. In a case with which I was favoured by the late Dr Cleghorn, both ovaria were greatly tumefied, and could be felt on each side of the navel, whilst immediately beneath that, they seemed to be united by a flat hard substance; and when the urine was long retained, a fluctuation could be perceived before that part. Upon dissection, a firm thick substance was found extending from the pubis to the navel, betwixt the ovaria. This was the uterus and vagina. The uterus itself was lengthened, the cervix was three inches long, and all appearance of os tincæ was destroyed. Her complaints began after being suddenly terrified: first she felt severe pain in the right groin, with weakness of the thigh, and soon afterwards, perceived a tumour in the belly; presently another appeared in the left side. She was tapped sixteen times.

§ In a case, where one ovarium was enlarged, partly from a kind of pus, but chiefly from solid matter, altogether weighing 80 pounds, the os uteri was effaced, and the viscus itself elongated to above six inches. Part of the tumour occupied the pelvis. The ureter was much elongated, and zigzag in its course. The blood-vessels were large, and penetrated freely the ovarian substance.

illustrated by the case of Madam de Rosney,* who in the space of four years, was tapped twenty-eight times; for seven days after each puncture she made water freely, and in sufficient quantity; the appetite was good, and all the functions well performed; but in proportion as the tumour increased, the urine, in spite of diuretics, diminished, and at last came only in drops. The woman generally continues to be regular for a considerable time, and may even become pregnant, and have the labour obstructed by the tumour.†

In the course of the disease, the patient may have attacks of pain in the belly, with fever, indicating inflammation of part of the tumour, which may terminate in suppuration,‡ and produce hectic fever; or the attack may be more acute, causing vomiting, tenderness of the belly, and high fever, proving fatal in a short time, or there may be severe pain, lasting for a shorter period, with or without temporary exhaustion, and these paroxysms may be frequently repeated; but in many cases, these acute symptoms are absent, and little distress is felt, until the tumour acquire a size, so great, as to obstruct respiration, and cause a painful sense of distention. By this time, the constitution becomes broken, and dropsical effusions are produced. Then, the abdominal coverings are sometimes so tender, that they cannot bear pressure; and the emaciated patient, worn out with restless nights, feverishness, want of appetite, pain, and dyspnoea, expires.

The effects of this disease must vary according to the nature of the parts most acted on, and the peculiar sympathies which exist in the individual. When we consider, that, in many instances, the whole constitution, as well as different organs, may bear without injury, a great, but very gradual irritation, it is not surprising that this disease should often exist for years without affecting the health materially, whilst in more irritable habits, or under a different modification of pressure, much distress, too often referred to hysteria, may be produced.

This tumour has sometimes appeared to be occasioned by injury done to the uterus in parturition, as for instance, by hasty extraction of the placenta; or by blows, falls, violent passions, frights, or the application of cold; but very often, no evident exciting cause can be assigned. In all cases after delivery, when the patient complains of any degree of fixed pain above or behind

* Portal, Cours d'Anat. Tom. v. p. 549.

† In Mr Hewlett's case, the tumour, which weighed about 17 lbs., presented. The os uteri, for long, could not be felt, but at last, in the space of an hour, the tumour disappeared, and the child was felt to be rapidly descending. Med. Chir. Tom. xvii. 226.

‡ An obscure case is related by Dr Taylor, where a very large abscess is supposed to have formed in the ovarium.—Quarterly Journal, July, 1826.

one groin, and particularly when this is increased by pressure, and attended with an irregular and protracted febrile condition, we should, besides the usual attention to the bowels, detract blood from the arm, or, topically, by cupping or leeches, and then apply a blister. Although some may be subjected to this active practice, who might have done well without it, yet many others should be saved from an incurable disease, the foundation of which is now laid. In the unmarried, as well as the married, pain in the ovarian or uterine region at the menstrual period, when different from that which the female has been accustomed to, demands attention, and at any time it is not to be overlooked, especially if combined with constipation, or following exposure to cold.

This disease is at first sometimes misunderstood, from the most prominent symptom, often, being tympanites. Even careful examination, cannot always, early, discover a tumour, amidst the inflated intestines. Afterwards, fluctuation is discernible, and the disease may be taken for ascites, but in general, the fluctuation is more obscure and circumscribed, being seldom felt in the lumbar region.

In the first stage of this complaint, we must attend to the effects produced by pressure. The bladder is to be emptied by the catheter, when this is necessary, which is not often, and stools are to be procured. It may be considered, how far, at this period, it is proper to tap the tumour from the vagina, and by injections or other means, endeavour to promote a radical cure. When the patient is pregnant, and the tumour opposes delivery, there can be no doubt of the propriety of making a puncture,* before having recourse to the crotchet. But this has only been resorted to, in order to obviate particular inconveniences, and affords no rule of conduct in other cases, where no such urgent reason exists. I would dissuade strongly from any operation at this period, because in a short time the tumour rises out of the pelvis, and then the patient may remain tolerably easy for many years. Besides, the ovarium in this disease, contains, in general, numerous cysts, and as these, in the first stage, are small, we can only hope to empty the largest. Perhaps we may not open even that, and although it could be opened and healed, still, there are others coming forward, which will soon require the same treatment. Puncturing, then, can only retard the growth of the tumour, and keep it longer in the pelvis, where its presence is dangerous.

* In a case noticed by Dr Denman, the labour was obstructed until the ovarium was emptied, by piercing it from the vagina. The woman died six months afterwards. *Introd.* Vol. ii. p. 74. In Dr Ford's case, related by Dr Denman, the crotchet was employed. See also a case by M. Baudelocque, *l'Art des Accouch.* § 1964.

When the tumour has risen out of the pelvis, we must, in our treatment, be much regulated by the symptoms. The bowels should be kept open, but not loose, by rhubarb and magnesia, aloetic pills, cream of tartar, or Cheltenham salt. Dyspeptic symptoms, may sometimes be relieved by preparations of steel, combined with supercarbonate of soda, or other appropriate medicines, though their complete removal cannot be expected so long as the exciting cause remains. General uneasiness or restlessness, occasionally produced by abdominal irritation, may be lessened by the warm bath, saline julap, and laxatives, whilst spasmodic affections are to be relieved by fœtids, and if these fail, by opiates. If, at any time, much pain be felt, we may open the bowels, if necessary, by a clyster, and then give an opiate. If these means fail, we may, if the tenderness be great, apply leeches, and afterwards a linseed-meal poultice, followed, if the pain continue, though not so severe, by a blister. Venesection may be useful, when the inflammatory symptoms are acute and the pulse sharp, but it is rarely required, never to be pushed far, and not to be used merely on account of pain. Such severe symptoms are rare in the simple form of this disease. I wish most distinctly to state my conviction, that beyond the object of palliating symptoms, the medical art can, at present, not extend; and it argues, in so far as our skill, at least, as yet goes, a most unsupported confidence in the power of physic to propose more. Full experience enables me to say, that the most useful treatment is that which most improves the general health. Upon the supposition of this disease being a dropsy, diuretics have been prescribed, but without success,* and often with detriment. Some have supposed, that diuretics do no good while the disease is on the increase, but that, when it arrives at its acme, they are of service. But this disease is never at a stand; it goes on increasing till the patient be destroyed. When they produce any effect, it is chiefly that of removing dropsical affections combined with this disease; and in this respect, they are most powerful immediately after paracentesis. With regard to their power, or the power of any other medicine, of diminishing the size of the ovarium, my opinion is, that they have no more influence on it, than they have over a melicerous tumour on the shoulder, or over the disease, when it occurs in the testicle, or over the configuration

* Dr Denman justly observes, that diuretics have no effect, Vol. i. p. 122. And Dr Hunter remarks, that "the dropsy of the ovarium is an incurable disease, and that the patient will have the best chance of living longest under it, who does the least to get rid of it. The trocar is almost the only palliative." *Med. Obs. and Inq.* Vol. ii. p. 41.

Willi, however, relates a case of 14 years' standing, which was cured by diuretics; and it was calculated that the tumour contained 100 pounds of fluid. *Haller, Disp. Med.* Tom. iv. p. 541. Are such tales correct?

of the patient's nose. In one case, fomentations and poultices, were supposed to have dissolved a tumefied ovarium;* and the late Dr Hamilton has stated, that he has cured seven cases by percussion, or patting for a length of time, daily, on the tumour, using a bandage so as to make constant compression, giving solution of muriate of lime, and employing the warm bath.† As some tumours seem to diminish, or be absorbed, under the influence of nauseating medicines, it might be supposed that in this formidable disease they might be tried with propriety; but continued sickness, for such a length of time, as must be required to produce any sensible effect on the tumour, would be as hurtful, at last, as the disease it was meant to remove, whilst certainly, during its operation, it is much more distressing. The strongest objection, however, is, that the proposal is just as useless as any other which has been made.‡

Having palliated symptoms until the distention become troublesome, we must then tap the tumour, which gives very great relief; and, by being repeated according to circumstances, may contribute to prolong life for a length of time.§ As the uterus may be carried up by the tumour, it is proper to ascertain, whether it be the right ovarium or the left, which is enlarged; and we should tap the right ovarium on the right side, and *vice versa*: by a contrary practice the uterus has been wounded.|| But if fluctuation be distinct in front, we may pierce below the umbilicus as usual. When the disease is combined with ascites, it is sometimes necessary to introduce the trocar twice, and the difference between the two fluids drawn off is often very great. We must neither delay tapping so long, as to injure, by great irritation and distention, nor have recourse to it too early, or too frequently, for the vessels of the cavity excrete much faster and

* Vide Dr Monro's fourth case, in *Med. Essays*, Vol. v.

† Hamilton on *Mercurial Medicine*, p. 202. See also *Practical Observations*, Part i. p. 102. In this work, the justly celebrated author announces his continued confidence in the plan.

‡ Dr Barlow in the 4th Vol. of *Trans. of Prov. Med. and Surg. Association* expresses confidence in the early use of venesection, topical bleeding, and caustic issues. One patient not only recovered by these means, but bare three children at one time, named Faith, Hope, and Charity.

§ Dr Denman advises the operation to be deferred as long as possible, and I believe he is right; for every operation is followed by re-accumulation, which is a debilitating process; yet it is astonishing how much may, in the course of time, be secreted, without destroying the patient. Mr Ford tapped his patient 49 times, and drew off 2786 pints. The secretion was at last so rapid, that three pints and three ounces were accumulated daily. *Med. Commun.* Vol. ii. p. 123.—Mr Martineau tapped his patient 80 times, and drew off 6831 pints, or 13 hogsheads; at one time he drew off no less than 108 pints. *Phil. Trans.* Vol. lxxiv. p. 471.

|| In a case of this kind related by M. Voison, the uterus was wounded, and the patient felt great pain, and fainted. She died on the third day after the operation. *Recueil Period.* Tom. vii. p. 362, &c.

more copiously after each operation; and it is to be remembered, that this is a cause of increasing weakness, not only from the expenditure of albuminous fluid, but also from the increased action performed by the vessels, which must exhaust as much as any other species of exertion.

I have known the disease become suspended, after the patient had been tapped oftener than once. But the partial cure, if such it can be called, was not the effect of medicine.

It has been attempted, to produce a radical cure, by laying open the tumour, evacuating the matter, and preventing the wound from healing, by which a fistulous sore is produced; or by introducing a tent, or throwing in a stimulating injection.* Some of these methods have, it is true, been successful, but occasionally they have been fatal;† and in no case which I have seen, have they been attended with benefit. There are two powerful objections to all these practices, besides the risk of exciting fatal inflammation: the first is, that the cyst is often irregular on its interior surface, and therefore cannot be expected to adhere, even if its organization otherwise permitted; the second is, that as the ovarium, when dropsical, seldom consists of one single cavity, so, although one cyst be destroyed, others will enlarge and renew the swelling: and indeed, the swelling is

* Le Dran relates two cases in the *Mem. de l'Acad. de Chir. Tom. iii.* In the first, the cyst was opened, and the woman cured of the dropsy, but a fistulous opening remained, p. 431. In the second he made a pretty large incision, and introduced a canula into the sac. The operation was followed by fever, delirium, and vomiting; the woman retained nothing but a little Spanish wine for three weeks. She discharged daily, 8 or 10 ounces of red fluid. At length, all of a sudden, 15 ounces of white pus were evacuated, and then the symptoms abated; but a fistula remained for two years; then it healed; p. 442.

Dr Houston relates the case of a woman in this neighbourhood, in whom he made an incision, 2 inches long, into the ovarium, and then with a fir splint turned out a quantity of gelatinous matter and hydatids. He kept the wound open with a tent, and succeeded in curing the patient. The disease was attributed to rash extraction of the placenta, and had existed for thirteen years. It was attended with violent pains. *Phil. Trans. xxxiii. p. 5.*

M. Voison relates a case which was palliated by tapping, and keeping a fistula open. *Recueil Periodique, Tom. xvii. p. 381.* And Portal gives an instance, where, by keeping the canula in the wound for a short time, a radical cure was obtained, and the person afterwards had children. *Cours d'Anat. Tom. v. p. 554.*

‡ De la Porte tapped a woman who had a large tumour in the belly, but nothing came through the canula. He made an incision of considerable length, and in the course of two hours and a half, extracted 35 lbs. of jelly. The lips of the wound were then brought together. Next day 16 lbs. of jelly were evacuated, but presently vomiting and fever took place; and she died on the thirtieth day, having discharged altogether 67 lbs. of fluid. This disease was of sixteen months' standing, and was attributed to hæmorrhage. *Mem. de l'Acad. de Chir. Tom. iii. p. 152.*

Dr Denman notices the case of a patient, who died the sixth day after injecting the ovarium. *Vol. i. p. 422.*

often not completely collapsed, nor the whole tumour emptied, by one operation. Hence, even as a palliative, the trocar must sometimes be introduced into two or more places. We sometimes, in dissections, meet with a solitary bag of serum connected with the ovarium, and can suppose, that if this, after acquiring a certain size, were felt distinctly fluctuating, per vaginam, it might first be punctured, and then have means used for producing obliteration.

It has been proposed to extirpate the ovarium, after puncturing it,* in order to reduce its size; or the operation may, on the same principle, be performed early, when the tumour is still small and moveable, and this I should conceive to be a much more favourable time, than after the ovarium had been allowed to acquire a great size. The operation is full of danger, and unwarrantable, but simple in its performance. We have only to make an incision into the abdomen, proportioned to the size of the tumour, and after tying a ligature around the pedicle, cut away the mass, replace the intestines, and stitch the wound. But how few patients could be expected to recover from this operation. It may be said they must die at any rate, whilst this gives a chance of complete recovery. True, but if performed early, we have a great probability of the patient dying in a few hours, whereas, by palliatives, she might have lived for many years. If delayed till a late period, the constitution is broken down, and the chance of recovery is still less. The operation after being commenced, has been obliged to be abandoned, owing to extensive adhesions.

It has happened that a cyst has adhered to the intestine, and burst into it, the patient discharging glairy or fœtid matter by

* This has successfully been done by Laumonier, as related in *Mem. de la Soc. Roy. de Medicin*, 1782, and by Dr Nathan Smith of America. Vide *Edin. Journal* for October, 1822. Mr Lizars has lately published two cases, where this operation was performed, and seems to have been encouraged by a wonderful history of a woman in America, who thought so little of the operation that in five days thereafter she was found making her bed. In one case both ovaria were diseased, and only one was taken away. The woman survived. In the other case, the operation was fatal. Other two cases of abdominal operation are contained in the work; in the one, no tumour of the ovarium existed; in the other, the extirpation, for good reasons, was not persisted in. There is an account of several cases of extirpation in *Archives*, T. xx. p. 92. One successful at Berlin, by Dieffenbach, and another by Hopfer; two fatal by him, and one by Martini. See also a paper by Hevin, in *Revue Med.* 1836, p. 161. Mr Scaffeson made an incision of about an inch long in the linea alba, midway between the pubes and umbilicus. Then punctured with a trocar, and afterwards drew out the empty sac, which he cut off after applying a ligature around its neck. The patient recovered. *Trans. of Provin. Med. and Surg. Association*, Vol. v. p. 239. Mr Stilling extirpated an ovarium about the size of the head. The patient died the fourth day, partly, from hæmorrhage. *Brit. and For. Med. Rev.* Vol. xxvi. p. 547.

stool,* or this tumour has burst externally.† Such cases as I have known, have been palliated, but only palliated, not cured, by this event. It is more serious when an inflammatory tumour forms.‡ Sometimes the fluid has been evacuated per vaginam,§ or the ovarium has opened into the general cavity of the abdomen, and the fluid been effused there, or the same has happened in consequence of a fall rupturing the ovarium.¶

There is another disease, or a variety of the former disease, in which bones, hair, and teeth, are found in the ovarium.¶

* Dr Denman relates the case of a patient, who, having for some time suffered from pain and tenderness about the sacrum and uterus, and uterine hæmorrhage, was suddenly seized with vomiting, syncope, pains in the belly, and costiveness; presently a tumour was felt in the right side, and this soon occupied the whole abdomen. This patient was cured, after purging a gelatinous fluid. *Med. and Phys. Jour.* Vol. ii. p. 20.

† Dr Monro, in *Med. Essays*, Vol. v. p. 773, details the history of a patient who had a diseased ovarium, and in whom the tumour pointed about four inches below the navel. It was opened, but nothing but air came out, followed next day by fæces: on the 5th day some pus was discharged. She gradually improved in health, and the tumour of the belly subsided; but in two years afterwards the supuration was renewed, and she died. In this case the colon had probably adhered to the ovarium.

‡ Dr Jamieson records a case, which at first resembled pregnancy, but presently declared itself, after much dyspnoea, and other suffering. She was tapped on Dec. 2d. She suffered much from tenderness of the abdomen, &c., but on the 1st of Jan. felt better. After dinner, she was seized with severe pain in the centre of the abdomen, with sense of bursting and shivering. Next day the tumour opened, and gas, with feculent matter, were discharged. On the 14th she died. The ascending and transverse colon formed a large sac, filled with liquid fæces. It was connected with the left ovary, which had been tapped, and now contained a large quantity of fluid, like whey. There were, therefore, two large tumours of different natures, but connected. *Dub. Journ.* Vol. xxi. p. 86.

§ Dr Monro relates a case of supposed pregnancy, in the tenth month of which the tumour was removed by an aqueous discharge from the vagina. In a future attack, however, violent bearing-down pains were excited, and the woman died exhausted. The left ovarium was found greatly enlarged with vesicles. *Med. Essays*, Vol. v. p. 770.

¶ A case of this kind is related by Dr Addison. Peritoneal inflammation took place, but was overcome, and the fluid was absorbed. *Guy's Report*, No. i. p. 41.

¶ See Dr Baillie's *Morbid Anatomy*, chap. 29. Dr J. Cleghorn mentions a woman who died ten days after being tapped. The right ovarium was found greatly enlarged, and had many cells, some containing hair, cretaceous matter, fragments of bone and teeth, others gelatinous fluid. *Trans. of Royal Irish Acad.* Vol. i. p. 80. In *Essays Phys. and Literary*, Vol. ii. p. 300, a case is mentioned, in which the one ovarium contained many vesicles; the other contained a mass, like brain, with bones and teeth. In the museum attached to the hospital at Vienna, there is a large ovarium, the inner surface of which is covered with hair. Horstius met with an ovarium, containing hair, purulent-looking, and oily matter. *Opera*, p. 249. Schenkius met with fat and hair, p. 556, and Schacher relates a similar case in *Haller's Disp. Med.* Tom. iv. p. 477. Ruysch, in his *Adversaria*, says he met with bones and hair, and Le Rich, in the *Hist. de l'Acad. des Sciences*, 1743, met with hair and oil, in cells, together with bones and teeth. See also *Recueil Period.* Tom. xvii. p. 462.

The sac, in which these are contained, is sometimes large, and, generally, is filled with watery or gelatinous fluid. The bony substance and teeth, usually, adhere to the inner surface of the cyst. This disease produces no inconvenience, except from pressure. It has been deemed by some to be merely an ovarian conception; but it may undoubtedly take place without impregnation; nay, similar tumours have been found in the male sex,* or a fœtus, more or less perfect, has been found in the abdomen. It is evident that our treatment must be purely palliative.

SECTION FORTY-SECOND.

The ovaria are sometimes affected with scrofula, and the tumour has proved fatal by producing retention of urine. When it rises out of the pelvis, it is often productive of hypochondriasis, and very much resembles the ovarian disease, formerly mentioned, but is firmer, seldom gives a sensation of fluctuation, and sometimes is very painful when pressed. It rarely terminates in suppuration; but when it does, the fluid, as Portal observes, is *blanchâtre, filamenteux, grumeleux, mal digéré*. The substance of the ovarium is soft, and similar to that of other scrofulous glands. Occasionally, it contains a cheesy substance, which is found, at the same time, in the mesenteric and other glands. If it go on more acutely, there is often great pain, emaciation, and sinking. Iodine, cicuta, mercury, electricity, laxatives, &c., have been employed, but seldom with benefit. The most we can do, is to palliate symptoms, such as retention of urine, costiveness, dyspepsia, or pain.

The ovarium may also be enlarged, and become hard like scirrhus, or bony,† or converted into a fatty sub-

* Duverney saw a tumour extirpated from the scrotum, containing fleshy matter and bones. *Œuvres*, Tom. ii. p. 562. And M. Dupuytren presented a report to the Medical School at Paris relating the history of a tumour found in the abdomen of a boy, containing a mass of hair, and a fœtus nearly ossified. It was supposed, that at conception, one germ had got within another. See *Edin. Med. Jour.* Vol. i. p. 376. From the respectable evidence of Baudelocque, Le Roy, &c., this cannot be placed on a footing with Halley's case of a greyhound dog, who voided by the anus a living whelp! *Phil. Trans.* Vol. xix. p. 316. I believe that bones, hair, &c., have been found in a gelding. Mr Highmore published an account of a fœtus found in the abdomen of a young man. See also *Med. and Phys. Jour.* Vol. xxxiv. 317. Mr Young's case in *Med. Chir. Trans.* Vol. i. p. 244, and Mr Philips in a girl. Vol. vi. 124. See also a paper with cases of monstrosity by inclusion, several of which were under the skin of the perineum, or in the scrotum, by Dr Olivier, *Archives*, T. xv. p. 355, and 539. Dupuytren describes the disorganized remains of a fœtus in a cyst connected with the mesentery of a boy, aged 14.

† Schlencker mentions a woman, who, soon after delivery, felt obtuse pain in the left side, and presently a swelling appeared in the belly. She had bad appetite, swelled feet, prolapsed uterus, and suppression of urine and fœces. The left ovarium was hard and stony, and weighed three ounces. Haller, *Disp. Med.* Tom. iv. p. 419. In this case the tumefaction of the belly could not be caused by the presence of the ovarium, but rather by the pressure on the intestines.

stance,* or undergo other changes which it would be difficult to specify. It may be greatly enlarged by substance of a fibrous nature, forming a hard moveable tumour, giving little inconvenience. Sometimes it is affected with the spongoid disease, or what has been called cerebriiform cancer, and is changed into a substance like brain, with cysts containing bloody serum. The tumour in this disease feels tense and elastic. It may burst through the abdominal parietes, and throw out large fungous excrescences. Frequently we find, on cutting an enlarged ovarium, that part of it resembles the spongoid structure, having bloody fungous cysts, part is like firm jelly, and part like cartilage, or dense fat. Often, the uterus participates in the disease, or is embedded in it quite healthy. I have seen a mass of this kind weigh thirteen pounds. Scirrhus-cancer may also affect the ovarium, but it is not so common as other changes.

These more solid tumours, are not to be confounded with those considered in the last section. They are distinguished by their hardness or elasticity, and too frequently by the greater distress they give, and their proceeding more speedily to a fatal termination. Perhaps of all these, the modifications of struma are the most frequent, and of these, the worst is that which approaches nearest to the spongoid tumour.

Of the numerous internal remedies proposed, such as iodine, cicuta, mercury, iron, &c., I feel compelled to say, that I have not known any of them do good, farther than as they acted on the general health. To attend to this, is the most important rule, and if no urgent symptoms be present, it is almost the only treatment required. The bowels are to be kept regular, the diet digestible, stimulants avoided, and the surface defended from cold. Medicines, to promote digestion, may occasionally be required. It is chiefly when the tumour becomes partially inflamed, marked by sensibility to pressure, and pain, sometimes excruciating, internally, or when the neighbouring parts, such as the stomach and bowels, become affected, that we are called on for active interference. Pain without fever, and depending more on flatulence than inflammation of the tumour, is to be relieved by opium; inflammatory attacks by leeches, and the subsequent application of a poultice, for venesection is seldom

* Vide case by Fontaine, in Haller, Disp. Med. Tom. iv. p. 485. The patient had tumour of the abdomen, with darting pains in the left side, extending to the thigh. The left ovarium weighed 10 pounds, the right was as large as the fist, and both consisted of fatty matter. Portal likewise relates a case of this disease, where the right ovarium was as large as a man's head, very hard, and filled with steatomatous matter, weighing altogether 36 pounds. The uterus and bladder were turned to the left side. No water was effused, but the person was cut off by hectic and diarrhoea. Some steatomatous concretions were found in the lungs. Cours d'Anatomic, Tom. v. p. 540. For various diseases of the ovarium, see Dr Seymour's Illustrations and Plates, 1830; and Cruveilhier, Anat. Path.

admissible; diarrhœa, by clysters containing laudanum; strangury, by fomentation, &c.

Acute inflammation is, perhaps, never confined to the ovaria alone, but one may, doubtless, be the part in which it originated, and from which it proceeded. For, we find that it is sometimes enlarged, and contains pus, whilst the uterus and other pelvic viscera are affected in a minor degree. Inflammation is marked by increased vascularity of the ovarium, its substance is redder, not merely from vessels, but bloody infiltration. The vesicles are larger and more vascular; and hence, although the patient recover, cysts may form. In a greater degree of inflammation, the ovarium is larger, softer, and more easily torn. It is infiltrated partly with serum, sometimes yellow, sometimes bloody. Afterwards, pus may be infiltrated, or collected in an abscess, which in some instances has opened into the uterus, the bladder, the intestines, or even externally. We also meet with cases where the acute symptoms subside, or perhaps never have run very high, and the patient lives for months or longer, during which time she suffers more or less from pain in the lower belly, vesical symptoms, &c., and on death we find one or more small abscesses in the ovaria, and the pelvic viscera often matted to the intestines which cover them. Simple white induration has been considered as a result of chronic inflammation, but it may occur without any previous symptom. If the treatment have not been active at first, so as to subdue inflammation, it only remains, in the subsequent stage, to palliate symptoms, but, even thus, much comfort may be derived, and life prolonged. Prostitutes, sometimes have the ovaria enlarged, and converted into a reddish spongy mass, with little appearance of vesicles.

SECTION FORTY-THIRD.

The ovaria may be wanting on one or both sides, or may be unusually small. In such cases, it sometimes happens, that the growth of the external parts stops early, and the marks of puberty are not exhibited. The ovarium may form part of a herniary tumour.

SECTION FORTY-FOURTH.

The tubes may be wanting, or impervious, or may be the seat of Dropsy sometimes to a great extent, by the two extremities being shut up. Adhesion sometimes takes place between the fimbriated extremity, and the ovarium. Muco-purulent secretion, also, may take place, and if discharged by the uterus, is supposed to constitute one form of leucorrhœa. They are also involved in many of the diseases of the ovaria. The tube may protrude in hernia.*

* M. Berard relates a case of protrusion at the crural ring. The tube contained a fluid, let out by puncture, but death followed. B. and F. Rev. x. 207.

The round ligaments may partake of the disease of the uterus, or may have similar diseases, originally, appearing in them. When they are affected, pain is felt at the ring of the oblique muscle, and sometimes a swelling can be perceived there.

The broad ligament has contained many tumours, so as to give it some resemblance to clusters of grapes.

CHAP. XI.

Of Menstruation.

THE periodical discharge of sanguineous fluid, which takes place every month from the uterus, is termed the menses; and whilst the discharge continues, the woman is said to be out of order, or unwell.

In some instances, the discharge takes place at puberty, without any previous or attendant indisposition; but in many cases, it is preceded by uneasy feelings, often, by affections of the stomach and bowels, pain about the back and pelvis, and various hysterical symptoms. These affections, which are more or less urgent in different individuals, gradually abate, but at the end of a month, return with more severity, attended with colic pains, or bilious vomiting, and sometimes quick pulse, and hot skin. Often leucorrhœa precedes menstruation. There now takes place, from the vagina, a discharge of a serous fluid slightly red, but it does not in general become perfectly sanguineous for several periods. When the discharge flows, the symptoms abate; but frequently a considerable degree of weakness remains, and a dark circle surrounds the eye. It is frequently a year, or even more, before the function be fully established, after which the girl menstruates, often, without any other inconvenience than a slight pain in the back, or about the pelvis, for a day before the appearance, though sometimes, during the whole of her life, she suffers from many of the former symptoms, every time she is unwell; and some have warning for a week. It has been said, that the active and robust, commence the period during the day, whilst, in the more delicate, the discharge begins during the night.

Women, at the menstrual period, are more subject, than at other times, to spasmodic and hysterical complaints. Attention to the origin, and connexion, of the uterine nerves, will enable us to explain the pain which attends menstruation, and which sometimes accompanies it, as well as the derangement of the system, and particular sympathies inhibited. We may, also, understand the bad

effects consequent to an inefficient effort to menstruate, and the production of formidable diseases, such as epilepsy itself, or of vicarious, or coexistent, hæmorrhage from the stomach. It ought to be remembered, that the uterus has two sets of nerves, the one, derived from the sympathetic, the other, from the spinal nerves. From an affection of these last, not only pain in the back may be produced, but, in certain cases, tenderness in one or more spots, with fever, pain in the sides or legs, or, from the cord being more extensively affected, the œsophagus or stomach may be very sensitive, so that food causes pain till it get out of the stomach.

When the function of menstruation is about to be established, 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, and its shape changed; 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.

The age at which menstruation begins, varies in individuals, and somewhat, also, in different climates. It has been considered as a general law, that the warmer the climate, the earlier does the discharge take place, and the sooner does it cease, but this seems to be only correct, to an extent more limited, than was at one time supposed. In the temperate parts of Europe, the most common age at which the menses appear, is fourteen or fifteen years.* In this country, menstruation ceases about the forty-fourth year, lasting for a period of from twenty-eight to thirty years, but in some instances it has continued even till near sixty. Many cease to menstruate at forty. I have not, myself, known any to continue after fifty-three.

The quantity of the discharge varies, also, according to the climate and constitution of the woman. In this country, from four to eight ounces are lost at each menstrual period, but this does not flow suddenly; it comes away slowly for the space of three or four days.† Some women discharge less, and are unwell for a shorter space of time; others menstruate more copi-

* Dr Briere de Boismont (Mem. de l'Acad. Roy. de Med. T. ix. p. 104, et seq.) makes the most common age 14, then 15, 16, 13, 17, 12. Only 30 out of 1200 were so late as 20; 8 so late as 22; and 10 as early as 9 years; 1 at 5 years. Mere children have had bloody discharge.

Mr Robertson has published a paper on this subject, in the North of England Med. and Surg. Jour., in which is a table, from which it appears, that the greatest number begin to menstruate in the fifteenth year, next to that, in the 14th, then the 16th, 17th, and 18th. Negresses do not menstruate earlier.

† Dr B. de Boismont says, that in France the greatest number continued for 8 days, next to that 3, next to that 4.

ously, and continue to do so for a week. Generally the discharge is less the first and last days, being most about mid period, but some are equal from first to last. Most, menstruate regularly every four weeks, that is to say, thirteen times in a year, or once every twenty-eight days, counting from the first day of each period, but some every three, others, nearly, every five weeks.

The menses are obstructed during pregnancy, and the giving of suck; but if lactation be very long continued, the menses return, and the milk disappears or becomes bad.

The discharge appears to be yielded by the uterine arteries, opening on the surface of the cavity of the body, and fundus, of the womb; but it is not an extravasation or hæmorrhage, for when collected, it does not separate into the same parts with blood, neither does it coagulate. In many instances, a great quantity has been retained for some months in the uterus and vagina, but it never has been found clotted when it was evacuated. It contains very little fibrin, and is said by Mr Brande to be a solution of the colouring matter of the blood in a diluted serum. M. Bouchardat, who, by embracing the neck of the uterus with the speculum, obtained about an ounce in ten hours, says that ninety parts are water. The rest consists of fibrin, albumen, and colouring matter, with mucus. It is mixed with the vaginal secretion, and is acid from the mucus. M. Donné says, that under the microscope are seen blood globules in great quantity, vaginal mucus, composed of epidermic scales, and mucous globules furnished by the neck of the uterus.

All agree, now, that the pure menstrual fluid, comes from the uterus alone, and not from any part of the vagina, though this canal be more vascular during menstruation. The uterus sometimes is, sometimes is not, a little enlarged, but its substance is very vascular, and its lining membrane coated with menstrual fluid. Some even say that villi, with or without vessels, sprout from the surface. The tubes are red and turgid, and contain also bloody fluid and mucus, sometimes one, sometimes both; or, one may be imperfectly filled. One or both fimbriæ have been found grasping the ovarium, which is very vascular, especially on one side, and a jagged circular aperture is described as appearing on its surface like a ruptured vesicle. Turgid vesicles also exist. From their appearance, it has been deduced, that ova, though never detected, were discharged at each menstrual period, leaving false corpora lutea.* The inspections, however, of

* This appears to have been Mr Cruikshanks' opinion as far back as 1797. Dr Lee has published cases also on the point. See *Cyclopedia of Med: and Med. Chir. Trans.* xxii. p. 335. An account of his observations, and those of M. Gendrin, may be found in the *For. and Brit. Rev.* Vol. x. pp. 68, and 592.

women dying during menstruation, especially without fever, are too few to enable us yet to admit this doctrine. In fever, the uterus and tubes, often, contain bloody fluid, when no menstruation existed, or sometimes clear jelly is effused. In rabbits, &c., at the time of rut, many more vesicles are found prepared, by enlargement and vascularity, for discharging their ova, than actually do so after coition, but there is no evidence that these supernumerary ova, are disposed of, otherwise, than by absorption or destruction.

There is no doubt of the influence of the ovaries on menstruation, and so far as our present knowledge goes, it appears that the discharge does not take place if they be wanting.* It has been conjectured, from one case, but not proved by inspection, that although the uterus were absent, if they existed, periodic pain &c., might take place. Disease of an ovary certainly does not prevent menstruation, and even when both are affected, that function may go on, and conception take place.† But, for this purpose, it is evident that some portion must be so sound, as to contain a healthy vesicle.

Menstruation has been attributed to the influence of the moon, to the operation of a ferment in the blood, or in the uterus, to the agency of a general or local plethora, or to the existence of a secretory action in the uterus. The last of these is the most probable opinion; but as this work is meant to be practical, I decline the discussion of theories and speculations. The use of menstruation seems to be to preserve the womb in a fit state for impregnation; at least we know, that the presence of menstruation is generally necessary to, and indicates a capability of, conception.

There have been instances of healthy, well-formed women, never menstruating, but the exact state of their internal organs is not known.

Although all the different parts of the body, be combined into one system, and dependent on the operation of a general principle, yet, individual organs do form separate systems, acting according to their own laws, and in consequence of possessing a peculiar vital energy. Nor does it affect the fact, whether we refer the peculiarity to the nature of the organ itself, or to the property of that portion of the medulla which gives off its nerves.

* Dr C. Johnson removed a chronic inversion of the uterus, by ligature, and yet the woman continued to menstruate, or, at least to have periodical discharges. But only the fundus and tubes were included. The preparation is in the Museum of the College of Surgeons in Dublin. To be certain, I applied to Dr Houston, who informed me, that the ovaria were not removed. *Dub. Hosp. Rep.* iii. 479.

† For confirmation, I need only allude to Mr Hewlett's case. *Med. Chir. Trans.* Vol. xvii. p. 226. There are many others.

It is so connected with, and dependent on, the general system, as, on the one hand, to be under its control, and needful of its support, and on the other, to be capable of exercising on it an influence, more or less powerful, according to the nature of the organ. The uterus forms not only a system, acting by its own vitality, and according to its own laws or constitution, but also is most intimately connected with the general system, and with other organs. The peculiarity of the female system consists in this, that not only, in general, is it more susceptible than that of the male, but it has within it, two very delicate individual systems, the breast and the uterus, capable, particularly the latter, of many changes, which may influence the general health, as well as other organs or systems. Whilst, then, I admit that the uterus often is affected by the state of the constitution, and has symptomatic affections of its functions, I, at the same time, must maintain, that in many other instances, the uterus is primarily affected, and such affection is the cause, not the consequence, of bad health. I remark further, that it is quite a mistake to suppose, that when menstruation is not properly performed, the uterus is in a state of mere debility. Great debility may prevent an organ from performing its function, but we meet with very few examples of pure debility, either in the constitution, or in organs. There is, almost immediately, superadded a state of excitement, or at least of disorder. Hence, under circumstances apparently little different, we may have, in one case, amenorrhœa, in another, menorrhœgia.

The action of menstruation, has an effect on the vascular and nervous system, and on the stomach and bowels. All tender or diseased parts are worse, and if visible, their vessels are more turgid, previous to, if not also during menstruation. The nervous system is more irritable, and convulsive affections of the body, or aberrations of mind, are more frequent at this period than at other times. The stomach may be affected with severe sickness and violent retching, or, by sympathy with the skin, may produce urticaria, whilst the bowels for a day or two before menstruation, sometimes are much inflated and costive, or, at the period itself, are affected with spasm.

As the female system is more irritable during menstruation, than at other times, and as changes effected in the system, or in particular organs, at that time, may come to interfere with the due performance of the uterine action, it is a general and proper custom with physicians, and a practice consonant to the prejudice of women themselves, not to administer active medicines, during the flow of the menses. It is also proper, that indigestible food, dancing in warm rooms, sudden exposure to cold, and mental agitation, especially in hysterical habits, be avoided as

much as possible. By neglecting these precautions, the action may either be suddenly stopped, or spasmodic and troublesome affections may be excited. For farther remarks I refer to the next chapter.

CHAP. XII.

Of Hysteria.

ALTHOUGH hysteria be not a diseased state of menstruation, yet, as it is a very general attendant, upon deviations of that action, and a very frequent and distressing complaint, to which women are subject, it will be proper to notice it briefly at this time.

In the well marked hysteric paroxysm, a sense of pain or fullness is felt in some part of the abdomen, most frequently about the umbilical region, or in the left side, betwixt that and the stomach. This gradually spreads, and the sensation is felt of a ball passing along. It mounts upwards, and by degrees reaches the throat, and impedes respiration, so as to give the feeling of a globe in the œsophagus, obstructing the passage of the air, and, as Van Swieten observes, the throat appears sometimes really to be distended. The patient now sinks down convulsed, and apparently much distressed in breathing, uttering occasional shrieks, something like the crowing of a cock, or sobbing violently, or otherwise indicating a spasm of the muscles of respiration. She is generally pale, and frequently insensible, at least during part of the fit; but when she recovers, she is conscious not only of having been ill, but of many things which passed in a state of apparent insensibility. After remaining for some time in a state of considerable agitation of the muscular organs, the affection abates, and the patient remains languid and feeble, but gradually recovers, and presently is restored to her usual health. This restoration is accompanied with eructation, which indeed often takes place during the paroxysm; and also, often, by the discharge of limpid urine, which, by Sydenham, is considered as a pathognomic symptom of hysteria. Headach is also apt to follow a fit.

Besides producing these regular paroxysms, hysteria still more frequently occasions many distressing sensations, which are so various, as not to admit of description. Of this kind, are violent headach, affecting only a small part of the head, sudden spasms of the bowels, dyspnœa, with or without an appearance of croup, and sometimes attended with a barking cough, irregular chills, and sudden flushings of heat, spasmodic pains, palpita-

tion, syncope, &c. These, if severe, or frequently repeated, are generally attended with a timid or desponding state of mind.

I believe I may say, that hysteria is the consequence, of the excitement of the nerves, at their origins. This may be produced, either slowly, by some cause operating directly on these origins, or more rapidly, by sympathy from irritation of their extremities. This is particularly the case with regard to the eighth pair of nerves, and the sympathetic, but it also holds true with regard to the whole spinal cord. When the origins of the nerves are directly affected, or when high arterial action, or even venous congestion exist there, the disease induced, indeed, too frequently passes for a common case of the simplest kind of hysteria, and is treated, accordingly, by antispasmodics.* But the preternatural rapidity, or marked slowness of the pulse, with suffusion of the eyes, flushing of the face, heat of the skin, pain, or distressing sensation of fulness in the head, with weight or giddiness, mark a more formidable and intractable disease. The immediate abstraction of blood, rather generally than topically, can alone arrest effectually the progress of this disease; at the same time, if the attacks be frequent, the lancet ought not to be resorted to, if possible, to avoid it. Cupping the back of the neck, or between the shoulders is better. If neglected in the very commencement, a train of symptoms is induced, bearing a greater resemblance to epilepsy than hysteria. In acute attacks of vertigo, the use of the lancet, or of cupping, but not of leeches, gives speedy relief, and the patient expresses herself as relieved from a weight on her head, although she had previously

* I consider both the common hysterical paroxysm, and the more severe and dangerous form, to be greatly dependent on the condition of the vessels at the base of the skull, and in the spinal canal. The cord is freely supplied with blood by the vertebral, intercostal, lumbar, and sacral arteries, besides the long spinal, which descends from the vertebral, within the cranium. But congestion is more frequent in the complex venous circulation. There are four longitudinal spinal veins, two before, and two behind. The anterior, one at each side, are formed by sinuses, as long as the spaces between the inter-vertebral foramen, each sinus communicating with the one above and below, so as to form a continuous but not uniform canal. The posterior are smaller, and do not so distinctly form individual sinuses. Both sets communicate freely on the surface of the dura mater, so as to form an anterior and posterior plexus, more complex in the cervical and lumbar, than in the dorsal region. Farther, there is a plexus on the face of the posterior arch of the atlas, communicating with the vertebral plexus, the transverse sinuses, and posterior occipital, as well as with the jugular vein and the spinal plexus described. The extent and intimacy of this communication deserves attention. The longitudinal veins along the spine, also receive, behind, the dorsi-spinales from the outside of the back, and, before, the basi-vertebrales from the bones themselves. They also in front, at each inter-vertebral space, communicate with, or in other words, terminate in the vertebral, intercostal, (ending in the axygos) lumbar, and sacral veins. The influence of the uterine system and abdominal viscera on the venous circulation connected with the spine, is both obvious and important.

denied having had any such feeling. A blister should be applied to the back of the head if the symptoms continue, and part of this, it may be necessary to keep open. A sensation of faintness, is best relieved, by ammoniated tincture of valerian. If the disorder prove still more obstinate, we must examine the spine from time to time, as when any spot becomes tender, the application of leeches or an issue there, is of much use. The lower part of the lumbar vertebræ, and upper portion of the sacrum, should especially be examined, as certain sacral nerves pass to the uterus, and are apt to be irritated in its affections; as they likewise join the hypogastric plexus, more extensive sympathies may take place. It should never be forgotten, that pain of the head, with giddiness and debility, may arise from an affection of any part, even the lowest, of the spinal cord. Purgatives are to be assiduously employed, and recovery is often preceded by the discharge, at length, of dark and very offensive stools.

During a pure hysterical fit, the patient is to be laid in an easy posture, a free admission of cool air is to be procured, the face is to be sprinkled with cold water, volatile salts are to be held to the nostrils, and, if she can swallow, 30 drops of tincture of opium are to be administered, with the same or a greater quantity of ether, or with a tea-spoonful of ammoniated tincture of valerian, in some carminative water; or, should there be a tendency to syncope, a drachm of the spiritus ammoniæ aromaticus may be given in water. These combinations, are also the most powerful remedies, in the different hysterical affections above enumerated, when there is no vascular excitement with local fulness. Clysters, containing assafoetida, are sometimes of use.

In the commencement of a regular hysterical paroxysm, or even of a paroxysm in which is blended somewhat of the disease just described, sponging part of the head and body with cold water is often effectual in checking its further progress. I may further remark, 1st, that local pain is frequently removed by sinapisms, with or without the internal use of opium; 2d, that severe affections of the organs of respiration, particularly if accompanied with full and frequent pulse, are more readily relieved by the lancet than by antispasmodics; and it is a great error to suppose that the mere name of hysteria can render a remedy improper, which both experience and the general principles of pathology prove to be worthy of confidence; 3d, although the lancet be proper in urgent cases, it ought not to be frequently resorted to, but the paroxysms are to be kept off, by a strict attention to the state of the bowels, and the employment of fœtids, or mild tonics; 4th, in repeated attacks of spasmodic breathing, like croup, the effect of an emetic may be tried before again taking blood, particularly if venesection have been recently

employed; after the operation of the emetic, a suitable dose of tincture of opium may be given, and we delay the lancet till the effect of these be seen; in the mean time the patient is in no danger of dying; 5th, a state of coma demands either general or local bleeding, or sinapisms to the scalp, according to the state of the patient and the previous depletion; 6th, irregular action of the heart, or palpitation, requires, during the attack, ether and opium; but if these fail, and the patient be plethoric, some blood ought to be abstracted.

The prevention of regular hysteric fits, or of individual symptoms, is to be attempted by preserving a *correct* state of the bowels, or even giving, for a time, every day, pretty powerful purges, which has a considerable effect on the state of the nerves, both immediately, and by rendering more active the venous circulation, so as to relieve congestion; afterwards we have recourse to preparations of steel, quinine, or other tonics, with moderate exercise, and the cold bath, if it do not produce languor, or coldness and headach. The mind ought also to be called as much as possible from brooding over the disease, for, in hysteria, the patient is frequently desponding, and anticipating many evils. Fœtids are also sometimes, but not invariably, of benefit, such as valerian, castor, assafœtida, &c. The menstrual action, if irregular, must, if possible, be rectified by appropriate remedies. The diet should be light, and every attention paid to the improvement of the general health.

Hysteria may occur during the course of other diseases, or in the stage of convalescence from them. In the first case, it may cause some deviation from the regular progress or train of symptoms of the disease, and it is to be feared, sometimes calls the attention of the practitioner, from more serious parts of the patient's malady.

CHAP. XIII.

Of Diseased States of the Menstrual Action.

SECTION FIRST.

AMENORRHŒA, or absence of the menses has been divided into the retention, or *emansio mensium*, and the suppression of the menses. By the first term, we are to understand, that the menses have not yet appeared, the action being longer than usual of being established. By the second, is meant the interruption of the action which has already been established, and hitherto per-

formed. This may be subdivided into checked menstruation, and prevented menstruation, commonly called obstruction.

The retention of the menses, is very often attended with chlorosis, or chloriasis, which, medically, signifies, merely a greenish hue of the skin, without regard to the cause, and therefore, it is applied by some to different affections of both sexes; but, generally, it is confined to that modification of amenorrhœa, which is attended by a dingy, pale, or greenish colour of the skin. An affection of the nerves of a disordered organ, may produce, both directly and circuitously, an effect on the origins of other nerves, productive of phenomena in parts distant from the seat of the disease. We see this, amongst other instances, well illustrated by the influence produced on the fifth and eighth pair of nerves, by which we have the expression, as well as the sensibility of the eye affected, the face changed, and often a dark colour below the eye. The tongue is affected in its sensibility, coating, and even its size. Every pathologist must have remarked the change of colour in the skin in visceral disease, whether organic, or merely functional, and this is always most evident in a defective state of cutaneous circulation, which, were there no morbid tinge, would produce simple paleness. It depends on the alteration of the corpus mucosum, induced by the cutaneous nerves, and is only observed where that substance exists. When the colour depends on the state of the blood, or its admixture with bile, the white of the eye is tinged, which is not the case in chlorosis. This subject has been too little attended to, as yet, to lead to any accuracy in diagnosis; still, it is probable, that when the colour is much affected, the uterus itself is more directly in fault, than where there is more pallor, indicating general debility.

It seems well established, that in chlorosis, the proportion of water in the blood is increased, and of iron decreased. In connexion with the remarks I have made on the nervous influence, I may add, that it has been asserted, that division of the eighth pair of nerves, diminishes the quantity of fibrin in the blood. If so, their imperfect action, may, also, have an influence, in that respect.

Chlorosis, is characterized, not merely by the colour of the skin, for this is not essential to the disease, and the skin may be deadly white, without a greenish tinge, but by a universal and decided debility of the whole frame, and sometimes even a degree of torpor of particular organs. There is not only general weakness of the muscular system, but weariness and languor of body, with listlessness of mind, perhaps, childish caprice. The eye, in well marked cases, is dull. The lips and tongue pale or blanched. The surface, particularly the extremities, usually

cold. The pulse is small and weak, often, but not always, quick. It is easily fluttered, and palpitation readily induced. The sleep is disturbed. The appetite is impaired, and the patient loathes food, or is sick after eating, or much troubled with flatulence and gastrodynia. Often, there is a desire for indigestible substances, particularly chalk, magnesia, or even cinders. The bowels are costive, often obstinately so, or if not, the stools are dark and offensive. The belly generally is tumid, perhaps considerably swelled, and variable in size. The hands and feet generally swell at night, and the eyelids, if not the whole face, are full in the morning. The urine is scanty, but generally clear. Whilst the strength and the flesh decay, other symptoms may be added, such as acute pains, headach, breathlessness, and a train of hysterical symptoms, and sometimes a cough, ending in consumption, or the patient may be affected with general dropsy. It is satisfactory, however, to know, that symptoms both alarming and protracted, may be removed, and this has given rise to an opinion, that consumption has been oftener cured than is really the case. The disease is often more functional than organic, whether it be manifested in the brain, stomach, or lungs, and this fact encourages us to unremitting efforts.

The menses may, from one person not arriving so early as another at puberty, be longer of appearing in some women than in others, and in such cases, no peculiar inconvenience attends the retardation. If the female, though near twenty, have still a child-like form, we may be sure that the uterus is not yet developed, and that no medicines can excite the secretion.* But, when the retention proceeds from other causes, it is to be considered as a disease, and often is to be attributed, to a general want of vigour in the system, by which, not only a new action is prevented from being formed, but also those which were formerly performed, become impaired. But, in other cases, the absence of the menses, depends upon a malformation of the organs of generation, a deficiency of the ovaria, and imperfect development of, or a special want of energy in, the uterus. I have, in my remarks on menstruation, noticed the individuality of the uterine system, and that it may, like other distinct organs, become directly impaired, or otherwise disordered, in its function or ac-

* When the uterus and ovaria are absent, menstruation cannot take place. I have already noticed retention, from occlusion of the vagina, and, here, add a case by Amusat, where the uterus was distended above the pubis, but no vagina existed. He cut where the orifice should have been, and with his finger pressed upward. He repeated the pressure daily, and kept the opening from contracting by a sponge. He at last reached the uterus, which he opened and let out the menses, which came afterwards also by the rectum, a communication having formed with it.

tion. It is supplied, we have seen, by two sets of nerves, the sympathetic and the sacral; and if we admit the first to be chiefly functional, we can the more readily conceive, how an improper state of the uterus, may influence the whole system of the sympathetic nerve, and especially the organs of digestion. And, when we further consider, the other connexion with the medulla spinalis, by means of the sacral nerves, we need be at no loss to explain many remote effects, produced through that medium. Nor can we feel any hesitation in admitting the universal, as well as the variable, injury which may result from the state of the uterus, considered as an original or primary exciting cause, if we allow that affections of other organs, such as the liver, can produce extensive disorder. The state of the uterus, in amenorrhœa, is not always that of mere inactivity, far less of simple debility, for, there may be an inefficient effort made, to perform the action, which is productive of a state of a more complex nature. A state of great debility, must influence the function of the uterus, and may suspend its performance so entirely, as to prevent even an effort to act. But in many other cases, an inefficient effort does seem to be made, which induces a disordered, or irritated, or excited state of the uterus, marked rather by its sympathetic effects than by pain. Two species, then, of amenorrhœa may be admitted, besides the endless variety arising from peculiarity of constitution, and extent of sympathy. In the one, the uterus seems quiescent, and often gives so little trouble, that the patient, in one respect, is neither better nor worse, than before puberty. This is sometimes the case in chronic diseases, attended with great debility, such as consumption, or in cases where a great quantity of blood has been lost. In the other, the uterus is not quiescent, but some effort is made to act, and a state of irritation or disorder is induced. The immediate cause of this inefficiency, is not so easily known, but the state does often exist, for a considerable time, about the age of puberty, and gives rise to chlorosis or bad health. It may also be produced by depressing passions, as hopeless love, or by debilitating causes. If we admit that this state of the uterus, often a combination of debility and irritation, or at least obscure excitement, but sometimes also of torpor, can influence the system, we may also understand, how a general debility of the system, or a particular affection of portions of the sympathetic nerve, as we meet with in a bad state of the digestion, may act on the uterus, and induce the disease as a mere symptomatic ailment; and, in either of these cases, it is evident, that the one must react on the other, and increase, or keep up, both the general and the uterine injury. The marked influence of the state of the cervix and os uteri on the stomach, is often seen in labour, by

cold. The pulse is small and weak, often, but not always, quick. It is easily fluttered, and palpitation readily induced. The sleep is disturbed. The appetite is impaired, and the patient loathes food, or is sick after eating, or much troubled with flatulence and gastrodynia. Often, there is a desire for indigestible substances, particularly chalk, magnesia, or even cinders. The bowels are costive, often obstinately so, or if not, the stools are dark and offensive. The belly generally is tumid, perhaps considerably swelled, and variable in size. The hands and feet generally swell at night, and the eyelids, if not the whole face, are full in the morning. The urine is scanty, but generally clear. Whilst the strength and the flesh decay, other symptoms may be added, such as acute pains, headach, breathlessness, and a train of hysterical symptoms, and sometimes a cough, ending in consumption, or the patient may be affected with general dropsy. It is satisfactory, however, to know, that symptoms both alarming and protracted, may be removed, and this has given rise to an opinion, that consumption has been oftener cured than is really the case. The disease is often more functional than organic, whether it be manifested in the brain, stomach, or lungs, and this fact encourages us to unremitting efforts.

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the production of sickness and vomiting in the first stage, or by these effects being, in some cases, invariably produced, even by inserting the finger within the os uteri. We can readily suppose, that the converse may happen, so that a certain state of the nerves of the stomach, may affect either a part, or the whole of the uterus.

It follows from this view, that when the disease or defect, is symptomatic, we cannot cure the patient till we improve and strengthen the system, and more particularly, the stomach and bowels, which have so much influence on the whole distribution of the sympathetic nerve. Even in the primary affection, if we had medicines more certainly emmenagogue than we possess, we must take the aid of this plan, and too often must, when we succeed, attribute our success, chiefly, to such general means as tend to improve the health and strength, and counteract the hurtful effects produced in the constitution. We would, then, recommend regular exercise, proportioned to the ability of the patient; the use of the warm or tepid salt water bath every day, succeeded by friction with dry flannel, or a soft brush; sufficient clothing, and particularly a flannel dress; a nourishing and digestible diet, with a proper portion of wine, avoiding every thing which disagrees or ferments; the administration of bitter and tonic medicines in varied forms, particularly preparations of iron, such as chalybeate waters, tincture of muriated iron, or the subcarbonate of iron alone, or combined with myrrh, or sulphate of iron with quinine, or a grain of iodide of iron, in a bitter infusion. Dr Ashwell recommends this, particularly, when the glands are affected. From one to two tumblers of warm water, with just as many drops of diluted nitric acid, as flavours, without making it distinctly acid, may be drunk in the morning.

The use of Bath water, internally as well as externally, is of service in the chlorotic state, unless the patient be of a full habit, in which case purgatives must be premised, and afterwards conjoined, so far as necessary. When the circumstances of the patient permit, I would prefer Ems, to be followed, afterwards, by Schwalbach, which is at no great distance.

Strict attention must, in every case, be paid to the state of the bowels, which ought to be excited to an active, and if possible a vigorous state, by the regular, but not inordinate, use of stimulating laxatives, such as the aloetic pill, compound tincture of senna, or compound tincture of gentian, combined with tincture of rhubarb or aloes, or the pilulæ aloes et myrrhæ, with a grain of sulphate of iron in each. Large doses ought not to be employed, and after the bowels are unloaded, a small quantity of medicine may be sufficient, if aided by a clyster of warm water

in the morning. The cold bath in chlorosis is seldom proper, as it is apt to be followed by chilness, headach, and languor. It is only useful, when succeeded by a sense of heat and comfort. The warm salt water bath is of greater service, and is proper even at an early stage. In proportion as the strength improves, it may be made colder, till the patient can bear the cold sea bath, to confirm the health. Besides this general plan, it has also been proposed, to excite more directly the uterine action, by marriage, one of the best emmenagogues, and the use of medicines bearing that name: but with respect to the latter part of the proposal, I must observe, that some of these, if rashly employed, may, from their stimulating qualities, do harm, and they do not generally succeed, without the use of such means as tend to invigorate and improve the system.

In cases where the uterus is quiescent, from great general debility, as in consumption, hæmorrhage, &c., it is evident that we need pay no direct attention to that organ, till we have removed the general cause.

On this subject, I would farther remark, that although debility be a powerful cause of amenorrhœa, yet it is neither the only cause, nor the actual condition on which it depends. For the uterus is not in a state of simple weakness, neither can we, by merely exciting it, make it perform its proper function. If so, cordials and local stimuli, should produce more decided effects than they do.

Chlorosis, whether produced in young girls, or succeeding to abortion, laborious parturition, or fever, is often attended with symptoms much resembling phthisis pulmonalis. In many instances, the pulse continues long frequent; there is nocturnal perspiration; considerable emaciation, with cough and pains about the chest, and yet the person is not phthisical; she suffers chiefly from debility. But if great attention be not paid to improve the health, the case may end in consumption, and hence, many consumptive women, date the commencement of their complaints, from an abortion, or from the birth of a child, succeeded by an hæmorrhage. In chlorosis, the symptoms are induced, not by previous pulmonic affections, but by some other evident cause of weakness; the pulse, although frequent, is not liable to the same regular exacerbation, as in hectic; a full inspiration gives no pain, and little excitement to cough; the patient can lie with equal ease on either side; the cough is not increased by motion, nor by going to bed, but it is often worst in the morning, and is accompanied with a trifling expectoration of phlegm. It is not short, like that excited by tubercles, but comes in fits, and is sometimes convulsive; whilst palpitation, and many hysterical affections, with a timid and desponding mind, accompany these

symptoms. The bowels are generally costive, and the patient does not digest well. The stethoscope also ascertains that the lungs are sound.

In chlorosis, attended with symptoms resembling phthisis, it is of considerable utility, to administer, occasionally, a gentle emetic, and at the same time the bowels must be kept open. Myrrh, combined with the oxide of zinc, is, I think, of approved efficacy; and ammonia, given in the form of an emulsion with oil, very often is effectual in relieving the cough. A removal to the country, and the use of moderate exercise on horseback, will contribute greatly to the recovery. The diet ought to be light, but nourishing. In many cases, milk agrees well with the patient; but it is not necessary to restrict her from animal food. Pain in the side, may be removed, by the application of a warm plaster; and, if the cough be troublesome, squill may be used as an expectorant, and an opiate should be given at bedtime. If the skin be permanently hot, or irregularly hot and cold, without weakening perspiration, the tepid bath is of service, or small doses of saline julep may be given. Ten grains of Dover's powder, may be given at night occasionally. Should the patient be of a phthisical habit, and the symptoms increase, or continue obstinate, it will be proper, if the stethoscope do not indicate a hopeless state of the lungs, to remove her to the southern part of the island, or to a milder climate. Emmenagogues are either useless or detrimental.

Retention of the menses, may take place, in combination with a plethoric state. There is seldom in this case chlorosis. The complexion is better than in the former state, and sometimes even florid, and the attending symptoms are of a different description. There is often a dull heavy headach, giddiness, palpitation, stitches, and generally a full pulse, unless there be some degree of œdema. If the symptoms be severe or acute, it will be proper to commence the treatment by using the lancet; but if not, we proceed at once to the use of laxatives, at first active, though not severe. Then, we give the aloetic pill, and assist it in the morning, with a glass or two of a mild solution of sulphate of magnesia, or a mineral water, both aperient and diuretic. Bitters are also of use. The diet should be light, and the exercise carried to the extent of the strength; after some time, if necessary, we conjoin an emmenagogue.

Suppression of the menses, may take place under two circumstances. The discharge may be suddenly checked during its flow, or it may be prevented from taking place at the proper period, by the operation of certain causes previous to its expected return. The first, may be called checked menstruation, and it is produced chiefly, by such causes as are capable of operating,

powerfully and speedily, on either the nervous or vascular systems. The most frequent of these causes, are violent passions of the mind, and the application of cold to the surface of the body, or standing long or walking far, if the patient be delicate.* The effect is to stop the discharge, and produce great pain in the uterine region, with spasm of the stomach or intestines, violent hysterical affections, and not unfrequently smart fever, and perhaps those inflammatory symptoms described in chap. x. sect. 25th. After these subside, the womb may still be so much injured, or the general health so impaired, that menstruation may not return for many months. The most effectual means of relieving these acute symptoms, are the semicupium, with full doses of laudanum, combined with ipecacuanha, or with the saline julep, and warm diluents. A clyster is to be given to open the bowels, and this, if necessary, is to be succeeded by a purgative. If laudanum cannot be retained in the stomach, it must be given as a clyster, with some assafœtida, and the belly fomented, and rubbed with tincture of soap and opium, or have a poultice, or turpentine applied to it. If there be febrile symptoms, and particularly if there be any great degree of pain in the region of the uterus, indicating a state of action, approaching to inflammation,† some blood should be taken from the arm, or, at least, leeches should be applied freely to the pubis or back, previous to the use of these other means. Should the menses not return at the next period, we must proceed, as shall presently be directed.

The menses may be prevented from returning, at the regular time, by the interference of causes during the interval. This, which has been called obstruction, is naturally produced by pregnancy, and, very generally, by such diseases as tend greatly to weaken the patient. The first of these causes is soon recognised, by its peculiar effects. In the second, the effect is mistaken for the cause, the bad health being attributed to the absence of the menses, and much harm frequently done by the administration of stimulating medicines. But in such cases it will be found, upon inquiry, that before the menses were suppressed, the patient had begun to complain. In them, the irregularity of the menses is symptomatic, and generally indicates considerable debility, or inability to perform the function perfectly, induced, perhaps, by great fatigue, bad diet, loss of blood, or long continued serous discharge, hectic fever, or dyspepsia.

* Briere de Boismont says, that moral were to physical causes, as 92 to 68. The most frequent physical cause was cold.

† A fatal case of this kind is related by Mr Newmann, where there were very few traces of inflammation, but a considerable effusion of bloody serum, and coagula in the pelvis; no ruptured vessel was discovered. *Nouv. Journ. Tom. xiii. p. 20.*

At the same time, it is also certain, that in many instances, the popular opinion, that bad health is produced by obstruction of the menses is correct. Repeated abortion, or excessive venery, may in this way, render the uterus incapable of performing its function, although the general health may not, for a length of time, be injured. The existence, likewise, of a different action in the womb, may prevent menstruation; hence the effect of one species of fluor albus, that proceeding from the cavity of the womb, in sometimes causing obstruction.

The immediate and remote effects of suppression are much modified by the previous state of the system, particularly with regard to irritability and plethora; and also by the condition of individual organs,* which, if already disposed to disease, may thus be excited, more speedily, into a morbid action. In many cases, nausea, tumour of the belly, and other indications of pregnancy are produced.

It also sometimes happens, that in consequence of suppression of the menses, hæmorrhage takes place from the nose, lungs, or stomach; and these discharges do, occasionally, observe a monthly period, but oftener they appear at irregular intervals. Recorded instances of vicarious discharges from almost every part of the body are so numerous, that I might fill a page with mere references.

When suppression of the menses takes place in consequence of some chronic and obstinate disease, such as consumption or dropsy, it would be both useless and hurtful to attempt, by stimulating drugs, to restore menstruation. But in those cases, where the menses are suppressed in consequence of some removable cause, which we conclude, if there be no symptoms of any incurable disease, it is proper to interfere, both, as the suppression is a source of anxiety to the patient, a cause of farther injury, and also, as the rational means of restoration tend to amend the health.

It is impossible to treat this complaint successfully, if we do not attend as far as can be discovered, to the cause, and consider whether the suppression be primary or sympathetic. On this subject, to avoid repetition, I refer to what I have already said respecting retention. Suppression, either as primary or symptomatic, may take place in two different states of the constitution. When it occurs in the debilitated, the symptoms and appearances are, more or less, those described under the head of retention, varying, however, both in degree and combination,

* Baillou has observed, that both in young girls, and elderly women, when the menses are obstructed or irregular, the spleen sometimes swells, and subsides again when the menses become irregular. *De Virgin. et Mulier. Morbis.* Tom. iv. p. 75.

in different instances. We have also less frequently the exquisite chlorosis, and very often a combination of clear complexion, and even some degree of floridity, with a general debility of the system, as well as of particular organs.

Our treatment must be conducted on the same principles, and in default of more particular indications, we must carefully embrace the whole of the tonic or strengthening plan, in all its ramifications, but more especially as directed to the stomach and bowels.

Along with the tonic plan of treatment, it is usual to have recourse to the use of emmenagogue medicines, such as rue, savin, hellebore, madder, myrrh, mustard seed, guaiac, valerian, iodine, cantharides, ergot, or nitrous acid. Of the specific power of any of these, I have no high opinion. A gentle course of mercury has sometimes done good, especially when the digestive organs were not correct. It has been proposed to inject, three times a day, into the vagina, a mixture, consisting of a dram of aqua ammonia, and eight ounces of water, but it does not seem to have done much good. Dr Ashwell however thinks he has seen good effects from injection of milk, with as much ammonia as makes it pungent. He has it retained for ten or fifteen minutes, and uses it for three days before the expected period. About the time when the menses are expected to appear, it is sometimes of advantage to exhibit a mild emetic, and to make use of the warm bath, or semicupium with or without mustard, or pediluvium. Tourniquets have, about this time, been applied to the thighs, but not with any benefit. Electricity, directed so as to act on the uterus, is scarcely of more service, though some still have confidence in it. Blisters have also been applied to the thighs, with pain rather than profit. Suction, by a syringe applied to the os uteri, has been advised, in order to draw blood to the womb!

When, along with suppression of the menses, there is a plethoric condition, and more especially, if there be a febrile state, marked by heat of the skin, frequent pulse, flushing of the face, and irregular pains in the chest or abdomen, stimulating medicines are hurtful. It is, in this state, of advantage to keep the bowels open, by the daily use of some saline purgative, dissolved in a considerable quantity of water: and should there be dyspnoea, with pain about the chest, increased by inspiration, it will be proper to take away some blood. Should the skin still remain hot, the common saline julep will be of service. The febrile symptoms being removed, advantage may be derived from chalybeates, bitters, myrrh, and oxide of iron. The aloetic pill is the best purgative.

In the flabby relaxed habit, in which there is a disposition to

watery effusion, laxatives, squills, and preparations of iron, with regular exercise, and frequent friction of the whole body, are the proper remedies of a general nature.

SECTION SECOND.

It sometimes happens, that the uterus, instead of discharging a fluid every month, forms a membranous or organized substance, which is expelled with pains and hæmorrhage, like abortion. Morgagni* describes this disease very accurately. The membrane, he says, is triangular, corresponding to the shape of the uterine cavity; the inner surface is smooth, and seems as if it contained a fluid; and that it does so, I have no doubt from my own observation; the outer surface is rough and irregular. According to Morgagni, the expulsion is followed by lochial discharge. Dr Montgomery describes it as exhibiting the rough, and the smooth aspect, of the two surfaces, but says it is thin and flimsy, devoid of the pulpy vascular appearance of decidua.

Dr Denman supposes, that no woman can conceive who is affected with this disease; but some cases, and, amongst others, that related by Morgagni, are against this opinion. Mercury, bark, chalybeates, myrrh, and injections, have all been tried, but without much effect. This, with the exception of mercury, might have been expected, as the disease appears to be of the inflammatory kind. Dr Ashwell advises mercury, and, if there be any induration, inunction of iodine ointment. A course of active, but not severe, purgatives, the daily use, for some time, of the warm sea water bath, with the decoction of sarsaparilla, will form, perhaps, the best general plan we can employ. When pain begins to be felt, a dose of pulv. ipecac. comp. should be given, and its effects assisted by some warm diluent. If the pain be acute, and the pulse quick, leeches may with advantage be applied to the back or groins, followed by the tepid hip-bath. A knowledge of this disease may be of great importance to the character of individuals.

Chaussier mentions a case, where this membrane presented, with pain, at the orifice of the uterus, and was pulled away entire with the fingers. It was as large as a fig, and filled with bloody fluid. Collomb describes a membranous protrusion, somewhat similar, which he conceived to be a prolapsus, or eversion, of the internal membrane of the uterus, and which was removed by ligature as a polypus.†

SECTION THIRD.

Menstruation is sometimes attended with great pain, and the

* Vide Epist. xlviii. Art. 2.

† Dict. des Sciences Medicales, art. Matrice.

discharge generally takes place slowly, and is sparing. It has more of the character of blood than of menses, for at first, there are often shreds of fibrin, or little clots discharged. If the discharge come freely after the first day, then the pain ceases. In some, it is confined to the back, but generally it also affects both the hypogastrium and thighs, or hips. With some, it precedes the discharge for more than a day, but oftener for a shorter period. This disease is called dysmenorrhœa. It seems to be dependent on an imperfect menstrual action, and so long as this state continues, conception cannot be expected to take place. In the treatment, we must consider whether any general condition, or sympathetic cause, or peculiar organization of the uterine system,* can be discovered to exist, and if so, we must act accordingly. If no special indication, however, can be obtained, we must endeavour to improve the state of the uterine nerves, by regular and repeated friction with a stimulating embrocation, such as oil of rosemary, alone, or with camphor dissolved in it, on the lumbar and sacral regions. Dr Bushnan rubs the sacrum three or four times a day, with an ointment composed of half a dram of veratria, and an ounce of lard. Dr Burne thinks a quarter of a grain of extract of belladonna given twice a day is useful. The bowels are to be excited by means of laxatives, especially aloetics, combined with the use of sarsaparilla, or with a short course of iodine, or such other stomachics as promote digestion. The diet, the clothing, and the exercise, are to be regulated, so as to contribute, to the improvement of the general health, and if the cold bath agree, it ought to be taken every morning. If it do not, we employ the tepid salt water bath. For a week previous to the expected attack of pain, the semicupium should be used every night, and some mild emmenagogue, such as a tea-spoonful of ammoniated tincture of guaiac, or infusion of madder, with an aromatic, prescribed. Whenever the pain begins, the patient should go into the warm hip-bath, then go to bed, take an opiate, in a full dose, combined with aromatic spirit of hartshorn, or with ipecacuanha, as in Dover's powder, and drink freely some warm diluent, so as to promote perspiration. The next morning, a mild purgative, conjoined with an aromatic, is to be taken, and the opiate, if necessary, repeated in the evening. If the opiate cannot be retained on the stomach, it should be given in the form of clyster. Camphor is less efficacious, yet it sometimes succeeds where opium fails. Six

* It has been supposed, that this disease generally depended on smallness of the os uteri, and that it was to be cured by dilating that with bougies. Do we never find it occur in women who have borne children, and have a large aperture, or do we never find the menses retained in the uterus and distending it? Lisfranc thinks it hereditary.

grains, at least, should be given for a dose, if the stomach will bear it. It may be repeated in two hours.

This state of the womb sometimes produces, besides uterine pain, spasmodic affection of the bowels, or violent bearing-down efforts of the abdominal muscles, as if it were intended to expel the womb itself. Such efforts are also sometimes made periodically, when the menses are altogether or nearly obstructed. Under such circumstances, we must examine carefully into the state of the womb, and the appearance of the discharge, or whether fibrous shreds be not expelled.

If no organic affection can be discovered, and the whole appear to arise from spasm, we have only to trust to opium in the mean time, with such treatment in the intervals, as the state of the system may point out. Some women, though they menstruate abundantly, suffer much pain, not only in the uterine region, but also in the belly, like colic, accompanied with violent vomiting and headach. This is relieved by bitters, tincture of hellebore, and especially tonic laxatives during the interval, and by opiates during the attack of pain.

When there is tenderness on touching the os uteri, leeches to that part or to the pubis, or sacrum, the tepid hip-bath, and anodyne clysters, are indicated. If the pulse be frequent or full, and the skin hot, venesection is useful.

SECTION FOURTH.

Some women menstruate more copiously, or more frequently, than by the general laws of the female system, they ought to do. The discharge is menstruous, and does not coagulate, which distinguishes this state from uterine hæmorrhage. Of the two varieties, we oftener meet with those who menstruate copiously, and for a longer time than usual, than with those who menstruate too often, for the generality of these, do not menstruate, but have hæmorrhage. Copious or prolonged menstruation, is only to be considered as a disease, when it is not natural, that is, when it has not been habitual, and when it produces weakness. It may occur in those who are robust and plethoric, or in those who are relaxed and debilitated; but women of the latter description are oftener liable to hæmorrhage, than to this state of menstruation. If it be necessary to interfere, we must enforce that plan, which prevents the vessels from being distended with blood, which lessens the determination to the uterus, and which rectifies the state of the constitution that predisposes to this excessive secretion. I need not be more particular, as I shall enter more into detail, in the next section.

SECTION FIFTH.

Hæmorrhage, has been ascribed either to an increased impetus, or a relaxed and enfeebled state of the vessels, for I speak not of hæmorrhage from wounds or abrasions, and hence has been divided into active and passive. In this distinction there is, I apprehend, more of formality than of pathological correctness, though, the two opposite states are to be attended to, in the treatment. That a weakened and tender vessel, shall give way to less force, than one which is strong, and may be ruptured by very little effort, is true. We see it in the case of diseased arteries, and in weak and delicate veins, where the circulation is retarded by position or otherwise. A very moderate ligature applied round a leg which is ulcerated, may make the veins give way, but these hæmorrhages are of that mechanical nature, allied to those produced by wounds. Even in this case, of the effect of a ligature, it is not always the vein which is lacerated, but more frequently the artery, which by the resistance is excited to greater effort. In all arterial hæmorrhage there must be an excitement, and consequently an increased action of the vessels of the part; not a mere excitement, for this may lead to inflammation or other consequences, but one which leads to an action of a particular kind, called the hæmorrhagic, and which is more peculiarly confined to the vascular part of the organ. It is probable that the different constituent textures of an organ are supplied by distinct nerves, and which, although apparently proceeding from the same trunk, might be traced, as distinct fasciculi, to the origin of the nerve. But, be this as it may, it is evident that excitation may be so modified, as, in some cases, to manifest itself chiefly by vascular contraction, in others, by sensation or inflammation, or hæmorrhagic action of the vessels; and we as yet know too little of the nature of the nervous system, and of the mutual relation of different fibrillæ, to be able to explain how certain remote (I speak as to locality) and sympathetic causes shall, without any difference that we can detect, produce opposite effects. For example, we often, in apparently the same state of the system, and of its different organs, find sometimes menorrhagia, leucorrhœa, or amenorrhœa, or an alternation of these produced. No general state of the system is sufficient to produce hæmorrhage. It is not essentially produced by either general plethora or general debility, nor by local debility, for all these states exist without hæmorrhage. It is only produced by the existence of a particular effort, of the vessels of the part, beyond their power, whatever that power may happen to be. In place, then, of dividing hæmorrhage into active and passive, it is better to consider it as occurring in two different

states of the system, or of the vessels of the part, but in both, as the result of action disproportionate to the power.

In either state, menorrhagia may be produced, by such causes, as act more or less directly on the uterine vessels, especially about the menstrual period, such as dancing much during menstruation, or the use of stimulating and exciting substances at that time, which exciting the whole system, produce a greater effect, on the uterine vessels from their peculiar state. Any considerable effort, made during menstruation, will be especially apt to have this effect, if there be any degree of prolapsus, or if the irritation of a polypus, &c., be conjoined. The irritation of ascarides or piles can have a similar effect. Another class of causes, acts by producing an increased resistance to the arterial blood, by retarding the circulation in the veins. Hence, costiveness, or a sluggish state of the bowels, by the effect on the whole system of the vena portæ, may produce both piles and menorrhagia. The state of the uterine nerves alone may cause it; and this, as in amenorrhœa, may be dependent on the origin of the nerves, being either directly affected, slowly, by some obscure cause, or, speedily, by some violent emotion of the mind, or sympathetically by the condition of other organs, as the liver, stomach, or intestines. All these act quite in a different way from organic disease, whereby the vessels are opened by destruction of their coats, or in some other mechanical way, and hence we should always in menorrhagia examine the state of the uterus. Even simple enlargement, or uterine congestion, may render any of the causes already noticed more efficient, or this, or other organic alterations, may be accompanied with such action as produces hæmorrhage. Hence the necessity of examination.

Uterine hæmorrhage is accompanied with symptoms of irritation, and, in almost whatever way induced, is attended by pain of the back and loins, generally depending on the state of the nerves, and often with a feeling of weight or even bearing-down. In the early stage, it may in one state of the system, be attended by a fever of the nature of synocha; but however it begin, if it go to a great degree, or be long protracted, we have great debility produced, with or without a particular kind of fever; and at last the patient may become dropsical, or some fatal visceral disease may develop itself.

It is of great importance to attend to the effect of hæmorrhage. The loss of blood, is loss both of a source of energy, and of a stimulus, and must therefore directly weaken or diminish the action, and this is certainly the immediate effect of a sudden loss of blood. Syncope is the direct consequence. But if the hæmorrhage neither prove

immediately fatal, on the one hand, nor be perfectly recovered from, on the other, we have some new circumstances to attend to. The actual quantity of blood is diminished, and therefore less must circulate in the arterial system, which must accordingly contract in the same proportion. It is very doubtful if the venous system contract in the same degree, for there is always an accumulation of blood found, even where hæmorrhage is fatal, in the vena cava, and veins of the brain, which is probably the cause of convulsions occurring, as an early effect of rapid and profuse hæmorrhage. If this system diminish less, then, a still greater effect will be produced on the arterial system, and it must contract still more. So long as the circulation can go on, there is no necessity, merely from the diminished quantity of blood in the system, that the heart should receive and expel less at a time than formerly, or that it should contract either quicker or slower. These are not necessary consequences. But it does follow, most distinctly, that the arterial, if not the whole vascular system, must be in a new and unnatural state, and must thereby be excited. A great or protracted hæmorrhage, if not speedily fatal, must be productive of a vascular excitement, marked by different symptoms, according to the constitution of the patient, and other circumstances. It is more or less of a febrile nature, and it is usual to call it by the name of re-action, merely, I presume, because the system has not sunk under syncope, but the person has lived long enough to become diseased. It is a state arising, not from an effort of nature, or a salutary action set agoing to counteract the work of death, as Mr Hunter would have said, but it is plainly the result of an existing excitement and irritation, arising from the unnatural state of the vascular system. In this state, wherever a local cause exists, productive of action beyond what the weakened condition of the part can bear, we are in great danger of a severe local disease, and hence none are so liable to inflammation of the uterus and peritoneum, as those women, who have suffered from uterine hæmorrhage. But besides these effects on the vascular system, there are other circumstances to be taken into account, particularly the state of the circulation in the brain, the general action of the nervous system, the exhausting effect of excitement of a weakened system, the derangement of functions, the intricate consequence of various sympathies, and the opposite condition, in which different parts may be in at the same time, as, for example, different portions of the brain. These, altogether, render the consideration very complex, and of high importance in a practical view. Increased susceptibility, and sometimes increased sensibility, may be the consequence of hæmorrhage, but not *directly* or *primarily*. Functions connected with muscularity are apt to be

impaired, hence the peristaltic motion is slow, unless the mucous coat of the intestine be irritable. Even the heart would probably act slowly, were no unnatural excitement produced, but, both the unnatural and excited state of the arterial system, and the secondary effect produced on the brain and medulla spinalis, must, in so far as these exist, or are not counteracted in particular cases, produce frequent and even irregular action of the heart. The same causes, may also occasion painful conditions of the extremities of the nerves, whose origins are thus affected, or even true inflammation may be excited, or violent cerebral disorder produced, or from the state both of the brain and of the venous system, stupor or apoplexy may be caused. The effect of an erect posture in this state of the system, on the brain and heart, does not require explanation. Repeated discharges, after a certain quantity has been at first lost, must at each renewal, eventually, add to the systematic irritation, though perhaps, at the moment, some relief be experienced to some of the sensations. All the effects of hæmorrhage, may be modified by the previous state of the system. Weak people generally suffer soonest, whilst a state of synocha is relieved, and the system brought into an improved state by the loss of a quantity of blood, which in health would have perhaps proved ultimately fatal.

Married women, are more liable to menorrhagia than virgins, and it is rare for these, if otherwise healthy, to have uterine hæmorrhage.

The management during the attack, must depend on the state of the constitution, and the effect of the discharge. In full robust habits, when the pulse is firm, when a synocha exists, and the hæmorrhage has not produced much debility, excellent effects may result, as in other tonic hæmorrhages, from the early use of the lancet, by which the uterine discharge is speedily checked, and that, before the organ be so much injured, as to occasion a rapid return. But if the pulse be small or weak, venesection is not to be proposed, nor can I conceive, that it is in any case useful, if delayed long. Whether the lancet be, or be not used, the succeeding part of the treatment is much the same. The patient, on a general principle, is to be kept from the very first in bed, that she may be in a recumbent posture. This I consider as of the utmost importance. Next, we are to moderate the action of the vascular system by cold, that is, we are to have the windows open, if in summer, and no fire if in winter, and no more bedclothes than are necessary to prevent shivering. The drink is to be sparing and cold. Sulphuric acid is to be given freely, and along with this, digitalis may be prudently administered, so as to moderate the circulation, but if it have not speedily this effect it does no good, and is not to be persevered in. It

is never to be pushed far, nor to be greatly trusted to. For the same purpose, nauseating doses of emetic medicines have been employed, and, sometimes, but chiefly in active hæmorrhage, with good effect, but we must not continue them so long, as to produce much depression, nor trust to them at all, if they do not speedily produce benefit. Vegetable acids, given freely, are trusted to by some. I shall afterwards speak of lead. Ergot has been freely given, but when it acts on the uterus, it seems to be chiefly on its muscular fibre. The diet is to be almost dry, and of the least stimulating and repleting quality. Wine and all excitants, are to be avoided. In order to restrain the action of the uterine vessels, cloths wet with cold water are to be applied to the vulva, or to the back and pubis. If these do not check the discharge, the vagina must be stuffed with a soft cloth, to retain the blood and promote coagulation. Should the discharge have been so profuse as to produce syncope, or at least great prostration of strength, the usual means for restoration must be employed, but stimulants must be carried no farther than is immediately necessary. In cases so severe, that it is feared the patient could not otherwise survive, the transfusion of blood, or rather the injection of blood just taken from the vein of another person, has been advised, but, as yet, we have too little experience of its utility, to place reliance on the effect.

In debilitated habits, or in plethoric patients, when the discharge has been profuse, and has produced much debility, the treatment must be modified. Immediate confinement to a horizontal posture, is, as in the former case, to be strictly enforced. Cold must be applied, sometimes generally, but oftener locally. It cannot be carried so far as in the former state, nay, in extreme cases, where the vital powers are much depressed, and the extremities cold, it may be necessary to apply warm flannel to the feet and legs, or even to the body in general, to preserve the heat requisite for recovery. This is a matter not of choice, but necessity, and, to the judgment of the practitioner, it must be left, to avoid the evils arising from the stimulating effects of heat, and the depressing effects of cold. In this, much attention must be paid to the sensations of the patient. When the debility produced is not considerable, we are satisfied with a horizontal posture, avoiding the stimulating effects of heat; stuffing the vagina, in severe cases, to promote coagulation; applying cloths wet with cold water to the external parts, and administering a dose of opium not less than two grains, and this is to be repeated if the debility be greater. I consider this as one of the best remedies we can employ, and when rejected from the stomach, it must be given in the form of a clyster or suppository. Opium has been considered as chiefly useful, where there was much pain,

arising, as it was supposed, from spasm. But its utility is not confined to the mere relief of pain. The injection of solution of sulphate of alumin, or decoction of oak bark into the vagina is useful, and also safer than the use of vinous or spirituous injections, which have been proposed by some eminent men. Oil of turpentine has been injected into the uterus itself, certainly with the effect of stopping the hæmorrhage, but the pain produced was excessive, and the danger of inflammation extreme. The diet is to be sparing, the drink acidulated, and every exertion avoided.

If the debility be great, or the face pale, the lips blanched, the extremities cold, the pulse small, and the patient attacked with vomiting or syncope, the danger is not small; it is great in proportion to the extent of the weakness, and the obstinacy of the discharge. In such cases the patient must be carefully watched. The vagina is to be kept stuffed, or if the plug be removed, it is only for the purpose of injecting a strong solution of sulphate of alumin, or decoction of oak bark. The strength is to be supported, by jellies and soups; by the moderate and well-timed use of wine, either cold or warmed with spices; by external heat, so far as it is necessary to prevent the body becoming cold; by opium, and by the use of aromatic cordials, such as aromatic spirit of ammonia mixed with cinnamon water. The use of astringents, if the stomach can retain them, may be useful, such as the tincture of kino, as advised below.

What some have called menorrhagia, from congestion, appears to be merely a complication, with some little enlargement, or fulness, of the uterus, productive of bearing-down, dysuria, and leucorrhœal discharge in the interval. But these symptoms are not, by any means, exclusively, belonging to this. The treatment, during the attack, must be conducted on the principle already laid down, and, if there be uterine fulness, we must, in the interval, keep the bowels very open, and avoid all general and local stimuli.

The immediate violence of the attack, in either of the cases I have been considering, being over, the patient may remain for some time free from a return of the discharge, and then may have another severe attack, or she may have, every day, more or less hæmorrhage. I must, therefore, next direct the attention, to those means which are to be employed, for the permanent cure of the patient, and which are deducible from principles, no less applicable to the management of the first attack. We have three objects to attend to. First, to manage the general condition of the system, which gives predisposition to, and modifies the hæmorrhage. Second, to remove or alleviate such affections, as may sympathetically influence the discharge, or to cure any mor-

bid uterine condition which may exist. Third, to employ such remedies as shall act on the vessels of the uterus, either directly, or through the medium of the nerves.

First, in the robust or plethoric habit, we must lessen the quantity of blood, and diminish the force of the circulation, or the distention of uterine vessels, by diet of the least nourishing and stimulating kind; a large proportion of vegetables ought therefore to be taken at dinner, and both wine and malt liquor should be avoided. Indeed much liquid of any kind, whether in the form of soup or of drink, may be hurtful, by filling too fast the vessels. Regular exercise must be resorted to, in such a degree as shall prevent fulness, and improve the health, on the one hand, without going the length, on the other, of exciting the circulation, so much as to produce rupture. Some, dare make very little exertion. Purgative medicines are of much service, especially those which act also on the kidneys, such as sulphate of magnesia, or Cheltenham salts. These not only lessen the quantity of circulating fluids, but divert the current from the uterine vessels. This may be farther assisted by supertartrate of potass, ethereal spirit of nitre, and other mild diuretics. As an exception to the rule of employing laxatives, I must notice those cases, where hæmorrhage alternates with, or seems excited by, an irritable state of the bowels, and in such, the use of opium is of signal benefit. The application of cold to the surface, especially, if unequal, and to the lower extremities, is hurtful, by determining to the internal parts. Heat, in a stimulant view, is to be avoided, but on the other hand, cold, by checking the perspiration, is hurtful. The sleep should be abridged, and taken on a hard bed, with not too much covering. If the patient be plethoric or the pulse full, it is proper, for one or two periods, to take some blood from the arm, or apply leeches just before the expected appearance. Smart purgatives exhibited then have been useful. After the plethoric or synochal condition is removed, the cold bath is usually of great service, at least, if it do not give headach, or produce coldness or languor.

In accomplishing the second view, we must examine carefully into the state of the various organs and functions, and inquire into the habits of the patient. Wherever any particular alteration or symptom can be detected, it must be laid hold of, and attacked by suitable means. In the first view, we, by a general plan, endeavour to improve the system at large, and thus rectify the state of the uterus; in the second, we improve the health by removing any little ailment, or every deviation, however trifling, and thus gain the same object. If the uterus be enlarged, or tender to the touch, we should have recourse to the means formerly pointed out for removing these conditions. By a recum-

should be taken, but no effort, likely to renew hæmorrhage, should be permitted. Headach, particularly of the throbbing kind, is a frequent attendant, and is removed by the use of laxatives and quinine, and cautiously persevering in attempting an erect posture. Stitches and pains, resembling pleurisy or other inflammation, are usually muscular, and cured by sinapisms or topical applications, or depend on a state of morbid excitement of the nerves of the part, which will yield to an opiate and laxatives, which remove irritation from the bowels. But, if local inflammation should actually take place, we must be wary in the use of the lancet, and even if the urgency of the case decidedly require it, we must take no more blood than is absolutely necessary for relief. Topical bleeding and small blisters are safer.

CHAP. XIV.

Of the Cessation of the Menses.

ABOUT the period when the menses should cease, they become irregular, and sometimes are obstructed for two or three months, and then for a time return. This obstruction, like many other cases of retention and suppression of the menses, is accompanied with swelling of the belly, sickness, and loathing of food. These effects are frequently mistaken for pregnancy: for, as La Motte remarks, many women have such a dislike to age, that they would rather persuade themselves they are with child, than suppose they are feeling any of the consequences of growing old; and this persuasion they indulge, like Harvey's widow, *donec, tandem, spes omnis, in flatum et pinguedinem facesseret*. In this situation, the belly is soft and equally swelled, and enlarges more speedily after the obstruction, than it does in pregnancy. No motion is felt, or if it be, it is from wind in the bowels, and shifts its place. Exercise, chalybeates, and laxatives, are the proper remedies in this case.

The period at which the menses cease, or "the time of life," is considered a critical, and, without doubt, it is an important epoch. If there be a tendency to any organic disease, it is greatly increased at this time, more especially, if it exist in the uterus or mammæ; and, indeed, the cessation of the menses does of itself seem, in some cases, to excite cancer of the breast. Diseases of the liver, also, make greater progress at this period, or first appear soon after it. Dyspeptic affections are still more frequent. When there is no tendency to local disease, it is very common for women, after the menses cease, to become corpulent, and sometimes they enjoy better health than formerly.

From an idea of the cessation of menstruation being uniformly dangerous, some, by the use of emmenagogues, tried to prolong the discharge, others, by issues, endeavoured to prevent bad effects. The first of these means, is foolish and hurtful, the last is not necessary. When the health is good, no particular medicines are requisite; but if there be a tendency to any particular disease, then, the appropriate remedies must be employed. The bowels must be kept open, in every instance, and the general health should be attended to by general means. The delicate, must be treated very differently from the robust and plethoric. No direct system of prescription is requisite, but the earliest, and slightest symptom, of deviation from health, should be attended to. Our directions must be given, from careful consideration of predisposition, or existing circumstances, and, if judicious, may be most valuable.

CHAP. XV.

Of Conception.

THE semen consists of a clear watery fluid, in small quantity, called the liquor seminis. This contains seminal granules, like those of lymph, and numerous animalculæ, called spermatazoa. These are considered as essential to fecundation, and live for hours, or even days, after emission, but the exact duration is not ascertained, only, we know it to be affected by the medium in which they are placed. Even on this point, observers are not agreed; all admit that they are not killed by blood, nor by vaginal mucus, the acid, in which, is too weak to affect them. Diluted acids, and the weakest solution of strychnine, will kill rapidly. Two opinions prevail as to fecundation; first, that the influence of the seminal fluid, on the nerves of the genital organs, affects the ovarium; second, that the actual application of semen, or a spermatazoon to the ovarium, is essential. The first is supported by the fact, that women have, repeatedly, been impregnated, not only, when the semen was emitted, merely on the vulva, but also when the hymen was entire. In answer to this, it is maintained, that in cases where the hymen was supposed to be entire, there was at least a small aperture, and that semen can be carried up to the uterus, and thence, along the tubes, by ciliary motions, to the ovarium. In rabbits, &c., spermatazoa have been found in the tubes, and on the ovarium. Perhaps a simple experiment might decide the question. Were a small bit of sponge, wet with diluted acid, or weak solution of strychnine, to be fixed in the os uteri, of an animal, previous to coition, and if, in any one instance, con-

ception took place, then, the necessity of the actual application of living spermatazoa, could hardly be maintained.*

The extremity of the Fallopian tube, embraces the ovarium and adheres to it, till the Graafian vesicle discharge the ovum, and, probably, for some time afterward.† Baer, in one instance, where the female drowned herself, the day after having had connexion, found the vesicle turgid, and the two coats separated from each other, the inner thickened, but both entire. In another, after eight days, he detected no ovum, either in the tube, or uterus. Weber found the decidua formed, at the end of seven days, but discovered no ovum. It is not believed to appear in the uterus for at least a week.

In animals, the time of descent is variable. In a young bitch, the ova are discharged later, and move down more slowly than in the older. Bischoff considers thirty-six hours, as the earliest period, at which the ovum escapes from the ovarium, but in one case, found it still midway in the tube, on the 14th day. Dr Barry found the ova (for they seem all to be discharged about the same time), out of the ovary, in nine or ten hours, but sometimes the period was much later. The passage along the tube is variable, but during it, many changes take place. Four ova, were found in the uterus, near the tube, in seventy-nine and a half hours. They go slowly from the horn. Pockels states the remarkable fact, that the ovum remains four months, in the ovarium of the roe deer.

In all the mammalia, except women, one coitus is generally followed by conception. But, though sometimes so, with the human female also, yet, it is not by any means the rule. It is very rare for a woman, for example, to be delivered of her first child, exactly nine months after marriage.

In the human subject, only one ovum is generally impregnated by one seminal application, but sometimes two or more may be carried down into the uterus, and even after one ovum has reached the uterus, and grown to a certain degree within it, we find, that it is possible for a second to be excited into action, and brought down into the womb, where it is nourished and supported;‡ but

* Dr Blundel made an experiment in one respect similar. He obliterated the upper part of the vagina, *ante coitum*. After coition, corpora lutea were found in both ovaria, but no ova or embryos were discovered. Here the question comes to be, were these genuine or false corpora. Dr Haighton found, that by dividing the tubes after a rabbit was impregnated, the ova were destroyed. Or, if only one tube, was cut, and the female afterwards became impregnated, corpora lutea were found in both ovaria, but no ova were found in the tube or horn of the uterus, on the injured side. Phil. Trans. Vol. lxxxvii. p. 175, &c.

† Baer, found the tubes adherent, in swine, for four weeks, whilst, on the other hand, Bischoff found them free in eight or ten days.

‡ Vide Med. and Phys. Journ. Vol. xvii. p. 489. Dr Hull delivered a woman of five children at one time, but, when they were conceived, is uncertain.

it is not yet ascertained what the greatest interval between the two conceptions may be. It appears to be established that a woman may not only bear two living children of different ages, or of different colours, but also that when a child dies in utero, it may be retained and a new conception take place.*

Mr Hunter† supposed that each ovarium is capable of producing only a certain number of ova; and that if one ovarium be removed or rendered useless, the constitution cannot give to the other, the power of producing as many ova as could have been done by both. The more modern opinion is, that from the earliest age, the ovarium contains a multitude of ova, continually coming forward, and successively removed.

It has been attempted to ascertain what age, and what season were most prolific. From an accurate register made by Dr Bland, it would appear, that more women, between the age of twenty-six and thirty years, bear children, than at any other period. Of 2,102 women, who bore children, 85 were from fifteen to twenty years of age; 578 from twenty-one to twenty-five; 699 from twenty-six to thirty; 407 from thirty-one to thirty-five; 291 from thirty-six to forty; 36 from forty-one to forty-five; and 6 from forty-six to forty-nine.

There are authentic instances of females bearing children, from the age of little more than ten,‡ to fifty-four. Beyond that, the cases are apocryphal. In these, the women have generally continued to menstruate till this advanced age. It is well known, that women may remain barren for twenty years of their married life, and then have a child.

At Marseilles, M. Raymond says, women conceive most readily in autumn, and chiefly in October; next in summer, and lastly in winter and spring; the month of March having fewest conceptions. M. Morand again says, that July, May, June, and August, are the most frequent dates of conception; and November, March, April, and October, the least frequent in the order in which they are enumerated. I have been favoured with a

* Percy mentions the case of a woman, whose child, in utero, seems to have become blighted, after motion had been perceived. At the end of seven weeks, from this time, she felt anew the incipient symptoms of pregnancy, and went on to the full time from the second date, when she bore a child, small but lively. After the placenta came away, a mass was expelled, in the midst of which was found a female fœtus corresponding in size to one of the fourth month; the period at which motion had ceased in the first instance to have been felt. *Revue Med.* Tom. x. p. 129.

† Vide *Phil. Trans.* Vol. lxxvii.

‡ Dr Rowlett in *Amer. Jour. of Med. Science*, 1834, p. 266, gives the history of a girl, who, a few days after entering her eleventh year, bore a child, weighing nearly 8lb. She had menstruated from a year old. He adds, "I think it is an overmatch for the case of the Swiss girl, spoken of by Haller." Mr Robertson authenticates a case of conception occurring in the eleventh year.

register, for ten years, of an extensive parish in this place, containing, at that time, 72,000 inhabitants; from which it appears, that the greatest number, both of marriages and births, take place in May, and the fewest births in October. From this, we would consider August and September to be most favourable to conception; but it is evident, that these conclusions are liable to great uncertainty.* In Wurtemberg, the greatest number of births, are in January, and the fewest in June; abortions are to deliveries, as 1 to 41.†

Women are supposed to conceive, most readily, immediately after the menstrual evacuation, but it is doubtful how far this opinion is correct; some even hold a contrary opinion, and think they are more likely to conceive just before the period; and therefore, in calculating the time when labour should be expected, it is usual to count from a fortnight after the last appearance of the menses, or to say that the woman should be confined at the end of the forty-second week from the termination of the last menstruation.

It has, contrary to all fact, been supposed, that a woman could not conceive, without having the venereal desire, and therefore, that if conception followed alleged rape, it was to be presumed that consent had, ultimately, been obtained. It is established, beyond all dispute, that women may conceive in a state

* It appears from Dr Cleland's tables, (published in 1831) that the population of this city and suburbs, was then (now 280,676,) 202,426, the females, in the total, predominating to the extent of 14,978, though till after fifteen years of age, there was an excess of males. There were 49,504 females between the age of fifteen and forty years, and 6,868 births within a year, of which 471 were still-born, (last year, 720). There were 3,281 living male children, and 3,116 females. There were 30,082 married men, so that at an average there was one child born to four and a half married females; of the children 877 died under one year of age, and 49 males more than females. There were 1,919 marriages within the year, and in all 41,965 families, including the married, widows, spinsters, &c. There were 55,984 children under ten years of age, and of these about 1 in 23 died. By returns in France for seventeen years, ending in 1833, it appears that in marriage, the number of males born, is to that of females, as 16 to 15: that, of illegitimate children is different, viz., 23 to 32—at an average each marriage produces nearly four children.

The proportion of stillborn children varies in different places; but in all, there are more males than females, and more illegitimate than legitimate children born dead. At Paris, one male in rather more than 16 births is dead, and one female in rather more than 19. In Geneva, $\frac{1}{7}$ of the whole births is dead, whilst in Bohemia there is only $\frac{1}{17}$. In the Dublin Hospital, if we exclude premature births, and take only those of the full time, it appears from Dr Collins' table, that $\frac{1}{10}$ are stillborn. In Glasgow, if we take the register of baptisms and burials, it would appear, that in one year it was $\frac{1}{12}$; in another, $\frac{1}{13}$. Last year, there were 703 stillborn children buried. This, however, includes all premature fetuses entered. There were 3,225 births engrossed, but it is to be observed, that many are not registered, and therefore, the calculation must be imperfect. See also Quetelet. &c.

† Archiv. Gen. xx. 76.

of deep sleep, or under the influence of narcotics, or in a state of syncope.*

The process of gestation usually requires forty weeks, or ten lunar months, or nine calendar months and a week, for its completion; but many circumstances may render labour somewhat premature, and it is even possible for the process to be completed, and the child perfected to its usual size, a week or two sooner than the end of the ninth calendar month. On the other hand, it is equally certain that some causes, which we cannot explain nor discover, have the power of retarding the process, the woman carrying the child longer than nine months;† and the child, when born, being not larger than the average size. How long it is possible for labour to be delayed beyond the usual time, cannot easily be ascertained; but it is very seldom more than a few days, counting the commencement of pregnancy from the day preceding that on which the menses ought to have appeared, had the woman not conceived. The longest term I have met with, is ten calendar months and ten days, dated from the last menstruation. In the case of one lady who went this length, her regular menstrual period was five weeks, and in her other pregnancies she was confined exactly two days before the expiration of ten calendar months after menstruation.

* There seems no reason to discredit the account given of a young woman, laid out as dead, and in that state violated by a monk. She revived after some hours, and had conceived. The monk confessed the crime, and was permitted, on being released from his vow, to marry her. *Fœderé*, Tom. i. p. 500.

† By the law of this country, a child born six months after the marriage of the mother, or ten months after the death of the father, is considered as legitimate. In the evidence given on the cause of the Gardner Peerage, published by Dr Lyal, there was a great difference of opinion. Some accoucheurs limited the period strictly to forty weeks, or 280 days, others considered that it might be extended to 311 days. Dr Merriman says, that out of 114 pregnancies, calculated from the last day of menstruation, and in which the children appeared mature, 3 took place at the end of the 37th week; 13 in the 38th week; 14 in the 39th week; 33 in the 40th week; 22 in the 41st; 15 in the 42d; 10 in the 43d; 4 in the 44th; a few even exceeded that. Hence, the greatest number, complete gestation, in the 40th week, and next to that in the 41st.—*Med. Chir. Trans.* Vol. xiii. Dr Montgomery gives an instance, from his own knowledge, of the lady going 291 days from the date of conception; another, where the lady menstruated on the first of January, and was delivered on the 14th of November. The late Dr Hamilton admitted the possibility of protracted pregnancy, and, amongst other cases, gives one where the eleventh period was passed by seven days. Moreau details the history of a patient, who was well from menstruation on the 8th of April; felt motion in the beginning of August; had all the feelings of labour in the beginning of January, but without any effect on the uterus; and was delivered of a living child on the 2d of March. *Traité*, T. i. p. 548. It is well known that cows, mares, &c., may go beyond the regular time. Lord Althorp thinks that the bull has an influence on the duration.

CHAP. XVI.

Of the Gravid Uterus.

SECTION FIRST.

WHEN we compare the unimpregnated with the gravid uterus at the full time, we must be astonished at the change which has taken place during gestation, in its magnitude alone.

In the ninth month, the size of the womb is so much increased, that it extends almost to the ensiform cartilage of the sternum; and this augmentation it receives gradually, but not equally, in given times; for it is found to enlarge much faster in the latter, than in the earlier months of pregnancy. This is true, however, only with regard to the absolute increase, for in the first month, the uterus perhaps doubles its original size, but it does not go on in the same ratio. It is not twice as large in the ninth as in the eighth month.

In the commencement of the second month, the uterus is enlarged in every part without much change of shape. Towards the end of the third month, it generally measures, from the mouth to the fundus, about five inches, one of which belongs to the cervix. In the fourth month, it reaches a little higher, and measures five inches from the fundus to the beginning of the neck. In the fifth, it has become so much larger, as to render the belly tense, and may be felt, like a ball, extending to a middle point between the pubis and the navel, and measures about six inches from the cervix to the fundus. In other two months, it reaches to the navel, and measures about eight inches. In the eighth month, it ascends still higher, reaching to about half way between the navel and the sternum. In the ninth month, it reaches almost to the extremity of that bone, at least in a first pregnancy, when the tightness of the parietes prevents it from hanging so much forward as it afterwards does. At this time, it measures, from top to bottom, about twelve, or from the fundus to the brim of the pelvis, eleven inches, and is more globular, than elliptical, in its shape. The broadest part, is a little above the middle, and is ten inches. For the first month, the shape of the uterus is scarcely altered; it is enlarged in every direction. But after this, it swells before and behind, and soon becomes somewhat globular, having the cylindrical undistended cervix depending from it; after the fifth month it becomes more oblong, and by the seventh, it resembles a balloon. These calculations are not invariably exact, suiting every case, but admit of modifications.

In pregnancy, the mouth of the uterus is directed backward, whilst the fundus lies forward. This obliquity, however, does not take place until the uterus begin to rise out of the pelvis, and it always exists in a greater degree in those who have born many children. If in the dead subject, we press up the uterus, by a probang, from the vagina, we find that the fundus glides up along the sacrum, and turns more forward as it is raised.

From this position it appears, that the intestines can never be before the uterus, but must lie behind it and round its sides. The uterus is usually directed to the right side, but in the last months, if the parietes of the abdomen be not much relaxed, it rises more perpendicularly.

Previous to the descent of the ovum, the uterus begins to enlarge, especially at its upper part, or fundus; and it is worthy of notice, that the posterior face of the uterus, always distends more than the anterior one, as we ascertain by examining the situation of the orifices of the Fallopian tubes.

When the fundus begins to increase, it not only grows heavier, but also presents a greater surface for pressure to the intestines above: it, therefore, may descend lower in the pelvis, and thus project further into the vagina. In this situation the uterus will remain, until it become so large as to rise out of the pelvis. This ascent takes place, generally, about the sixteenth week of pregnancy, if the pelvis be well formed, and the uterus increase in the usual ratio.

SECTION SECOND.

In the fifth month of pregnancy, the cervix begins to be developed: so that by the end of the month, one quarter of its length has become distended, and contributed to augment the uterine cavity; the other three-fourths, which remain projecting, become considerably softer, rather thicker, and more spongy. In another month, one half of the cervix is distended, and the rest is still more thickened, or the circumference of the projecting part greater; the uterus has also risen farther up, and the vagina is more elongated. In the seventh, we may, with the finger, distinguish the head of the child pressing on the lower part of the uterus, which we can seldom do before this. In the eighth month, the neck is nearly effaced, and its orifice is as high as the brim of the pelvis. In the ninth month, the cervix is completely developed, and the whole uterus more enlarged. The alterations of the cervix are discovered, by introducing the finger into the vagina, and estimating the distance betwixt the os uteri and the body of the uterus, which we feel expanding like a balloon.

The size of the lips, and extent of the mouth, or chink, of the

uterus, in the unimpregnated state, have already been described. Soon after conception, the os uteri is said to close, but this is only correct, in so far, as it is, at the end of the cervix, shut up by albuminous substance. Its lips become a little softer, rather thicker, and the orifice sometimes, but not always, seems more circular. The changes, however, in the early period, are not so marked, as to afford, of themselves, positive indications of pregnancy. In proportion as gestation advances, and the cervix stretches, the lips become rather thicker, and, although in a few instances, they may shorten, yet, they always continue to project, until labour commence. All the inner surface of the cervix uteri, in the whole course of gestation, exhibits glandular follicles, which secrete a thick viscid mucus. This extends from the one side to the other, and fills up the top of the mouth of the uterus, very perfectly, being thus interposed as a guard betwixt the membranes and any foreign body. By maceration, it may be extracted entire, when a mould of the lacunæ will be obtained by floating it in spirits, saturated with fine sugar.

SECTION THIRD.

Vesalius describes three strata of muscular fibres, transverse, perpendicular, and oblique. Malpighi describes them as forming a kind of network; whilst Ruysch maintains, that they appear at the fundus, in concentric planes, forming an orbicular muscle. Dr Hunter paints them as transverse in the body of the uterus, but at the fundus describing concentric circles around each of the Fallopian tubes. These contradictions of anatomists serve to show, what may readily be seen by examining the uterus, that the fibres are not very regular and distinct in their course, but the circular seem to predominate. The lips of the os uteri have few, if any muscular fibres.

The increased size of the uterus, is by no means, entirely, owing to the addition of muscular fibres. These become indeed larger, and better developed, but do not contribute so much to the increase, as the enlargement of the blood vessels, and perhaps the deposition of cellular substance. This gives the uterus a very spongy texture, and makes it so ductile, that a small aperture may be greatly dilated, without tearing. From examination, it appears, that although the whole uterus do not grow thinner, in proportion to its increase, yet it does, at the full time, become a little thinner near the mouth; whilst the fundus continues the same, or perhaps grows rather thicker, at least where the placenta is attached.

SECTION FOURTH.

No one, who understands the anatomy of the ligaments of the

unimpregnated uterus, will be surprised to find a great change produced in their situation and direction, by pregnancy. The broad ligament, which is only an extension of the peritoneum from the sides of the uterus, is, in the ninth month, by the increase of that viscus, spread completely over its surface; and consequently, were we to search for this ligament, we should be disappointed. Its duplicatures are separated and laid smoothly over the uterus. It will therefore be evident, that we can no longer find the ovaria and Fallopian tubes floating loose in the pelvis, nor the round ligaments running out at an angle from the fundus uteri to the groin. All these, are contained within duplicatures of the peritoneum, or ligamentum latum; and therefore, when this is spread over the uterus, it follows, that the ovaria, tubes, and round ligaments, particularly the last, cannot now run out so loosely from the uterus, but must be laid flatter on its surface, by the extended peritoneum. This description, applies only to the state of the uterus, at the full time. Earlier, we may readily observe the broad ligament floating out, so that the ovaria are more distant. The loose extremity of the tube becomes more expanded, and very vascular, and forms a kind of cavity called the antrum.

The state of the ovarium has already been described.

SECTION FIFTH.

The origin and distribution of the blood vessels of the uterus have been formerly noticed; I have only to add, that, in pregnancy, they become prodigiously enlarged. Even before the ovum be very distinct, we find the uterine artery, when injected, as large as the barrel of a goose quill, and sending large branches round the cervix uteri, and up the sides of the womb. The spermatic or ovarian artery, is however, the chief source of blood, and at an advanced period sends numerous tortuous branches up along the uterus. As pregnancy advances, the trunks, but especially the branches, become still larger, particularly, near the implantation of the placenta. The veins are enlarged in the same proportion with the arteries. They are destitute of valves, and receive the name of sinuses. They will be afterwards noticed.

The lymphatics are very large and very numerous. The nerves have already been described. Both they, and their ganglia, are increased in size during gestation.

SECTION SIXTH.

Although many opportunities have occurred to anatomists, of examining not only abortions, but also the uterus itself, at an early period of gestation; yet, it has not been exactly deter-

mined at what precise time the ovum enters the womb, or, when the foetus becomes visible. This may depend, partly on want of information, respecting the exact number of days, which have intervened betwixt impregnation, and our examination; and partly, perhaps, upon irregularities of the process in the human female, induced by various causes.

In a dissection performed by the late Mr Hunter, and related by Mr Ogle,* no ovum could be found either in the uterus or the tubes, although it was conjectured that nearly a month had elapsed from the time of impregnation. All that is known, is, that she had menstruated a little more than a month preceding her death. I have examined very carefully, but I acknowledge without the aid of the microscope, three uteri, considerably within the first month after menstruation, and have not been able to discover either ovum or foetus; but I cannot determine the exact date of impregnation. Sir E. Home gives a representation of a uterus, which was taken from a woman, who was supposed to have been impregnated eight days before death. It corresponds, exactly, in appearance to those I have alluded to. He imagined that an ovum was seen, but from the description, there is little doubt that he was deceived, and Mr Clift maintains, that what he saw, was the egg deposited by a flesh fly. (Museum, No. 3593.) From an observation of Baer's, it appears that in women, decidua is formed by the eighth day, and the ovum is out of the vesicle, but could not be found in the uterus. Dr Rainy showed me an abortion, which came away between the menstrual periods, where the decidua vera, was well formed, and the reflexa, enveloped a cavity as large as a pea. In this, a small spot, supposed to have been the ovum, had been seen. Weber, in a female who poisoned herself eight days after conception, found, between the surface of the uterus and the decidua, a villous vesicle which he thought contained an embryo. Pockels also says he has seen it at the end of a week, but the accuracy of his case is doubted. Velpeau, in an abortion, ascertained to be at the thirteenth day, found a distinct embryo, with the vesicles and membranes, but none between the tenth and twelfth. Baer saw it on the fourteenth. Dr Combe had a preparation containing a minute embryo, but it was supposed that twenty-two days had elapsed. Mr Jones describes an ovum, which Wagner thinks earlier than the third week. The chorion was as large as a pea, and at one end, in albumen, was a round body like a pin head, the blastodermic vesicle, but no embryo. Dr Allan Thomson describes two early ova, one, supposed to be about the fifteenth day. In the smallest, the yolk bag occupied the

* Transactions of a Society, &c. Vol. ii. Art. vi. The preparation is in the Museum of the College of Surgeons in London. No. 3590.

greatest part of the cavity of the chorion, the intervening space being filled with albuminous filaments; the embryo lay flat, on the bag, without any connecting pedicle. There were neither amnion nor allantois. In the other, the same appearance existed, but the dorsal folds were very distinct. Wagner, at twenty-one days, found the embryo connected to the bag by a short pedicle. Müller, at thirty-four, but Baer thinks twenty-one days, found the embryo two lines and a half long. At the end of the third week, Velpeau says, that, if stretched out, the embryo measures four or five lines. I should say not so much. It curves at this time so much, as to form nearly a circle. In the sixth week, it is curved, and resembles as it floats in water, a split pea. In another week it is as large as a small bee. In the tenth, it is the size of a kidney bean. The size however, appears to vary according to the natural bulk of the foetus, and other circumstances which we are not acquainted with. This accounts for the great difference in the representations of different authors.

The embryo, at first, appears to the naked eye like two oval bodies of unequal size, united together, and forming a curve, or at first nearly a circle. The one of these is the head, the other the trunk. The head is a membranous bag, which is large in proportion to the body, but after the first month of its growth, the relative size decreases: on opening it, nothing but a soft pulp is found within. Branchial slits, to be afterwards noticed, appear, and are seen till the commencement of the second month. In a little time, the face appears, the most prominent features of which are the eyes; these are proportionally larger in the embryo, than in the advanced foetus, and are placed low down. The face itself, is small, compared to the cranium. The nose does not appear until the end of the second month; but somewhat sooner, we may observe two apertures in the situation of the nostrils. The mouth, at first, is a round hole, but by degrees lips appear, and after the third month they are closed, but do not cohere. The external ear is not formed at once, but in parts, and is not completed before the fifth month; even then, it differs in its shape from the ear after birth. It is at first like a gently depressed circle.

The extremities early appear, like the buds of a plant. The arms are directed obliquely forward, toward the face, and are larger than the inferior extremities. The genitals, for a time, are scarcely to be observed, but in the third month, they are large in proportion to the body.

The foetus does not grow in an uniform ratio, but, as has been observed by that careful 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 gestation.

In the fœtus, the cord is inserted higher, or lower, according to the age. In the second month, it enters just above the pubis, but, gradually, the point of entrance ascends, till the full time, when it is supposed to be about midway between the top of the head, and the sole of the foot; but there is a considerable latitude in this calculation, and oftener it is nearer the foot.* It has been proposed, by attention to this measurement, to decide in cases, otherwise doubtful, respecting the age of the fœtus. Farther assistance may be expected, from an examination of the osseous system, as different bones begin to ossify at stated periods. Some uncertainty, however, must be connected with this rule, and, to a still greater degree, with the marks taken from the development of the brain. In the early period, there is no brain, but only the spinal cord, so that the fœtus resembles an animal of the lowest order. About the second month, the brain is discovered, very small, and evidently formed by a prolongation of the cord. The pons is not seen till the fourth month, the pyramidalia are defined in the fifth, the olivaria are not so distinct till the seventh, nor are the convolutions of the brain seen till then. Before the sixth month, the brain is semifluid. Hair does not grow on the head, before the sixth month, and even then, it is very short, sparse, and light coloured. The nails are indistinct, the eyelids closed, and the membrana pupillaris closes up the pupil. The heart is large in proportion to the lungs. In the seventh month, the membrana pupillaris is removed, the eyelids open, the nails are more distinct, the hair longer and thicker, and on cutting the skin, we now, for the first time, discover some deposition of fat. Formerly, the cells had merely contained albumen. In the eighth month, the skin becomes brighter in the colour, the hair is longer, a more copious secretion of fat has taken place, the fluid in the gall-bladder approaches more nearly, both in colour and taste, to bile. The colon and rectum are nearly filled with meconium. At the full time the nails are quite formed, the hair covers the head, and is of its proper colour, the cells of the skin are filled with fat, the lungs are large and red, the valve of the foramen ovale completely formed, the ductus arteriosus, scarcely less than the aorta, and nearly an inch in length.

* In the measurement of twenty children, at the full time, in the hospital here, Dr Pagan found only one where the cord entered exactly at the middle of the total length, and this child measured twenty-four inches. In the rest, the total length was most frequently twenty-two inches, and the cord entered two nearer the sole.

The proportion between the weight of the fœtus and its involucre, is reversed at the beginning and the end of gestation. When the embryo does not weigh more than a scruple, the membranes are nearly as large as a small egg. Even when the fœtus is not larger than a fly, the membranes resemble, in shape and size, a chestnut. On the other hand, at the full time, when the fœtus weighs seven pounds, the placenta and membranes, do not weigh a pound and a half, and the proportion of liquor amnii is greatly lessened. In the twelfth week, the fœtus weighs nearly two ounces, and measures when stretched out, about three inches. The membranes are larger than a goose's egg, and weigh, if we include the liquor amnii, several ounces. In the fourth month, the fœtus is five or six inches long. The placenta about three inches and a half long, and two and three-quarters broad, but it is sometimes a little less. Even in a month later, the placenta is sometimes not larger. In the fifth month, it measures from six to seven inches. In the sixth month, the fœtus is perfect and well formed, measures nine or ten inches, and weighs about one pound troy; whilst the placenta and membranes weigh about half a pound, exclusive of the liquor amnii. The fœtus is now so vigorous in its action, that there have been instances, though most rare, of its continuing to live, if born at so premature a period.* In the seventh month, it has gained about three inches in length, and is now more able to live independent of the uterus, though, even, at this time, the chance of its surviving six hours

* To be capable of living, a child must have the heart and lungs so far perfected, as to be able to carry on circulation and respiration; and the medulla oblongata must be so developed, as to furnish the necessary nervous influence. The stomach and its nerves must be competent for digestion. All these requisites exist at the 6th month; but the instances of children surviving, at that early period, are rare indeed. We cannot have any expectation of a child living before the 7th month, and, even then, the chance is little. Extraordinary cases have, however, occurred. The Marechal de Rioblieu is said to have been born at the end of the 5th month. Various instances are related where children lived at six months, and a little more, but I have never myself met with such a case. The late Dr Rodman of Paisley, published an instance (*Edin. Jour. Vol. xi. 454.*) where the child was supposed to be between the 5th and 6th months, but it was objected to this, that at the end of three weeks, it measured thirteen inches, and weighed 2lb. iias., minus 11 oz. for clothes. Dr Merriman knew a child live at the period of six months and eighteen days. The late Dr Nimmo had a case, where the child, born at six months, lived eleven days. It weighed 1½lb. In the *For. and Brit. Rev.* for July, 1842, a child is described as being born, and living, at 170 days, or six months. Forty days after birth, it weighed three pounds, and measured thirteen inches. The centre of the body was an inch above the umbilicus. Children of this description seem to be more advanced than usual at the same period. Meil in his *Giurisprudenza*, noticed in the *Annales d'Hygiène, T. viii. p. 466*, gives, particularly, an instance, by Molina, of a child born at the end of the fifth month near Como, and continuing to live. Hervas quotes a case from Valles, where the child, at the beginning of the sixth month, lived. By the law of Scotland a child is legitimate at six months. The late Dr Hamilton said, that no child could live before the seventh month was completed.

from birth is much against it. In the eighth month, it measures from fifteen to seventeen inches, and weighs four, or sometimes five pounds, whilst the involucra weigh scarcely one. These calculations vary according to the sex of the child, and also the conformation of the parents, which accounts for the latitude I have given in the length, which is less than that stated by some authors, but this I cannot help. Male children generally weigh more than females. Dr Røederer concludes, from his examinations, that the average length of a male, at the full time, is twenty inches and a third, whilst that of a female is nineteen inches and seventeen eighteenths.* Dr Joseph Clark has given a table of the comparative weight of male and female children at the full time, from which it appears, that although the greatest proportion of both sexes weigh seven pounds, yet there are more females than males found below, and more males than females above that standard. Thus, whilst out of sixty males and sixty females, thirty-two of the former, and twenty-five of the latter, weighed seven pounds; there were fourteen females, but only six males, who weighed six pounds. On the other hand, there were sixteen males, but only eight females, who weighed eight pounds. Taking the average weight of both sexes, it will be found that twelve males are as heavy as thirteen females.† At La Maternité, the average weight was $6\frac{1}{2}$ pounds; out of thirty-five, there were ten under six pounds. In the Wurtemberg report it is stated, that some children weighed at birth from nine to fifteen pounds,‡ and were from nineteen and a half, to twenty-eight inches long. One married mother bore a child at the full time, measuring seventeen inches, but weighing only three pounds and a half. The placenta in some cases weighed fully three pounds. The placenta of a male, weighs, at an average, one pound two ounces and a half, whilst that of a female weighs half an ounce less. Female children, who, at the full time, weigh under five pounds, rarely live; and few males, who even weigh five pounds, thrive. They are generally feeble in their actions, and die in a short time. Children often diminish somewhat in weight for a little after birth.

When there are two children in utero, the weight of each in-

* A female is, generally, fully nineteen inches and a half, sometimes nearly twenty. The circumference of the head, at the largest part, little less than thirteen inches.

† "The mean weight of the bodies of stillborn children, exceeds the mean weight of such as have lived one day, by from about $\frac{1}{2}$, to somewhat less than $\frac{1}{2}$." Dr Guy, Edin. Jour. lvi. p. 60.

‡ Mr Owens mentions a child, born dead, which weighed 17lb. 12 oz.; it was twenty-four inches long, and, from one parietal protuberance to the other, five inches. Lancet, 1835. Dr Rigby says, that Sir Richard Croft delivered a living child, fifteen pounds weight.

dividual is generally less than that of the fœtus who has no companion, but their united weight is greater. When a woman has twins, it either, usually, happens, that both children are small, or one is of a moderate size, and the other is diminutive; though I have known instances, where both the children were rather above, than under the usual standard. The average weight of twelve twins, examined by Dr Clarke, was eleven pounds the pair, or five and a half each. Twins require more pabulum from the mother, and a greater degree of action in the uterus; for two placenta must have their functions supported. The uterus is also, generally, more distended, and produces greater excitation; it has more blood circulating in it; and the weight of its contents, to that with a single child, has been stated as twenty to fifteen. Twin gestation, often produces a greater effect on the system, making the women more disposed to disease, and less able to bear it: hence, the chance of recovery has been supposed to be four times less in them, than in those who have single children. The children, being generally feebler, than when only one is contained in the uterus, are more disposed to disease; and, as the mother is less able to suckle children after a twin labour, many perish, who might have been preserved, by providing a good and careful nurse, soon after birth, for the weakest child.

When the number of children increases above two, the aggregate weight does not increase. Thus Dr Hull, of Manchester, met with a delivery of five children, who did not weigh two pounds and a quarter; they measured from eight to nine inches in length, and two of them were born alive.

Calculations have been made of the proportion of single births, to those where there were a plurality of children. In the Dublin hospital, one woman in fifty-eight had twins. In the British lying-in hospital, one in ninety-one. In the Westminster hospital, one in eighty. In my own practice, about one in ninety-five. In the Dublin hospital, triplets have not occurred above once in five thousand and fifty times. More than three are not met with, once in twenty thousand times. In la Maison d'Accouchement in Paris, there were, in twenty years, 37,441 single births, 444 twins, and 5 triplets. At Wurtemberg, there were twins, once in about 86 cases; triplets, once, in about 7,000.

The proportion of male children, born in single births, is, as has been already noticed, greater than of females; but in the Westminster hospital, it is worthy of remark, that the number of male twins was only 16, whilst that of females was 30. In the Dublin hospital, Dr Collins makes the proportion of males to females as 24 to 23.

SECTION SEVENTH.

The fœtus has many peculiarities which distinguish it from the adult, and which are lost after birth, or gradually removed during gestation. In particular, the liver is of great size, by which the abdomen is rendered more prominent than the thorax. At birth it extends quite to the left side, and the inferior margin of both lobes, though not of the cleft between them, is nearly in a line with the navel. It appears very early, and increases rapidly till the fourth month, after which its growth is slower. In the child, after birth, the greatest quantity of blood, in the liver, is venous, and from this the bile seems to be secreted. But in the fœtus, the blood is more nearly approaching in its nature to arterial; and no bile, but a greenish fluid, different in its properties, is secreted. The gall-bladder merely fills the sulcus in which it lies. It is about $1\frac{1}{4}$ inch long, and $\frac{3}{8}$ broad. The umbilical vein, which contains blood, changed in the placenta, enters the liver, and sends large branches to the left side; the vena portæ enters the liver, and ramifies on the right side; whilst a branch or canal of communication, is sent from the umbilical vein to the vena portæ. By this contrivance, the left side is supplied, altogether, with pure blood from the placenta, and the right side is supplied, with a mixture of pure and impure blood, which does not form perfect bile. After birth, as the circulation from the placenta is stopped, the branches of the umbilical vein, which supplied the left side, should be empty, did not the canal, which formerly served to carry a portion of blood, from this vein to the vena portæ, now, permit this latter vessel, to fill the branches in the left side, which henceforth form a part of the vena portæ. The whole liver is thus supplied with blood entirely venous. Bile is formed, and sometimes in very considerable quantity. The fissure between the two lobes of the liver, is situated in a line running from the umbilicus to the sternum, and is to be found midway between these points. The umbilical vein runs, nearly, straight up from the umbilicus, and enters the fissure, though a perpendicular line will go nearer its left, than its right, margin. The distance from the umbilicus, to its entrance, between the lobes of the liver, is from $\frac{3}{4}$ to near an inch. The arteries, if traced downwards, are for half an inch, nearly parallel, and scarcely $\frac{1}{2}$ distant; but as they descend by the side of the bladder, they divaricate, and at the brim of the pelvis, their external margins are $\frac{3}{4}$ separate.

The blood of the fœtus differs from that of the adult. It forms a less solid coagulum, for in place of fibrous matter, it yields a soft tissue, almost gelatinous. It is said not to be ren-

dered florid by exposure to air,* and that it contains no phosphoric salt. But soon after the fœtus has respired, the colouring matter, exposed to oxygen, acquires the vermilion tint, and salts are formed, particularly the phosphate of lime. We know, that if we inflate the lung of a stillborn child, the blood becomes bright.

The stomach is small, its two orifices being within $1\frac{1}{2}$ inch of each other, and in its broadest part only $1\frac{1}{4}$. It contains a little fluid. The intestines, which at first, are seen like threads arising from the stomach, are redder, and said to be longer in proportion to the body in the fœtus, than in the child. They are at first uncovered, but, after some time, the abdominal muscles and integuments, form a complete enclosure. The small intestines, contain a reddish albumen. The large, are filled, though, sometimes, with the intervention of a portion, almost empty, with a soft feculent substance, of a dark green colour, called meconium.

At a very early period, there is an opening, or cloaca, at the bottom of the abdomen, called the sinus urogenitalis. This cavity is presently divided, from above, downward, into two portions. The anterior, forms the urinary bladder, about the end of the second month. The posterior forms, in the male, the vesiculæ seminales, and in the female, the middle of the uterus and vagina, the end of which is, at this time, common also to the urethra. About the tenth week, the anus is partitioned off. The epididymis and testicles are developed separately, but are soon connected by transverse vessels; and from the former, before it becomes convoluted, the gubernaculum descends. We have thus, at one time, three distinct bodies, which, indeed, may be long observed. In the female, the ovaria are formed as the testicle; the Fallopian tubes as the vasa deferentia. The tubus, uterus, and ovaria, join ultimately into one organ, continuous with the vagina.

The testicles, lie on the *psœ* muscles; but, generally before birth, they pass into the scrotum. The period at which they do so, is variable. They are sometimes out of the abdomen in the sixth month, and sometimes not till the eighth, or till after birth. Till they pass out, they are connected with the scrotum, by a kind of cellular pyramidal cord, called gubernaculum. The ovaria, in the fifth or sixth month, lie across the *psœ* and *iliaci* muscles, parallel to Poupart's ligament, between it and the colon. At the full time they lie on the *psœ* muscles, and the tubes extend over the *iliaci*, nearly to the crest of the ilium. The uterus is mostly out of the pelvis, but hid, at first by the bladder which

* Bichat made experiments to ascertain this upon Guinea pigs, and always found the fœtal blood black. *Anatomic Générale*, Tom. ii. p. 343.

lies before it. It is evidently triangular in its shape, as in the adult; from $\frac{5}{8}$ to $\frac{3}{4}$ long, and $\frac{1}{2}$ inch broad, at the fundus. The kidneys, which are formed about the seventh week, are $1\frac{1}{2}$ inch long, and lobulated; the ureters thick. The reddish glandulæ renales are large. The bladder is more conical and lengthened than in the adult. The spleen $1\frac{1}{2}$ by $\frac{7}{8}$ in size. The lungs are dense and firm, and part of a large gland, called thymus, is contained in the thorax. Two highly vascular bodies, composed of transverse cæca, called, from their describer, Wolffian bodies, extend, from before the kidney, downward on each side, terminating by an excretory duct in the urogenital sinus. In the human foetus they disappear earlier than in other mammalia, and are only well seen at an early period; but, by the microscope, vestiges have been discovered, in the folds of the peritoneum, in the mid period of gestation. It was, at first, supposed that they formed the kidneys, and, then, that the testicles were developed from them. The present opinion is, that they are temporary kidneys. Their function wants further investigation.

The structure of the heart, is different from that which obtains after birth; for, though the auricles be divided into two cavities, yet, these are seen, in the human foetus, to communicate, freely, by a vacancy in the septum; and even after this is supplied, it is only with a valve, which allows the blood to pass from the right to the left side. This is the foramen ovale, which is shut up after birth. Another peculiarity of the foetal heart is, that the pulmonary artery, although it divide into two branches for the lungs, yet sends a third, and still larger branch, directly into the aorta, just at its curvature, and this is the ductus arteriosus. The blood is received, in a purified state, from the placenta, by the umbilical vein, which, after giving off branches in the liver, sends forward the continuation of the trunk, to terminate in the vena cava, or largest of the hepatic veins, and this continuation is named ductus venosus. The mixed blood which is thus found in the vena cava, is carried to the right auricle, and thence to the corresponding ventricle. By the pulmonary artery it ought to be conveyed to the lungs, but this would be useless in the foetus, and therefore the greatest part of it, passes on, by the ductus arteriosus, to the aorta. It follows from this, that, as little blood is carried to the lungs, so little can be brought from them, by the pulmonary veins to the left auricle. Now, to obviate this, and fill that auricle at the same time with the right, the foramen ovale is formed; and thus, as the blood can pass freely from the right to the left, the two auricles are to be considered as one cavity, being filled and emptied at the same time.

The aorta is distributed to the different parts of the body;

but this singularity prevails, that the hypogastric vessels run up all the way to the navel, and pass out to form the umbilical arteries. After birth, these arteries are obliterated, in their course to the navel, and the foramen ovale, and ductus arteriosus become impervious.

Cartilaginous plates are formed over the brain, which are gradually converted into bones. These, at birth, are only united by intermediate membranes.

The pupil of the eye, till the seventh month, is shut up by a membrane; and the eyelids, for six months, adhere together. It has been said, that there is neither pigmentum nigrum, nor rete mucosum till after birth; but this I do not think correct, more than the assertion, that a negro child, is as fair as an European, till the ninth day.

The skin is covered with a white substance, which, though unctuous to the feel, does not melt, but dries and crackles by heat. It is miscible with spirits, or, with water through the medium of soap or of oil. It appears in the seventh and eighth months.

The male foetus differs from the female, in having the head larger, but less rounded, and flatter at the back part. The thorax is longer, and more prominent, and formed of stronger ribs than in the female. In her, it is wider from the upper part to the fourth rib, and narrower below; the belly, also, in the female, is more prominent, and the symphysis pubis projects more. The upper extremities are shorter, than those in the male; the thighs are thicker at the top, and more tapering to the knees. Dr Soemmering says, that the spinous processes of the lower dorsal, and upper lumbar vertebræ, make in the male an eminence like a yoke, in the female a sinuosity. I may remark, that as the clitoris is large in the young foetus, females sometimes pass, in abortions, for males.*

When in utero, the foetus assumes that posture, which occupies least room. The trunk is bent a little forward, the chin is pushed down on the breast, the knees are drawn up close to the belly, and the legs are laid along the back part of the thighs, with the feet crossing each other. The arms are thrown into the vacant space betwixt the head and knees. This is the general position, and the child thus forms an oval figure, of which the head makes one end, and the breech the other. One side of it is formed by the spine and back part of the head and neck, and the other by the face and contracted extremities. The long axis of this ellipse measures, in the ninth month fully

* For the purposes of medical jurisprudence, I refer on this subject to an account of the length, weight, &c., of the foetus, and its different organs, at various periods of intra uterine life, to *Med. Leg. par Devergie*, Tom. i. p. 495. et seq.

ten inches, and the short one, five or six. In the eighth month, the long axis measures fully eight inches. In the sixth, betwixt four and five. In the fourth month, it measures nearly three inches and a half; and in the third, about an inch less. In the early months, however, there is no regular oval formed, and these measurements are taken from the head to the breech, which afterwards forms the ends of the distinct ellipse. The extremities are at first small and slender, and bend loosely toward the trunk.

SECTION EIGHTH.

On removing the shell of a hen's egg, we find that it has been lined by the *membrana putamenis*, consisting of two layers, separated at the large end, so as to form a small sac, the *folliculus aëris*; or, according to Mr Town, there is within these another delicate membrane, the separation of which, from the former, forms the *folliculus*. Within this membrane is the albumen, which is thinner at the surface than deeper. If the egg be opened under water, we find that these two portions, outer and inner, are really separated from each other, by a very delicate membrane, which appears to send irregular prolongations through the thick albumen, and, very distinctly, is traced to the *chalazæ*, and thence over the whole yolk, so that it forms a delicate covering to it. Besides this thin layer, called the *chalaziferous membrane* by Dutrochet, the yolk is covered by its own proper coat, called the *vitelline membrane*. On removing this, we do not find the yolk run out; it still preserves its shape by what looks more like a condensation of its granules or substance, than a proper membrane. This, however, is a distinct envelope of granular membrane, and it is called the *blastodermic vesicle*, or, afterwards, the *umbilical vesicle*. The yolk, itself, is a fluid containing globules, or cells, and also some oil globules. These cells are produced in the manner described by Schwann; but, according to Reichert, the formation of new cells is limited to that part of the yolk, which, more directly, is concerned in the development of the chick, which he maintains to be the yolk cavity, and the disc. From the poles of the yolk there goes off, at each end, a *chalaza*, so placed, that however the egg be rolled, one surface is always uppermost; and on that surface of the yolk, we see, covered by the vitelline membrane, and partly sunk in the yolk, or in the blastodermic vesicle, the *cicatricula*, *germinal membrane*, or *blastoderme*. The centre or nucleus, where the rudiments of the embryo first appear, is clear, the rest, opaque and more granular. The *cicatricula* is not seen for some time after the yolk is formed; then, a little modification of the granules is perceptible, and a disc, or *cicatricula*, of granular

substance, is formed under the vitelline membrane. This has, also, been called *discus proligerus*, or stratum proligerum. Beneath this is accumulated a small mass of granules, called the nucleus, or *ovum proligerus*, seen through the central, or clear part of the cicatricula. This clear part afterwards becomes *area pellucida*, and the darker circumference, or *halones*, are the seat of the future *area vasculosa*. In the centre of the yolk, there is, at an early period, a space, called the *yolk cavity*, filled with paler fluid, and, from this, a canal rises up to the cicatricula. In this central space is found, before the egg has left the oviduct, a small vesicle, called the *germinal vesicle*, and within it a minute spot, called after the discoverer, that of Purkinje, or, the *germinal spot*. The vesicle, presently, rises through the canal, and is lodged in the cumulus, or immediately beneath the disc. Both the vesicle and spot disappear, when the ovum leaves the egg bed, and without impregnation.

The small blastoderme, at first, consisting of a granular or mucous layer, has, after incubation, formed on it, a smooth or serous layer, so that now it is double. Presently, there forms, between them, a third, containing blood, called the vascular layer. All the three enter into the composition of the fœtus.* The first is supposed to form the whole system of the digestive organs and glands; the second, the nervous system, muscles, bones, skin, and membranes; the third, the vascular system. That is to say, "the *tissu générateur*," is deposited, and converted into these different parts. The cicatricula, at first, seems identified with the granular coat, but at the tenth hour of incubation, it can be separated from it.

These three layers, according to Baer, and others, not only form the embryo, but, as incubation advances, extend over the granular envelope of the yolk, but never enclose it completely. The vitelline membrane, covering the cicatricula and whole yolk, must enclose every thing already enumerated, and also every thing afterwards formed, as for example, the allantois. But, at a certain stage, this membrane is absorbed, and ceases to exist, its place being supplied by what is called the false amnion, immediately to be noticed.

Schwann deduces all animal structure from granules. There is, first, a small spot, or nucleolus, which is increased to a nucleus.

* Reichert gives a different account, and employs different terms. The cells of the germ disc, and of the yolk cavity, alone, contribute to form the embryo. On the surface of the cicatricula is formed a stratum of cells, or a disc of the same size. It is the serous membrane, and extends between the yolk and vitellary membrane, and forms the nervous centres. A second mass of cells forms, for the formation of the structures of the embryo, vertebral, cutaneous, sanguineous, &c. It is the *membrana intermedia*. The third, and last, layer, forms at the under surface of this, and is the mucous layer, for the intestines, &c.

These granules congregate, and form a cystoblast. On the surface of this little point, a clear vesicle, like the glass of a watch, is seen, and a cyst, or cell, is now constituted, containing clear fluid. The nucleus, which was involved in its wall soon disappears. One cell forms another. Sometimes they are formed within the parent cell, sometimes exterior to it. From these cells are formed the different tissues. The germinal spot, is considered as the nucleus, the vesicle as the cystoblast; but Dr Barry says it is a parent cell.

Leaving the consideration of the development of the chick, for a little, I may simplify the matter by first describing the formation of the membranes. When the embryo begins to be evolved, by the alteration of the coats of the blastoderme, it lies, with what is to be the belly, on the yolk. This belly is not yet shut up, and from its margins a doubling of the serous membrane of the blastoderme, extends over the sides and extremities of the embryo to its back, where it forms a kind of purse mouth that soon closes, and leaves no trace of an opening. There is thus produced, what may be called, an outer tegument to the foetus, only, it does not adhere to its surface. It however embraces it closely, having no water interposed. There must also at this period be, at the belly, a part where there is an opening in the amnion, leading directly into the belly. This gradually contracts and is called the umbilicus. Now, let it be remembered, that owing to the doubling of the membrane where it passes off, and from this being continued all the way along the back, there must be, in the whole of that course, two layers. If from the purse mouth behind, we trace the innermost forward, we come to the margin of the umbilicus, and this, which afterwards contains water, is the true amnion. But if in the same way we trace the outermost forward, we find that when it reaches the yolk, it does not, like the other, proceed to the umbilicus, but passes under the vitelline membrane, and is lost on the granular membrane supplying the place of the former, which is presently absorbed. This layer is called the false amnion. From this account it is evident, that if any substance protruded from the abdomen, it must pass between these two layers, and be covered by the one called false amnion. Now we find that a vesicle, called allantois, or ovo-urinary vesicle, does protrude from the rectum. On attending to the history of this vesicle, we find that in about thirty-six hours, it may, with the glass, be seen projecting from the rectum and cloaca, but it is not distinct, to the naked eye, till the fourth day. It passes out, exterior to the amnion, by the side of its attachment to the abdominal parietes, and appears as a vesicle filled with pellucid fluid, and having vessels ramifying on its coat. These vessels arise from the aorta, and return to the venous sys-

tem. On the eighth day, we find it to be flattened, but still containing fluid, spreading over the true amnion and yolk, all the way to the junction of the yolk and albumen. The vascular membrane of the yolk, not yet described, extends no farther over the yolk than to that junction. On separating the yolk-bag from its adhesion to the albumen, we see on that part of the bag a broad circle, almost as if there had been, there, a deficiency of membrane, closed by albumen. By the tenth day, the vascular production is no longer a bag, the fluid is gone, and the sides coming in contact, we find, thus, a double layer formed, which gradually extends more and more over the albumen, and completely encloses it and the yolk, about the fourteenth day. Still, from the description already given of the course of this vesicle, between the true and false amnion, it is quite evident, that it must be covered by the latter, which should be interposed between it and the membrane of the shell. But this is not the case, for the false amnion is absorbed or lost, and on removing the membrana putamenis, which itself is ultimately absorbed, we everywhere, find exposed, this vascular coat which receives the name of chorion. At this period then, the chick, if lifted out of the egg, should be found enclosed in its amnion, with the yolk hanging from, or attached to, the outside of that bag opposite to the chick, but sending a prolongation or vitello-intestinal tube, through the aperture of the amnion at the umbilicus, in order to enter the intestines. The chorion should be found investing the whole, as a highly vascular membrane.

But there is another vascular membrane yet to be described, which is found on the yolk. I have mentioned, that the blastoderme consists of a serous and mucous layer. Now, between these, globules appear, at first colourless, then of a greenish colour. These form little isles, soon enclosed in tubes or vessels. Red blood is seen so early as the thirty-sixth hour. The *area*, over which these ramify, has received different names, *figura venosa*, vascular area, areolar or vascular membrane. This area is surrounded at its margin by a venous sinus, called the *vena terminalis*, and which receives blood from the veins of the area, or the vessels which are first formed. This sinus is not a perfect oval, nor does the blood circulate continuously round in it. But we may for understanding it better, divide the oval into two lateral halves, having the embryo lying between them, so that we have really two marginal sinuses, one on each side. These, at both ends, bend to the under part of the head, where the heart is formed, skirting as it were a fissure in the area. Two therefore must go down by the side of the head, and two come up by the other extremity, all to enter the heart. They are thus divided into the cephalic and caudal, terminal veins, or entering

veins, as they are called by some. At the same time, two branches, in the chick, shoot out from the new formed aorta, and ramify on the area, returning the blood, by its veins, to the sinus, and thence to the heart. We have thus a regular circulation established, and as the albumen recedes from over the area, this comes in contact with the membrana putamenis, and the blood in its vessels is subjected to the action of the air. Thus, this membrane serves, at first, the purpose of the chorion or placenta. Next, we find that two veins, partly new, and partly receiving areolar ramifications, form on the area, corresponding to the two arterial branches from the aorta, and carrying back their blood not to the vena terminalis, but directly to the heart, where the cephalic and caudal branches enter. These branches, with the vena terminalis, now decay, but even so late as when the vitellus is taken into the belly, some ramifications of the new vessels, called omphalo-mesenteric, remain. The effacement of the original veins of the area, and the diminution of the omphalo-mesenteric arteries and veins, may be expected to follow from the alteration in the current of blood, which attends the development of the chorion, which now performs, entirely, the respiratory functions of the placenta. The nutritive department in the chick is to be found in the blastodermic or umbilical vesicle, which, although it communicate with the intestine, by the vitello-intestinal duct, which enters at the lower part of the ilium, yet, has been said, not to send it, by that, to the intestines, for it is closed before all the yolk be consumed. This point is still disputed. Before incubation, and for some time after it, the inner surface of the yolk-bag is smooth, but presently folds form; and by the ninth day, project very much. These are furnished with vessels called vasa lutea, which enter the omphalo-mesenteric vein, (Grainger and Dalrymple.) As incubation advances, the yolk undergoes a chemical change. The albumen is mixed with it, and it becomes more fluid, especially at the plicæ. The entrance of the albumen is supposed to be by endosmose.

The cicatricula, consists of a clear centre, and opaque margin, and, immediately after incubation commences, certain changes take place, some of which have already been described. The middle part becomes more clear, especially towards its circumference, and is named the area pellucida, or, by Coste, the internal ellipse.* A serous and a mucous layer exist here, but the former predominates, and scarcely any globules are seen here. This area is at first circular, but, presently, becomes oval, and

* Harvey says the cicatricula enlarges and looks like an eye. In the centre is a clear pupil in which the embryo is formed. It is as if part of the albumen were colligated, "*colligamentum candidum appello.*"

then pyriform. Around the clear area is an opaque rim, in which, first, the mucous, but, ultimately, the vascular layer predominates. It is called, by some, the area vasculosa, because it becomes vascular, by others, the tapis or the external ellipse, for it surrounds the internal, but the two are in contact at the end where the head is to be formed. It is farther to be observed, that the outer area is, by a curved line on each side, subdivided into an inner and an outer part, in the latter of which, called the vitelline area, the mucous layer predominates, and this does not become vascular. In the pellucid area, in a transverse direction with regard to the egg, there is seen, about the fourteenth hour, a small, opaque stria, about a line and a half long, supposed to result from the aggregation of granules in the area. It is called by Baer the primitive stria. From this, in about three hours, there rises on each side, a little ridge forming the dorsal folds. These meet and unite, so as to form a canal, at the end of which the cranium is formed. A clear fluid is contained in this canal, which deposits on its inner surface, where the vertebræ form, a firmer substance, ultimately constituting the spinal marrow and its membranes, and in the same manner, the brain is successively produced. Baer, under the name of dorsal cord, describes another fold of the stria, shaped like a pin and lying undermost. It is according to him the rudiments of the spine. Coste considers it as a *jeu de la lumière*. As the back is formed by the elevation and shutting in of the dorsal folds, so the anterior part of the body is evolved by folds rising in an opposite direction, called the ventral folds, which ultimately also close. From these, also, the extremities are seen to sprout, about the middle of the third day. Now, it is to be remembered, that the embryo does not continue to lie flatly on the yolk or the blastoderme; but, by the end of the second day, it begins to curve, so that the two ends of the membrane forming it, bend toward one another. These extreme folds or curves are called hoods, cephalic and caudal. What are called the lateral hoods are the ventral folds. If we continued, in imagination, this process, we should suppose the margins of all the folds approximating to a common point, and then meeting so as when closed, to form, from the membrane, a figure like a worm. But, we must bear in mind, that all the three layers enter so far into this composition, and, also, that, as the blastoderme rests on the yolk, the curving and contraction of this membrane, will include a part of the yolk on which it is placed. We may therefore say, for the present, that a little part of the yolk is included in the cavity of the embryo, while the great bulk is exterior to it, in the blastodermic vesicle. That portion of this vesicle and membrane, taken into the embryo, divides into two, one directed toward the head, the other toward

the tail, the first forming the ilium, jejunum, &c., all the way to the mouth; the second the cæcum, &c., on to the anus; and hence we clearly understand the nature of the vitello-intestinal duct already noticed.

The serous layer, forming the ventral folds, is the foundation on which the cavity is formed. The mucous and vascular layers, are taken in, as if, to line this open cavity. Then, they are so far detached from the back, as to form by the extension of the vascular layer, a mesenteric fold, at the margin of which the mucous, or undermost layer, forms a gutter on which also is extended the vascular one. Both close so as to form a tube, the innermost constituting the mucous coat, the outermost the muscular and vascular, on which is next formed a transparent covering, converted into peritoneum. For a length of time, a great part of the intestine is not within the umbilical aperture, but about the nineteenth day it is taken in, and along with it, the vitelline duct which dilates a little, within the cavity, to receive the yolk, so that at this time we have two dilated sacs containing yolk, one without, another within.

The embryo about the third day, begins to turn toward the left, the head turning first; on the fifth, it is quite on the left side, the vitelline duct entering on that side, and the allantois proceeding from the right directly toward the shell. This side is developed more speedily than the other.

The alimentary canal is the origin of the other viscera. Its vascular layer swells, and gives off detachments in different parts. From the pharyngeal portion, two little prolongations go off forming the lungs. In like manner the liver, pancreas, allantois, &c., are given off as sprouts, and gradually developed. All must, and do, originally, communicate with the canal, and this communication, in some, continues, becoming the excretory duct. It is farther to be observed, that the vesicle already described (ovo-urinary vesicle,) being sent off from the lower part of the alimentary canal, comes to be subdivided by a contraction into two, one, exterior, forming the vascular covering, or chorion, another within, forming the bladder, the pedicle or top of which, analogous to the urachus, is at this time glued to the umbilicus.

About the third day, three slits are observed on each side of the neck, communicating with that part of the alimentary canal which is afterwards to be the pharynx. They are at first nearly parallel to one another, and vertical with respect to the spine. There must of course be septa or bands between the slits, giving a resemblance to the gills of fishes. Hence the name of the branchial arches. These gradually are obliterated, so that they are effaced about the sixth day. The uppermost is converted into the lower jaw.

At the margin of the cephalic hood, in the region of the neck, we observe a deposition of opaque substance, which within thirty-six hours becomes clear, and converted into a canal containing colourless fluid. About the same time we observe red blood in the area. This cardiac canal, even whilst shut at both ends, contracts on its contents, exhibiting slight pulsation. From the anterior and posterior extremities, two little prolongations go off, but it can hardly be said that they are formed after the canal. The posterior, called also lateral, receive the entering vein or continuation of the vena terminalis, a short common trunk, entering the heart, being thus formed. From the other, or anterior end of the canal, where the bulb of the aorta is formed, the anterior prolongations, becoming small vessels, arch backwards, whilst others form, hence called the arterial arches. By them the blood is sent back to the area. The canal elongates, but being fixed at its two ends, it must thereby form a curve like a horse shoe. This increasing, the canal does not project farther, but coils so as to form first a circle, and then an additional twist forms. That part of the canal into which the posterior veins enter, or the common trunk formed by them, becomes the auricle. The ventricle is formed at the convexity of the principal curve, for a time, separated from the auricle, by a short diaphanous portion called the canalis auricularis. At the anterior extremity, the bulb of the aorta is formed, distinguished from the ventricle, also, for a time, by a contraction, called the fretum. Ultimately, the single auricle and ventricle, are divided, by a septum, and partly by growth, into two. The same happens to the bulb of the aorta which rose from the common ventricle. Thus the heart is constructed, but it is necessary to revert to the bulb of the aorta, from which we find, successively, formed five pair of arches, the course of which has been already noticed. These, on each side, meet in a common trunk called the root of the aorta. The two roots, next, unite and form the trunk of the aorta, which is distributed in three ways; first, to the body of the chick; second, to the vascular area, which lessens, as the third, to the chorion, increases. At one period, the aorta seems almost to end in the areolar, or omphalo-mesenteric arteries; afterwards, in the two allantoid branches, corresponding to the umbilical arteries, the right one of these, in the chick, being at last obliterated. With regard to the arches we find important changes take place. The most anterior pair is obliterated first, then the second pair, and lastly, the fifth arch on the left side. The remaining arches change their character, and are converted into those going to the head, wing, &c., the carotid being first developed; thus the fifth on the right, and the fourth on the left side, go to the lungs and form pulmonary arteries;

whilst the fourth on the right side forms the descending aorta, the other root being effaced. It is the left in the mammalia.

For understanding the venous system, I would observe, 1st, that the primitive, or terminal, veins from the vascular area, going to the heart, obliterate; 2d, that the second set of areolar veins, called the omphalo-mesenteric, enter the heart where the first did, and there is, therefore, still a short venous trunk there, which is converted into the end of the vena cava. Some way before entering the heart, they, in the process of incubation, receive the mesenteric veins, and hence their name. The areolar department, of these omphalo-mesenteric veins, in its turn, diminishes also, leaving the mesenteric in full vigour. 3d, Two descending or anterior cavæ form, by the union of the jugular, brachial, and intercostal, but only the left enters by a proper orifice: the right enters the ascending, or posterior cava, which is formed from numerous branches in the Wolffian body, and, issuing from it, mounts behind the liver. 4th, The common venous trunk, entering the heart, elongates, and, by a change of position, is carried toward the alimentary canal, from which is formed two hollow pyramids embracing it, and constituting the rudiments of the liver. 5th, The allantoid, or umbilical vein, enters ultimately, and joins the common vein which may be called cava. But besides this junction, called ductus venosus, a trunk is sent off, around which, the liver is formed; and again, from the liver, a vein arises, to enter the common trunk or cava higher. This part of the venous system, which is greatly involved in the liver, is both the hepatic vein and vena portæ. The omphalo-mesenteric veins are tributaries to, and afterwards principals in, the formation of the porta, and therefore this vena portæ must at an early period enter very near the heart. Baer says, even that its trunk, which is short, is not, at the third day, distinct from the venous part of the heart. 6th, Going over these changes, and connecting them one with another, they shall be better understood, by recollecting that these permanent veins elongate, so that the junction of one with another becomes farther from the heart. We may trace the system from the heart in the chick. First, there is a short common trunk receiving the terminal veins, which are effaced; second, this elongates, receiving the cava and the united trunk of the omphalo-mesenteric veins; third, if we traced still farther on, we should go along the umbilical vein, and remark the connexion of this with both the porta and the cava.

The nervous system seems to be formed from canals and vesicles as already hinted at. According to Baer, the anterior part of the spinal cord dilates into a vesicle, which is afterwards subdivided for the two hemispheres of the cerebrum. Behind that,

another forms, for the optic beds, and then, another, for the medulla oblongata. Serres says, that on the fifth day, the rudiments of the cerebellum appear from the lateral parts of the medulla oblongata. The first nerve seen is the optic, which shoots out as a tube, and ends in a small bladder or retina, enclosing the lens on the surface of a globe of albumen. The ear, in like manner, shoots out from the medulla oblongata, and on the third day the olfactory appear. There is a difference however in the statements of physiologists. Serres says the first nerve seen is the optic, on the fourth day, then, we have the third pair, then the fourth, sixth, and fifth, in succession, and the seventh so late as the eleventh day. There is, in different classes of animals, increasing complexity or development of the different parts of the brain, being lowest in fishes, and progressively higher in reptiles, birds, and mammalia. In the human embryo, the brain seems to be successively analogous to the first three, and then is perfected into the fourth. The nervous system seems to be formed in two halves, from opposite sides, which unite. Some, as Serres, maintain, that the nerves, and even those which are ganglionic, are formed in the circumference and go toward the centre: that is, are formed in the part which they are to supply, and go to the spinal cord, &c. Others consider the central part of the nervous system as their origin. We see distinctly in the optic nerve, that it extends from the optic bed.

In the mammalia, although the mode of development may vary in different genera, yet, the ova possess some common characters.* The germinal vesicle, and its contents, are first formed within the Graafian vesicle. Then, granules and fluid surround this, and these are covered by a membrane, the *vitelline*, so that a yolk is now seen. This, again, is covered by a more external, thick, and transparent coat, called from its appearance under the microscope, the *zona pellucida*. This imbibes fluid, which keeps it separate from the yolk-bag. Such is the state, in the ovarium, before impregnation. After this, and when the ovum has got into the tube, or, according to some, even in the ovarium, it receives a *third* thin coat, which becomes *chorion*. The vitelline membrane is absorbed, or destroyed, and the yolk, now, is, directly, contained within the second coat, or *zona pellucida*. Before coition, the germinal vesicle lies at the surface, or periphery of the yolk, under the vitelline membrane then existing, and, the germinal spot, at the surface of the vesicle. Dr Barry says, that before coition, but decidedly after it, there is, at

* Mr Jones, with whom I had an opportunity of examining the human ovulum, and M. Coste, unknown to each other, first discovered the vesicle and spot in mammalia.

this part of the surface, a small cleft or opening in the zona, by which the fecundating principle of the semen can enter. It is not seen after impregnation, and after this, but before leaving the ovarium, the germinal vesicle recedes to the centre of the yolk, and the spot to the centre of the vesicle. These two parts do not seem to be lost, but are changed, so as to have given rise to the opinion, that they were destroyed. According to others, they disappear before impregnation. About the time of the return of the *spot* to the centre, a vesicle proceeds from it, which enlarges, and lines the germinal *vesicle*, which thus has two coats. The spot, itself, forms cells, which fill it, but there is a central minute cavity containing a fluid. In this situation two incipient cells come into view. These produce other two; and, these again, two, so as to form eight.

These follow the same course, till innumerable cells are formed, and a mulberry-looking object is seen, produced by them, in the centre of the ovum. In the uterus, a layer of vesicles, of the smallest size, appears on the inner surface of the zona pellucida, which is probably presently removed. The mulberry-like structure, now proceeds, from the centre, to the periphery. Its vesicles, coalescing with those of this layer, when they come in contact, afford the rudiments of the amnion, which, in this view, is no part of that which constitutes the embryo. That portion of the membrane, which directly surrounds the germ, sinks in, whilst the external, adjacent, part, rises up. It lines, and adheres everywhere to, the zona pellucida, except at the caudal extremity of the germ. Baer considers the amnion as rising, exactly, in the same way as in birds, only more rapidly. In the interior of the mulberry congeries of cells, is now seen a large vesicle containing a fluid, and dark granules, and, in the centre of the fluid, is a hollow spherical body, containing fluid. This is considered to be the germ. The vesicle disappears, and in its place we have an elliptical depression, filled with fluid, corresponding to the area pellucida in birds.

The germ separates into a central and peripheral portion. The first, occupies the situation of the future brain; the second, is supposed to be analogous to the area vasculosa, at all events, vessels go to the umbilical vesicle. Barry says it is the *tâche embryonnaire* of Coste. From the region of the germ goes off a hollow process of pellucid objects, which is conjectured to be the future umbilical vesicle, as it enters into the formation of a structure continuous with the peripheral portion of the germ. It receives the yolk, (of vesicular origin,) into its interior, and lines the amnion. If this view be correct, there is, in the mammalia, no splitting of a germinal membrane into serous and mucous layers, with a third, or vascular, between them, nor any

structure called a germinal membrane, or blastoderme, for it is not the membrane which originates the germ, but the germ which originates the membrane, but on this point, physiologists are not agreed. There is no proligerous disc in the mammalia, at least such as in the egg of birds. The chorion is supposed by Dr Barry to be formed thus:—In the tube, the zona pellucida is invested by a thin membrane, which rises from its surface, and is itself surrounded by gelatinous matter. Mr Jones, on the other hand, says, that the vitellary membrane in the ovarium is surrounded by gelatinous matter, which becomes chorion. Tufts or villi begin to form on this chorion, however it may be generated, which become connected with a formation on the surface of the uterus. The allantois, or ovo-urinary sac, reaches the chorion, flattens, and extends on its inner surface, to which it adheres, and its vessels penetrate the chorion to get to the villi. The allantois has two layers, the outer, vascular, the inner, not. The one, lining the chorion, denominated, by some, *exochorion*; the other, covering the amnion, *endochorion*. The villi of the chorion, on a certain portion of its surface, are connected with the uterine formation, and form placenta; on the rest, they become effaced, or indistinct, so that the membrane, there, is smooth, not shaggy.

Different animals exhibit different modes of progress, which I cannot here detail. In the sheep, for instance, the embryo, with its amnion, sinks into the ovo-urinary sac, and is surrounded by it. Vascular cotyledons, from it, dip into the mammillary projections from the uterus, whilst a non-vascular layer is detached from the inner lamina, and forms a bag for the urine. The two original layers of the sac unite. In the rabbit (and Rodentia,) the embryo, with the amnion, sinks into the umbilical vesicle, which has no pedicle. It becomes vascular, as in other instances, and the ovo-urinary sac protrudes through the purse-mouth, formed by its envelopment of the embryo.

In women, every security exists for the safety of the embryo. At first, the space betwixt the yolk-bag, or umbilical vesicle, on which the embryo rests, and the chorion, is filled with albuminous substance. Then, when the amnion is formed, the space between it and the chorion is filled up with clear albumen and reticulated filaments, and, when the two membranes come closer together, this is supposed to condense into a thin coat, called tunica media. The space between the decidua vera, and reflexa, is also filled with albuminous fluid, called the hydroperione by Breschet. Thus, every part, within the uterus, is fitted so as to shield and support the umbilical vesicle, and afterwards the embryo. The umbilical vesicle and spot recede from the embryo, between the chorion and amnion; and, about the sixth week is

connected to it, only, by a filament. It is effaced in the third month, though traces of it are sometimes seen later.*

SECTION NINTH.

Immediately, that is within a week, after conception, there is formed, on the inner surface of the body, and fundus of the uterus, a vascular layer called the caducous coat, or *membrana decidua*.† The inner surface of this is smooth, the outer, by which it adheres to the uterus, is rough and not so dense. Into this last, vessels shoot from the uterus, and seem to spread on the inner surface. I have considered these two surfaces as belonging to two different layers of decidua, intimately connected, and really forming one coat. This extends a very little way into the orifices of the tubes, and at the top of the cervix seems to be closed over the surface of the jelly which occupies that part, forming thus a shut sac. Now, when the ovum enters the uterus, one of two things takes place; either it is checked by what may be considered as the inner layer, which it does not mechanically push before it, but that layer grows with it, and affords a covering to it, or, the ovum enters when the decidua is yet soft and scarcely organized, becomes involved in it, and surrounded by it, so that as it grows or enlarges, the envelope grows with it, and still covers it. From finding the ovum at the top of the cavity, but not, necessarily, at the earliest period, just at the orifice of the tube, the last is the most probable opinion. If we trace the decidua along the uterus to the ovum, we find it reflected over it as a covering, and therefore this protrusion or envelope is called the *reflected decidua*. There must, for a time, be a space between the surface of this, and that of the general cavity, or sac of the *decidua vera* as it is called, and this space is filled with albuminous fluid, which after death is of

* For farther information on the development of the embryo, see Dutrochet, in *Mem. de la Soc. d'Emulation*, T. viii. p. 47. Pander, in *Archives Générales*, 1823, p. 178, and 346. Baer, in *Répertoire Gén. d'Anatomie*, T. viii. p. 47, and *De ovi genesi; Recherches sur la generation*, par Delpesch, et Coste. Velpeau, *Embryologie*. Coste, in *Annales des Sciences Nat.* 2d Series, T. iii. Serres, Tiedeman, &c. Also Wagner and Valentine, in *Edin. Journal*, 1835. Wagner's *Physiology*, part 1st. Müller's *Elements*, part 6th. The papers of Dr Barry, Mr Jones, and others, already referred to. Dr Allan Thomson, *Edin. New Phil. Jour.* ix. 295, and *Edin. Jour.* lii. 119, &c. There are good plates of the progress of the chick, by Sir E. Home, in *Phil. Trans.*; by Mr Town, in *Med. Chir. Trans.*; and in the Catalogue of the Museum of the College of Surgeons, London, &c.

† Weber, Sharpay and Reid, do not consider the decidua as a new production. They think it is, merely, the mucous membrane of the uterus become more thick and vascular, and the, rough, cribriform appearance of the uterine surface, is from the opening of the tubular glands, or follicles of the membrane. On this principle, the lining of the uterus, or a layer of it, is thrown off with every ovum. Müller's *Physiology*, p. 1574.

a reddish colour. The quantity of this hydropericone, lessens as the ovum grows, and at last the reflected, and the true, or original deciduæ, meet and become blended together. Dr Montgomerie has described on the uterine surface of the decidua vera, small elevations like bags, which appeared to have orifices toward the uterus, and to contain a milky fluid.

The decidua is, at first, and for a long time, thick and also vascular; but, by degrees it becomes soft, and like a thin layer of jelly, but still having soft vessels circling in it. The decidua vera does not terminate at the margin of the placenta, but is continued beneath it, so that it becomes as it were a medium of attachment to the uterus, and in which the fragile communicating vessels pass. At the full time it is like a thin stratum of red jelly. This layer is called *decidua serotina*. The decidua reflexa is best seen at a comparatively early period. At the second month, for instance, it is distinctly seen reflected on the chorion, from the margin of the placenta, and as thick as paper.

SECTION TENTH.

The chorion from the first is covered with shaggy villi, giving its surface a flocculent appearance. These, when macerated, are white and solid, so that they can only be considered as leaders to the small vessels which pass on them. The chorion has no red vessels proper to itself. The vascular layer proceeds from the allantois. Its texture is membranous, or like condensed cellular substance, and as gestation advances, its villi or filaments disappear, or at least become so obscure that they are lost in the decidua reflexa. It adheres slightly to the amnion by the remains of the albumen which was interposed between them, called the tunica media. Sometimes, even at the full time, watery fluid is interposed.

SECTION ELEVENTH.

The amnion is thin, pellucid, and totally without the appearance of red vessels or regular fibres; yet, in the end of pregnancy, it is stronger than the chorion. It lines the chorion, covers the placenta, and mounts up on the navel string, affording a coat to it all the way to the umbilicus, where it terminates.

The sac, formed by the amnion, contains besides the foetus, a fluid which appears to be composed chiefly of water, with a very little earth, albumen, saline matter, and a peculiar acid. As this water is contained within the amnion, it has received the name of liquor amnii.

The quantity of water, upon an average, which is contained within the amnion, at the full time, is about two English pints;

but sometimes it is much more, and at other times scarcely six ounces. Its origin is unknown, for it is not yet decided whether it be excreted from the child, or secreted by the amnion. The latter has no red vessels. But it has been said that they were distinct, in, supposed, inflammation of this texture. In the early periods, the quantity is larger in proportion to the size of the uterus than afterwards, and the proportion of albumen is rather greater. It has been said to contain a respirable air, but *cui bono?* no air is found in the lungs of the fœtus.

SECTION TWELFTH.

The placenta, at the full time, is a flat circular substance, about six or seven inches in diameter, and fully an inch thick at the centre, but thin at the circumference. It may however be thin and extended over a much larger surface, or it may be divided so as to form two or more, but generally only one is large, and to this, the vessels from the other run, in order to join the umbilical vessels there. The ordinary weight of the placenta has been already noticed. Although it varies according to the period of gestation, yet, it also does so, to a considerable extent, at the full time. It is sometimes very large and thick, weighing from a pound and a half to nearly two pounds, or, is decidedly under the average, and this does not depend altogether on the size of the child.

That surface of the placenta which is attached to the uterus, is distinctly divided into lobes, with small sulci between them. It is covered by a thin layer of decidua, soft, and resembling clotted blood, which dips down into the sulci. These depressions forming what are called lobes, do not reach the fœtal surface, and, there, the texture is continuous. The surface next the child is smoother, and on it we see the eminent branches of the umbilical vessels, over which are spread the chorion and amnion, the former adherent to the surface.

The umbilical cord may be fixed into any part of the placenta, or even into the membranes at a distance from it. In this case, the vessels run in distinct branches to the placenta, along the membrane; usually, the cord is implanted nearer the centre than the circumference. From this point the vessels radiate, and ramify on the placenta, gradually dipping into its substance.

The placenta of the mammalia, always consists of two portions, a fœtal and a maternal. That which is furnished by the umbilical vessels is the essential formation, or indispensable to the organ, for, the other portion may be formed under a variety of circumstances, and in different places, as for instance from the peritoneum.

The surface of the brute uterus becomes either unusually rugous or porous, and very vascular, whilst the chorion sends vascular villi into these depressions, so that we have an universally extended placenta, as in the pachydermata, or, we find that the uterus forms an annular porous portion, for each foetus, and receives corresponding efflorescences from the chorion, as in the carnivora, or, a projection more or less circular, as in the rodentia, or, many mammillary projections, to receive corresponding tufts, as in the ruminantia. In all these, the uterine portion is developed for a temporary purpose, and receives the foetal vascular prolongations, under whatever name they may be called.

We have seen, that immediately after conception, the fundus and body of the human uterus is lined with a vascular layer called decidua. We have also seen, that the chorion, at first, is everywhere covered with fibrous threads, or shaggy projections, and farther, that blood vessels, especially veins, from the embryo, reach the chorion. These extend to, and ramify on the villi or shag. If injected with vermilion, the projection assumes a fine red colour. These vessels, and tufts, seem to connect themselves with the decidua, both vera and reflexa, so that a union is formed between the mother and foetus. But this union, which is so well marked all round at first, becomes modified; at one part, it thickens and concentrates, whilst, elsewhere, the vessels diminish and the tufts are effaced, more and more of the chorion, to a certain extent, becomes bald, or smooth, whilst beyond this, the villi become more developed. The bald portion is connected with the decidua reflexa; the thicker part forms placenta. The villi here, which at one time were mere threads, by the second month divide and ramify, or become arborescent, and interlace, so as to form a general meshwork, the ramifications being accompanied by minute subdivisions of the umbilical arteries and veins. This texture, then, seems to serve the double purpose of forming innumerable reticulations by interlacement, and, also, of conducting the minute, and capillary, branches of the foetal vessels, an artery accompanying each ramulus, and ending in a returning vein. So far then, the placenta would appear to be exclusively a foetal production. But in addition to this, we find that most delicate continuations, from the decidua, or mouths of the uterine vessels, which, as they pass from the womb, become extremely soft, proceed, amongst this net-work, all the way to the foetal surface of the placenta. This maternal portion, exceedingly soft, forms a connecting medium between the reticulations of the foetal portion. The arterial blood from the mother, passes through this, and is returned to the veins. There is no direct connexion between the foetal and maternal portions, but intimate juxta-position. It is not easy, by injection, to say whether the maternal portion con-

sists of multiplied and irregular canals, amongst the foetal tissue, the arterial ending in a returning canal, or of cells, in which, the one ends, and, from which, the other arises. Injection from the maternal vessels doubtless produces a multitude of grains, which would favour the latter opinion, but we know how easily the texture is ruptured, and wax poured out. If we inject from the uterine vessels alone, the wax passes quite to the foetal surface of the placenta, and on cutting or tearing that organ we see, everywhere, granules of wax.* If we inject from the foetal vessels alone, and macerate the substance, we see multitudes of fine shaggy vessels on uninjected threads, which are the remains of the villi; an uninjected substance also consists of the maternal portion, but this is washed away in the process. If we tie one great subdivision of the umbilical vessels, the part, or lobe which it supplies, is not filled, there being no universal communication between these vessels, in the placenta. On the other hand, if injection enter any portion of the maternal cells, all the rest may be filled. This is of practical importance, for, if a part of the placenta in the living subject be detached, blood not only flows from the opened uterine vessels, but, freely, from the placenta, and thus the mother may be drained in two modes. The late Dr Hamilton attached most importance to the last. The placenta of the monkey resembles that of women, only the decidua is thicker.†

* Dr Hunter says that by injecting the uterine arteries, we fill the cells of the placenta, and if we push the injection, it returns by the sinuses, and fills the uterine veins. I have always found the cells best filled from the vein, that is, most wax from it. The venous injection filled the greatest number of cells, or cavities, on the foetal, the artery on the maternal surface.

† Noortwyk (1741) describes the placenta as made up of lobes, between which a cellular medium dips so far, but does not extend to the chorion. The umbilical vessels subdivide, and, in all their length, are accompanied with a lanugo. Haller also believed the placenta to be made up of foetal vessels, and cellular substance. This appears to have also been Dr Hunter's opinion in 1755. Afterwards, he gave a more correct account of the placenta, dividing it into two portions, foetal ramifications, and cells filled by maternal blood. John Hunter gives a similar account, and it was the claim to priority of discovery, which led to the feud, between the two gifted brothers. Dr Hunter, after stating that the placenta consists of two parts, and describing the ramifications of the foetal vessels, says, that the decidua shoots, in the placenta, into innumerable processes, with most irregular and minutely subdivided cavities between them. The two portions intertwine so as to leave small cavities between them, freely communicating in the substance of the placenta. Both uterine arteries and veins, pass through the decidua, and the large branches of both, with little or no ramification, terminate, abruptly, in the cells. He compares the placenta to the corpus cavernosum (anatomy.) J. Hunter, describes a spongy, &c., cellular, mass fitted to be a reservoir of blood. The spiral arteries from the uterus open, at once, into this substance, without diminution of size, or passing beyond the surface. The veins commence by openings from the surface, larger than even their caliber, as they pass obliquely through the decidua into the uterus. (Work by Mr Palmer, iv. 61. *et seq.*) No. 3605 and 3610, in the museum of the London College, show the thin interposed layers of decidua, and the cells

In tubal and ovarian pregnancy, it may be supposed, though not proved, that the maternal portion of the placenta is formed in the usual way. But in ventral extra-uterine pregnancy, we do not know the nature of the substitute for decidua, nor the minute structure of the placenta. Neither do we know the structure of that part, which has, sometimes, been attached to the head of the foetus itself.*

injected. There are many preparations in Dr Hunter's museum, which confirm his opinion. I would particularly mention No. 180 and 181, *Press. R. R.* which are invaluable. The uterine vessels, in the fourth month of pregnancy, were filled, the veins with black, the arteries with red, and the ovum then separated. No. 180 shows the sinuses and veins, well filled with black, and red arteries, as large as crow quills, projecting from the uterine surface, (which is rough from the remains of the decidua and placenta), to go to the placenta. No 181 is the separated ovum; large patches of black and red, are in the thin decidua serotina, or the placenta, and its cells are filled. In many others, the cells are filled all the way to the chorion. Many dissections I have made and witnessed myself, confirm the general principle of the Hunterian doctrine. Some, and amongst others Seiler and Dr Lee (*Phil. Trans.* 1832, p. 63) deny the existence of cells. Dr Lee says the placenta does not consist of two portions, it has no cells, nor is there any communication between it and the uterus, by long vessels. I believe that he has now, as might be expected, from his zeal and talent, changed his opinion.

Müller says the uterine portion is formed by the decidua, which penetrates between the villi, even to the chorion, and completely encloses them.

Weber says that the uterine vessels, on entering the placenta, do not ramify, but immediately terminate in, or take the form of, a net-work of vessels of large diameter, and filling the space between the villi and their vessels. He compares this portion to a sponge, and says that the vessels in the placenta consist of a very delicate prolongation of the inner coat, of the uterine vessels, covered by a continuation of the decidua. Each villus of the chorion contains, within itself, a small foetal artery and vein. The villus branches out, and the vessels accompany these ramifications, and at the extremity of the filaments, or ramuli, the divisions of the artery come together in loops, the same capillary coiling several times, so as to form several loops, before it joins the vein. From these convolutions, little enlargements of the extreme divisions of the chorion, or villi, are produced. In the spaces between the divarications, or ramifications, of the chorion, the maternal vessels, or canals, run so that the two sets are in intimate contact; nay, the little masses of convoluted vessels, or apices, which terminate the villous ramuli, penetrate the canals containing the maternal blood, and are bathed by it. He thus, in place of maternal cells, like Hunter, substitutes maternal canals.

Eschricht, on the other hand, maintains that the maternal vessels terminate in very delicate capillaries, that processes from the decidua pass between the minute ramifications of the chorion and foetal capillaries, thus supporting a general capillary rete, by which the uterine arteries and veins are connected in the placenta.

Wagner gives very much the same account.

Dr J. Reid, like Weber, supposes the maternal part of the placenta, to be formed by the prolongation of the inner coat of the uterine vessels, or a continuation from it, but constituting an extensive sac, not a net-work, intersected by many thousand tufts, projecting into it like fringes. He also supposes that tufts of the placental vessels are prolonged into some of the uterine sinuses. A similar opinion was entertained by Michaelis.

* Vide case by Mr Pole, when the largest portion was attached to the occiput and scapula. What portion was connected with the uterus is not known. The child, though malformed, lived 36 hours. *Med. and Phys. Journ.* iii. 397 and 497. Breschet (*Répert. d'Anat.* ii. 28) describes an attachment to the side of the cranium

If we carefully inject the uterine vessels, we observe, on cautiously separating the placenta, numerous arteries passing from the surface of the uterus, into the layer of decidua which is interposed. There, they form small coils, the coats of which resemble the decidua, itself, in softness and texture. They open into the placenta, or, it will give a more correct idea to say, that they open at once into cells, or meshwork, which they fill even to the foetal surface. Some pass deep into the sulci between the lobes, before they open into cells. They are small in the decidua of the uterus, where the placenta is not attached; but at the placenta they are as large as a bell wire.

The uterine sinuses also vary at different parts. Where the placenta is not attached, they either terminate, at once, by opening obliquely on the surface of the uterus, or often they appear as if a slice had been taken out of their side, the trunk continuing on, in the uterine substance. In neither case can the vein or sinus be traced through the decidua. The vacancy in the side of the vein, or its orifice, is covered, and rendered entire by the decidua. This has been also noticed by Dr Lee, who, at one time, supposed that the foetal blood, is changed by the maternal, acting on it through the coat. But this structure exists, not at the placenta, but at the decidua, covering the membranes, and therefore cannot be intended for this purpose, even if the venous blood of the uterus could act, as is thus supposed, on the foetal vessels. No distinct, or even small, veins from the decidua, can be traced into the sinuses; and yet we should suppose that blood is sent to them from the decidua. At the placental region the case is different. We there find that the veins, like the arteries, are prolonged from the uterine surface, and retain both their size and flattened shape. They pass obliquely through the stratum of decidua, as if two layers of it formed the coat of their continuation. The tract is very short on the uterine surface of the placenta; and thus, like the arteries, the veins terminate at once, in cells; so that we can fill these, throughout the whole thickness of the placenta, from either set of vessels. At the margin of the placenta, the veins often skirt that, for a considerable length, before communicating with the cells, but even these long, and large, canals, have coats quite like decidua. From this structure of the intermediate vessels, we can easily see that their great security arises from the apposition of the uterus and ovum, or the support afforded

and face, which were so confounded with the placenta, that a separation could not be effected without tearing. Dr Lee describes an implantation of the cord, and chorion, and amnion, into the forehead, but without vascular intercourse. *Med. Chir. Trans.* xxii. 300, and a coloured plate in *Path. Obs.* Part i. In this, as in other cases, there was malformation.

by the adhesion of the one to the other. A slight separation must lacerate the tender vessels, either passing to the surface of the placenta, or running along its margin; and as these, especially the latter, and the veins of the former, are large at the end of gestation, great hæmorrhage may ensue. We farther understand, from this fragile texture, how the secundines are easily thrown off after the child is born.

The placenta may be implanted on any part of the uterus, but it, usually, is formed on the posterior surface of the body. In all the uteri in Dr Hunter's museum, there is no instance of the placenta being found, exactly, at the fundus, and only one, where its edge, at six months, reaches the fundus. They are generally on the back, at different elevations according to the age. At four months, for example, the placenta extends to the top of the cervix. There is a beautiful ovum (No. 214), of a triangular shape, measuring two inches across at the top, and the same, from that, directly down to the apex. The decidua vera in all this extent is entire, and bristles are introduced into the aperture at the tubes and cervix. The reflexa which goes off at the margin of the placenta is smooth, and not quite in contact with the vera. Part is cut off to show the chorion to which it adheres. The placenta thin, and about the size of a penny, is formed on the back of the ovum with a film of decidua over it. The preparation is exquisite.*

The placenta being a living part, is liable to disease.† Its vessels may be very much congested, or extravasation may take place. It is also liable to inflammation, ending in grey or red induration like that of the lungs, or in abscess, or adhesion to the uterus, or, by its foetal surface, to some part of the child. We sometimes find it unusually soft. Distinct tumours may form in its substance; part of it may be ossified; or more or less of it may be converted into hydatids. Partial disease of the placenta does not necessarily destroy the foetus, but extensive alteration must do so. We cannot, *a priori*, detect the existence of such alterations, for even fixed or local pain may proceed from other causes, and the stethoscope cannot make us sure of the state of the circulation in the placenta. In doubtful cases, early venesection is I believe the safest practice.

* Mr H. Carmichael and Dr Doherty, in the *Dub. Jour.*, xv, xvi, and xvii, have remarks on the subject. The latter gentleman states, that in 100 cases, 54 were on the posterior; 25 on the anterior wall; 8 on the right side; and 10 on the left side, below the tubus; and 3 at the fundus.

Nægélé says, the stethoscope indicates the side to be the most frequent situation. Out of 600 cases, the placenta in 238 was implanted on the left side; in 141 on the right side; in 13 on the anterior wall; and in 7 at the fundus.

† Besides the works of Cruveilhier, &c., see a good paper by Dr Simpson, in *Edin. Journal*, 1836.

SECTION THIRTEENTH.

The umbilical cord is an essential part of the ovum, connecting the foetus to its placenta. It is found in oviparous and viviparous animals, and also in plants; but in these different classes, it appears with many modifications. In the human subject it consists of three vessels; of which two are arteries, and one is a vein. These are imbedded in gluten, and covered with a double membranous coat. The two arteries are continuations of the arteriæ hypogastricæ of the child, which, passing out at the navel, run in distinct and unconnected trunks, until they reach the placenta, where they ramify and dip down into its substance. When they reach the placenta, the one artery, in some cases sends across a branch to communicate with the other. The vein commences in the substance of the placenta, forms numerous rays on its surface, corresponding to the branches of the arteries; and, near the spot where the arteries begin to give off branches, these rays unite into a single trunk, the area of which is rather more than that of the two arteries. None of these vessels are furnished with valves.

The umbilical vessels run in a spiral direction, within the covering of the cord, and the twist is generally from right to left. Besides this twisting, we also find, that the vessels, especially the arteries, form very frequent coils loosely lodged in the gluten.

The cord is implanted nearly into the centre of the placenta, in about one half of the number of cases; between it, and the margin, in the rest.

The cord does not consist entirely of vessels, but partly of a tenacious transparent gluten, which is contained in a cellular structure; and these numerous cells, together with the vessels, are covered with a sheath, formed by the reflection of both chorion and amnion from the placenta; and of necessity, the amnion forms the outer coat of the cord. The chorion adheres firmly to the cord everywhere, but the amnion does not adhere to the chorion; it is not even in contact with it at the placental extremity, but forms there a slight expansion, which, from its shape, has been called by Albinus, the *processus infundibuliformis*. It is only in the human subject and some apes, that the chorion is found on the cord. Fleurens says that there are five layers continuous, successively, from without inwards; with 1. the epidermis; 2. the derma; 3. the subcutaneous cellular tissue; 4. the muscles and aponeurosis; 5. the peritoneum.

The proportion of gluten is larger in the early, than in the advanced, stage of gestation; and the vessels, at first, run through it in straight lines. In some instances, the cells distend

or augment in number, so as to form tumours on the cord, which hang from it like a dog's ear.

From the vesicula alba or umbilicalis, already described, a small duct proceeds along the cord, but it is soon obliterated. A small artery and vein pass along the cord from the navel, to the vesicle. These are the omphalo-mesenteric vessels.

Nerves have been described, and also lymphatics, rising from the placenta, and said to be easily injected by pushing a fine tube into the cells of the cord. This does not seem to be the case. Besides the blood-vessels, there is, in brutes, the urachus leading to the allantois.

When the ovum is first visible in the uterus, there is no cord, the embryo adhering directly to the involucra, but it soon recedes; and within the sixth week, a cord of communication is perceptible.

The cord at the full time varies in length, from six inches* to four feet,† but its usual length is two feet. Negrier says, in the greatest number it is from seventeen to twenty-five and a half inches. When it is too long, or even when of the usual length, it may be twisted round the neck or body of the child, or occasionally has knots formed on it,‡ most frequently, perhaps, by the child passing through a coil of it during labour.§ I have seen them pretty firm.

The vessels of the cord sometimes become varicose and form very considerable tumours. These, occasionally, so far, impede the circulation, as to interfere with the growth of the child, or even to destroy it altogether. Sometimes the vessels burst, and blood is poured into the uterus, which produces a feeling of distention, and excites pain. There can, however, be no certainty of this accident having taken place until the membranes burst, when clots of blood are discharged. If the fœtal and maternal vessels should communicate, the mother is weakened, and may even faint; and, in every instance, the child suffers, but does not always die.¶ Delivery must be resorted to, either on account of the effects produced on the mother, or to prevent the destruction of the child.

The cord may, by a fall, or violent concussion of the body, be torn at a very early period of gestation. In this case, the child dies, but is not always immediately expelled. It may be retained

* Hildanus, cent. ii. obs. 50.

† Mauriceau has seen it a Paris 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. It has been seen five and a half feet long.

‡ Vide Mauriceau, obs. 133 and 156. See also Baudelocque, who justly remarks, that they never can be drawn so tight, as to stop the circulation.

§ Dr Hunter thinks he has twice seen these formed previous to birth.

¶ Vide Baudelocque l'Art, note to section 1084.

for several weeks ; afterwards the ovum is thrown off, like a confused mass, enclosing a fœtus, corresponding in size to the period when 'the accident happened.* The cord may be filled with hydatids.

The cord has been found unusually small and delicate, or, on the contrary, very thick. In the latter case, it is always proper to apply two ligatures, instead of one, on the portion which remains attached to the child.† It has happened, that by the shrinking of the cord under the ligature, the child has died from hæmorrhage.‡

Two cords have been met with, connected with one placenta, or with two placentaë belonging to one child. In other instances, the vessels are supernumerary or deficient. Stories have been told of the cord being altogether wanting, but these are incompatible with the fœtal economy.

CHAP. XVII.

Of Sterility.

It is a popular opinion, and I do not know any instance to discountenance it, that if twins be of different sexes, the female is sterile.§ This is well known as to cattle, for the free martin, or female twin, is barren, and shows no inclination for the bull. Mr Hunter has shown that there is internal malformation or confusion of sexes, perhaps testicles in place of ovaria, or both existing, or part of a vas deferens, &c. In the human female, the sexual desire is not absent. Even if the ovaria be removed, it is not necessarily lost. Female twins so far from being barren, not unfrequently have twins themselves.

Sterility depends either on malformation, or imperfect action of the organs of generation.|| In some instances, the ovaria are wanting, or too small ; or the tubes are imperforated ; or the

* Vide case by M. Anel, in Mem. of Acad. of Sciences, 1714.

† This was proposed by Mauriceau, in consequence of meeting with an instance where the child suffered much from loss of blood, obs. 256.

‡ Vide case by M. Degland, in Recueil Périod. Tom. v. p. 343.

§ In order to decide a question, whether the cord were long enough, and strong enough, to allow the mother to strangle the child, before it was completely expelled, Negrier made some experiments, the result of which proved that it was. The mean weight required to break a varicose cord was eight lb. troy. A non-varicose, required 14 lb. 4 oz. Annales d'Hygiene, T. xxv. p. 126.

|| I have never had an opportunity of examining the state of the uterus and its appendages after death.

¶ Dupuytren cut off an elongated neck of the uterus, and, after that, the woman conceived.

uterus very small. In these cases, the menses generally do not appear, the breasts are flat, the external organs 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 seem to be well formed, but their action is imperfect or disordered. The menses are either obstructed or sparing, or they are profuse or too frequent, and the causes of these morbid conditions, have been already noticed.

It is rare for a woman to conceive, who does not menstruate regularly; and, on the contrary, correct menstruation generally indicates a capability of impregnation on the part of a woman.

A state of weakness or irritation of the uterine system, occasioned by frequent and promiscuous intercourse with the other sex, is another very common cause of barrenness in women, and hence few prostitutes conceive.

A morbid state of the uterus and ovaria, often accompanied with fluor albus, may likewise be ranked amongst the causes of sterility, and this is known by its proper characters.

Women who are very corpulent, are often barren, for their corpulence either depends upon want of activity of the ovaria, spayed or castrated animals generally becoming fat, or it exists as a mark of weakness of the system.

When sterility depends upon 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, along with the general system of the body, or more directly on the uterus itself. Our first attention must be directed to menstruation, as the state of that function is our principal directory in the choice of the class of medicines to be employed. On this subject I must refer to what has been said in chap. xii. We will also, altogether independently of the state of menstruation, naturally consider the constitution and habit of body, with regard to plethora, irritability, torpor, or debility, and use varied and persevering means for rectifying these states; always, however, taking care that we do not injure the constitution in seeking for a remote good. In the majority of cases, weakness or imperfection of action, of the uterine system, is the cause. This may be dependent on the direct condition, of these parts, or be produced by the sympathetic influence of other organs. Sea bathing, change of air, and tonics in various forms, with the use of such laxatives, as invigorate the action of the bowels, are all more or less useful. Ems is a fashionable resort, in cases of sterility, and doubtless

aided by the benefit of the journey, has been useful where menstruation was faulty, and the digestion bad. The ancients employed medicated pessaries, which have long fallen into disrepute, rather perhaps from the absurdity of their ingredients, than from any argument, respecting the inefficacy of gentle stimulants, acting on the vagina and womb.

A temporary separation from the husband is of service, especially when the menses are profuse, and, in most cases, frequent intercourse should be avoided.

Should a woman, who has been for some years barren, conceive, she must be very careful during gestation, for abortion is more readily excited.

In some cases, the uterine system is capable of being acted on by the semen of one person, but not of another.

CHAP. XVIII.

Of Extra-Uterine Pregnancy.

SECTION FIRST.

It sometimes happens, that the ovum does not pass down into the womb, but is retained in the ovarium, or stops in the tube, or is deposited among the bowels. No cause can in general be assigned.* Of all these species of extra-uterine pregnancy, the tubal is the most frequent.

The symptoms of extra-uterine pregnancy are not, at first, very definite. The woman may at first enjoy perfect health, but, generally, the usual sympathetic effects of pregnancy, or the diseases of gestation, are more distressing than if the fœtus were contained in utero, and often do not cease so early. In some cases, they even increase in violence, as pregnancy advances.†

The symptoms, though often more violent, are, however, similar in kind, to those of common pregnancy. The belly swells, the uterus itself enlarges, and may be felt to be heavy; but after some time, it does not correspond in its size, and in the state of its cervix, to the supposed period of gestation, or it

* Lallemand, in one case, attributes the accident to a fright, or start, at the moment of conception, which happened in October. The patient died in March. A fœtus was found in the abdomen, and the chorion was adhering to the whole pelvis. *Nouv. Journ.* Tom. ii. p. 320. Beclard showed to the Academy of Med. a fœtus retained seven years, and converted into adipocere. The woman had been effrayée au milieu des embrassemens de son mari. *Archives*, xxviii. p. 208, related by Guillemot.

† Vide Paper by Dr Gartshore. *Lond. Med. Jour.* Vol. viii. p. 344.

may return to the unimpregnated size.* The menses are often obstructed, though in some cases they have continued to appear for two or three months. The breasts enlarge, the morning sickness takes place about the usual period,† and the child quickens at the proper time, but it is felt chiefly in one side. An obstruction to the free passage of urine is sometimes produced, till the sac rise out of the pelvis.

Occasionally, in the early state of pregnancy, pains‡ resembling those of colic are felt, and these have been so severe as to excite syncope,§ or convulsions;|| and it has happened, that during these pains, the tube or ovarium has burst, and the person died, owing to the internal hæmorrhage,¶ and partly perhaps

* Vide Mr Tucker's case, *Med. and Phys. Jour.* xxix. 448.

† In Dr Clarke's case the morning sickness, and other signs of pregnancy, appeared very regularly. At the end of nine months, attempts were made to expel the fœtus. These were followed by inflammation and decline of health. Then suppuration took place, and the patient sunk. *Transactions of a Society, &c.*, Vol. ii. p. 1. In Mr Mainwaring's case, in the same work, p. 287, the patient suffered much from morning sickness, and pain at the groins.

‡ In the *Journal de Sçavans* for 1756, we are told of a woman at Louvain, who at first had so dreadful pain when she went to stool, that she thought her bowels were coming out. In Pouteau's case the woman suffered great pain till after the second month. *Melanges*, p. 333.

§ Bianchi mentions a case, in which, in the first months, the woman complained of great pain in the lower belly, with nausea, and fainting fits. The motion of the child ceased in the fifth month, and then milk was secreted. *De Nat. in Hum. Corp. Vitiosa, Morbusque Gener.* p. 166.—In Dr Mounsey's case, the pain, vomiting, and fainting fits, continued till the woman quickened. *Phil. Trans.* Vol. xiv. p. 131.—In Dr Fern's case, the person complained of great pain till the third month; and from that period till the eighth month, was subject to convulsions and syncope. *Phil. Trans.* Vol. xxi. p. 121.

¶ Vide Dr Fern's case, and a case by Mr Jacob, in *Lond. Med. Jour.* Vol. viii. p. 147.

¶ In Mr Langstaff's case, the patient felt violent pain in the lower belly, sickness, and a faintness, and died in seven hours after being taken ill. Two quarts of blood were found effused into the pelvis, and abdomen, and a fœtus with its membranes was found, apparently about eight weeks old. The right Fallopian tube was as large as a hen's egg, and had burst in two places. The uterus was very vascular, and contained jelly, but it is said had no decidua; the cervix was not shut up by mucus. The tube was obliterated at the uterine extremity, which probably was the cause of the evil. *Med. Chir. Trans.* Vol. vii. p. 437. Sabatier mentions two instances of ovarian pregnancy, where the patient died quickly after pain and fainting. *Med. Operat.* Tom. i. p. 343. Dr Abercrombie has informed me of a fatal case of hæmorrhage of this kind. See also *Revue Med.* Tom. i. p. 460. M. Bushell relates a case where the tube gave way, but the ovum, about half the size of a pea, was found in the tube, between the laceration and uterus. About two pounds of coagulum were found in the pelvis. *Med. Chir. Rev.* June, 1824. The late Mr Moore showed me a preparation taken from a woman in the sixth month of extra-uterine pregnancy. Pains, of the bearing-down kind, came on about a fortnight before her death, with sharp pain in the side, where the ovum lay. Bleeding and other means relieved her, but at the end of a fortnight, they returned, and she sunk rapidly. On examination, a fœtus of the ordinary size at six months, was found in the ovarium, which had given way, and blood was effused into the abdominal cavity. The uterus was enlarged to the size

from inflammation. The pains usually begin in the sac, and then the uterus is excited to contract, and discharge any fluid it contains. When these pains either do not occur, or are removed, or the patient survives the rupture of the sac, we sometimes find, that at the end of six, eight, nine, or ten months, from the commencement of gestation, appearances of labour* take place; the woman suffers much from pain, and there may be a sanguineous discharge from the uterus. The pains go off more or less gradually,† the motion of the child ceases, and milk is secreted.‡ In a few instances, very little farther inconvenience is felt, the tumour of the belly remaining for many years, and the child being converted into a substance resembling the *gras de cimetières*, whilst the sac which contains it becomes indurated, or sometimes the child seems fresh like a preparation.§ More frequently, however,

of the fist, and could have contained a large pear. It was lined with decidua. In the first effort the os uteri was felt open, but nothing could be discovered within it. A brownish discharge took place. In M. Clement's case, the female, who had previously been quite well, suddenly complained of abdominal tension, and pain so severe as to make her shriek, fainting, hiccup, &c., and died in about three hours. The tube was the size of a pigeon's egg, and though lacerated, still contained a small ovum and embryo, about six weeks old. The uterus was twice its natural size, and lined with decidua. A great quantity of blood was in the pelvis. *Med. Gaz.* xiv. p. 31. An unmarried woman, had, for two days, slight difficulty of making water, complained, then, of faintness, followed by pain in the lower belly, so great as to make her bend forward. In a few hours fatal syncope took place. An immense clot of blood was found in the abdomen, produced by the rupture of the tube. I received the uterus for examination. The fœtus measured from the head to the heel, three inches, and was connected to the tubal placenta by the cord. The uterus was three inches five-eighths long; the cavity of the fundus one inch seven-eighths broad; the thickness of the parietes five-eighths; the breadth of the os uteri, externally, at the cervix, one inch five-eighths. The fundus and body were coated with a thin layer of decidua, partly like jelly, partly like fibrin, with red patches in it of small size, and striæ of the same colour. The cervix and os uteri contained red jelly. The ovaria had nothing unusual in their appearance. See also a case in *Archives*, T. x. p. 108.

In Dr Fairbairn's case, the sac burst in the third month, and about 6 lb. of fluid, and clotted blood, were found in the abdomen. The sac is said to have been between the folds of the broad ligament, or formed by them and the fimbriæ of the left tube. The placenta and membranes are said to have been natural, and the maternal blood, conveyed by vessels passing along the upper part of the broad ligament. *Edin. Med. Jour.* lvii. p. 77.

* In Dr Perfect's case, no labour pains came on, but the motion of the child ceased at the end of nine months. The abdomen neither increased nor diminished in size, for two years and seven weeks; but she was afflicted with constant pain in the hypogastric region, attended with fever, and finally sunk under marasmus. *Cases in Midwifery*, Vol. ii. p. 164.

† In Mr Bell's case, the pains continued, though gradually abating, for three weeks. *Med. Comment.* Vol. ii. p. 72.

‡ In Mr Bell's case, milk continued to be secreted for several years. In Mr Turnbull's case, a fluid was secreted, rather like pus than milk.

§ There is in the Museum of the College of Surgeons, Dublin, a preparation of tubal pregnancy, which had existed twenty years. The placenta and decidua are seen within the tube or sac, and the child, of the ordinary size at the ninth month, is perfect, as if it had been kept in spirits.

considerable irritation is produced,* with nausea, loss of appetite, frequent vomiting, or diarrhoea, or dysuria, chills, difficulty of breathing, apthous mouth, and great debility; inflammatory symptoms supervene, and hectic takes place. The sac adheres to the peritoneum, or intestines; and after an uncertain period, varying from a few weeks or months to several years, it either opens externally, or communicates with the abdominal viscera. Very fœtid matter, together with putrid flesh, bones, and coagula, are discharged through the abdominal integuments,† or by the rectum,‡ vagina,§ or bladder.¶ Sometimes, almost an entire

* In the case of a female mulatto, the outlines of which I was favoured with by Dr Chisholm, the pain was so great that it could not be allayed by the strongest opiates. It ended fatally.

† This termination is noticed so long ago as by Albucasis, lib. ii. c. 76. In the Paduan Commentaries, there is related a case, where the abdominal parietes opened by gangrene, which is also said to have affected the uterus, and the child was then expelled, and the patient recovered. In a case related by Mr Gunning, the patient after having pains like those of labour for three days, got better; in a month the menses appeared; presently the abdomen became inflamed, and a fœtus was discharged through the integuments. She continued to menstruate, and we are informed that at each period, a discharge of red fluid took place by the fistulous wound, which had not closed. *Med. and Phys. Jour. Oct. 1827, p. 314.*

‡ Vide cases by Langius, in his *Epistolæ*, Tom. ii. p. 670. Tulpius Opera, lib. iv. c. 39. p. 358.—Pouteau in his *Melanges*, p. 373.—Mr Shiever, in *Phil. Trans.* No. 303. p. 172.—Winthrop. *Phil. Trans.* Vol. xliii. p. 304, and Simon, p. 529.—Lindestaple, Vol. xlv. p. 817.—Morely, Vol. xix. p. 486.—Gordon, in *Med. Comment.* Vol. xviii. p. 323.—Cammel, in *Lond. Med. Jour.* Vol. v. p. 96.—Cases by M. Bergeret, in the *Recueil Périodique*, Tom. xiv. p. 289. Gaitskell, *Med. Rep.* March, 1823.

§ Vide Marcel. Donatus, de *Med. Hist.* Mirab. lib. iv. c. 22.—Horstii Opera, Tom. ii. 536. In this case, the fœtus was discharged both by the vagina and rectum.—Benevoli, in his *Dissert.* p. 104, gives an instance where the greater part of the child was expelled by the vagina, but the woman died before the process was completed.—Mr Smith's case in *Med. Comment.* Vol. v. p. 314.—In Mr Colman's case, pains came on, and the head was felt in the pelvis at the time of her reckoning, and long afterwards, but the os uteri could not be perceived. In some time, hectic fever, with diarrhoea and sore mouth appeared. Six months after her attempts at labour, an opening was felt in the vagina, but very unlike the os uteri. The hand was introduced, and a putrid child was extracted. Some fœces continued to come by the wound, but at last she got well. *Med. and Phys. Jour.* Vol. ii. p. 282.—See also Camper's case, in his *Demonst. Anat. Path.* lib. ii. p. 16. and Dr Fothergill's case in *Mem. of Med. Society*, Vol. vi. p. 107.—In Dr Harder's case, the fœtus, piecemeal, was extracted from an abscess in the vagina, Much pus flowed, but nothing like placenta or cord was discharged. The patient recovered. *Archives*, 2d Series, T. x. p. 488. In a case related by Mr Rankin, two bones were discharged by the vagina. The os uteri was felt a little open, and something within it. It was dilated by polypus forceps, and a fœtus extracted. *Edin. Med. Jour.* April, 1827, p. 302. If the extraction really was made through the os uteri, and not by a new formed opening, the case could not have been extra-uterine. May the uterus have been ruptured at the time pains were first felt, but the fœtus not entirely expelled into the cavity of the abdomen? We have no instance, even of a dead child being retained in utero, after natural labour had come on, and being afterwards expelled piecemeal.

¶ Vide Stalpart Van der Wiel Opera, Tom i. 305. In this case bones came away with the urine.—In the case of Ronseus, the child was discharged partly by

fœtus has been brought away from the umbilicus,* or by the rectum.† It is worthy of notice, that the placenta, in this process, almost always is destroyed,‡ and discharged among the putrid fluid. Often, time is not allowed for expulsion to be accomplished, but the person dies at an early period. Extra-uterine has been combined with ordinary pregnancy.§ Menstruation may return.¶

Thus it appears, that there are different terminations of the extra-uterine pregnancy. The sac may burst, and the person die speedily of hæmorrhage;¶ or the child may escape into the abdomen, and be enclosed in a kind of cyst of lymph;** or the bladder, but chiefly by the anus. *Epist. Med.*—A similar instance is related by Morlanne, the extraneous matter forming a nucleus for a calculus. By an operation similar to that of lithotomy, two stones and five portions of cranial bones were extracted. *Recueil Périod. Tom. xiii. p. 70.*—In Prof. Josephi's case, the child was found altogether in the bladder. *Med. and Phys. Jour. Vol. xiv. p. 519.*

* Vide case of Mrs Stagg, in *Lond. Med. Obs. and Inquiries, Vol. ii. p. 360*; and cases by Mr Jacob, Dr Maclarty, and others.

† In Mr Gifford's case, the child was expelled entire by the anus, and even the cord was found hanging out of the intestine. *Phil. Trans. Vol. xxxvi. p. 435.* See also Mr Goodair's case, in *Annals of Medicine, Vol. vii. p. 412.* Dr Albers has a similar case. In Julia's case, bones were discharged by the rectum in the second year. At an earlier period, pains, with milk fever, &c., had come on. *Rev. Med. Tom. x. p. 53.*

‡ In Dr M'Knight's case, although the Cæsarean operation was performed before any bad effects were produced on the health, no part of the placenta could be found.

§ Case by Clet. *Nouv. Jour. Tom. iii. p. 287.* A woman, whilst going on with an extra-uterine conception, became pregnant, and at the full time bore a child, which lived fifteen days. The abdominal tumour had previously become blue; an incision was made, and a child 18 inches long extracted, recovered: *Archives, T. ix. p. 423.* Mrs Stagg, whose case is related by Mr Bard, and noticed above, became pregnant whilst she had an extra-uterine child. The delivery was safe. The original tumour afterwards suppurated, and was opened. An ordinary sized fœtus was extracted, but no placenta.

¶ Mr Aubry's patient menstruated for ten years. *Archives. Mars, 1842, p. 346.* The fœtus was supposed to be in the substance of the uterus, but, of this, there is no proof.

** In Dr Clarke's case, the tube burst in the second month, and the woman died from loss of blood. *Transactions of a Society, Vol. i. p. 216.* Vide case by Duverney, in his works, *Tom. ii. p. 353,* and by M. Littré in the *Memoirs of the Acad. of Sciences, for 1702,* and by Riolan in his works. See also *Med. Comment. Vol. i. p. 429.* In Mr T. Blizard's case, rupture took place at a very early period, for the woman had miscarried only five weeks previous to this event. *Vide Edin. Phil. Trans. Vol. v. p. 189.* Mr Tucker's case, *Med. and Phys. Journal, xxix. 448.* Dr Williamson's patient had an attack of pain, and vomited fœces. She died in half an hour. The right tube was rent; the placenta strongly adherent. The fœtus was about the sixth month. A large coagulum was found. *Edin. Jour. lviij. p. 384.* In the same volume is a case by Dr T. B. Watson. The patient had vomiting, pains, and became faint. Blood was found effused; the left tube dilated, and ruptured, and within it an embryo about the size of a horse bean.

** Vide a case by La Croix, in *La Med. Eclairée, Tom. iv. p. 349.* In Dr Bright's case, the fœtus lay in a kind of cavity, communicating with the bowel. The patient had suffered much from pain, difficult breathing, diarrhœa, &c. *London Med. and Surg. Journ. ii. 65.*

sac may remain entire, the child being retained many years,* and the parts become hard; notwithstanding this, the menses may return, and the woman conceive again.† But the most frequent termination, is that of inflammation, ending in abscess, attended with fever and pain, under which the patient either sinks, or the foetus is expelled in pieces, and the cure is slowly accomplished. When the sac adheres to, and opens into, the sigmoid flexure of the colon, the bones are more easily discharged than when it becomes connected to the ileum, unless that open into the colon. From a review of cases it appears, that a majority ultimately recover, or get the better of the immediate injury; of the rest, some have sunk speedily, either from hæmorrhage or inflammation, or exhaustion produced by ineffectual attempts to expel the child; or more slowly from hectic fever, or irritation; or in consequence of some other disease being called into action, by the violence which the constitution has sustained.

In some cases the sac soon rises quite out of the pelvis. In others, it remains longer, and falls down between the uterus and

* I have known the foetus retained for twenty years, and there are some instances, where it has been retained for thirty, forty, or fifty years. Mrs Ruff, whose case is related in the *Med. and Phys. Jour.* for May, 1800, carried the child fifty years. Middleton's patient carried it sixteen years: *Phil. Trans.* Vol. xlv. p. 617. Mounsey's thirteen years, Vol. xlv. p. 121. Steigertahl's forty-six years, Vol. xxxi. p. 126. Broomfield's nine years, Vol. xli. p. 696. Sir P. Skippon's patient discharged it by suppuration at the groin, after retaining it twenty years, Vol. xxiv. p. 2070. See also cases by M. Grivel, in *Edin. Med. Jour.* Vol. ii. p. 19, and Dr Caldwell, p. 22. Sometimes no attempt is made to expel, but the foetus is converted into a substance which Fourcroy finds to resemble the *gras des cimetières*. *System*, Tom. x. p. 83. Sandifort relates a case, where, after attempts at labour, no further inconvenience was sustained, but the child was found after twenty-two years to be indurated. *Observations*, lib. ii. p. 36. He quotes Nebel for a case, where it was retained fifty-four years. Cheselden found it converted into earthy matter. The late Mr Hamilton of this place, had a preparation of a foetus, covered with calcareous matter, which was retained 32 years. This woman had pains at the end of nine months, after which the belly decreased in size. Penker relates a case of extra-uterine pregnancy, as one in which the child was retained in utero for three years. The result is not given. *Archives*, Tom. ix. p. 124. In Vol. xvii. p. 332, M. Garde relates the case of a woman 73 years old, in whose abdomen, was found an ossified foetus, two inches long. In the *American Med. Journ.* for May, 1828, is the case of a negress, who retained a child in an ossified cyst for forty years.

† In the 5th Vol. of the *Edin. Med. Essays*, there is related a case in which the patient seemed to have a second extra-uterine pregnancy before she got quit of the first. See also *Primrose de Morb. Mul.* p. 326. Mr Hope, in the 6th Vol. of the *Med. and Phys. Jour.* p. 360, details a case, where the woman in the seventh month of pregnancy had pains, which continued for three weeks, and then went off, leaving a hard tumour on the left side, which was somewhat painful; she then had another pregnancy, and a fortnight after delivery, began, after taking a laxative, to vomit, and continued to do so, ultimately throwing up feculent matter. The case ended fatally. See also Turk, in *Haller, Disp. Chir.* iv. 793. Mr S. Cooper mentions a case, where the patient had a living child, whilst still discharging the bones, of an extra-uterine one. *Med. and Surg. Journ.* v. 337.

bladder,* or the rectum and vagina, forming a tumour accompanied with symptoms of retroversion of the uterus.† In such cases the sac inflames, and bursts into the rectum or vagina. Dr Merriman‡ is of opinion, that all these cases, are instances of retroverted uterus, and not of extra-uterine pregnancy; but, for the present, this must rest entirely on supposition. The mere circumstance, of the pregnancy being complicated with suppression of urine, or tumour at the back part of the pelvis, is no proof, as both of these may arise from the pressure of the sac on the pelvis.

Sometimes, when parturient efforts are made, the head descends into the pelvis, though it was not there before; but either no os uteri can be felt, or it is felt directed to the pubis, and it is not affected by the pains.

It is curious to observe, that generally the uterus enlarges considerably,§ and in almost every instance, decidua is formed.|| The cavity is filled with a fluid, which is often, indeed generally, discharged when pains come on, but the decidua is not soon thrown off.¶ In a remarkable case related by the late Mr

* This happened in Dr Harries's case. Dysuria was a prominent symptom. See *Med. Gazette*, xiv. p. 830.

† Vide Mr Mainwaring's case, in *Trans. of a Society, &c.*, Vol. ii. p. 287. In Mr White's case, related in *Med. Comment.* Vol. xx. p. 254, the symptoms were very like those of retroversion, and the case was only distinguished by the result. In Mr Cammel's case, there was not only a tumour betwixt the vagina and rectum, but the os uteri was turned upward and forward. *Lond. Med. Jour.* Vol. v. p. 96. Mr Kelson's case very much resembled retroversion, for in the tenth week both the urine and stools were obstructed. In about a fortnight the impediment was suddenly removed, and the uterus felt in situ. She continued well to the ninth month, when pains ineffectually came on; but in process of time, the child was discharged by the anus. *Med. and Phys. Jour.* Vol. xi. p. 293.

‡ Vide *Dissert. on Retroversion, &c.* 1810.

§ Boehmer long ago observed this; and Dr Baillie, in the 79th Vol. of the *Phil. Trans.* mentions, that Dr Hunter had a preparation of tubal pregnancy, in which the uterus was found enlarged to double its natural size and containing decidua. He also states, that in an ovarian case, the uterus was enlarged, thick, and spongy, and its vessels enlarged. Dr Clarke found the uterus, in the second month of an extra-uterine pregnancy, exactly of the same size as if the embryo had been lodged within it. The decidua was formed, and the cervix filled with gelatinous matter. *Transactions of a Society*, Vol. i. p. 216. See also a case by Saviard, in *Phil. Trans.* No. 222, p. 314. A case similar to Dr Clarke's is related by Mr T. Blizard, in the *Edin. Phil. Trans.* Vol. v. p. 189. See also *Annals of Med.* Vol. iii. p. 379.

|| Dr Hunter had a tubal case, No. 369, where the sac is as large as an orange. The uterus is of its natural size. It is divided to show the slit or cavity quite natural, and without decidua. In another, 367, decidua is formed. The tube is the size of an egg. This, I suppose, is the case alluded to by Dr Baillie.

¶ In Mr Houston's case the cervix was so closed up that it would not admit a probe. *Phil. Trans.* Vol. xxxii. p. 387. The decidua would appear sometimes to enlarge, and form a mass like placenta, which in Mr Turnbull's case was expelled with hæmorrhage. *Mem. of Med. Society*, Vol. iii. p. 176. Mr Douchez has published a case of tubal pregnancy, proving fatal about the tenth week, where

Hey* of Leeds, the placenta was formed in the uterus, whilst the fœtus lay in the tube.

Tubal pregnancy, often does not proceed farther than the second month, the tube bursting at that time; or, to speak more correctly, I believe the tube slowly inflames, and sloughing takes place. In some instances, however, the tube goes on enlarging for nine months, and acquires a size nearly equal to that of the gravid uterus, at the same stage of gestation.† The placenta, differs from an uterine placenta, in being much thinner and more extended. External examination discovers little difference, at the full time, between this and common pregnancy. M. Breschet‡ has published some cases, where the ovum got to the very end of the tube, but not into the uterine cavity. It grew in the substance of the uterus.§

Ovarian|| is much more rare than tubal pregnancy, and it is

there was no decidua, but only a thin coating of mucus within the uterus, which was somewhat enlarged. *Med. Gazette*, vii. p. 11.

* *Vide Med. Obs. and Inq.* Vol. iii. p. 341.

† Among many other cases in proof of this, I may refer to one very accurately detailed by Dr Clarke, in *Trans. of a Society, &c.* Vol. ii. p. 1. In a case which the late Dr Millar showed me, the patient was supposed to become pregnant in January, 1833. Till the eighth month she went on as usual. She, at that time, had pains like those of labour, for three days. These went off, but returned again, for a short time, in three weeks. In the month of May, 1833, she was pale, emaciated, with quick pulse, diarrhœa, and aphthous mouth. The abdomen was large, like that of a woman about the eighth month, very tender, and with a fluctuating prominence to the left side of the navel. She got so far better as to be able to walk some miles, but presently relapsed, and died November 1833. The uterus was found to be sound, and not adhering to other parts. The left tube was enlarged, and adhering to the ilium, forming a cavity which contained pus and bones, some of which had entered the ilium. I have a cast of the parts, taken by my son, and also the preparation presented by Dr Millar. In the *American Jour. of Med. Science*, January, 1841, p. 47, there is a case, by Dr Gilman, of supposed tubal pregnancy, which was punctured, and two gallons of fluid evacuated. On death, the sac was found to be adherent to the adjacent parts. The fœtus, about the sixth month, could have been extracted without opening the general cavity.

‡ *Répertoire d'Anatomie*, Tom. i. p. 91. Moreau and Gardien mention a case where a canal went off from the right tube, through the substance of the uterus, to open within its neck, and think this may explain such a case. *Revue Med.* Tom. i. p. 567. In the *Museum Dupuytren*, a good specimen of Breschet's is seen. The uterus itself is enlarged to about the size it ought to have in the third or fourth month. This, which has been called interstitial pregnancy, is also illustrated by a case in *Archives*. T. xi. p. 169.

§ Some deny that the ovum gets from the extremity of the tube into the parietes of the uterus. Others maintain that it does, and has been expelled from the uterine cavity into the vagina. See a case by Carus, and discussion by Velpeau, &c., in *Archives*, 2d Series, T. ix. 107. In Rosshirt's case, the fœtus was covered by the coat of the uterus, and the placenta adhered to it externally. *Archives*. Dec. 1841, p. 507.

|| In a case related by Varocquier, the ovarium did not acquire a larger size than an egg. The woman died after suffering violent pain in the left side, low down. The viscera were slightly inflamed. *Mem. de l'Acad. de Sciences*, Tom. cxiii. p. 76. In the case by L'Eveillé, the fœtus was apparently betwixt three and four months old. *Rapport de la Societé Philomatique*, Tom. i. p. 146. See

seldom that the ovarium acquires a great size. It either bursts early,* or inflammation and abscess take place; or the fœtus dies, and is converted into a confused mass; or it excites dropsy of the ovarium.† The ovarian pregnancy, until inflammation have taken place, produces a circumscribed moveable tumour, like dropsy of the ovarium.

In ventral pregnancy, the most rare of the three species, the motions of the child are felt more freely‡ and its shape is readily distinguished through the abdominal integuments. The expulsive efforts may come on as usual, and the head of the child is sometimes forced into the pelvis. It dies, and the usual process for its removal is carried on, if the woman do not sink immediately under the irritation.§ The placenta is found attached to the mesentery or intestines,|| or, together with the fœtus, contained in a sac.¶ It has been supposed, that the examples of also a case in the *Recueil Périod.* Tom. xiii. p. 63; and in the *Recueil des Actes de la Société de Lyon.*

* Vide Chambon, *Malad. de la Grossesse*, Tom. ii. p. 373. Case by St Maurice, in *Phil. Trans.* No. 150, p. 285. In the case related by La Rocque, the ovarium was found ruptured, and the abdomen full of blood. *Jour. de Med.* 1683. Böhmer found the ovarium ruptured, and the fœtus half expelled. *Obs. Anat. fasc. Prim.* Dr Forrester's patient, after violent colic pains, voided blood by the anus. The hæmorrhage and fainting fits proved fatal. The fœtus was found in the ovarium. *Annals of Medicine*, Vol. ii. p. 379.

† Vide Roederer, *Elemens*, c. 15, § 758. In M. Dumas' case, a fluid like chocolate was drawn off by tapping, which was twice performed. The ovarium contained hair, bones, &c. *La Med. Eclairée*, Tom. iv. p. 65. Mr Bell's tubal case excited ascites.

‡ Dr Zais relates a ventral case, where the motion could scarcely be moderated, by the force a man could exert! Eight weeks after the death of the fœtus, it was removed by an operation. It was found to have been included in a kind of cyst. The placenta was attached to the spine, and could not be separated. The wound was closed, and the placenta seemed to come away, in a broken down state. The patient recovered. *Archiv. Gen.* xxv. 417.

In the Museum of the Lying-in Hospital of Dublin, there is a preparation where the uterus, elongated to above a foot, seemed to form the front of the cyst.

§ Dr Rigby describes minutely the case of a woman in St Bartholomew's hospital, admitted about the sixth month of pregnancy. The tumour was very irregular, and she had great pain. The uterine souffle was distinct, or indeed louder than usual, but no fœtal pulsation was discovered. The uterus seemed to be antverted. After protracted suffering; during which the tumour decreased, she died at the end of about three years. The mass adhered to the neighbouring intestines, and, on the right side, to the lining of the pelvis. The fœtus was a putty-like stuff.

¶ Vide Dr Kelly's case, in *Med. Obs. and Inquiries*, Vol. iii. p. 44. In Mr Clarke's case, the placenta was attached to the kidneys and intestines. *Mem. of Med. Society*, Vol. iii. p. 179. In the *Mem. of the Acad. of Sciences*, there is a case related, where the placenta adhered to the lumbar vertebrae. In the history by La Coste, it was placed under the stomach and colon. Vide *Œuvres de Duverney*, Tom. ii. p. 363. In Mr Turnbull's case, it was very thin, and adhered to the intestines. *Mem. of Med. Society*, Vol. iii. p. 176. A case of ventral pregnancy, complicated with hernia, is related by M. Martin, in the *Recueil des Actes de la Société de Santé de Lyon*. Courtial found it adhering to the stomach and colon.

¶¶ In a case related by Dr Collins, the appearance much resembled that of re-

this variety, are all in reality instances of ruptured uteri; but this is not supported by satisfactory proof. At the same time, I have no doubt that many of them are.

It has been said that all cases of protracted extra-uterine pregnancy were ventral, that tubal, rarely extended beyond two, or ovarian, beyond six months, but this is far from being ascertained.

SECTION SECOND.

In the treatment of extra-uterine pregnancy, much must depend on the circumstances of the case.* In the early stage, if the sac be lodged in the pelvis, we must procure stools, and have the bladder regularly emptied, as in cases of retroverted uterus. Attacks of pain, during the enlargement of the tube, require blood-letting and anodynes, laxatives and fomentations. The same remedies are indicated, when convulsions take place.

When expulsive efforts are made, and the head is felt through the vagina, and the nature of the case distinctly ascertained, it may be supposed, and some recorded cases would seem to justify the supposition, that much suffering may be avoided, by making an incision through the vagina, and delivering the child; but, as yet, experience has not fully ascertained the utility of this practice.† It has been proposed, in these and other circumstances, to perform the Cæsarean operation,‡ in the usual manner, upon

troversion, in some respects, but although the tumour could be raised out of the pelvis, it readily returned again. The bladder was empty, and yet "a large elastic tumour" was felt in its region, which was not found, or accounted for, on dissection. The uterus, tubes, and ovaria, were entire, but in the pelvis, was a sac, from which a fœtus two months old, had escaped. This sac is said not to have had any connexion with the uterus, but the particular attachment to the pelvis was not ascertained. There was no decidua, but some small excrescence, on the inner surface of the uterus. *Dublin Med. Trans.* Vol. i. p. 118.

* In a supposed case of tubal pregnancy, Dr Ritgen tried to procure abortion by medicine. Blood and clots came away, and in about a year and a half, the tumour disappeared. Had it really been an extra-uterine pregnancy, the treatment was more likely to rupture the tube than expel the fœtus.

† In a case probably of this kind, related by Lauerjat, and quoted by Sabatier, the child was extracted by an incision through the vagina, and the woman recovered. *De la Med. Oper.* Tom. i. p. 136. A similar case is to be met with in the *Journ. des Sçavans*, 1722. A very interesting case is related by Delisle, in the *Bulletin de la Societ  de Med. d'Emulation*, for May and June, 1818; where the child was extracted alive, by an incision through the vagina. The mother died in a quarter of an hour, and the child half an hour after her. It has, in one instance, however, been extracted thus, with success to both parties. In Mr Norman's case, *Med. Chir. Trans.* Vol. xiii. p. 2, the child was extracted, after making an incision through the vagina, but the patient died from peritoneal inflammation. The pregnancy was ventral, for the placenta was attached externally to the broad ligament of the uterus. Caignon extracted a living child from the vagina, but the mother died. *Archives*, xxi. 286.

‡ M. Colomb performed the Cæsarean operation, but it ended fatally. *Recueil des Actes de la Societ  de Lyon*. Oslander has also failed. Gurney extracted by operation. *Med. and Phys. Journal*, April, 1823. In a late case, we are told of

the accession of pains ; but there is not only great danger from the wound, but likewise from the management of the placenta, which, if removed, may cause hæmorrhage, especially in ventral pregnancy, and, if left behind, may produce bad effects. The last, however is the worst alternative, unless it be strongly adhering to delicate parts. The case, of all others, which would justify the operation, is that, where the child is alive, at the time when pain comes on, and where the proofs of the pregnancy being extra-uterine are unequivocal.

The result of the numerous cases upon record, will certainly justify our trusting to the powers of nature, rather than resorting to the knife of the surgeon. If any exception is to be made to this rule, it is in those cases, where the child is distinctly felt through the vagina, and can be extracted by an incision made there. Allaying pain and irritation in the first instance, by blood-letting, anodynes, and fomentations ; and avoiding, during all the inflammatory stage, stimulants and motion, whilst, by suitable means, we palliate any particular symptom, constitute the sum of our practice.

A tendency to suppuration, is to be encouraged by poultices ; and the tumour, when it points externally, is either to be opened, or to be left to burst spontaneously, according to the sufferings of the patient, and the exigencies of the case.* The

the successful extraction of a living child, which was supposed to have been in the cavity of the belly, having the placenta attached to the fundus uteri and ovarium. *Nouv. Journ.* Tom. xv. p. 52.

* Dr Maclarty relates the case of a negress, where the breech of the child protruded through an ulcer, at the lower part of the abdominal tumour, and the arm at the upper part of the tumour. The intermediate portion of skin was divided, and the fœtus extracted. The head of the child stuck firmly, but was brought out with the forceps. There was no placenta, but putrid matter was discharged with the child. The woman recovered. *Med. Comment.* Vol. xvii. p. 481. Another case is related by Duverney, where the child was extracted from the groin ; and this is one of the rare instances where the placenta was not destroyed. It was extracted with the child. *Cœuvres*, Tom. ii. p. 357. Cyprianus gives an instance of the child being removed, after having been retained twenty-one months. *Histor. Fœtus Hum. Salva Matre ex Tuba Excisi.* Mr Brodie enlarged the navel with a lancet. *Phil. Trans.* Vol. xix. p. 580. See also Mr Baynham's case, in *Med. Facts*, Vol. i. p. 73. In Mr Bell's case, an incision, four inches in length was made, and the bones of two children extracted. *Med. Comment.* Vol. ii. p. 72. Dr Haighton relates an interesting case, where some bones were discharged by the vagina, but the tumour also pointed above the pubis, and through this one of the ribs appeared. The practitioner made an incision, but so great hæmorrhage came on, that he was obliged to apply a bandage till next day, when he extracted the bones. The woman recovered. *Med. Records*, p. 260. Dr M'Knight performed the operation in the twenty-second month, although the woman enjoyed tolerable health ; very dangerous symptoms supervened, but the woman, who certainly was brought into a very hazardous state by the premature operation, did recover. No placenta was found. *Mem. of Med. Society*, Vol. iv. p. 32. See also a successful cure in *Med. Chir. Rev.* for July, 1826, p. 275. Mr Hutcheson has lately published an interesting case, in which

passage of the bones, and different parts of the fœtus, may often be assisted; and the strength is to be supported, under the hectic, which accompanies the process. After the abscess closes, great care is still necessary, for, by fatigue or exertion, it may be renewed, and prove fatal.*

When no process is begun for removing the fœtus, but it is retained and indurated, our practice is confined to the palliation of such particular symptoms as occur.

CHAP. XIX.

Of the Signs of Pregnancy.

SOME women feel, immediately after conception, a particular sensation, which apprises them of their situation, but such instances, are not frequent, and, generally, the first circumstances which lead a woman to suppose herself pregnant, are the suppression of the menses, and an irritable state of the stomach, commencing often within the first month. She is sick, or vomits in the morning, and has returning qualms, or fits of languor, during the forenoon, is liable to heartburn through the day, or in the evening, and to that disturbed sleep through the night, which so frequently attends abdominal irritation. In some instances, the mind is also affected, becoming unusually irritable, changeable, or melancholy. Occasionally, the features become livelier and the complexion better, but in general the woman becomes paler, the under part of the lower eyelid, perhaps, of a leaden hue. The features become sharper, or even

the child was extracted piecemeal with success. The patient had the ordinary symptoms of pregnancy, but increased more rapidly in size than usual, and presently had spasms, so severe as to make her insensible. At the ninth month, pains came on, attended with clear discharge, occasionally bloody, and at that time she suffered much agony from the restlessness of the child. A tumour was felt between the rectum and vagina. Afterwards, owing to swelling, paracentesis was performed, and six pints of dark fluid drawn off. The aperture did not heal, but became larger, and a finger introduced could feel the head of a child. It was enlarged, and the child extracted piecemeal. The funis was entire, but it was not till some time after, that the disorganized placenta was discharged. Mr Hutcheson argues in favour of early extraction. *Med. Gazette*, No 414 and 480.

* In Dr Morley's case, this happened two years after the original abscess had healed. *Phil. Trans.* Vol. xix. p. 486. Mr Moyle details a history, where the abscess first of all burst, in consequence of leaping over a hedge. Bones continued to be discharged for a year, without much injury to the health. The abscess then healed, but three years afterwards a tumour again appeared, and in consequence of exertion burst, when about a yard of intestine protruded. Some days elapsed before Mr Moyle saw her. The intestine was then gangrenous, but she lived twelve days longer, and the portion was thrown off before death. *Med. Journ.* Vol. vi. p. 52.

the whole body begins to be emaciated, whilst the pulse quickens. In many instances, particular sympathies take place, causing salivation, toothache, jaundice, &c. In other cases, very little disturbance is produced, and the woman is not certain of her condition, until the period of quickening. There is a popular, but idle notion, that a physician can, by feeling the pulse, tell if a woman be pregnant.

Some females, at the time of conception, have a slight discharge of blood from the uterus, and in every case the true menses are afterwards suppressed. It has, however, been disputed, how far this suppression is an invariable effect of pregnancy. That some have been regular during the whole time of gestation, nay, that they have been regular only then, is asserted by distinguished practitioners, whilst others, no less eminent, maintain, that although repeated sanguinous discharges, like menstruation, may take place, yet these are neither regular, as to the monthly period, nor, exactly, of the quality of the menses. I have not known any instance, where menstruation was perfect and regular, during the whole of pregnancy. But we sometimes find, that every month, for at least a part of the term of gestation, there is, for a day, a sanguinous discharge with pain, and occasionally the pain, at each successive period, increases, whilst the discharge diminishes. Some have, at the period succeeding impregnation, a degree of hæmorrhage rather than menstruation. This is no indication of a threatened abortion. It is physically impossible that perfect menstruation can take place, at least, if examination by the speculum be depended on. The whole cavity of the uterus, is otherwise employed, from the first day of conception. But it may be said that the cervix, or at all events, the upper part of the vagina may furnish menstrual fluid. Blood, or bloody fluid may be furnished, and it is not to be denied, that this may, for longer or shorter, come periodically. Even such cases, which are not to be considered as instances of proper menstruation, are comparatively rare.

The breasts, at first, sometimes become rather smaller, but about the third month they enlarge, and occasionally become painful, and as pregnancy advances, the cutaneous veins often become distinct. In many cases, a serous fluid, at an early period, and a more milky liquid at a later, runs freely from the nipples, sometimes in such quantities, as to make the person wet. The secretion of milky fluid, or even of milk, is no certain proof of the existence of pregnancy.

The nipple becomes fuller and deeper in the colour. It is, at all times, surrounded by an areola, more or less broad and deeper in colour, as the complexion is dark. The texture of this is similar to that of the rest of the skin, containing glands

or little vascular follicles, with excretory ducts; one set, at the under surface of the corium, for the secretion of mucus, which, mixing with colouring matter from another set, more superficial, forms epidermis; a third set, in the substance of the corium, secrete sweat. Besides these, we also find from five to ten little glands, which appear as tubercles on the surface. They are seated on the inner surface of the cutis, and secrete a limpid, sometimes, in lactation, a milky fluid. It has long been known, that occasionally during menstruation, the areola becomes more coloured from increased action; but almost invariably by the third month of pregnancy, it becomes darker, more turgid, and its tubercles more prominent. The depth of colour is generally proportioned to the natural darkness of the complexion. But we rely more on the increased distinctness of the tubercles, and the fulness of the skin; than on its colour. There is also a softness or slight moisture from the follicles. This condition, which continues during lactation, has been well described by Dr Montgomery.* Doubtless, it greatly depends on the increased action which is excited in the breast in general; but the difference of colour evinces also a change of the secretion, from the appareil chromatogene of Breschet, or that which secretes the colouring matter.† This change is not always confined to the original areola, but may extend much beyond its former boundaries. This state of the areola, is not an infallible, but it is a most important sign. It is however known, that in a woman who has once born a child, the areola continues always darker than formerly. But the turgescence is peculiar to pregnancy.

On the same principle, the skin of the labia, or groins, sometimes becomes darker. Jacquemen says, that the mucous coat of the vagina assumes a deeper, or purple, colour, but this, when it exists, must be attributed to the state of the vascular system there.‡ Dr Kluge says it is visible in the fourth month. Osian-der talks of what he calls the vaginal pulse. That is, the arte-

* In one case, the areola did not exceed in breadth a quarter of an inch; but the tubercles were prominent, like a string of beads, whilst in another, it was almost black, and above three inches in diameter. After the fifth month, but especially toward the end of pregnancy, in women of dark complexion, mottled patches of a whitish colour, are scattered over the outer part of the areola, and for an inch round it, as if the colour had been discharged by drops of rain. (Plates 5 and 6.) Dr Montgomery has recognised the areola, especially the puffy appearance, at the end of the second month. It is perfected in other two months. Signs, &c. p. 60. Dr Rigby mentions an instance of the discoloration extending over the whole breast, after the delivery of a first child.

† *Annales des Sciences Naturelles*, Serie 2. Tom. 2. p. 166 et seq. Sir Astley Cooper, on this subject, says, the quantity of rete depends on the quantity of blood.

‡ He says, that in 40 or 50 trials that he made with the speculum at La Force, he was correct in every instance. Dubois declines giving an opinion from his own experience. Dr Montgomery has observed this colour during menstruation.

ries in pregnancy become larger, and can be felt beating in the vagina.

In the commencement of pregnancy, the abdomen does not become prominent, but, on the contrary, is sometimes rather flatter than formerly, and when it does first increase in size, it is rather from inflation of the bowels, particularly of the colon, than from expansion of the uterus. In some instances, about the time of the first menstrual period, the intestines distend, from flatus, for several weeks, when they subside, and the abdomen continues small till the uterus rise out of the pelvis. As an increase of bulk, together with many of the other symptoms of gestation, may proceed from suppression of the menses, we cannot positively, from these signs, pronounce a woman to be with child.

The enlargement of the belly is at first accompanied with tension or uneasiness about the navel. This, at first, sometimes appears to be rather sunk, or drawn in, but from the third month, it not only resumes its natural appearance, but toward the end of pregnancy, is prominent. It begins about the fourth month, to become less shallow.

The uterus rises, not by pressure on the pelvis, for that should rather keep it down, and we have no symptom of decided pressure on the parts. It rises by mere growth, and therefore, the os uteri is not higher, till the increasing obliquity and bulk bring it up. The fascia, if healthy, must, from the first, prevent much descent, and may, if it have any effect at all, contribute ultimately to the elevation. The womb rises, or grows gradually, so that in the third month, its fundus is level with the brim, and in the beginning of the fourth, is perhaps an inch above it. The elevation is in many cases gradual, but frequently, at a certain point of growth, the uterus does seem to make a start upward; and when this happens, sensation is produced.

When women have any doubt with regard to their situation, they generally look forward, to the end of the second quarter of pregnancy, as a period which can ascertain their condition. For, about the end of the fourth calendar month, or a little sooner or later, in different women, the uterus ascends more out of the pelvis, and the motion of the child is first perceived, or it is said to quicken, and, in some cases, a few drops of blood flow from the uterus at this period. Some, quicken at the end of the third, and others, not till the fifth month, which may depend on the size of the pelvis, the growth of the uterus, and quantity of fluid it contains; but the usual time is the end of the sixteenth or seventeenth week after conception.* The motion is first felt

* By the Koran, chap. ii., a widow is prohibited from marrying again, till four months and ten days, after the death of her first husband, that it might be known if she were pregnant.

in the hypogastrium, and is languid and indistinct, but by degrees it becomes stronger. It is possible for women to mistake the effects of wind, for the motion of a child, especially if they have never born children, and be anxious for a family. But the sensation, produced by wind in the bowels, is not confined to one spot, and is, very often, referred to a part of the abdomen, where the motion of the child could not possibly be felt. It must, however, be acknowledged that sometimes a sensation, seems to be produced, distant from the uterus, and higher than the child can actually lie. This may be from motion, communicated through the folds of the intestine, and the result shows, that the woman was not mistaken in her sensation. It is not to be supposed that the child is not alive till the period of quickening, though the code of criminal law, is absurdly founded on that idea. The child is alive from the first moment that it becomes visible, but the phenomena of life must vary much at different periods. It is seldom felt to move, till after the ascent, of the uterus, out of the pelvis. Does this arise, from any change in the phenomena of life, at that time, in the child itself, or from the muscular power becoming stronger, or from the uterus now being in a situation, where, there being more sensibility, the motion is better felt? All of these probably contribute to the sensation, which becomes stronger, as the child acquires more vigour, and, as the relative proportion of liquor amnii decreases.

This foetal motion, however, is not to be confounded with the sensation, sometimes felt by the mother, from the uterus rising out of the pelvis, and which precedes the feeling of fluttering. If this elevation shall take place suddenly, the sensation accompanying it, is pretty strong, and the woman, at the time, often feels sick or faint, and in irritable habits, even an hysterical fit may attend it. From the time when this is felt, women are said to have quickened, and they afterwards expect to be conscious of the motion of the child. This motion in many, soon increases, and becomes very vigorous; in others, it is languid during the whole of pregnancy; and in a few cases scarcely any motion has been felt, although the child at birth be large and lively. The morning sickness, and many of the sympathetic effects of pregnancy, generally abate after this, and the health improves during the two last quarters.

By applying the cold hand, flat, on the uterus, the motion is sometimes fully felt in the fifth, but it is distinct in the sixth month. By placing one hand on the side of the belly, and patting with the other on the opposite side, as in ascertaining fluctuation, the child, it is said, may be pitched from one side to another. But this is not to be depended on. Strange to say,

motion is sometimes perceived by the hand, when the mother is not sensible of it.

Many women suppose, that by examining the blood drawn from the veins, their pregnancy may be ascertained. Soon after impregnation, the blood, in most cases, though not invariably, becomes sily, but, it differs from that of a person affected with inflammation. In the latter case, the surface of the crassamentum is dense, firm, and of a buff colour, and more or less depressed in the centre. But, in pregnancy, the surface is not depressed, the coagulum is of a softer texture, of a yellow, and more oily appearance. It is not possible, however, to determine positively, from inspecting the blood; for, a pregnant woman may have some local disease, giving the blood a truly inflammatory appearance; and, on the other hand, it is possible for the suppression of the menses, accompanied with a febrile state, to give the blood, the appearance, which it has in pregnancy. The chemical qualities have been said to be changed.

The urine, if allowed to stand for a day, generally deposits a caseous looking sediment, easily detected, if the fluid be not dark or turbid, furnishing other precipitates. This is an old test, and has been revived by Nauche and others. Dr Montgomery has some confidence in it, and says the urine looks as if a little milk had been put into it, part sinking to the bottom, part floating like a filmy cloud. Mr Bird, that if allowed to stand in a glass for two days, it becomes troubled, with many globules of a greasy appearance. In another day or two a pellicle forms, which breaks up, and on the sixth we see triangular prisms of triple phosphate of magnesia. This is much more obscure than Dr M.'s account. It is supposed to be available in the second month.*

Examination of the uterus itself, is a more certain mode of ascertaining pregnancy. About the second month of gestation, the uterus may be felt prolapsing, a little lower in the vagina than formerly; its mouth is directed rather more backward than before impregnation; and the cervix is felt to be thicker, or increased in circumference. The os uteri has been affirmed to close, so that the finger could not be introduced even so far as in the unimpregnated state. The cervix is undoubtedly shut up by jelly, but there is no diminution of the outward chink, or opening between the lips, to such an extent as can enable us to form a judgment. The aperture is sometimes a little more circular. When raised by the finger, the womb, is found to be heavier, or more resisting. Some have advised, that the os

* See also a paper by Dr Stark. Edin. Med. Journ. lvii. p. 168.

uteri should be pressed upward and forward, so as to retrovert the womb, in order that its body may be felt, but this is not expedient. Examination, at this period, is liable to uncertainty, because the uterus of one woman, is, naturally, different in magnitude, from that of another. But, in the third month, we can arrive at a surer conclusion, the womb being then felt, decidedly, to be heavier, so that it may be, in a manner, balanced on the finger, during which, something can be felt to be floating within the uterus. But this ballottement, perceived by gently jerking up the uterus, cannot, with certainty, be expected, before the end of the fourth month. From this time to the end of pregnancy, we can often pitch up the head or presenting part, but I wish it to be understood that we sometimes cannot. This perhaps depends on there being less liquor amnii. In the beginning of the fifth month, it is found to be higher than when unimpregnated; and a kind of fluctuation may be perceived, and by placing the hand on the lower part of the belly, so as to press on the fundus of the womb, it can be made to give more resistance to the finger, applied per vaginam, and may, by it, be in some degree, made to roll. After quickening, if we pat with the finger on the cervix uteri, we can generally make the child strike gently, so as to be felt. About this time, and still more distinctly afterwards, we can, if the abdominal muscles be relaxed, feel the uterus, extending up from the symphysis pubis, and, in proportion as pregnancy advances, can, more readily, distinguish the members of the child, and feel its jerks or motions. Examination, per vaginam, informs us of those changes of the cervix and os uteri, which were noticed in a former chapter.

A simple suppression of the menses, is apt to be mistaken for pregnancy, nor, is it easy to distinguish, for some time, between them; but the doubt is soon cleared up by the state of the womb, and the want of motion at the proper period. In pregnancy, the uterus early descends, somewhat, in the pelvis, and its general bulk and weight are increased, whilst the os and cervix, are, by the third month, somewhat altered. Simple inflation of the bowels, with suppression of the menses, cannot mislead, if the state of the uterus be attended to, and at an advanced period, the lower belly is found soft or puffy.

Not infrequently, a diseased ovarium makes the patient suppose herself pregnant, even although she should have the counter evidence of menstruation. For, the abdomen is large, and the ovarium is felt through the parietes, sometimes pretty high, like the uterus, or like a prominent part of a child. The tumour is acted on, so far, by the aorta as to occasion, at times, a sense of pulsation, which is mistaken for the motion of the child. Per vaginam, the uterus is sometimes felt to be higher or lower than

usual, if the ovarium act on it. No child, however, can be felt, nor any distinct expansion of the lower part of the uterus, whilst, externally, the round and circumscribed tumour of the ovarium may be distinguished.

The stethoscope has been used for ascertaining the existence of pregnancy, and the life of the child.* If, after the uterus have ascended out of the pelvis, it be applied over its region, a particular murmur, hissing, or bruit du soufflet, synchronous with the pulse of the mother, is perceived. It has been compared, by Dubois, to the sound emitted by an aneurismal varix. This has been attributed by some to the circulation in the placenta, and named bruit placentaire; by others, to the utero-placentary circulation, or to the current in the aorta or iliac arteries. This sound has been heard not only after the placenta had been expelled, but also when the uterus had been enlarged by tumour, the instrument having been placed over a large artery.

There seems to be two situations where the bellows' sound is heard. That where the placenta is fixed, and, in an inferior degree, at the sides of the uterus, from the position of its great vessels. It cannot be heard before the fourth month, and then, and for a little afterwards, it is heard over all the uterine space, but feebly. Different opinions are held as to its future seat. Some suppose that it is heard in both inguinal regions, and extending, thence, up toward the umbilicus; others, near the entrance of the tubes. Some, that it changes its situation; others, that it does not, but only varies in degree, and this seems the most correct. Were it variable in position, it would be difficult to conceive how the placenta could have any influence. Dr Doherty says, if the bruit can in the least degree be detected at any part of the anterior wall, or front, of the uterus, the placenta is fixed there. If only along the margin of the uterus, the placenta is on the posterior wall, and inclines to that side, where the sound is loudest. The souffle from the arteries, at the side of the uterus, is feeble, compared to this. With regard to the value of auscultation, I have, especially in cases at all doubtful, a good opinion.

Another sound, the bruit du cœur, or that of the foetal heart, is heard about the end of the fifth month, and more distinctly afterwards. Some say they have heard it at the end of the fourth month. Unlike the other, it is not heard always in the same place, but varying with the posture of the child. The pulsating sound, or ticking, is so frequent, as 120, sometimes 140 in the minute, and when opportunities have occurred, of

* See a paper by Dr Kennedy, in Dublin Journ. v. 231, and Observations, &c., and the writings of Hamilton, Montgomery, Velpeau, Nægélé on Auscultation. Kergaradec Mémoire. Dubois in Archives, T. xxvii, and xxviii, &c., Dublin Journ. xvii.

feeling the cord before labour began, the pulsation then has been the same. But in many cases, we find the pulsation not to exceed, perhaps not to extend to, 60 in the minute. This is to be considered as dependent on that change which labour produces on the child, for the pulsation is slowest during a pain, and then may be accelerated, especially, if much liquor amnii be retained, and the child move. It is not, however, proved that pressure is the sole cause of this diminution. If the child be nearly still-born, we find the pulsation very slow, until breathing be established. I have no other explanation to offer of the two states of the foetal pulse. It resembles the ticking of a watch. It is heard, at first, only over a small extent, but afterwards sometimes nearly over the whole abdomen. It is most audible at that part where the back of the child is. The heart is large in proportion to the contents of the thorax, and the lungs are dense, so that sound is more readily conveyed. It is usually first heard about the linea alba, but afterwards may vary according to the position of the child. Naegelé says, that out of 370 cases, it was heard, in 185, beyond the mesial line, with the back to the left side of the mother. In 137, still on the left side, it did not reach the mesial line. In 114, it was heard on the right side only. In 46, it was heard over the whole abdomen. In presentation of the head (with the exception of the face) and the breech, the back always corresponds, he says, to the part where the sound is most distinct. In the early months, the flutter of the foetus, may be mistaken for pulsation, but the patient is sensible, at that time, of motion, and at any rate the existence of pregnancy is proved. It is sometimes heard before the beating of the heart. Naegelé mentions an instance where rapid pulsation of the mother, communicated to the abdomen, was, at first, mistaken for the pulse of the child. Besides this beating of the foetal heart, a souffle is heard in the cord, especially if coiled round the child or pressed on. There may thus be three separate sounds heard by the stethoscope. That of foetal pulsation is most important in deciding on our conduct in labour. Syncope, or excitement of the mother, does not affect the foetal pulsation. The existence of twins, is supposed to be ascertained, by hearing the foetal heart beat at two different places, at the same time; but as Dr Rigby remarks, if examined by two people at once, the pulsations are found not to be synchronous.

CHAP. XX.

Of the Diseases of Pregnant Women.

SECTION FIRST.

PREGNANCY, produces an effect on the general system, marked, often, by a degree of fever, and, always, in that case, by an altered state of the blood. This state, is the consequence of local increased action, induced on the same principle as when an organ is inflamed. There would appear to be, likewise, a tendency to the formation of more blood than formerly, and the nervous system is often rendered more irritable and sensitive. The gravid uterus, also, has an effect, by sympathy, on other organs or viscera, and, likewise, on some of them, mechanically, by its bulk and pressure.

The effect of irritation, or changes in the condition, of the extremities of the abdominal nerves, on the sensorium commune, and whole nervous system, as well as on the arterial action, is so fully proved, that it is not necessary to enter, minutely, here into that subject. It is, however, of great importance, that it should be borne in mind, in our pathological reasoning, although, we be not yet prepared to explain, or what is worse, to detail, many facts of practical value. The origin and distribution of the par vagum, and sympathetic nerves, might lead to the expectation, of very important and intricate sympathies. Temporary affection, of certain portions of the intestinal canal, produces pain in one eye, or side of the head; when another portion is affected, or perhaps the same portion, in a different degree, the opposite side suffers, or the whole forehead is pained, or the upper part of the spinal marrow sympathizes, and a secondary, but most marked, train of symptoms is thereby produced, cough, feeling of suffocation, numbness, or spasms. Another affection of the bowels, gives rise to convulsive agitation of the muscles; whilst, once more, we find irritation, particularly of the small intestines, sometimes occasions drowsiness, or a feeling of fulness and giddiness in the head, or even a temporary insensibility, or paralysis. Hence, some varieties of apoplexy and palsy, are, originally, dependent on affection of the bowels; and, hence, the distressing, and, in many cases, injurious effects, produced by inefficient doses of laxatives, which irritate, partially, without exciting briskly and universally, or, in speedy succession, the whole tract of the intestine. Hence, the impropriety of employing certain mineral waters, in cephalic affections, more especially,

if not aided by exercise, or an additional laxative to excite briskly. Hence, the origin of sick headach, of many hysterical and anomalous affections, of chorea, and disorders of the sanguiferous system; and, hence, the most valuable, but too often disregarded fact, that many excitements, arising clearly from the bowels, or state of the abdominal nerves, are, from this indirect influence on the vascular system, best relieved by resorting to the lancet, before acting on the original seat of the disease by purgatives, which should be too slow in their operation. The uterus may directly influence the system, producing much irritation, and many disordered actions, and so doubtless may the stomach and liver; but I question whether these different organs, do not more frequently cause sympathetic disorders, through the medium of the intestines. Even, in many cases of dyspepsia, perhaps in most, not dependent on organic disease, the complaint is referrible to the intestines; increased secretion of bile, acidity in the stomach, sickness and headach, depending more on the state of the bowels, than on primary disorders of the stomach. Hence, dyspeptic patients are sure to suffer, if they take much liquid, or soups, or acidifiable diet, or aliment which passes easily out of the stomach, and is possessed of a gentle laxative quality; for, thereby, the intestines are excited to a hurtful, but not to a sufficient degree; they are irritated, but not stimulated to efficient action. A diet too light is, therefore, equally bad, in such cases, with one which is heavy and indigestible; and that diet is best, which neither passes too readily, through the changes to be produced on it, in the stomach, nor resists too long, nor runs rapidly into acetous fermentation. Every invalid must, to a certain degree, regulate his diet by experience; but, when an acute attack is brought on, he shall find it still a desideratum, to obtain a medicine which can, rapidly and briskly, excite the intestinal action, without occasioning a long interval of sickness, or being succeeded by debility of the canal.

Effects, both powerful and varied, are often produced by the uterus in a state of gravidity. These, may be divided, into those arising from sympathy between the uterus and other abdominal viscera, and confined to them; into those exhibited in more remote parts, whether occasioned by sympathy directly with the uterus, or indirectly through the medium of the sympathizing intestines; and into those arising more purely from mechanical pressure.

When we consider the great connexion, which subsists between the uterus, and other abdominal viscera, by means both of the sympathetic and spinal nerves, as well as by that more mysterious sympathy, which exists between one organ and another, be-

yond what can be explained by mere connexion of nerves, and the actual enlargement of the uterine nerves, we need not be surprised, at the powerful effect, often produced by pregnancy, on the different organs of digestion, particularly on the stomach and duodenum. These have, in general language, been called dyspeptic, but a thousand symptoms, many of a very opposite character, have been included under the name of dyspepsia or indigestion. It is not my intention, to enter farther into this subject, than to observe, that nothing can be more unfounded than the doctrine, that an imperfect and disordered performance of a function, necessarily, implies a state of debility, far less of torpor, in the organ affected. There may be a defective performance, from simple weakness, but this does not often last long; and in a much greater number of instances, the derangement from the very first, is connected with, if not immediately dependent on, a state either of irritation or excitement. Without discussing the chain of sympathies, which may lead to the production of particular symptoms, much less, investigating the causes and varieties of dyspepsia, I would, from this view, point out the relief which is procured to the stomachic affection, as well as to the other disorders incident to pregnancy, by the use of the lancet, and of a soothing, in preference to a stimulating regimen.

The effects of pregnancy vary much, both in degree, and in the nature and combination of the symptoms, according to the constitution of the woman, and the natural, or acquired, irritability and sensibility of different organs. In a few cases, a very salutary change, is produced on the whole system, so that the person enjoys better health, during pregnancy, than at other times. But in most instances, troublesome or inconvenient symptoms are excited, which are called the diseases of pregnancy, and which, in some women, proceed so far, as not only to deprive them of all enjoyment and comfort, but even to produce considerable fear for their safety.

As these proceed from the state of the uterus, it follows, that when they exist, in a moderate degree, they neither admit of, nor require, any attempts to cure them, for, their removal implies a stoppage of the action of gestation, which is their cause. But, when any of the effects, are carried to a troublesome extent, then we are applied to, and may palliate, though we cannot take them away. This we do, by lessening plethora, or local irritation, or excitement, of the origin of the nerves, if necessary, by blood-letting, and allaying the increased irritability of the system, by the regular use of laxatives, which remove that particular state of the bowels, which is so apt to cause restlessness and

nervous irritation. If these are not altogether successful, the camphorated julep, or musk, are useful medicines.* Besides this general plan, we must diminish the febrile state of the system, where such exists, by regulation of the diet, and suitable remedies. Individual symptoms must be treated on general principles.

There is a great diversity, both in the effects of pregnancy, and, also, in the period at which these manifest themselves, for, whilst some begin to suffer, very early, from the irritation of the uterus, and are much relieved from the effects thereof, after the child quickens, others feel little inconvenience till towards the end of pregnancy, or the last quarter, when the womb is greatly enlarged, and the abdominal viscera disturbed.

In the dietetic part of our treatment, we must bear in mind, that we ought neither to admit of such regimen, as shall fill the vessels with too much fluid, nor throw the organs of digestion into disorder. Much liquid, even of the mildest nature, ought to be avoided, and the aliment must neither be too rich nor too acescent. Regard, however, must be had, in our directions, to the state of the patient, and the risks to be apprehended, on the one hand, from plethora, and on the other from debility. Whatever fruit agrees with the patient, may be freely allowed, and the same may be said of well-boiled vegetables, but when these occasion acid or flatulence, they must be refrained from. It is of much importance, to preserve the bowels in a correct and active state. The exercise to be taken, or permitted, must be regulated by the probable chance of abortion resulting.

SECTION SECOND.

In many cases, the pulse becomes somewhat quicker, soon after impregnation, and the heat of the skin is, at the same time, a little increased, especially in the evenings. In the latter months of pregnancy, the febrile symptoms, in some instances, are extremely troublesome; the pulse is permanently frequent, but in the evenings it is more accelerated, whilst the skin becomes hot, and the woman restless; she cannot sleep, but tosses about till daybreak, when she procures short unrefreshing slumber, occasionally accompanied with a partial perspiration. In the morning, the febrile symptoms are found to have subsided, but in the

* Petit, and many after him, have been of opinion, that opium is hurtful during gestation; and there can be no doubt that it generally is so, when given frequently. It is detrimental, both by its effects upon the stomach and bowels, and on the system at large. In severe spasms, or great irritation, it may be necessary, but it never ought to be often repeated, as it ultimately increases the irritability, and injures the bowels, as it would do in chorea.

afternoon they return, and the following night is spent alike uncomfortably.

This state is attended with more emaciation, and greater sharpness of features, than is met with in pregnancy, under different circumstances; but it is wonderful how well the strength is kept up, in spite of the want of rest, and of the uneasiness which is produced, from this disease being, sometimes, conjoined with intolerable heat, about the parts of generation.

Without entering into the doctrine of fever, I would merely remark, that the existence of this state, must be intimately connected with an excited condition, of those portions of the nervous system, which, chiefly, influence the action of the heart, and the evolution of animal heat.

In slight degrees of this febrile state, all that is necessary, is sedulously to keep the bowels open, and take away a little blood, in order to diminish the excitement of the nervous system. But when it becomes urgent, towards the last months of gestation, we are under the necessity of taking away blood more frequently, but not in great quantity at a time; and always, in doing so, having regard to the constitution of the patient. The saline julep is of considerable service, by producing a gentle moisture, but a copious perspiration is neither necessary nor useful. The julep may either be given in repeated doses, through the day, or merely one or two doses in the morning, or early part of the night, according to circumstances. The bowels are to be kept open, by a mild laxative, such as the aloetic pill, or rhubarb and magnesia. The sulphuric acid is a very good internal medicine. The restlessness is best allayed by sleeping with few bed-clothes; and sometimes great relief is obtained, by dipping the hands in water, or grasping a wet sponge. Opiates very seldom give relief, and ought not to be pushed far, as they make the patient more uncomfortable, and are supposed even to injure the child; at all events, if the occasional exhibition on any emergency, of a moderate dose of opium or hyoscyamus, fail to procure comfortable sleep, no benefit is to be expected from increasing the quantity. Frequently, nothing does much good, the state continuing until the woman be delivered. I need scarcely add, that we must take care not to confound this, which may be called the fever of pregnancy, with that arising from local disease, as for instance in the lungs or liver.

There is a species of fever, which may affect women about the middle of pregnancy, and makes its attack suddenly, like a regular paroxysm of ague. It soon puts on an appearance rather of hectic, combined with hysterical symptoms. The head is generally at first pained, or the patient complains of

much noise within it, sleeps little, has a loathing at food, with a furred dry tongue, and a considerable thirst, whilst the bowels are constipated. Sometimes she talks incoherently, or moans much during her slumber, and has frightful dreams: occasionally, a cough, or distressing vomiting supervenes. This disease is very obstinate, and often ends in abortion, after which, if the patient do not sink speedily, under the effects of the process, she begins to recover, but remains long in a chlorotic state, which, if not removed, may terminate in phthisis. This disease appears to originate from the bowels, and bears great analogy to the infantile remitting fever. It is usually, preceded by costiveness, and is sometimes, apparently, excited by irregularities in diet. We ought, on the first attack of the cold fit, to check it by warm diluents, with the saline julep. If the proper opportunity be lost, or these means fail, we must lessen irritation, by detracting some blood, open the bowels freely, and afterwards prevent feculent accumulation, keep the surface moist, and palliate troublesome symptoms. If the tongue be early loaded, and the patient be sick or squeamish, a very gentle emetic, such as a cupful of chamomile tea, which may only operate once, and that easily, will be proper in the commencement. The strength is to be supported. In a state of convalescence, gentle exercise and pure air are useful, but every exertion must be avoided.

SECTION THIRD.

Vomiting, is a very frequent effect of pregnancy, and occasionally, begins almost immediately after conception. Generally, it takes place only in the morning, immediately after getting up, and hence it has been called the morning sickness; but, in a few instances, it does not come on till the afternoon. It usually continues until the period of quickening, after which it decreases or goes off, but sometimes it remains during the whole of gestation. Some women do not vomit, and have very little, if any, sickness; others, begin, after the fourth month, to feel an irritation about the stomach and other viscera; and some remain free from inconvenience till the conclusion of pregnancy, when the distention of the womb affects the stomach. The fluid thrown up, is generally glairy or phlegm, and the mouth, fills with water, previous to vomiting, but if the vomiting be severe or repeated, bilious fluid is ejected. Generally, there is no occasion to prescribe any remedies. Puzos, and others, even considered vomiting as salutary; but in some cases, it goes to a very great length, recurring whenever the woman eats, or sometimes even when she abstains from eating, and continues for days or even weeks, so obstinate, that she is in danger of miscarrying, or of suffering from want of food. Although emetics be apt to cause abortion, yet

this sympathetic vomiting seldom does so, unless it be long continued. In this case, abortion does take place, and most fortunately, as otherwise the woman would die exhausted. I have never known, however, vomiting, purely, dependent on pregnancy, end fatally. In some instances, the vomiting ceases whenever the ovum perishes; in others, not till it be entirely excluded. It is a general rule, in severe cases, to take away, early, a small quantity of blood, a quantity proportioned to the vigour and fullness of the habit, and state of the pulse. Of the utility of this practice, the general testimony of practitioners, and my own observation, fully convince me. 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, cerebral affections. It also acts on the sympathetic nerve, the cœliac plexus of which, sympathizes with the uterine. Narcotic substances, such as opium, or morphia, have been tried internally, either without blood-letting or subsequent to it, but uniformly without permanent cure, and, rarely, even with temporary advantage. Still, they do sometimes alleviate so far, as to enable the patient to bear up till the eighth or ninth month. In such cases, their exhibition has not produced a desire for them after delivery. In a few instances, a cloth wet with laudanum, applied to the pit of the stomach, has done good. The greatest attention, must be paid to the bowels, and most marked benefit, is often derived, from a gentle dose of Epsom or Cheltenham salts. The severity of the vomiting, may also be greatly mitigated, by effervescing draughts, or soda water, the last of which, if it do not check the vomiting, renders it much easier. Even cold water, has been employed, with advantage. A light bitter infusion, as that of chamomile, or lemonade, is sometimes of service. Obstinate vomiting, especially if accompanied with pain, or tension in the epigastric region, may be relieved by the application of leeches to that part. I have so often found advantage, from this remedy, in harassing vomiting, that I strongly advise it. If these means fail, in procuring speedy relief, it is necessary to refrain for a time, from eating, and have recourse to nourishing clysters, or to give, only, a spoonful of milk, soup, &c., at a time. Sometimes one kind of food is kept, whilst another is rejected. When the vomiting is bilious, and accompanied with pain in the right side and shoulder, cough, and other symptoms of hepatitis, blood should be taken, if the symptoms be acute; if not, a small issue, by caustic, should be immediately formed on the side, and a very gentle course of mercury given, with circumspection, for, if the medicine be given freely, it produces much debility, or abortion, and sometimes accelerates the fate of the patient.

In very obstinate vomiting, it has most properly been proposed to induce premature labour, in order to preserve the patient. I knew one case where this was twice done. In a third pregnancy the patient died, and a gall stone was found impacted in the duct. Nature sometimes saves the patient by means of premature expulsion.

When vomiting is troublesome, in the conclusion of pregnancy, it is proper to detract blood, and confine the person to bed. Cloths dipped in laudanum, should be applied to the pit of the stomach, and a grain of solid opium may be given internally; but if this do not succeed, it is not proper to give larger and repeated doses. Gentle laxatives must be employed.

Vomiting may also come on, from a state of the stomach, approaching to inflammation. In this case, it is obstinate, and nothing can be long retained. The substance vomited, is either dark green or blackish, according to the extent and duration of the disease, and there is tenderness of the epigastrium, with great depression of strength. The former or hepatic disease is dangerous, but this is much more so. Leeches, followed by blisters applied to the region of the stomach, and opiates, with small quantities of mild nourishment, or nutritive clysters, constitute the treatment, unless we have seen the case so early, as to be able to use the lancet. It is too often fatal.

Obstinate vomiting, has also appeared to proceed, from a morbid condition of the uterus, which, after death, has been found slightly inflamed, or even pus has been found, between the surface of the uterus and membranes, although, during life, no pain was felt in the uterine region. The parietes are soft, the uterus flaccid, with an exudation of fibrin in some places between the uterus and decidua. The stomach is sound, and seldom has been pained. Two cases are related by M. Dance, where the vomiting began with pregnancy, and proved fatal at three, or three and a half months.* This calls for minute examination in protracted vomiting, and points out in all doubtful cases, the propriety of the soothing and gentle depletory, rather than stimulating treatment.

Dyspepsia is to be treated *more solito* by mild laxative bitters, along with soda; the occasional use of a blue pill, or if need be, the application of a very small blister to the epigastrium. The diet rather solid than liquid.

SECTION FOURTH. ;

• Heartburn, often occurs very early after conception, but sometimes not till after the fourth month. This is a complaint,

* Archives Générales, Juin, 1827.

so very common, and so generally mitigated by absorbents, such as magnesia, or bicarbonate of soda, that we are seldom consulted respecting it. But, when it becomes very severe and intractable, it is requisite to try the most powerful of these means, such as calcined magnesia, combined with pure ammonia. When these fail, liquor potassæ, or the chalk mixture, with a large proportion of mucilage, may give relief. Extract of liquorice is sometimes useful. Laxatives are always indispensable. In obstinate cases, venesection is useful. Emetics have been proposed by Dr Denman. They are only allowable, where there is a constant screatus, of disagreeable phlegm. In every severe case, the diet must be carefully attended to. A sensation of heat or burning, sometimes depends on the mere state of the nerves of sensation. It is not relieved by antacids, nor is there any proof of acid being present. It is more permanent, and obstinate, than heartburn from acid. It is most relieved by opium, in moderate doses, and purgatives, and the application of a blister, to the back of the neck, or between the shoulders. We must not confound these affections, with chronic inflammation of the mucous coat of the stomach and gullet, in which the throat ultimately becomes aphthous. Leeches to the pit of the stomach, followed by a small blister, mild laxatives, bland liquid, and, occasionally, small doses of blue pill, constitute the practice, in this last case.

Pyrosis is to be relieved chiefly by laxatives, such as the aloetic pill, with extract of colocynth, some light bitter, or rhubarb and magnesia. If these means fail, antispasmodics or opium may be useful, and rubbing the cervical region, with anodyne balsam, or applying leeches to the back of the neck, for it often depends, on a complicated affection, of the eighth and the fifth pair of nerves.

SECTION FIFTH.

Women during gestation, are subject to many *bizarreries* in their appetite, and often have a desire to eat things, they did not formerly like. This desire, is common, in cases of abdominal irritation, as we see in those, who are afflicted with worms, or have indurated or morbid fæces in the intestines. These longings, it has been thought dangerous to deny; for, as it was supposed, that they depended upon some peculiar state of the child, affecting the mother, it was imagined, that, if this were not removed, the infant should sustain an injury, or might even bear the mark of the thing longed for. Into this doctrine, it is now unnecessary to enter; and it will be sufficient to add, that when the desire is placed upon any article of diet, it may be safely gratified, and, indeed, generally, the inclination leads to some light, and cooling, regimen.

SECTION SIXTH.

Spasm of the stomach, or duodenum, may often be attributed to some irregularity of diet, to the action of cold, or the influence of the mind. It is necessary to interfere, promptly, not only because the pain is severe, but, also, because it may excite abortion, or kill the child. A full dose of laudanum with ether, followed immediately by a saline clyster, is almost always successful; but when the attacks are renewed, then we must endeavour to prevent them by tonics, such as colomba, oxyde of bismuth, or preparations of iron. It is, at the same time essential, that the bowels be kept open, and for this purpose, asafotida, combined with aloes and colocynth, is well adapted. Blood-letting is of service, if the attack be prolonged.

When spasm of the stomach, takes place in the end of pregnancy, or about the commencement of parturition, with a sense of fulness or uneasiness in the head, it is necessary to detract blood, lest the patient be seized with convulsions, which are particularly apt to take place, if there be any spot, in the spine, tender on pressure. If so, a blister should be applied to it. Bleeding is likewise proper, when the pain is accompanied, with tenderness about the epigastric region, heat of the skin, full pulse, and ruddy face. When pain proceeds from the passage of a biliary calculus, it is to be treated *more solito*.

SECTION SEVENTH.

Costiveness, is a general attendant on pregnancy, partly owing to the pressure of the uterus on the rectum, and partly owing to the increased activity of the womb, producing a sluggish motion of the bowels. We must not, however, neglect this state, because it naturally attends gestation, for it may occasion many and serious evils. It certainly increases the irritability of the system, as well as some of the stomachic ailments; and is apt to cause irritation of the bowels, which may either excite premature labour, or give rise to much inconvenience after delivery, or, even, occasion convulsions during labour. In considering the effects of costiveness, not only in pregnancy, but in other circumstances, it will be well to attend to the effect on the rectum alone, independently of other consequences, and to recollect the branches, both of the sympathetic ganglia and sacral nerves, distributed to that gut and the remote influence thereby exercised.

Magnesia is a very common remedy, because it, at the same time, relieves heartburn; but, when it fails, or is not required for curing acidity in the stomach, the common aloetic pill, the compound rhubarb pill, compound extract of colocynth, or, a

pill composed of equal parts of carefully prepared extract of aloes, and that of liquorice, with, or without, a little oil of peppermint or of cassia, may be employed. Castor oil is also given, either alone, or made into an emulsion with mucilage. If a clyster of warm water be regularly given in the morning, much less medicine will be required. At least a pint should be thrown up, and it should not be retained above a few minutes, as it acts on a different principle from the saline clyster. The mere emptying of the rectum alone, has a most beneficial effect on the system, and must not be disregarded, even, if the superior part of the canal, did its duty.

It sometimes happens, that indurated fæces, are accumulated in the rectum or colon, producing considerable irritation, even of the whole system. This causes, not only pain of the bowels, but, also, an increased secretion of the intestinal mucus, which is passed either alone, or with blood, together with pieces of hard fæces. This state, like dysentery, is often accompanied with great tenesmus; but it may be readily distinguished, by examining per vaginam, for, the rectum is found to be filled with fæces, and sometimes a diverticulum is formed, or considerable pressure made, on the top of the vagina. Our first object ought to be, to remove the irritating cause, which might ultimately produce abortion. Clysters are of great efficacy, because they soften the fæces, and assist in emptying, that part of the intestine, which is most distended. These are to be, at first, of a very mild nature, and must be frequently repeated. It may even be requisite, to break down the feculent mass, with the shank of a spoon, or scoop. After the rectum is emptied, laxatives, such as castor oil, or small doses of sulphate of magnesia must be given, to evacuate the colon; and when the fæces are brought into the rectum, clysters must be again employed. After the bowels are emptied, hyoscyamus should be given, to allay the irritation; or if this be not sufficient, and the pain, and secretion of mucus, with tenesmus, still continue, an opiate clyster must be administered, but, next day, it is to be followed by a mild laxative. Should there be fever, or considerable pain in the abdomen, blood-letting will be necessary. If this costive state be neglected, near the time of delivery, the labour is often protracted, and after delivery, masses of indurated fæces, come down from the colon, attended with considerable pain, and frequency of pulse, or, sometimes fatal peritonæal inflammation. When there is much irritation with sensibility, upon pressing on the abdomen, either before or after delivery, it will be proper to detract blood, at the same time that we use the remedies already pointed out.

SECTION EIGHTH.

The bowels, instead of being bound, may be very open; or costiveness and diarrhœa, may alternate with each other. The diarrhœa is of two kinds; a simple increase of the peristaltic motion, with greater serous secretion; or a more obstinate disease, depending on deranged action, if not texture, of the bowels. In the first kind, which seems to proceed from the uterine sympathy, the discharge is not altered from the natural state, except in being thinner; the appetite is pretty good, and the tongue clean, or only slightly furred. This is not to be checked, unless it go to a considerable extent, or continue long, or the patient be weakened by it, or be previously of a debilitated habit. Anodyne clysters, or the confectio catechu, or half-grain opium pills, will then be of service. Should the pulse be frequent, and any degree of heat, or tension, be felt in the abdomen, venesection will be useful. In the second kind, the function of the digestive organs is more injured, either directly or indirectly, the appetite is lost or diminished, the tongue is foul, and the patient has a bitter or bad taste, and, occasionally, vomits ill-tasted or bilious matter; the breath is offensive, and often, the head aches. The stools are very offensive, and generally dark-coloured. In this case, small doses of rhubarb give great relief, and one grain of ipecacuanha, may occasionally be added, to each dose of rhubarb. A light bitter infusion, is also a useful remedy. If scybalæ be passed, a small quantity of castor oil should be given occasionally. Attention must be paid to the diet, which is to be light, and the food taken in small quantity at a time. Considerable benefit, is derived from soda water, which generally abates the sickness. When the tongue becomes cleaner, and the stools more natural, anodyne clysters may be administered. In all cases of continued diarrhœa, it is useful to have the surface kept warm with flannel; and sometimes a flannel roller, bound gently round the abdomen, gives great relief.

Purging, from chronic inflammation, or ulceration, of the mucous coat of the intestine, is very dangerous and obstinate. It resembles dysentery; it seldom proves fatal before, but often after, delivery. If we see the patient early, mild laxatives should be given, to remove any hardened fœces which may be in the bowels. If there be much pain, leeches should be applied. Afterwards, anodyne clysters, or pills of soft opium, must be used. Blisters have sometimes been useful.

SECTION NINTH.

Pregnant women are very subject to piles. This may be, partly, owing to the pressure of the womb, upon the vessels of

the pelvis, but is chiefly to be attributed, to a sluggish state of the intestinal canal, communicating a similar torpor to the hæmorrhoidal veins. As this state, is attended with costiveness, the disease has been considered as dependent on the mechanical action of the fæces; but whatever truth may be in this opinion, in some cases, yet, generally, it is without foundation; and it is no unusual thing for those who are subject to piles, to be able to foretell an attack, by the appearance of peculiar symptoms, indicating diminished action of the intestinal canal. The treatment of this disease is twofold. We are to remove the cause, by such means as give a brisker action to the bowels, such as bit-
ters and laxatives; which last, are also of great service, by removing the irritation of the fæces from the rectum, and rendering them softer, by which the expulsion gives less pain. For this purpose, cream of tartar alone, or combined with sulphur, has been generally employed; but we may, with equal advantage, give small doses of castor oil. The effect should never be violent, and much benefit, may be derived, from the daily use of a clyster of tepid water, cautiously administered, so as not to irritate the parts with the pipe. Besides removing the cause, we must likewise lessen the effect, by such local means, as abate irritation and sensibility. When the pain, inflammation, and swelling, are great, it is of service to detract blood, topically, by the application of leeches, or, especially if there be considerable fever, blood-letting may be necessary, as in other cases of local inflammation. The diet should be spare; all stimulants and cordials must be avoided; cooling and anodyne applications to the tumour, are also very proper, such as an ointment, containing a small quantity of the acetate of lead, or a weak solution of the acetate of lead in rose water, or a mixture of the acetum lithargyri and cream, or cocoa nut oil. Sometimes, astringents are of service, such as the gall ointment; or narcotics, such as opium* or belladonna. If these means fail, it will be proper to give an anodyne clyster, and apply fomentations, or emollient poultices to the tumour, but every practitioner can tell, how often, all topical applications have disappointed him. In some cases, the tumour becomes slack, and subsides gradually; in other instances it bursts, and more or less blood is discharged. If the hæmorrhage be moderate, it gives relief; but, if profuse, it causes weakness, and must be restrained, by pressure and astringents. Great pain, or much hæmorrhage, are both apt to excite abortion, as the former is apt to act, by sympathy, on the neighbouring parts. Even in the unimpregnated state, internal

* Dr Johnson advises the following ointment to be applied, and then a poultice to be laid over the tumour. ℞. Ol. Amygd. ꝑi. Ol. Succini ꝑiss. Tinct. Opii. ℥ij. M. *System*, p. 125.

piles are apt to produce symptoms, supposed to arise from the womb or vagina. The rectum-bougie in such cases is useful, provided it do not give pain.

Extirpation is not warrantable, in pregnancy, unless, the severity and obstinacy of the symptoms, be more likely, to produce premature labour, than the temporary pain, and excitement, from the operation.

SECTION TENTH.

The bladder is often affected by pregnancy. In some instances, like the intestines, it becomes more torpid than formerly, so that the woman retains her water long, and expels it with some difficulty, and in considerable quantity at a time. This state requires great attention, for complete retention may, at a certain stage of gestation, possibly be occasioned. There is not much to be done, by medicines, in this case; for, although soda, and similar remedies, sometimes give relief, yet, more reliance must be placed, on the regular efforts of the patient. Should these be delayed too long, then, the catheter must be employed.

More frequently, the bladder is rendered unusually irritable, especially about its neck, and the urethra participates in this state. There is also, in many instances, an uneasiness felt, in the region of the bladder itself. It may be produced by sympathy with the uterine nerves. This state, requires a very different treatment, from the former, for, here, it is our object, to avoid every saline medicine, which might render the urine more stimulating. Relief is to be expected, by taking away blood, giving small doses of castor oil, and, occasionally, the extract or tincture of hyoscyamus, and encouraging the patient to drink mucilaginous fluids, which, although they do not reach the bladder as mucilage, yet, afford a bland addition to the blood, from which the urine is secreted. The occasional introduction of a pretty large sound or bougie, is sometimes useful; or, we may, if the distress be considerable, try an opiate clyster. This state of the bladder, is sometimes productive of a slight irritation, about the symphysis of the pubis, rendering the articulation less firm, and more easily separated. In such circumstances, when the pubis is tender, blood-letting and rest, are the two principal remedies.

A very distressing affection, which is often conjoined with this state of the bladder and urethra, but which may also take place without it, is a tender and irritable state of the vulva, producing great itching about the pudendum, especially during the night; and generally the urine is felt very hot. This vexatious condition, is often alleviated, by blood-letting and laxatives; and when the itching is great, a sponge dipped in cold water, or in

cold solution of cerussa acetata, should be applied, or the parts may be bathed with emulsion of almonds, having half a grain of muriate of mercury added to each ounce, or with a weak solution of nitrate of silver. If much fever exist, the saline julep, combined with a little tincture of opium, is useful.

Incontinence of urine, is not uncommon in the end of gestation, and is produced by the pressure of the uterus on the bladder, by which the urine is forced off, involuntarily, whenever the woman coughs or moves quickly; or at least she cannot retain much of it, being obliged to void it frequently, but without strangury. For this complaint, there is no cure; and many consider it as a favourable omen, that the child's head is resting on the os uteri. When the uterus is very pendulous, some advantage may be obtained, by supporting the belly, with a proper bandage, attached to the shoulders.

SECTION ELEVENTH.

Connected with the state of the alimentary canal, is the jaundice of pregnant women. This disease appears at an early period, and is preceded by dyspeptic symptoms, which generally increase, after the yellowness comes on. In some instances, the tinge is very slight, and soon disappears. In other cases, the yellow colour, is deep and long continued, and the derangement of the stomach and bowels considerable. Emetics, and other violent remedies, which are sometimes used in the cure of the jaundice, are not allowable in this case; and, in every instance, when young married women are seized with jaundice, we should be very cautious in our prescriptions. Small doses of blue pill, along with laxatives, and afterwards, some light bitter infusion, are the most proper remedies, and, generally, the complaint soon goes off. Jaundice may also take place, in the end of gestation, and, in this case, it proceeds, most frequently, from pressure on the gall duct. Sometimes, however, it is dependent on a disease of the liver itself, which may occur at any period of gestation, and is marked by the usual symptoms. In this case, the danger is very great, and can only be averted, by taking prompt measures, for removing the hepatic disease.

SECTION TWELFTH.

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 certain conditions of the alimentary canal. It goes off after delivery, and does not require any peculiar treatment.

SECTION THIRTEENTH.

The thoracic viscera, not unfrequently suffer, during pregnancy. Palpitation of the heart, is a very common affection, and extremely distressing. It is a disease so well known, that it is needless here to describe it; but it may not be improper to observe, that women themselves, sometimes mistake for it, a strong pulsation of the arteries, at the upper part of the abdomen. It may make its attack, repeatedly, in the course of the day; or only at night, before falling asleep; or at the interval of two or three days; and is very readily excited, by the slightest agitation of the mind. It is generally void of danger; but, in delicate women, and in those who are disposed to abortion, it sometimes occasions that event; and, if long continued, it may excite pulmonic disease, in those who are predisposed to it. Absolute rest, with antispasmodics, are requisite during the paroxysm. Hartshorn, ether, and tincture of opium, may be given separately or combined. Roderic a Castro prescribes a draught of hot water. The attacks are to be prevented, by the administration of tonics, such as tincture of muriated iron, and of fœtids, such as valerian and asafoetida, and rubbing the spine with some stimulating embrocation. Fatigue and exertion, must be avoided, and the mind kept tranquil. If the patient be plethoric, the head be pained, or the face flushed, it is useful to take away a little blood. The bowels are to be carefully kept open. The diet must be attended to, for it is often produced by a disordered stomach.

A more formidable species of palpitation is independent of the pregnant state, but is increased by it. It proceeds from organic affection of the heart, detected by the stethoscope. Mere palpitation, from this cause, does not prove fatal; but, when combined, as it too often is, with dyspnœa and dropsy, it is most dangerous, and the patient may die undelivered. The treatment must be conducted on the usual principles. Occasional bleeding to a small extent, light diet, laxatives and diuretics, constitute the practice.

A tendency to nervous or hysterical diseases, is to be prevented, in those who are liable to them, by occasional blood-letting, the use of laxatives, and camphor, or fœtids. Opiates are only to be given, for the immediate relief of urgent symptoms.

SECTION FOURTEENTH.

Syncopé may take place, at any period of gestation, but is most frequent, in the first three months, or about the time of quickening. It often occurs, in those who are not otherwise

unhealthy, but it also may occur, daily, for some time, in those who are weakened, by a loose state of the bowels, alternating with costiveness, or, by want of sleep occasioned by toothach; &c. It may succeed some little exertion, or speedy motion, or exposure to heat; but it may also come on, when the person is at perfect rest. The paroxysm is sometimes complete, and of long duration; at other times, the patient does not lose her knowledge of what is going on, and soon recovers. A recumbent posture, the admission of cold air, or application of cold water to the face, the use of volatile salt, and the cautious administration of cordials, constitute the practice during the attack. Should the fit remain long, we must preserve the heat of the body, otherwise, a protracted syncope, may end in death. Those who are subject to fainting fits, must avoid fatigue, crowded or warm rooms, fasting, quick motion, and agitation of the mind. Tonics are useful, when the system is weak, and the bowels must be, strictly, attended to.

There is a species of syncope, that I have, oftener than once, found to prove fatal, in the early stage of pregnancy, dependent, I apprehend, on organic affections of the heart, that viscus being enlarged, or otherwise diseased, though perhaps, so slightly, as not, previously, to give rise to any troublesome, far less, any pathognomonic symptoms. Although, I have met with this fatal termination, most frequently, in the early stage, yet, I have also seen it take place, so late, as the sixth month of pregnancy.

SECTION FIFTEENTH.

Sudden attacks of dyspnoea, in those who were previously healthy, are generally to be considered as hysterical, and are readily removed by antispasmodics. There is, however, a more obstinate and protracted symptom, not unfrequently connected with pregnancy, namely, cough. This may come in paroxysms, which are generally severe, or, it may be almost constant, in which case, it is short and teasing. Sometimes, a viscid fluid is expectorated, but more frequently, the cough is dry. During the attack, the head is generally painful, and the woman complains much of the shaking of her body, especially of the belly. All practical writers are agreed, with respect to the hazard of this disease, for it is extremely apt to produce abortion; and it is worthy of remark, that after the child is expelled, the cough often suddenly ceases. But exposure to cold frequently brings it back, and, should there be a predisposition to phthisis, that disease may be thus excited. Blood-letting must be early, and sometimes repeatedly employed, the bowels kept open, and lozenges, containing opium or hyoscyamus, must be occasionally

used, to allay the cough. A large Burgundy pitch plaster, applied betwixt the shoulders, is of service, or a small blister, over the junction of the cervical and dorsal vertebræ, and kept open, for some time, by savin ointment. This kind of issue, also does good, on the top of the sternum. Should abortion take place, and the cough continue, tonics, such as myrrh and oxide of zinc, ought to be administered.

SECTION SIXTEENTH.

In some instances, hæmoptysis or hæmatemesis takes place in pregnancy, especially in the last months. Blood-letting is the remedy, chiefly, to be depended on, and, afterwards, purgatives should be given. Acids and hyoscyamus may then be employed, to allay irritation, and a blister applied over the breast or stomach. If these means do not succeed, the patient dies. Should the hæmorrhage take place during labour, or should pains come on prematurely, and the os uteri dilate, as sometimes happens, it will be prudent to accelerate the delivery.

SECTION SEVENTEENTH.

Headach, is a very alarming symptom, when it is severe, constant, and accompanied with symptoms of plethora. It very generally, though not always, is occasioned, or at least, preceded, by a neglected state of the bowels, with, or without, indigestion from over indulgence. If the eye be dull or suffused, and the head giddy, especially when the patient stoops or lies down, with a sense of heaviness over the eyes, or within the skull, great danger is to be apprehended, particularly, if she be far advanced in her pregnancy. This is still more the case, if she complain of ringing in the ears, and see flashes of fire, or have indistinct vision. I am pretty well satisfied, that in most cases, although the head be pained, yet, the spinal cord is the part originally diseased, and the head only suffers in a secondary way. In some instances, there is a fixed pain in one part of the back, along with, or preceding the affection of the head. Tetanic convulsions, or coma, next take place, sometimes attended with paleness, sometimes, with turgid redness of the visage. These diseases are to be prevented, by having immediate recourse to blood-letting and purgatives; and the same remedies are useful, if either one or other of them, have already taken place. The quantity of blood which is to be detracted, must be determined, by the severity of the symptoms, the habit of the patient, and the effect of the evacuation; but, generally, moderate evacuation will prevent, whilst very copious depletion, is requisite to cure, these diseases. I shall not, at present,

enter, more minutely, into the treatment of convulsions, but only remark, that the first and most essential thing, to be done, is to detract blood freely from a vein; next, the bowels are to be immediately opened by a clyster, and, then, a purgative is to be administered. If the headach be accompanied with œdema, diuretics are to be afterwards used. If local uneasiness remain, in one part of the back, or a vertebra be painful on pressure, and, particularly, if pressure excite spasm, blood should be taken from the part, by leeches or cupping, and afterwards an issue, over it, may be required.

If the patient be seized with apoplexy,* there is seldom any attempt made to expel the child,† during the fit, and in my own practice, I have only once known that event take place. In eclampsia, on the contrary, if the paroxysm be protracted, but particularly if the attacks be repeated, and the patient have not been subject to them before, there is, frequently, an effect produced on the uterus; its mouth opens, and the child may be expelled, if the patient be not, early, cut off, by a fatal coma. But much depends on the cause, and the immediate connexion of the disease, with the state of the uterus. Whenever expulsive effects come on, we must conduct the labour, according to the rules, hereafter, to be noticed. But in no case, are we to endeavour to bring on labour, far less to force delivery. In some instances, palsy either succeeds an apoplectic attack, or follows headach and vertigo. This does not commonly go off, until delivery have taken place; but it may be prevented from becoming severe, by mild laxatives and light diet; and after the woman recovers from her labour, the disease often abates, or yields to appropriate remedies.

All headachs, however, do not forebode these dismal events, for, often, they proceed from the stomach, and evidently depend on costiveness, dyspepsia, or nervous irritation. These are generally periodical, accompanied with a pale visage; they feel more external than the former, and are often confined to one side of the head. They are attended with acidity in the stomach, eructations, and sometimes considerable giddiness, or slight sickness, with bitter taste in the mouth. They are relieved, by the regular exhibition of laxatives, by sleep, the moderate use of volatiles, and the application of ether externally.

Hysterical convulsions, are not uncommon during gestation, and, more especially, during the first four months. They occur in irritable and excitable habits, or in those, who are, naturally

* Some attribute this to hypertrophy of the left ventricle; others, to the gravid uterus obstructing the course of the blood to the lower extremities; both opinions are doubtful.

† Mr Wilson's case is an exception to this. Vide Med. Facts, Vol. v. p. 36.

disposed to syncope, or who have been exhausted, by any pain, depriving them of rest, or by alvine discharges. They are distinguished, by the face, usually, being pale during the attack, the countenance is very little distorted, there is no foam issuing from the mouth, the patient, for a time, lies as in a faint, and then has convulsive motions, or screams and sobs, and the fit is generally terminated by shedding tears. The treatment, in the first instance, consists in administering antispasmodics, particularly opiates, and volatile fœtids. Afterwards, the returns are to be prevented, by bringing the bowels into a correct state, and keeping them so. The exercise is to be gentle, but taken regularly. The diet mild, but nourishing. Sleep is to be procured, if necessary, by opiates; and tonic medicines, with the assistance of ammoniated tincture of valerian, must complete the cure. If, however, there be a feeling of fulness about the head, or weight, or headach, it is, even in spare habits, of service to take away a little blood.

SECTION EIGHTEENTH.

Toothach, not unfrequently attends pregnancy, and sometimes, is a very early symptom of that state. 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. Creosote may be tried.

SECTION NINETEENTH.

Salivation, is, with some women, a mark of pregnancy. It has been supposed, that there is a sympathy, existing between the pancreas and salivary glands, and that the phlegm rejected by vomiting, proceeded from the former, whilst, in many instances, the latter, yielded an increased quantity of viscid saliva. This is a symptom, which scarcely demands any medicine, but, when it does, mild laxatives, are the most efficacious, with counter-irritation on the back of the head or neck.

SECTION TWENTIETH.

Pain and tension of the mammæ, frequently attend gestation, and these symptoms are often very distressing. If the woman have, formerly, had a suppuration of one mamma, that breast, is generally most painful, and she is afraid of abscess again forming; in other instances, the pain being accompanied with increased hardness of the breast, produces apprehension of cancer.

These fears, are generally groundless; but if suppuration do take place, it is to be treated on general principles. Blood-letting often relieves the uneasy feeling in the breast, which is also mitigated, by tepid fomentations, or gentle friction, with warm oil. Nature often gives relief, by the secretion of a serous fluid, which runs out from the nipple; but if this be much encouraged by suction, Chambon remarks, that the fœtus may be injured. This, however, is so far from being always the case, that many women, who conceive during lactation, continue to nurse, for some months, without detriment to the fœtus. The discharge is, in some instances, so great about the seventh month, or later, as to keep the woman very uncomfortable. The diet in this case should be dry.

The sudden abatement of the tension, and fulness of the breasts, with a diminution of size, are unfavourable circumstances, indicating either the death of the child, or a feeble action of the womb.

SECTION TWENTY-FIRST.

In the course of gestation, the feet and legs, frequently become œdematous, and sometimes the thighs, and labia pudendi, participate in the swelling. The swelling is by no means proportioned, always to the size of the womb, for, as has been remarked by Puzos, those who have the womb unusually distended with water, and those who have twins, have, frequently, very little œdema of the feet. This disease, is partly owing, to the pressure of the uterus, but it also seems to be, somewhat connected with the pregnant state, independent of pressure; for, in some instances, the œdema is not confined to the inferior extremities, but affects the whole body. A moderate degree of œdema, going off in a recumbent posture, is so far from being injurious, that it is occasionally remarked, that many uneasy feelings, are removed by its accession; but a greater, and more universal effusion, indicates a dangerous degree of excitation. In ordinary cases, no medicine is necessary, except aperients; but, when the œdema is extensive or permanent, remaining even after the patient has been for several hours in bed, and, more especially, if the pulse be accelerated, and uncomfortable sensation be felt in the head, or about the eyes, it may be considered as arising from a particular state of the nervous system, and dangerous effects, such as convulsions, may succeed, or, it may predispose to puerperal diseases. We must therefore have, instant, recourse to blood-letting and purgatives. These means are always proper, and are never to be omitted, unless the strength be much reduced; in which case, we only employ the purgatives, and cordials, prudently, with acetate of potass, or

sweet spirit of nitre. In obstinate cases, we may try the twelfth part of a grain of extract of elaterium, with a drachm of supertartrate of potass, twice or thrice a-day for a short time. Diuretics, generally, are not successful, and many of them, if given liberally, tend to excite abortion. Friction relieves the feeling of tension.

SECTION TWENTY-SECOND.

Ascites, may, like œdema, be excited, in consequence of some condition connected with gestation, or may be independent of it, arising from some of the ordinary causes of dropsy, especially from a disease of the liver. In the last case, medicine has seldom much effect, in palliating or removing the disease, and the patient usually dies, within a week or two after her delivery, whether that have been premature, or delayed till the full time. When ascites is not occasioned by hepatic disease, and appears for the first time, during gestation, it is generally connected with the œdematous state, above-mentioned, depending on the same condition of the nerves, and seldom comes on, until, the woman have been, at least, three months pregnant. If it be not attended with other bad symptoms, such as headach, feverishness, drowsiness, &c., it abates, and goes off, a little before, or soon after, delivery, which is often premature. But in other instances it increases, and from the distention produced, very great difficulty of breathing, inability to sleep, and tendency to faint, are occasioned. I have seen diuretics given, very freely, in these cases, but, most frequently, without any benefit. On this account, and also from the danger of these when powerful or irritating, exciting abortion, or premature labour, I am inclined to dissuade from their use, except in urgent cases. Then, the mildest ought to be employed, such as cream of tartar, juniper tea, acetate of potass, &c. If any of these produce much irritation of the urinary organs, they must be exchanged for others. Purgatives and blood-letting are more useful, and ought rarely to be omitted. Elaterium in minute doses is safely to be tried, but hypercatharsis is dangerous. The lancet, in many cases, if early employed, and to a moderate extent, will supersede the necessity, of resorting to any other remedy, beyond that of a purgative, for, this is an acute disease, more easily remedied by depletion, than by any other means. If, in spite of this treatment, the swelling increase, paracentesis must be performed, and I am surprised that there should ever have been a moment's doubt, as to its propriety, for there certainly can be none as to its safety. When the navel projects much, and is very thin, it has, not very judiciously, been proposed to puncture it with a lancet. In one case, related by M. Olivier, the fluid continued

to be discharged for twelve days, after which the puncture closed. In another, the patient herself pierced the navel, fifteen or twenty times, with a needle.

Ascites may have existed previously to pregnancy, and the two causes combined, can produce a very great enlargement of the belly. In this case, the uterus may be felt through the parietes, sometimes very much compressed, as if the child lay across. Mild diuretics tend to keep the disease at bay; and if the distention be very great, especially at an early stage, my experience leads me to conclude, that after quickening, a great part of the fluid may, as in the former case, be drawn off safely, provided, during the operation and afterwards, the abdomen be carefully and uniformly supported by a bandage. It is useful to know this, as the distention is sometimes so great, that life could not go on, without much distress, till the end of gestation. The operation, I think, is more apt to be succeeded by labour, if performed in the last month, than earlier. In all cases where the patient is weak, we must take great care that the puncture be correctly closed; for, if its lips inflame, instead of adhering, fatal peritonitis is the invariable result. When the dropsy is very general, and the symptoms urgent, it has been proposed to induce premature labour.

SECTION TWENTY-THIRD.

When the liquor amnii is in too great quantity, much inconvenience is produced, and not unfrequently the child perishes. This disease is known, by the abdomen being unusually large, at an early period of gestation, for generally by the seventh month, it is as big as it ought to be in the ninth. It is distinguished from ascites, by motion of the child being felt, though obscurely, by the mother, and the breasts enlarging. Per vaginam, we can ascertain that the uterus contains a substance, which alternately recedes and descends, as the finger strikes on the lower part of the womb. This is to be considered as a dropsical affection of the ovum, but the health of the woman seldom suffers so much as in ascites; the tongue, however, is white, and the urine is diminished in quantity. The legs are less apt to swell, than in a common pregnancy. The distention may, in the advanced stage, prove troublesome. When the quantity of water is greatly increased, the child is seldom kept till the full time, but is generally expelled in the eighth month, or sooner, and the labour is apt to be accompanied, or succeeded, by uterine hæmorrhage. In some instances, the child occupies the upper part of the uterus, and the water the under, at least during labour. Twice in the same woman, in succeeding pregnancies, I found the child contained in the upper part of the

uterus, and embraced by it, as if it were in a cyst, whilst several pints of water lay between it and the os uteri. When the water came away, filling some basins, then the child descended to the os uteri, but was born dead, with the thighs turned firmly up, over the abdomen, and other marks of deformity.

We know the water to be contained in the uterus, and not in the abdominal cavity, by feeling the shape and firmness of the uterus, and by the greater obscurity of the fluctuation. In ascites, complicated with pregnancy, the fluid is more distinct, and the shape of the uterus cannot be perceived till after tapping. This is a disease of the ovum, and not of the mother, for even the foetus itself is often malformed, or at least blighted. The affection, may be considered, as a species of monstrous conception. It has also been looked on as the result of inflammation of the amnion. Some particular condition of the parent, in certain cases, occasions this state. For instance, it may be connected with a syphilitic taint in either the father or mother; or with some less obvious cause impairing the action of the womb, but not directly producing a miscarriage; with lunacy or idiotism; or with an original condition of the ovum in the ovarium: for a woman may, without apparent cause, have repeatedly this kind of pregnancy. All of these causes do not operate, uniformly, to the same extent, but the foetus suffers in proportion to their operation. It is either born very feeble and languid, and is reared with difficulty, or it dies almost immediately, or it perishes before labour commences; and this is generally the case, when the diseased state, exists to any great degree. The period of the child's death, is usually marked, by a shivering fit, and cessation of motion in utero, at the same time that the breasts become flaccid. Afterwards, irregular pains come on, with or without a watery discharge. Sometimes the woman is sick or feverish, for a few days, before labour begin.

If the liquor amnii be only moderately increased, beyond the usual quantity, the woman may go the full time, but, from the distention of the uterus, is apt to have a lingering labour.

Tonics, the cold bath, dry diet, with occasional venesection, and the use of laxatives, during pregnancy, may be of service, but frequently fail. Diuretics do no good. If in the early stage, there be febrile symptoms, along with any peculiar feeling in the uterine region, blood-letting and laxatives are proper, or leeches may be applied to the belly or back. A course of mercury conducted prudently, previous to conception, is the only remedy, when we suspect a syphilitic taint. It may be necessary to prescribe it to both parents. When it proceeds from some more latent cause, I think it useful, for preventing a repetition of the

disease, to make the mother nurse, even although her child be dead. Mercury ought also to be tried.

When this distention produces much distress, it has been proposed to draw off the water by the os uteri; or this has been done, in one case, by the common operation of paracentesis, the woman surviving and labour taking place on the twenty-first day.* I can conceive no one advantage which can result from tapping the uterus, rather than perforating the membranes from the os uteri, which must be done if the symptoms be urgent, but very often the uterus, in that case, spontaneously expels its contents. When the os uteri is considerably dilated by the pains, it may be proper to rupture the membranes, as has been advised by Puzos.

This disease may be complicated with alterations of the placenta, which may also exist without it. In some cases, we have cysts formed in the placenta, or more solid tumour, or induration, or wasting and shrivelling of a part, whilst the rest is healthy. We have no control over these diseases, when they take place, neither, indeed, can we be sure of their existence, even when we have the uterus ceasing to enlarge, or repeated hæmorrhage. One part, may be much diseased or wasted, and the rest may be sufficient to preserve the fœtus.

SECTION TWENTY-FOURTH.

Discharges of watery fluid from the vagina are not unfrequent during pregnancy, and generally depend upon secretion from the glands about the cervix uteri. It has been supposed, that, in every case, they proceeded from this cause, or from the rupture of a lymphatic, or the evacuation of a fluid collected between the chorion and amnion, or the water of a blighted ovum, in a case of twins; for in most instances, where the liquor amnii has been artificially evacuated, labour has taken place. But we can suppose, that the act of gestation may, in some women be so strong, as not to be interrupted by a partial evacuation, of the liquor amnii. Even granting the water to be collected, exterior to the chorion, there must be a strong tendency to excite labour, if the quantity† discharged be great; and if the uterus can resist this, it may also be unaffected, by the evacuation of liquor amnii. I have known instances, where, after a fright or exertion, a considerable quantity of water has been suddenly discharged, with subsidence of the abdominal tumour, or feeling of slackness, and

* Vide case by Noel Desmarnis, in *Recueil Périod.* Tom. vi. p. 349. M. Baudelocque gives a memoir on this subject, in the same volume. Scarpa also, seems to defend the paracentesis.

† Vide Dr Alexander's case, in *Med. Comment.* Vol. iii. p. 197.

even irregular pains have taken place, and, yet, the woman has gone to the full time.* These circumstances prove, as far as the nature of the case will admit of proof, that the water had been evacuated. Sometimes only one discharge has taken place, but oftener the first has been followed by others, and these are often tinged with blood. The aperture seems to close, if gestation go on, for, during labour, a discharge of water takes place. Much more frequently, labour does take place. Even, when the discharge proceeds, only, from the glands above the cervix uteri, if the woman be not careful, a hæmorrhage may take place, followed by labour. This is most likely to happen, if there have been a copious discharge.

The practice, in these cases, is to confine the patient for some time to bed. An anodyne ought also to be given, and may be repeated occasionally, if she be affected either with irregular pain or nervous irritation; previous venesection often renders this more useful. The bowels are to be kept open. If we suppose the discharge, to be from the glands about the cervix uteri, we may, with advantage, inject some astringent fluid, such as a solution of sulphate of alumine, or decoction of oak bark.

It sometimes happens, that a large hydatid, is lodged between the ovum and the os uteri, and it may be expelled, several weeks before parturition. If care be not taken, this may be followed by hæmorrhage. The existence of smaller hydatids, with pregnancy, may also take place, either in the decidua or part of the placenta.

SECTION TWENTY-FIFTH.

Varicose tumours sometimes appear on the legs. They are not dangerous, but are often painful. By pressure they can be removed; but I am not sure, that it is altogether safe, to apply a bandage round the legs, so tight, as to prevent their return. It is better, in ordinary cases, to do nothing at all; but where there is much pain, a recumbent posture and moderate pressure give relief.

SECTION TWENTY-SIXTH. :

From the distention of the abdominal muscles, pain may be produced, either about the extremities of the recti muscles, or

Dr Pentland relates a very distinct case, where the liquor was, in the third month discharged in a fit of coughing. The belly fell, but she still went full time, and had a good labour. Dublin Med. and Phys. Essays, No. I have known a discharge of the water take place, at short intervals, when the funis umbilicalis protruded, without any exertion, the membranes, which is a demonstration that the membranes were open, and that the discharge of liquor did not speedily

the origins of the oblique or transverse muscles. These pains are not dangerous, but give unnecessary alarm if the cause be not known. It is impossible to remove them, but they may be mitigated by anodyne embrocations. If the pain be severe along the edge of the ribs, relief may be obtained, by applying round the upper part of the abdomen, a narrow band of leather, spread with adhesive plaster, or of oiled silk.

There is another cause of pain, which sometimes affects these muscles, but oftener those about the pelvis and hips. This seems to proceed from the state of the spinal nerves, going to the muscles. A long walk, or some little fatigue, may produce such an effect, as to render them painful for a long time; or, even, without any unusual degree of motion, the muscles ache, and produce the sensation of weariness. These pains have been supposed to be most frequent, when the woman has twins; but this is far from being a general rule. They may occasion an apprehension, that she is going to miscarry. Rest is the principal remedy; but if they be severe, relief may often be obtained by venesection, and rubbing the back, with a stimulating embrocation.

Pain in the side, particularly the right side, is sometimes, at an advanced period of gestation, both muscular, and also connected with the state of the bowels, especially of the colon. It is frequently most severe, and may be rendered still more distressing, by being combined with violent heartburn, or water-brash. It comes on chiefly at night, and instead of being relieved by lying down, is often increased on going to bed. It is usually accompanied, with much motion of the child. Venesection, sometimes gives relief, but generally more advantage is derived, from rubbing with anodyne balsam, attending to the state of the bowels and regulating the diet. Although the pain be very severe, it seldom brings on labour. In certain cases, there is a complication of pleuritic pain of the side, spasm of the ureter, and some portion of the intestines, with sensibility of part of the abdominal muscles. Blood-letting and purgatives, followed by anodynes, and rubefacient applications, form the practice. If these fail, a blister applied to that part of the back, which is on a line with, or a little above, the seat of the pain, may be useful, here, and in most of the cases, noticed in this section.

SECTION TWENTY-SEVENTH.

Spasm of the ureter, or some violent nephritic affection, may occur during gestation. The pain is severe, the pulse slow and soft, and the stomach often filled with wind. The symptoms are attended with distressing strangury, and if not soon removed, may cause premature labour. Decided relief is obtained, by giving a saline clyster, and after its operation, injecting eighty

drops of laudanum mixed with a little starch. A sinapism is to be applied to the loin, and if these means fail, blood must be taken away.

SECTION TWENTY-EIGHTH.

Spasms in the inferior extremities, are often very distressing. These may come on suddenly, but, occasionally, they are preceded by a sense of coldness, and accompanied with a feeling of heat. They are removed by change of posture and gentle friction. They have, by some, been thought to indicate a wrong presentation of the child, but this opinion is not supported by experience. They proceed from the pressure of the uterus on the nerves in the pelvis.

SECTION TWENTY-NINTH.

The gravid uterus itself, at various periods of gestation, is liable to become preternaturally sensible, and even to be affected with spasm. This state, is marked by great pain, in the region of the uterus, subject to exacerbations, but never going entirely off. It is presently succeeded by inflammation, marked by frequency of pulse, thirst, heat of skin, sometimes sickness, constipation, more or less tenderness of the hypogastric region, with severe pain, stretching to one or both groins, and occasionally in the back. In every instance I have known, where there was appearance of inflammation, the ovum has been expelled, and, in some, the patient has sunk soon afterwards. The practice, even when the case is clearly spasmodic, consists in detracting blood, and, after opening the bowels, giving effective doses of opium, either by the mouth, or as clysters; and this medicine must be repeated as often as necessary. Fomentations and diaphoretics are also proper. When inflammation has taken place, the detraction of blood must be pushed farther, warm fomentations employed, stools procured, and anodyne clysters administered. When abortion takes place, the strength must be supported, and irritation allayed by the free use of opium; but the patient is in a dangerous state.

This section, it may be thought, had better have been divided into two, spasm, and inflammation; but it is difficult to draw the distinction, and the first is apt to glide into the second. I think this disease has, without proof, been considered as rheumatism. I could only admit the supposition, if the patient had rheumatism at the same time, or immediately preceding, in other parts.

SECTION THIRTIETH.

Some children, are scarcely perceived to move, in the uterus, whilst others are disagreeably active. But there is a state, in

which, the motion amounts to an actual disease. This generally arises from an increased sensibility of the uterus, and abdominal muscles, proceeding, I apprehend, from the condition of the nerves supplying them, one of the effects of which, I have noticed in the last section. The motion, whether it be actually stronger, or more frequent, than usual, produces a sense of pain in the uterus, with a feeling of sinking or sickness, and, often, spasmodic contractions of the abdominal muscles, and sometimes slight convulsive motions, of those of the trunk or extremities. Such patients, seldom go to the full time, and after delivery, are more liable, than others, to syncope, with or without hæmorrhage. The treatment consists in venesection, if the circumstances permit it, the use of laxatives, the application of irritants to the back, and if these do no good, an opium plaster should be applied there, and cloths wet with laudanum laid on the abdomen.

SECTION THIRTY-FIRST.

In a first pregnancy, the abdominal muscles, generally preserve a greater degree of tension, than they do afterwards; and, therefore, the belly is not so prominent, as in succeeding pregnancies. Sometimes the muscles and integuments, yield so readily to the uterus, that it falls very much forward, producing a great prominence in the shape, inconvenience from the pressure on the bladder, and pain in the sides, from the increasing weight of the projecting uterus. In such cases benefit may be derived, from supporting the abdomen, with a bandage, connected with the shoulders. In other instances, the muscles and integuments do not yield freely, but the belly is hard and tense; the patient feels shooting pains about the abdomen, and sometimes miscarries. This state is relieved by blood-letting and tepid fomentations. When the skin does not distend freely, and becomes tender and fretted, or when these effects are produced, by very great distention, benefit is derived, from fomenting with decoction of poppies, and, afterwards, applying a piece of soft linen, spread, very thinly, with some emollient ointment.

There is sometimes a disposition to distend unequally, so that one side, yields more than the other, or even part of one side, or one muscle more than the rest, producing a peculiar shape. This is attended with no inconvenience.

SECTION THIRTY-SECOND.

The navel of pregnant women generally becomes prominent, even at an early stage. In some instances, such a change is produced, as to allow the intestine or omentum to protrude, forming an umbilical hernia; or, if the woman have been formerly

subject to that disease, pregnancy tends to increase it, whilst on the other hand, the intestines being soon raised up by the ascending uterus, inguinal and femoral herniæ are not apt to occur, or, are even removed, if they formerly existed. Umbilical hernia ought to be either kept reduced, by a proper bandage, or at least prevented, by due support, from increasing; and during delivery, we must be careful that the intestine be not forcibly protruded, as it might be difficult to replace it. After delivery, a truss must be applied with spring wings, which come round by the side of the belly.

I have seen the *linea alba* give way, just below the umbilicus, so as to allow a portion of the uterus to project, forming thus a painful tumour of a flattened form, and too tender to permit of pressure. Leeches relieved the pain, probably by their effect on the cellular substance; and, when the child was born, the tumour disappeared.

In some cases, during gestation, the fibres of the abdominal muscles, elsewhere, separate, so that a ventral hernia is formed, either by a portion of the parietes of the uterus, or by intestine. The same circumstance may take place during parturition; and the laceration is sometimes so large, that afterwards, whenever the muscles contract, as, for instance, in the act of rising, a quantity of intestine is forced out, forming a hard tumour like a child's head. It is necessary in this, and in all other cases of large herniæ, to be careful that compression be applied immediately after delivery, and also during the expulsion of the child. By neglecting this, syncope and uterine hæmorrhage have been occasioned.

Hernia of the bladder should always be reduced in the commencement of labour, for it may interfere with the process of parturition, or the bladder may be exposed to injury. The same may be said of prolapsus vesicæ, and vaginal hernia, &c.

SECTION THIRTY-THIRD.

It is not uncommon, to find women very desponding during pregnancy, and much alarmed respecting the issue of their confinement. This apprehensive state, may be the consequence of accidents befalling others in parturition; but, not unfrequently, it proceeds from a peculiar state of the mind, dependent on gestation, and intimately connected with sympathetic effects, produced on the *medulla spinalis* and *oblongata*. These may arise, directly, from the uterus, or, mediately, through the state of the bowels; nor is it easy, or perhaps always possible, to determine which of these operate, primarily, on the nervous system. Some, who at other times enjoy good spirits, become always melancholy during pregnancy, whilst others suffer chiefly during lactation. If this

state be preceded by excitement, marked by heat of skin and frequency of pulse, or, by congestion at the base of the brain, marked by slow pulse, and feebleness or languor, venesection will be proper; and in determining on this, no attention is to be paid to the paleness of the visage. If there have been no indication for bleeding, then we go on, at once, to the plan which in the former case we would follow, after the use of the lancet, namely, the regular use of purgatives, and the exhibition of the mist. camph. in the dose of half a wine glassful every three hours, either alone or with a table spoonful of saline julep. Little more can be done by medicine, except to obviate all causes of disease, or uneasiness of the body; the mind is to be cheered and supported, by those who have most influence with the patient. The disease is not permanent, and when it commences early in gestation, usually goes off before delivery.

A similar affection of the mind, may occur near the menstrual period, for a length of time in the unmarried, and it seems to depend on the same cause, namely, the effect of the uterus on the nerves.

Some, during the early period of pregnancy, imagine that they see a phantom continually present, or are under other delusions. In general, after getting farther on, the mind becomes correct.

SECTION THIRTY-FOURTH.

Retroversion of the uterus was described, but not explained, by Ætius, Rod. a Castro,* Mauriceau, and La Motte, and afterwards demonstrated by Gregoire, and his pupil Levret, but was, in this country, first, accurately illustrated by Dr Hunter in 1754. It is an accident which is always attended with painful, and sometimes fatal consequences, chiefly, owing to the effect produced on the bladder. If the pelvis be of the usual size, it may take place at any time, during the third and fourth months of pregnancy: or if the pelvis be large, or the ovum not much distended with water, it may occur in the fifth month. It may also be produced when the womb is enlarged to a certain degree, by disease.† A peculiar kind of displacement is described by

* Lib. ii. c. 17. De Uteri Ascensu et Recursu. He gives a very imperfect account, but advises reduction to be effected by the finger in ano.

† Mr Pearson relates a case, where the uterus was retroverted, in consequence of being scirrhus. Vide Pearson on Cancer, p. 113. Dr Marcet gives an instance where the uterus was retroverted without pregnancy, producing constipation and vomiting. Vide Cooper on Hernia, Part ii. p. 60. Desault observes, it has been caused by a uterine polypus. See also Dr Weir in Glasgow Journal, i. 263. Dr Alken relates a case, where a woman, after suffering from difficulty of passing the urine and stools, had, in fourteen days, complete retention of both. The bladder reached to the umbilicus. The extremities were cold, the pulse small, vomiting, &c. The urine was drawn off. After bleeding, and the warm bath.

Mr Ingleby,* where a tumour of the fundus seems to have carried the body of the impregnated uterus deep into the pelvis, so as to resemble retroversion. It was pushed up, but the patient died after delivery.

We recognise retroversion of the uterus, chiefly, by its effects on the bladder, and, also, by difficulty in voiding the *fæces*; for, whilst, the patient may be distressed sometimes with tenesmus, she usually passes little at a time. Although, it have been maintained, by some, that no effect is produced on the rectum, yet, nevertheless, the obstruction, in certain cases, is so great, that feculent vomiting is produced, and on dissection, we find the rectum stretched over the fundus uteri. When the retroversion is completed, bearing-down pains may be excited, as if an attempt were made, to expel, or force down, the uterus itself, and in some instances they equal the pains of labour. These are much connected, also, with the state of bladder, being most severe when it is distended, and generally abating, in frequency and force, when the urine is evacuated. In some cases, the retention is, from the first, complete, and the symptoms go on increasing. In others, after a day or two, the urine begins to dribble away, but the bladder is never emptied; or, there may, for some time, at first, be a little discharged, by straining, and afterwards the retention becomes total. This condition is attended with either acute pain, or tenderness of the lower part of the belly, so that sometimes, the patient cannot bear to have it touched. It is also tumid. The loins are pained, and there is more or less desire to strain, according to the state of the bladder, and the position of the uterus. There is tenesmus, and even the rectum may be everted, and the orifice of the vagina protruded. The degree to which the bladder may be distended, in the living subject, is much greater than could be supposed, from trials to inflate it after death. Fourteen pints have been drawn off at once, and the bladder has been found as large as the gravid uterus, at the full time.

The acute symptoms, produced by the distention of the bladder, or the inability to pass the urine freely, first of all, call the attention of the patient, to the disease. When we examine her, we find a tumour betwixt the rectum and vagina,† formed by the

force was employed in opposite directions, both from the rectum and vagina, and in an hour the uterus was replaced. It was, however, displaced again next day, but was reduced, and the retroversion did not return. The uterus was unimpregnated. *For. and Brit. Rev.* xii. p. 262.

* *Facts and Cases*, p. 78.

† M. Baudelocque relates a case, where the fundus uteri protruded at the os externum, the patient at the same time having violent inclination to expel something. He was, however, able speedily to reduce the womb to the proper state. *Vide l'Art, &c.* § 125. In Dr Bell's case, a portion of the rectum was protruded by the uterus. *Med. Facts*, Vol. viii. p. 32.

fundus uteri, which is thrown backwards and downwards, whilst the os uteri is directed forward, and sometimes so much upwards, as not to be felt by the finger. The back part of the vagina, has been pressed, so forward, as to make it difficult to introduce the finger.

This is a disease, which we should think cannot be mistaken, and yet, it is sometimes difficult to distinguish it; for, in extra-uterine pregnancy, it has happened, that the symptoms have been nearly the same, with those of retroversion;* and a tumour of the ovarium has sometimes produced similar effects. Perhaps, the diagnosis cannot, in every case, be accurately made, but this is of less immediate importance, as the indications, in such instances, must be the same, namely, to draw off the urine, and procure stools.

Retroversion may take place, under two different circumstances, and from two causes. In the one, it takes place more slowly, and its progress, in some instances, may be ascertained from day to day;† in the other, it occurs pretty quickly, and occasionally the woman has been sensible, at the time, of a tumbling, or motion, within the pelvis. Dr John Clark thought that a small pelvis might prove a cause, and this is not unlikely, if the promontory overhang a very hollow sacrum. I can also conceive, that if the posterior, and upper part of the womb, enlarge unduly, retroversion may be facilitated. Any sudden or violent contraction of the abdominal muscles, particularly if the upper part of the rectum, or end of the colon, be loaded, may cause it. If the pelvis be quite well formed, I should say, that one too large, rather than too small, was favourable to the production of retroversion. But on this point we have no proof.

That the student may, the better, understand retroversion, I remark, first, that the uterus, in the unimpregnated state, lies obliquely, sometimes almost horizontally, in the bottom of the pelvis. If it remain long in this position, after its fundus has enlarged in consequence of pregnancy, more especially, if there be that relaxation which attends prolapsus, retroversion is endangered, if not actually produced. But, if along with this, the rectum should be lax, and curl or hang much to one side, as it

* Vide Mr Giffard's case in Phil. Trans. Vol. xxxvi, p. 435, and Mr White's very instructive case in Med. Comment. Vol. xx. p. 254.

† M. Baudelocque gives a case of this kind, § 253. In Dr Bell's case, as the woman complained for five weeks of dysuria only, it is likely that for that period, the retroversion was not complete. Med. Facts, Vol. viii. p. 32. Dr Hunter supposed that it might take place in various degrees; it might be complete, or semi-complete, or even the os uteri might remain in its natural situation. He says that Dr Combe and he saw a case, where the os uteri was pushing out as in a procidentia; but this, perhaps, will not be admitted to have been retroversion. Med. Obs. and Inq. Vol. v. p. 388. In the same volume, p. 382, Dr Garthshore relates an instance of semi-retroversion.

often does, particularly to the left side, it is evident, that should this fold or curve of the rectum, become loaded with fæces, pressure will be made on the fundus uteri, which thereby, is not only prevented from rising, but is actually pressed lower, the cervix is carried forward, and a certain degree of prolapsus takes place. Then, pressure is made, against the lower part of the bladder, just at its orifice. The urine thus comes to be retained, the bladder is distended, and the cervix is carried still higher, and the fundus pushed somewhat backward, and also pressed lower, partly, by this cause, and partly by bearing-down efforts, which are excited. Now, if this view be correct, it is evident that retention of the urine, though it may increase the retroversion, is at first an effect, and not a cause. Nay, farther, it follows, that even in the unimpregnated state, the uterus may be partially retroverted, or retroflected, by this state of the rectum, and yet no retention of urine be produced, but only an obstruction to the passage of the stools, the uterus being too short to act, mechanically, both on the bladder and the rectum, and thus the symptoms of this species will vary, according as the uterus is, or is not enlarged. Secondly, if the urine be too long retained, in the unimpregnated state, the distention of the bladder raises the uterus somewhat; but the peritoneal coat reflected from the bladder, is raised as that viscus distends, and makes the uterus, cling closer, to its posterior surface. Retroversion cannot therefore take place, from this cause, and if it could, it would immediately cease, on emptying the bladder. But if the fundus be enlarged, and the whole uterus be longer, as in pregnancy, then, the heavy fundus may, in certain positions, incline a little more backward, when the bladder is full, or it may be acted on, by the state of the rectum already noticed, which may thus greatly contribute, to the production, or increase of retroversion, or may be the principal cause. Any unusual contraction, of the abdominal muscles, may also press the fundus downwards and backwards. Still, even in this view of the subject, a distended bladder, does not seem capable of causing, of itself, a retroversion of the uterus. It can only, at the most, bring the uterus into positions, more favourable for its production, by pressure,* or other causes. From the description already given, of the relative situation of the bladder, and its connexions, it appears, that it is attached, both to the vagina and uterus. In the third month of

* I have studied this point carefully, by examination in the pregnant state, and my son, Mr Allan Burns, has farther confirmed, the several opinions I have given, by separate observations, in dissecting a female in the third month. Dr Hunter maintained that retroversion is the cause, Dr Denman, the effect of retention of urine. Whoever tries to retrovert the uterus, in pregnancy, shall find it more easily accomplished, when the bladder is empty or flaccid, than when it is greatly distended.

pregnancy, if the bladder be fully blown up, we find that it is connected to the face of the cervix uteri, for nearly $2\frac{1}{2}$ inches above the lip of the os uteri, and the peritoneum is reflected from the bladder, to the uterus, at about three inches from the top of the fundus, and the vesical fascia a little lower, the whole length of the uterus being at this time about $5\frac{1}{2}$ inches.* If the finger be introduced into the vagina, we feel at its end, the distended bladder, which is attached to it, for about two inches and a half. At this period, the top of the fundus, rises above the brim of the pelvis. Now, granting the uterus, to be a little more raised, it cannot be thrown much more backward, for it meets the rectum, and is supported by it. But, if, in this distended state of the bladder, when it is, perhaps, six inches and a half long, and its antero-posterior diameter six, any pressure may be made by the abdominal muscles, the bladder may be forced back, and the intestines down, on the uterus, and its fundus pressed a little lower, whilst the cervix curves or bends backward, so that the uterus is more or less retroflected.† And it is not till a more advanced stage of the case, that we have the os uteri, directed in the line of axis of the uterus, or complete, and actual retroversion, or turning the womb, obliquely, upside down, established. This, however, will be somewhat dependent, on the period of gestation, for, if beyond the third month, and the body and fundus of the uterus, be more globular and larger, the retroflection is less likely to be considerable. The uterus may also lie, for a time, more directly back, its anterior face placed upward. Farther, we have formerly seen, that a fold of the peritoneum, goes off, on each side, from the uterus, to the side of the rectum, forming, thus, a kind of cul de sac between them, at the upper part of the vagina. Now, the uterus, though it may go by the side of this, obliquely, is more likely to be retroverted into it, enlarging it, and carrying it down before it. Thus, a kind of cavity or pouch is formed, for the reception of the fundus uteri, which is thereby more firmly fixed. When the cervix uteri is curved back, the os uteri is not found to be directed upward, or to be so high, as it afterwards is. It presses on the neck of the bladder, and obstructs, more or less, the flow of the urine. But if the retroversion be complete, and more especially, if it have

* The uterus may, without much violence, be so bent back or retroflected, by curving the cervix, as to measure from top to bottom, nearly two inches less.

† In Mr Bird's case, the accident succeeded to stooping, in washing clothes. *Med. Obs. and Inq.* Vol. v. p. 100. In Mr Hooper's case, the woman was frightened by an ox, and in attempting to escape, fell down, after which the symptoms appeared. Mr Evan's patient ascribed it to lifting a burden. *Med. Comment.* Vol. vi. p. 215; and Mr Swan's patient to a fall, p. 217. Dr Merriman's patient first complained after being suddenly terrified; and Mr Wilmer's patient had the uterus retroverted, after being fatigued with weeding.

been of considerable duration, the os uteri is sometimes carried, even, above the pubis. It presses against the back part of the bladder. Some of the urine may escape, or ooze beyond the point of pressure, and either come dribbling away, or, as the urethra is directed more upward, it may be so stretched and tightened, or the orifice of the bladder, may be drawn, so obliquely, against the vagina, that a collection, to a certain degree, may take place just above the neck, and if the catheter be introduced, only thus far, we may empty this, without relieving the bladder, and suppose that we have got away all the urine, when much still remains. It is also possible, for the impacted uterus, to be so affected in its shape, and so bent at its cervix, as to make pressure on two points.

If the patient die, without having the uterus replaced, we find it firmly impacted in the pelvis. The fundus is in the hollow of the sacrum, with the rectum stretched on it, so as to be almost flat, and the os uteri directed forward, sometimes to the arch of the pubis, pressing on the urethra, sometimes higher, toward, or even above, the upper part of the symphysis, pressing on the bladder. In most cases, the cervix will be found more or less curved, so that the os uteri is not directed so much upward, as it otherwise should be. The peritoneum and vesical fascia, instead of being reflected upon the face of the uterus, evidently, must run directly down. The uterus, may be, altogether in the cavity of the pelvis, or part, of what ought to have been its anterior surface, projects above the brim. The urethra is placed more directly upwards. In drawing out the uterus, it comes with a sound, like that of a piston, from a syringe, and part of the difficulty of raising it, is undoubtedly from its being like a sucker.

The same woman has been known, to have the uterus retroverted, in two successive pregnancies. Retroversion may also take place after delivery.*

The danger of retroversion arises, more immediately, from the distention† of the bladder, which inflames,‡ and an opening, generally small and irregular, may take place, in consequence

* Vide case by Dr Senter, in Trans. of Phys. at Philadelphia, p. 130. Both times it was reduced by the hand.

† In the case described by Dr Hunter, Med. Obs. and Inq. Vol. iv. p. 400, the bladder after death was found to be amazingly distended, but not ruptured.

‡ In Mr Wilmer's case, the belly was greatly distended; six pints of urine were drawn off, but the woman soon died. On inspecting the body, the bladder, from the disease of its surface, was found to contain a quantity of coagulated blood, and the inflammation had spread to the colon. In this case, the umbilicus was protruded like half a melon, and the disease, was, at one time, taken for hernia. The uterus was found to be so firmly wedged in the pelvis, that it could not be raised up, till the symphysis pubis was sawed away. Wilmer's Cases, p. 284.

of gangrene;* or the bladder adheres to the abdominal parietes, its coats becoming thickened and diseased.† If the urine cannot be drawn off, of which I have never yet met with an instance, death is preceded by abdominal pain, vomiting, hiccup, and sometimes convulsions. These effects are, chiefly, produced, by mistaking the nature of the complaint. Their duration is variable.‡ Inflammation and gangrene of the vagina, and external parts, have also been produced. If the disease do not prove rapidly fatal, so much urine escaping as to prevent a speedy termination, it occasionally happens, that hectic fever is produced. The pulse becomes frequent, the body wastes, and purulent urine is voided;§ or the person may become œdematous, and the disease pass for dropsy.|| Sometimes the water is not quite obstructed, but it is voided with difficulty, for a week or two, when the symptoms become more acute, and forcing pains are excited.

Our first object is to relieve the bladder, by introducing a catheter. We may try either a gum catheter, or a male silver one, which is only slightly curved, towards the extremity. The bladder being turned a little over the pubis, we introduce the instrument, more directly upward, than in ordinary cases, and turn its concavity toward the symphysis. Should we, however, in a rarer case, find that the os uteri is so situated, that the lower part of the bladder, bends backward over it, then, the handle of the instrument, must be directed back, between the thighs and the concavity, at its end, turned toward the sacrum. By introducing a finger, or if necessary even the hand, into the vagina, we, not only, may, the better guide the catheter, and ascertain its course, as well perhaps as the seat of the obstruction, but can depress the os uteri, and push back the tumour in

* In Mr Lynn's case, the bladder burst, or sloughed, and immediately afterwards the woman miscarried, but the uterus after death was found to be still displaced. *Med. Obs. and Inq.* Vol. v. p. 388. Dr Squires relates an instance in which the bladder gave way. *Med. Review*, for 1801.

† In Dr Ross's patient, after the uterus was reduced, abortion took place; and the woman dying, the bladder was found to be thickened, and adhering to the navel. *Annals of Medicine*, Vol. iv. p. 284.

‡ Dr Perfect's patient died thus on the sixth day. *Cases in Midwifery*, Vol. i. p. 394.

§ This is illustrated by Dr Garthshore's patient, who, notwithstanding these symptoms, ultimately did well. After the reduction of the womb, she miscarried, and foetid lumps were, for some time, discharged from the bladder. *Med. Obs. and Inq.* Vol. v. p. 382.

|| In Mr Croft's case, the disease was of a month's standing, the woman was œdematous, and she was supposed to have dropsy; but by introducing the catheter, seven quarts of urine were drawn off. The introduction was daily repeated for some time, and then, occasionally, as circumstances required, for three weeks. The swelling of the legs went off, and the uterus gradually rose. *Med. Jour.* Vol. xi. p. 381.

the vagina* and thus get, altogether, the instrument better on. If we direct the catheter obliquely backward and use force, the urethra may be ruptured, and even the uterus entered.† We must remember that the os uteri or the neck, may in one case press only on the urethra, and in another when raised higher, it may press on, or above, the neck of the bladder. In this last case, the obstacle to the passing of the catheter is likely to be greater, from the uterus pressing the bladder more forward, perhaps even over the symphysis, and opposing itself as a barrier to the instrument. In this case pressing up the fundus, though it may not reduce the retroversion, yet so far displaces the os uteri and relieves the bladder, as to allow the catheter to be introduced. It is even sometimes followed by the spontaneous discharge of a little urine. When the catheter cannot be introduced, we have been advised to tap the bladder,‡ or the uterus, from the rectum or vagina, but I have never met, under any circumstances, with a case requiring either of these operations.§

We must not be deceived with regard to the state of the bladder, by observing that the woman is able to pass a small quantity of water, for it may, nevertheless, be much distended. We must examine the belly, and attend to the sensation, produced by pressure, on the hypogastric region. Even although the cathe-

* In Mr Hooper's case, whenever the tumour was pressed back, the woman called out that she could now make water. *Med. Facts*, Vol. i. p. 96.

† In a case related by Mr Baynham, the catheter was supposed to pass freely, but, only once, had it entered the bladder, and drawn off urine; only blood followed. The patient died exhausted on the 13th day; on dissection, two tumours were found, into the posterior of which alone, the catheter entered. This was found to be the uterus. The instrument had pierced during life, the urethra and vagina, and entered the os uteri, passing on between the parietes of the uterus, and the membranes, without rupturing them. The bladder had not been emptied, and contained three pints of bloody urine. Its mucous coat was highly inflamed. The peritoneum, and whole abdominal viscera were healthy. *Edin. Journ.* xxxiii. 266.

‡ This was done by Dr Cheston. The woman remained long very ill, but she carried her child to the full time, and recovered. *Med. Commun.* Vol. ii. p. 96. In one instance, by using a long trocar, the uterus was wounded, and the woman died.

§ Mr Baynham gives the very interesting case of H. Martin, who applied for relief, in the 8th month of pregnancy, having six weeks before, had the uterus retroverted, in moving a heavy weight. The os uteri was pointed directly upward, and raised above the pubis, the fundus was less than an inch, from the anus, the vagina prolapsed, and the clitoris (prepuce?) and nymphæ enlarged. The urine could be drawn off by the catheter, which had been used morning and evening. Every attempt to reduce failed, and as she seemed moribund, an endeavour was made to introduce a curved instrument, into the os uteri, but it failed. The uterus was therefore punctured from the rectum, but no discharge taking place, the trocar was introduced a second time, and 12 oz. of liquor amnii flowed. Then the uterus could be replaced. Abortion took place at the end of twenty-five hours. She suffered much afterwards, but recovered. *Edin. Journ.* xxxiii. 257.

ter have been employed, only part of the urine may have been drawn off, particularly, if the complete evacuation, have not been assisted, by moderate pressure, over the bladder. It has happened, that only so much has been taken away, as to give a little relief, and merely alter the position of the uterus, so as to lessen the pressure, on the orifice of the bladder. In this case, on getting up, a great quantity of urine has flowed spontaneously, and the womb immediately returned to its proper state.

The urine being evacuated, and the most immediate source of alarm being thus removed, we must, in the next place, procure a stool, by means of a clyster, or otherwise unload the rectum above the uterus (for there is seldom any fæces below it); detract blood, if there be fever or restlessness; and give an anodyne injection, if there be strong bearing-down efforts. This is, often, all that is requisite; and I wish particularly to inculcate the necessity, of directing the chief attention to the bladder, which ought to be emptied, if possible, four times in the twenty-four hours, but at least morning and evening, or a gum catheter may be left in the bladder. By this plan, the uterus sometimes resumes its proper situation, in the course of a short time, perhaps in forty-eight hours;* and the retroversion is seldom continued for more than a week, unless the displacement have been very complete. The precise time, however, required for the ascent of the womb, will be determined, *ceteris paribus*, by the degree to which it has been retroverted, and the attention which is paid to the bladder. If the fundus be very low, the ascent may be tedious; but I consider myself as warranted, from experience, to say, that in every moderate degree of retroversion, in every recent case, we may be satisfied with emptying the bladder regularly, without making any attempt to push up the womb, unless from its position, and the partial retroversion, we have reason to expect, that by introducing the hand, we can with little difficulty, and small force, replace it. But if the uterine tumour be very low, and near the perineum, or if there be a tendency to an increase of degree, then, what in this last case, was rather optional than imperative, may, in this one, be more necessary, and we endeavour to replace the womb. This is also proper, if there be much irritation excited, by the state of the womb, and which does not give way, to the use of the catheter, and of anodyne clysters. I fear, however, that these efforts are sometimes too keenly made, and that, often, more harm than good is done by them. It may be said, that although the immediate danger, be

* Dr Hunter mentions a case, in which the uterus recovered itself immediately after the bladder was emptied. *Med. Obs.* Vol. iv. p. 408. And in Mr Croft's second case, the water having been drawn off for six days, the uterus suddenly rose. *Lond. Med. Jour.* Vol. xi. p. 384.

done away with, by the regular use of the catheter, yet, the womb may remain, for the rest of the term of gestation, in its malposition, and give rise to great difficulty in labour, or to the same event as in extra-uterine pregnancy. I can only reply, that in so many instances, where the bladder has been regularly emptied, has the case done well, that I feel justified, when there is no particular urgency, in ascertaining what nature can do, before having recourse to efforts that must be both strong and painful.

The attempt to replace the uterus, may be made, by placing the patient on her knees and elbows, so as to elevate the breech.* Two fingers are then to be introduced, into the rectum, and the uterine tumour is to be pressed slowly, firmly, and steadily, either directly up, or obliquely toward a side. We may, at the same time, try, with the finger in the vagina, to turn down the os uteri, but the proposal to use a lever for this purpose, or to depress, with a strong sound, introduced into the bladder, is not only fraught with danger, but absolutely useless. Instruments thrust into the rectum are to be reprehended. Forcible and violent attempts, are to be strongly reprobated; they give great pain, and may even excite inflammation, or convulsions. They can only be justified, on the principle of preventing a greater danger. Now, we know that the chief risk, proceeds from the distention of the bladder; if, therefore, it can be emptied, the danger is usually at an end. Some propose, to introduce the one hand, into the rectum, and the other, into the vagina, and thus, more effectually, raise up the uterus; but this is most severe. If the hand be introduced, it ought to be only into the vagina.† One great obstacle to reduction, arises from the fundus, adjusting itself, to the hollow of the sacrum, and filling tightly the cul de sac, into which I have said it was thrown. The force from the rectum, should be directed not only upward, but also somewhat forward, so as to disengage the fundus, and press it toward the brim. If the os and cervix, can at the same time be depressed, the reduction may be facilitated. If we employ pressure from the vagina, we should remember the advantage of having the uterus pressed somewhat forward. The abdominal muscles, reacting against us, press down the intestines, and also the bladder, if it be not quite empty, on the uterus, and our efforts, tend rather to press the os uteri farther up, than to raise the fundus into its place. We shall succeed best, if we can

* It has been proposed to bleed ad deliquium, before the attempt be made. It is very doubtful if this ever has done good; it may easily be conceived to do harm, if any tedious mischief followed.

† Mr Halpin thinks he reduced the uterus, by introducing a wet bladder into the vagina, and distending it with air. Dub. Journ. Vol. xvii. p. 67.

relax the muscles. Retroflexion, is more easily reduced than retroversion, and, owing to the relation of the hollow of the sacrum to the tumour, pressure from the rectum, is more likely to be efficient, than from the vagina alone. The practitioner must judge, from the situation of the tumour, how, and from whence, he can best direct his chief pressure.

When the retroversion ceases, the uterus usually resumes completely its proper situation; but it sometimes happens, especially if the vagina have been much relaxed, that when the retroversion is removed, the uterus is found very low, forming a prolapsus, which continues for some time. It requires, chiefly, attention to the urine and stools; for it may occupy the pelvis fully, and pretty firmly; and almost the whole foetus can be felt, by the finger, through the uterus. I do not consider it as necessary to use a globe pessary, or to stuff the vagina to prevent a return.

When the uterus ascends, occasionally a little blood is discharged;* but abortion does not take place unless much injury have been sustained. Thus, the woman has miscarried, quickly, after the bladder had burst, or rather sloughed, as in Mr Lynn's patient; or when inflammation had taken place, as in the cases related by Drs Bell and Ross. When this happens, the uterus rises indeed, but the patient is cut off by peritoneal inflammation,† accompanied by vomiting of dark coloured stuff. Abortion shall generally take place, if the liquor amnii have been discharged. The presentation of the child is not altered. It has been proposed to induce abortion by drawing off the liquor amnii, by a tube introduced into the os uteri, but this is not always easily accomplished.‡ It has also been asked, whether it would not be allowable to make an incision into the abdomen, and pull up the uterus. The section of the symphysis has also been proposed.

That the uterus does generally rise spontaneously, if the urine be regularly evacuated, and the rectum emptied, is a fact of which I am fully convinced, from my own experience, as well as from the observations of others. But it is nevertheless possible for it to continue, in a certain degree of malposition, even to the end of gestation.§ In this case, the uterus cannot, indeed,

* M. Roger's case, in Act. Havn. ii. art. 17.

† Both Dr Ross's patient, and Dr Cheston's patient, the latter of whom recovered, complained of uneasiness in the throat, which Dr C. considers as a mark of slow peritoneal inflammation.

‡ Dr Catlett gave ergot to excite labour. Some slight effects appeared to be produced in five hours. The uterus was reduced, but painful force was employed. Nothing is said of the result, and there is no evidence that the ergot had any share in the reduction. Edin. Journ. Vol. lvii. p. 94.

§ This circumstance has been mentioned by different writers, and a distinct case is related by Dr Merriman, in the Med. and Phys. Jour. Vol. xvi. p. 388. Mr

at last be said, exactly, to be retroverted; for, it has enlarged so much, that it occupies nearly as much of the abdomen as usual: but it has enlarged, in a peculiar way, the os uteri being still directed to the symphysis pubis, or even perhaps raised above it. In such a case, which is exceedingly rare, the labour must be very tedious and severe. The os uteri shall be very long of being felt, and be first perceived at the pubis.* We are indebted to Dr Merriman for an explanation of this fact,† and likewise for the observation, that it is possible for the termination, to be similar to that, of extra-uterine pregnancy, namely, by suppuration. A case of this kind, well marked in all respects, except suppression of urine, is related by Dr Barnum,‡ as an instance of extra-uterine gestation. In the fifth month, after some imprudence, the patient had pain, accompanied with a discharge of water and some blood, a mark that the ovum was in the uterus. She got relief at this time; but next month, (Nov.) she had a return of pain, and the os uteri was felt directed to the pubis, and the fundus to the sacrum. All attempts to reduce it failed, suppuration took place, and foetal bones were discharged by the anus. She died in March.

Retroflexion of the uterus, or that state produced by bending back the fundus and body on the neck, and in which the os uteri is thrown less forward, and not much elevated, is rare during pregnancy, but has oftener occurred after labour. It is to be treated on the general principle of rectifying the position.

SECTION THIRTY-FIFTH.

The uterus is also sometimes antverted, that is, the fundus

F. being about five months pregnant, was suddenly terrified, and felt as if her inside were turned upside down. The symptoms, however, were not very acute, for she voided the urine in the last month of gestation, though with pain and some difficulty. On the 16th of June, she had some pains, and a discharge of serous fluid; no os uteri could be felt, but a large semi-globular tumour at the back part of the vagina, bearing down toward the perinæum. The pains brought on fever, and at last delirium and convulsions. She was bled, and had a clyster, after which she got some sleep, and the pains continued moderate, though regular, for two or three days, and she passed both urine and stools. On the 20th, nothing like os uteri could be felt; but on the 21st, there was perceived a thick flattened fleshy substance descending into the vagina, and very soon the uterus was restored to its natural situation. The substance was found to be the scalp of the child, containing loose bones. The child and placenta were delivered, and the mother recovered. Dr Dewees has published a criticism on this opinion, and strongly maintains, that in all such cases as Dr Merriman describes, or refers to, the child was extra-uterine. *Philad. Jour.* Vol. ii. p. 76.

* A case of this kind has been lately published in the 4th No. of the *Edin. Journal of Medical Science*, by Mr Wyse. The feet were felt at the os uteri, which was directed to the pubis, and the head occupied the pelvis. The feet were drawn down, and the head pushed up by pressing from the rectum.

† It has been maintained that he mistook a great obliquity for retroversion.

‡ Vide *New York Med. Rep.* v. 40.

fundus uteri, which is thrown backwards and downwards, whilst the os uteri is directed forward, and sometimes so much upwards, as not to be felt by the finger. The back part of the vagina, has been pressed, so forward, as to make it difficult to introduce the finger.

This is a disease, which we should think cannot be mistaken, and yet, it is sometimes difficult to distinguish it; for, in extra-uterine pregnancy, it has happened, that the symptoms have been nearly the same, with those of retroversion;* and a tumour of the ovarium has sometimes produced similar effects. Perhaps, the diagnosis cannot, in every case, be accurately made, but this is of less immediate importance, as the indications, in such instances, must be the same, namely, to draw off the urine, and procure stools.

Retroversion may take place, under two different circumstances, and from two causes. In the one, it takes place more slowly, and its progress, in some instances, may be ascertained from day to day;† in the other, it occurs pretty quickly, and occasionally the woman has been sensible, at the time, of a tumbling, or motion, within the pelvis. Dr John Clark thought that a small pelvis might prove a cause, and this is not unlikely, if the promontory overhang a very hollow sacrum. I can also conceive, that if the posterior, and upper part of the womb, enlarge unduly, retroversion may be facilitated. Any sudden or violent contraction of the abdominal muscles, particularly if the upper part of the rectum, or end of the colon, be loaded, may cause it. If the pelvis be quite well formed, I should say, that one too large, rather than too small, was favourable to the production of retroversion. But on this point we have no proof.

That the student may, the better, understand retroversion, I remark, first, that the uterus, in the unimpregnated state, lies obliquely, sometimes almost horizontally, in the bottom of the pelvis. If it remain long in this position, after its fundus has enlarged in consequence of pregnancy, more especially, if there be that relaxation which attends prolapsus, retroversion is endangered, if not actually produced. But, if along with this, the rectum should be lax, and curl or hang much to one side, as it

* Vido Mr Giffard's case in *Phil. Trans.* Vol. xxxvi, p. 435, and Mr White's very instructive case in *Med. Comment.* Vol. xx. p. 254.

† M. Baudelocque gives a case of this kind, § 253. In Dr Bell's case, as the woman complained for five weeks of dysuria only, it is likely that for that period, the retroversion was not complete. *Med. Facts*, Vol. viii. p. 32. Dr Hunter supposed that it might take place in various degrees; it might be complete, or semi-complete, or even the os uteri might remain in its natural situation. He says that Dr Combe and he saw a case, where the os uteri was pushing out as in a proclivita; but this, perhaps, will not be admitted to have been retroversion. *Med. Obs. and Inq.* Vol. v. p. 388. In the same volume, p. 382, Dr Garthshore relates an instance of semi-retroversion.

often does, particularly to the left side, it is evident, that should this fold or curve of the rectum, become loaded with fæces, pressure will be made on the fundus uteri, which thereby, is not only prevented from rising, but is actually pressed lower, the cervix is carried forward, and a certain degree of prolapsus takes place. Then, pressure is made, against the lower part of the bladder, just at its orifice. The urine thus comes to be retained, the bladder is distended, and the cervix is carried still higher, and the fundus pushed somewhat backward, and also pressed lower, partly, by this cause, and partly by bearing-down efforts, which are excited. Now, if this view be correct, it is evident that retention of the urine, though it may increase the retroversion, is at first an effect, and not a cause. Nay, farther, it follows, that even in the unimpregnated state, the uterus may be partially retroverted, or retroflected, by this state of the rectum, and yet no retention of urine be produced, but only an obstruction to the passage of the stools, the uterus being too short to act, mechanically, both on the bladder and the rectum, and thus the symptoms of this species will vary, according as the uterus is, or is not enlarged. Secondly, if the urine be too long retained, in the unimpregnated state, the distention of the bladder raises the uterus somewhat; but the peritoneal coat reflected from the bladder, is raised as that viscus distends, and makes the uterus, cling closer, to its posterior surface. Retroversion cannot therefore take place, from this cause, and if it could, it would immediately cease, on emptying the bladder. But if the fundus be enlarged, and the whole uterus be longer, as in pregnancy, then, the heavy fundus may, in certain positions, incline a little more backward, when the bladder is full, or it may be acted on, by the state of the rectum already noticed, which may thus greatly contribute, to the production, or increase of retroversion, or may be the principal cause. Any unusual contraction, of the abdominal muscles, may also press the fundus downwards and backwards. Still, even in this view of the subject, a distended bladder, does not seem capable of causing, of itself, a retroversion of the uterus. It can only, at the most, bring the uterus into positions, more favourable for its production, by pressure,* or other causes. From the description already given, of the relative situation of the bladder, and its connexions, it appears, that it is attached, both to the vagina and uterus. In the third month of

* I have studied this point carefully, by examination in the pregnant state, and my son, Mr Allan Burns, has farther confirmed, the several opinions I have given, by separate observations, in dissecting a female in the third month. Dr Hunter maintained that retroversion is the cause, Dr Denman, the effect of retention of urine. Whoever tries to retrovert the uterus, in pregnancy, shall find it more easily accomplished, when the bladder is empty or flaccid, than when it is greatly distended.

As the os uteri opens a little after the expulsion, and a sanguineous discharge takes place, with or without portions of the placenta, the woman has sometimes been supposed to miscarry. If she survive, the womb slowly decreases in size, and returns to the unimpregnated state,* which will assist materially in the diagnosis, between this and extra-uterine pregnancy existing from the first. The menses return, and though the belly do not subside completely, yet, the person continues tolerably well, unless inflammation come on. She may even bear children before the extra-uterine fœtus be got rid of.† If the case be to prove fatal, the pulse becomes quick and small, the belly painful, the strength sinks, and sometimes continued vomiting ushers in dissolution.‡

Cases have occurred where the rupture was not complete, but

* In the Journ. de Med. for 1780, there is the case of a woman who had the uterus ruptured in the fourth month of pregnancy. The injury was followed by uterine hæmorrhage, which continued for some time. The menses returned, but the belly did not subside. In the ninth month she died. The uterus was found of the natural size, but the rent was still perceptible.

The uterus for some time does not return to its unimpregnated state, as is evident from the following case, which I lately saw. Anne Neilson, aged 24 years, fell on the ground about a month before this note was written, being then in the ninth month of her first pregnancy. She felt at the time, as if something had burst near the navel, and perceived more fluttering of the child than usual. This continued in a certain degree for two days, after which she felt no more motion. In the course of two or three days after the accident, she was seized with irregular pains, chiefly about the belly, and these are rather increasing than diminishing in severity. The belly has subsided considerably in size, is hard, particularly above the navel, toward the stomach. The umbilicus itself is soft and prominent. The bowels are regular, urine proper, tongue clean, heat natural, pulsæ 84, has occasional shivering. On examining per vaginam, the lower part of the uterus is felt soft and tubulated, very unlike either the gravid or unimpregnated womb. It hangs into the vagina like a fleshy inverted cone. By some degree of attention the os uteri is discovered at the lower part, or rather a little backward. It has no distinct projecting lips as in the unimpregnated state, but by pressure with the finger, the aperture is felt with thin margins, and the point of the finger may be introduced a very little way within it. The head of the child is discovered between the uterus and pubis. No distinct member can be felt through the abdominal parietes. (I have heard nothing more of her, 1842.)

Dr Jeffray possesses a preparation of a fœtus contained in a kind of cyst taken from a woman who had carried the child above 20 years; the rupture was occasioned by a fall.

Dr Macartney relates the case of a woman, who near the full time, had the uterus ruptured by the kick of a cow. The child was retained in the abdomen, without producing any severe symptom. Dub. Jour. vii. 412.

† Vide Journ. de Med. Tom. v. p. 422.

‡ In the Journ. de Med. for 1780, a case is detailed of a woman, who, in the month of January, being then seven months pregnant, was squeezed betwixt the wall and a carriage, and had the uterus ruptured. She instantly felt violent pain in the belly, and a discharge took place from the vagina, which continued in variable quantity for six weeks. The strength gradually sunk, and in June she began to vomit, and continued to do so for several days, when she died. The abdomen was found inflamed, and contained the remains of a putrid child. The rent was visible in the womb.

confined to the peritonæal coat, and outer surface of the uterine tissue. This may be produced by external causes, but rather by the contraction of the uterus itself in the very commencement of labour. Hæmorrhage into the abdomen, alone, or followed by inflammation proves fatal. It has also been confined to the uterine tissue.

Rupture of the uterus may be the consequence of mental agitation,* sometimes of exertion,† or of convulsions, but in most cases it is owing to external violence,‡ and always, unless the uterus be diseased. Blows or falls, rend the uterus, but, it may escape, though much pressure be made on the abdomen.§ It has also taken place, by the giving way of a cicatrice of the Cæsarean operation. The child may be injured, yet the uterus remain entire.||

Three modes of treatment present themselves, when the uterus is ruptured during gestation, and previous to labour. To deliver *per vias naturales*; to leave the case to nature; to perform the Cæsarean operation. To dilate the os uteri, is, no doubt in some cases, from the yielding of the parts, possible, but no rule can be drawn from experiments on the dead subject, and, in general, it is both difficult and hazardous. In one case, incisions were made

* Dr Percival's patient attributed her accident to a fright; Dr Underwood's referred her's to mental agitation; M. Dubarque's to anger. In the 4th month, whilst yet trembling, she felt a sharp pain in the belly, accompanied with a "bruit de claquement." She got better, but, five months afterwards died suddenly. There was much blood in the abdomen, and a fœtus about the 4th month. There was a rent in the uterus, and there it was thin and the veins varicose. The placenta was in the uterus. *Maladies*, T. ii. p. 42.

† In Mr Shillito's case, symptoms of labour came on after exertion in the 7th month. Next morning she had two severe pains and no more. On the third day she had rigor, fever, and abdominal inflammation, with profuse discharge of dark offensive stuff from the vagina, which continued till the fourteenth, when she discharged water, pus, and the membranous part of the placenta: and on examination the os uteri was found gone, and an opening in its place which communicated with the abdomen. The child was felt there, and extracted. She died in twelve days after this, or twenty-five days after the rupture. The child was found to have been included in a new formed sac.

‡ In Mr Wilson's patient, the accident was produced by being kicked. She complained of pains all night after the injury, and next day had a sanguineous discharge from the vagina, and soon afterwards was attacked with violent griping pain. The fœtus was ultimately discharged by an abscess, bursting externally. *Annals of Med.* Vol. ii. p. 317, and Vol. iv. p. 401.—Dr Garthshore's patient ascribed it to violent exercise. *Med. Journ.* Vol. viii. p. 334. Mr Goodsir's patient to exertion. *Annals of Med.* Vol. vii. p. 412.—In the 5th and 6th volumes of the *Journal de Med.* are two cases, the first produced by a fall from a tree, the second by a bruise from a waggon.—A woman fell in the advanced stage of pregnancy. Four weeks afterwards she had symptoms of labour. The os uteri was puffy and open, and a bloody mucus was discharged. She had sickness, debility, and hectic. Then the navel inflamed, and Dr Miller extracted from it a child in a putrid state. *Edin. Journ.* xxxi. 444.

§ Mr Green relates the case of a woman, whose uterus escaped, although a cart wheel went over her abdomen. *Med. Chir. Trans.* xii. p. 7.

|| Duparque *Malad. de la Matrice*, T. ii. p. 28.

in the cervix, and the child successfully extracted.* Cases left to nature, have sometimes ended well;† but I am not now disposed to leave the fœtus, if the state of the mother permit of operation. An incision, no larger than requisite, to get hold of, and extract the child, and placenta, may be made, either in the abdominal parietes, or vagina, according to the position of the child, and, the greater facility of extracting through one, rather than through the other. Too often, there is no room whatever, for treatment, for the hæmorrhage, alone, rapidly sinks the patient, or the fatal event is accelerated by the shock, or by the accession of inflammation.

The uterus, sometimes, in the early months of gestation, is opened by a kind of ulcer, and, occasionally, by a species of slough; either of which states, proceeds from previous disease in a part of the womb. There may be pain attending this process; but in such instances as I have known, there has been none. The patient, without any evident cause, has been seized with great sickness, and fits of fainting, which, in a few hours have proved fatal. On examination, there will be found much blood effused in the pelvis or cavity of the abdomen, and perhaps a fœtus among the clots. But this oftener proceeds from an opening of the tube, than of the uterus.

Wounds of the gravid uterus, generally prove fatal,‡ even although there be little blood lost. But, recoveries have been made with, or without, labour.

SECTION THIRTY-SEVENTH.

The usual period of utero-gestation is nine months, but the fœtus may be expelled much earlier. If the expulsion take place within three months of the natural term, the woman is said to have a premature labour; if before that time, she is said to miscarry, or have an abortion. The process of abortion, consists of two parts, detachment and expulsion; but these do not always bear an uniform relation to each other, in their duration or severity. The first, is productive of hæmorrhage, the second of pain; for the one is attended with rupture of vessels, the other

* Dr Smith in *Med. Chir. Trans.* Vol. xiii.

† Besides the cases already quoted, and others, I notice one by Mr Bochart, of a rupture produced in the seventh month, by a fall from a tree. She suffered much, but after a time, she conceived again, and bore a living child, thirteen months after the accident. Some months afterwards, fœtid pus, bones, &c., were discharged from the navel. Duparquet, T. ii. p. 72.

‡ Planchon mentions a woman, who was wounded with a long nail. Part of the liquor amnii, coloured with blood, spouted out. She had douleurs supportables, but presently had vomiting, hiccup, and convulsions. She died in sixty hours. There was no extravasation of blood, but the puncture of the uterus was surrounded by an inflamed ring. *Traité, &c.*, p. 77. The uterus and placenta have been, by mistake, pierced with a trocar.

with contraction of the muscular fibres. The first may exist, without being followed by the second, but the second always increases, and ultimately completes the first. The symptoms then of abortion, must be those produced by separation of the ovum, and contraction of the uterus. To these which are essential, may be added others more accidental, induced by them, and varying according to the constitution and habits of the patient.

The ovum may be thrown off at different stages of its growth; and the symptoms, even at the same period, vary in duration and degree. The process of gestation may be checked, before the ovum can be readily detected, and when the decidua only is distinct. In this case, which occurs within three weeks after impregnation, the symptoms are much the same with those of menorrhagia. There is always a considerable, and often a copious discharge of blood, which coagulates or forms clots. This is accompanied with marks of uterine irritation, such as pain in the back and loins, frequently spasmodic affections of the bowels, and, occasionally, a slight febrile state of the system. In plethoric habits, and when abortion proceeds from over-action, or hæmorrhagic action of the uterine vessels, the fever is idiopathic, and precedes the discharge. In other circumstances it is either absent, or, when present, it is symptomatic, and still more inconsiderable, arising merely from pain or irritation. As the deciduous coat is thin, and easily disorganized, it cannot be readily detected in the discharge. Nothing but coagulum can be perceived; and this, as in other cases of uterine hæmorrhage, is often so firm, and the globules and lymph so disposed, as to give it, more especially if it have been retained for some time about the uterus or vagina, a streaked or fibrous appearance, which sometimes gives rise to a supposition, that it is an organized body.

The only interruption to the discharge, in this case of abortion, proceeds from the formation of clots, which, however, are soon displaced. Women, if plethoric, sometimes suffer considerably, from the profusion of the discharge; but, in general, they soon recover.

If the ovum have acquired the size of a nut, the symptoms are somewhat different. We have an attempt in the uterus to contract, which formerly was not necessary; we have pains, more or less regular, in the back and hypogastric region; we have more disturbance of the abdominal viscera, particularly the stomach. The discharge is copious, and small bits of fibrous substance can often be observed. Sometimes the vesicle may be detected, in the first discharge of blood, and will be found to be streaked over with pale vessels, giving it an appearance as if it had been slightly macerated. In other instances, it comes en-

veloped in the vascular portion, or it is destroyed, and we only discover the decidua torn open, but still shaped like the uterine cavity. When all the contents are expelled, a bloody discharge continues for a few hours, and is then succeeded by a serous fluid. At this time, and in later abortion, if the symptoms take place gradually, we may sometimes observe a gelatinous matter to come away, before the hæmorrhage appears.

If the uterus contain more vascular and organized matter, as in the beginning of the third month, we have for some time a discharge of blood, accompanied or succeeded by uterine pain. Then, the inferior part, or short stalk, of the ovum may be expelled, gorged with blood, and, afterwards, the upper part equally injured. Sometimes the whole comes away at once and entire; but this is rare. As considerable contraction is now required in the uterus, the pains may be pretty severe. The derangement of the stomach is also greater than formerly, giving rise to sickness or faintness, which is a natural contrivance for abating the hæmorrhage.

When the membranes come to occupy more of the uterus, and a still greater difference exists between the placenta and decidua, we have again a change of the process; we have more bearing-down pain, and a greater regularity in its attack; we have a more rapid discharge, owing to the greater size of the vessels; but there is not always more blood lost now than at an earlier period, for coagula form readily, from temporary fits of faintness, and other causes, and interrupt the flow until new and increased contraction displace them. Often the membranes give way, and the foetus escapes with the liquor amnii, whilst the rest of the ovum is retained for some hours or even days,* when it is expelled with coagulated blood, perhaps separating and confounding its different parts or layers. Retention of the secundines, when accompanied with considerable or repeated hæmorrhage, very generally is dependent on, or connected with, spasmodic contraction of the uterus, which embraces a very small bit of the upper part of the placenta. At other times the foetal and maternal portions separate, and the first is expelled before the second, forming a very beautiful preparation. In some rare instances, we find the whole ovum expelled entire, and in high preservation. After the expulsion, the hæmorrhage goes off, and is succeeded by a discharge, somewhat resembling the lochia, and often the abdomen rather enlarges for a time, the morning sickness continues, the breasts increase, and milk is secreted, so that if the conception have not been seen, or examined, it is diffi-

* In all cases the placenta is retained much longer, after the expulsion of the child in abortion, than in labour at the full time.

cult for some time to say, whether abortion have been completed. When the uterus at an early period is emptied, it often feels per vaginam, like a gravid uterus at a much more advanced stage, and if the abdominal muscles be hard, and the hypogastrium tense or full, an inattentive practitioner may make a very great mistake.

In cases of twins, after one child is expelled, either alone or with its secundines, the discharge sometimes stops, and the woman continues pretty well for some hours, or even for a day or two, when a repetition of the process takes place, and if she have been using any exertion, there is generally a pretty rapid and profuse discharge. This is one reason, amongst many others, for confining women to bed for several days after abortion. The second child, may however be retained, till the full time.

There are frequently, for a longer or shorter time before the commencement of abortion, pain and irregular action in the neighbouring parts, which give warning of its approach, before either discharge or contraction takes place;* unless when it proceeds from violence, in which case the discharge may instantly appear. This is the period, at which we can most effectually interfere, for the prevention of abortion. I need not be particular in adding, that we are not to confound these symptoms, with the more chronic ailments, which accompany pregnancy.

A great diversity obtains, in different instances, with regard to the symptoms and duration of abortion. In some cases the pains are very severe and long continued; in others short and trifling; nor is the degree of pain always a correct index of the force of contraction. Sometimes the hæmorrhage is profuse† and alarming: at other times, although circumstances may not be apparently very different, it is moderate or inconsiderable. Often, the sympathetic effects on the stomach and bowels, are scarcely productive of inconvenience, whilst in a greater number of instances, they are very prominent symptoms. Spasmodic contraction of the womb, is generally attended with sickness, vomiting, and faintness.

The os uteri always becomes soft, and opens during abortion. Sometimes it is felt very high and far back, and in that case, the anterior surface of the uterus, is felt often pressing into the vagina, like a degree of antiversion.

I may only add, that, *cæteris paribus*, we shall find, that the farther the pregnancy is advanced beyond the third month, and

* In some cases, shooting pains and tension are felt in the breasts before abortion, and the patient is feverish.

† Those who are plethoric generally lose much blood, unless the contraction have been brisk. In some cases six or seven pounds of blood have been lost in a few hours.

the nearer it approaches to the end of the sixth, the less chance is there of abortion being accompanied, but the greater of its being succeeded by nervous affection.

As there is a diversity in the symptoms, so is there also in the duration of abortion; for, whilst a few hours in many, and not above three days in the majority of cases, is sufficient to complete the process, we find other instances in which it is threatened for a long time, and a number of weeks elapse before the expulsion take place.

In some cases, the child appears to be dead for a considerable time, before the symptoms which accompany expulsion occur. But in a great majority of cases, it is living, when the first signs of abortion are perceived, and in some instances is born alive. The signs by which we judge that the child in utero is dead, are the sudden cessation of the morning sickness, or of any other sympathetic symptom, which may have been present. The breasts become flaccid. If milk had been formerly secreted, it sometimes disappears, but in other instances the contrary happens, and no evident secretion takes place, until the action of gestation, or at least the life of the child be lost. In almost every case, however, the breasts will be found to have lost their firmness. If the pregnancy had advanced beyond the period of quickening, the motion of the child will be lost, and a feeling of heaviness will be felt about the pelvis. When all these signs are observed, and when they are followed by discharge, and especially when this is attended with pain, there can be no doubt that expulsion will take place, and it would be improper to prevent it. We are not, however, to conclude that the child is dead, merely because it does not move; and when abortion is threatened before the term of quickening, this sign cannot enter into our consideration. The stethoscope can only be of use after the fifth month, in discovering the bruit du cœur.

When the ovum perishes at a very early period, and is not immediately discharged, we find that the sympathetic signs of pregnancy disappear, and not unfrequently a serous or milky fluid comes from the nipples. The woman feels languid and hot at night, or has fits of sickness, or hysterical symptoms; a discharge of foetid dark coloured fluid takes place from the vagina, and is often mixed with particles like snuff. This continues till all the remains of the ovum have come away, and then the health and spirits are restored.

If, at a more advanced period, the ovum remain after the child dies, it is converted either into a mole or hydatids; and this may also happen, even, at a very early stage of pregnancy. These cases have already been considered. It is generally most prudent to obviate symptoms, and wait until the os uteri open and

pains come on. Then we are to be directed by existing circumstances. Whether the ovum become putrid, or undergo a change into hydatids, it is reasonable to expect that the vessels of the uterus, being no longer employed in the growth of the foetus, should diminish, and become, in the first case, merely sufficient to nourish the uterus, and, in the second, to supply the necessities of the substance attached to the inner surface of the womb; for, there is a communication between them, and a discharge of blood attends the expulsion of either a mole or hydatids, whereas, on the other hand, if the ovum have perished completely and become putrid, the discharge is rather a foetid sanies than red blood.

Abortion may, very properly, be divided into accidental and habitual. The exciting causes of the first class may, in general, be easily detected; those giving rise to the second, are often more obscure; and, without great attention, the woman shall go on to miscarry, until either sterility, or some fatal disease, be induced.

In many cases, there can be no peculiar predisposing cause of abortion, as, for instance, when it is produced by blows, rupture of the membranes, or accidental separation of the decidua; but, when it occurs without any very perceptible exciting cause, it is allowable to infer, that some predisposing state exists, and this, frequently, consists in an imperfect mode of uterine action, induced by age, former miscarriages, and other causes. It is well known, that women can only bear children until a certain age, after which, the uterus is no longer capable of performing the action of gestation, or of performing it properly. Now, it is observable, that this incapability or imperfection, takes place sooner in those, who are advanced in life before they marry, than in those, who have married, and begun to bear children earlier. Thus we find, that a woman who marries at forty, shall be very apt to miscarry; whereas, had she married at thirty, she might have born children, when older than forty; from which it may be inferred, that the organs of generation lose their power of acting properly, sooner, if not employed, than in the connubial state. The same cause which tends to induce abortion, at a certain age, in those, who have remained until that time single, will also, at a period somewhat later, induce it in those, who have been younger married; for, in them we find, that, after bearing several children, it is not uncommon to conclude with an abortion; or sometimes after this incomplete action, the uterus, in a considerable time, recruits, as it were, and the woman carries a child to the full time, after which she ceases to conceive.

In the next place, I mention that one abortion paves the way

for another, because, setting other circumstances aside, it gives the uterus a tendency to stop its action of gestation at an early period after conception, and therefore it is difficult to make a woman go to the full time, after she has miscarried frequently. This fact has also been explained upon the principle of repeated abortion weakening the uterus,* and this certainly may have some influence. The renewed operation of those causes, which formerly induced abortion, may likewise account, in many cases, for its repetition. But I am also inclined, to attribute the recurrence, sometimes to habit alone, by which I understand that tendency, which a part has, to repeat, or continue, those modes of acting, which it has frequently performed, as we see in many diseases of the stomach and windpipe, spasmodic affections of these, and other organs, being apt to return at the same hour, for a long time. With regard to the uterus, one remarkable instance is related by Schulzius, of a woman, who, in spite of every remedy, miscarried, twenty-three times, at the third month. In this, and similar cases, slighter causes applied at the period when abortion formerly happened, will be sufficient to induce it, than would be required at another time.

We also find that an excessive or indiscriminate use of venery, either destroys the power of the organs of generation altogether, making the woman barren, or it disposes to abortion, by enfeebling these organs.

Some slight change of structure in part of the uterus, by influencing its actions, may, if it do not prevent conception, interfere with the process of gestation, and produce premature expulsion. If, however, the part affected be very small, and near the os uteri, it is possible for pregnancy to go on to the full time. Indeed, it generally does go on, and the labour, as may be foreseen, will be very tedious. I knew one instance, where a very considerable part of the uterus, I may say almost the whole of it, was found, after delivery, to be extremely hard, and nearly ossified; but this state could not have existed before impregnation took place, for, I cannot conceive that so great a proportion of the uterus, should have been originally diseased, and, yet, that conception, and its consequent actions, should take place. There is less difficulty in supposing that, during the enlarging of the uterus, the vessels deposited osseous or cartilaginous matter, instead of muscular fibres. •

A general weakness of the system, which must affect the actions of the uterus, in common with those of other organs, is

* " Per hanc vero consuetudinem nihil aliud intelligo, quam pravam vasorum uteri laxitatem et inde provenientem humorum stagnationem, ex abortiendi labore sepius repetito inductam." Hoffman, Tom. iii. p. 180.

likewise to be considered as giving rise to abortion, though not so frequently as was at one time supposed.

A local weakness of the uterus, sometimes exists, when the general system is not very feeble; or, when the constitution is delicate, the uterus may be weaker, in proportion, than other organs. Simple debility, however, is seldom the sole cause of abortion, for, in most cases, it is conjoined with a state, prone to irregularity of action, and morbid irritability. In neither case, can it perform its functions, with the necessary activity and perfection, but it is very apt, after a time, to flag. We cannot operate, with medicines, directly upon the womb, for the purpose of strengthening it, but must act on it, by invigorating the general system, and attending to all the functions, performed by other organs, and, more especially, those of digestion. Sea-bathing is of great service; and after impregnation, every exciting cause of abortion must be guarded against. Women of this description, are generally pale, of a weakly, flabby habit, and subject to irregular, often to copious menstruation, or fluor albus. When they conceive, the cold bath, light digestible food, regular bowels, and free air, should be enjoined; and, if any uneasy sensation be felt about the uterus or back, or the pulse throb, a little blood should be slowly taken away, and the woman keep her room for some days. Bleeding prevents the womb from being oppressed, and it is as necessary to attend to this, as it is to prevent the stomach from being loaded, in a dyspeptic patient. On the other hand, were we to bleed copiously, we might injure the action of the uterus, and destroy the child.

It has been supposed, that abortion might arise from rigidity of the uterus, which prevented its distention. But the uterus does not distend like a dead part, unto which pressure is applied, but it grows, and therefore I apprehend that an effect is, here, considered as a primary cause.

The uterus, is not only affected, by the general conditions of the system, more especially with regard to sensibility, and the state of the blood vessels, but it, likewise, sympathizes with the principal organs, and may undergo changes in consequence of alterations in their state.

Thus, we often find that loss of tone, or defective action of the stomach, produces amenorrhœa, and it may also on the same principle induce abortion; on the other hand, the action of the uterus, may influence that of other viscera, as we see in pulmonary consumption, which is sometimes in its early stage, suspended in its progress during pregnancy; or, if there be any disposition in an organ to disease, frequent abortion, partly by sympathy betwixt the uterus and that organ, and partly by the weakness which it induces, and the general injury which it does to

the system at large, may excite the irregular or morbid action of the organ so disposed.

As the action of the uterus is increased, during pregnancy, it must require more nervous energy, and although the size of the nerves of the uterus be increased, yet we must, to a certain degree, depend for the increased supply upon the trunks, or larger portion of the nervous substance from which they arise; for we well know that the quantity of energy expended in an organ, does not depend upon the size of the nerve in its substance, but on the trunk which furnishes it. Whenever action is increased in an organ, it must either perish, or the larger nerves must send the branches more energy, for, the branches, themselves, cannot form it, their extremities being only intended for expending it; from which it follows, that, in pregnancy, there must be more energy sent to the uterus, and, most likely, less to some other part. We also find that increased action, in one organ, may be productive of diminished action in another, unless excitement, raise general action, above the natural degree, the consequence of which is, that the power is not sufficient for the action, which becomes irregular, and the system is exhausted, as we see in febrile conditions.

There being increased action of the uterus, in gestation, requiring an increased quantity of energy to support it, we find that the system is put, *pro tempore*, into an artificial state, and obliged, either to form more energy, which cannot be so easily done, or to spend less in some other part. Thus the function of nutrition, or the action by which organic matter is deposited, in room of that which is absorbed, often yields, or is lessened, and the person becomes emaciated, or the stomach has its action diminished, or the bowels, producing costiveness and inflation. If no part give way, and no more energy than usual be formed, gestation cannot go on, or goes on imperfectly. Hence, some women have abortion by being too unsusceptible, that is to say, all the organs persist in keeping up their action, in perfection and complete degree.

A tendency to abortion, also, results from a contrary cause, from organs yielding too readily, allowing the uterus to act too hurriedly. In this state, it is as liable to go wrong, as the general system is, when it is at the highest degree of action compatible with health; the most trifling cause deranges it. Thus sometimes, the intestines yield too readily, and become almost torpid, so that a stool can with difficulty be procured. Here, costiveness is not a cause of abortion, though it may be blamed. In like manner, the muscular system may yield and become enfeebled: and in this instance, debility is accused as the cause of abortion, although it be, indeed, only an effect of

too much energy being destined for the uterus. In this case, the woman is always weaker during menstruation, and gestation, than at other times.

If the neighbouring parts, do not accommodate themselves, to the changes in the direction of energy, and act in concert with the uterus, their action becomes irregular, and consequently painful. In this state, the uterus may have its just degree of power and action; but other parts may not be able to act, so well, under the change of circumstances. This is chiefly the case in early gestation, for, by time, the parts come to act better. It often gives rise to unnecessary alarm, being mistaken for a tendency to abortion; but the symptoms are different. The pain is felt chiefly at night, a time at which weakened parts always suffer most; it returns pretty regularly for several weeks, but the uterus continues to enlarge, the breasts to distend, and all things are as they ought to be, if we except the presence of the pain. This may be alleviated by bleeding, and sometimes by anodynes; but can only be cured by time, and avoiding, by means of rest and care, any additional injury to parts, already, irregular and ticklish, in the performance of their actions. If this be neglected, they will react on the uterus at last, and impede its function. It is therefore highly necessary, especially in those disposed to abortion, to pay attention to pains about the back, loins, or pubis: and to insist upon rest, open bowels, and detracting blood, if the state of the vascular system indicate evacuation.

I have already considered the sympathetic effects, produced on other organs by the state of the uterus, and have here only to remark, that when any of these go to an extreme degree, an injurious effect may be produced on the uterine system. To avoid repetition, I refer to what I have said, when considering the disorders of menstruation.

Even although the different organs, both near and remote, may have accommodated themselves, to the changes in the uterine action, in the commencement of gestation, the proper balance may yet be lost, at a subsequent period; and this is most apt to take place, about the end of the third, or beginning of the fourth month, before the uterus rise out of the pelvis: and hence a greater number of abortions take place at that time, than at any other stage of pregnancy. There is from that time, to the period of quickening, a greater susceptibility in the uterus to have its action interrupted, than either before or afterwards; which points out the necessity of redoubling our vigilance, in watching against the operation of any of the causes, giving rise to abortion, from the tenth to the sixteenth week.

If the action of gestation go on under restraint, as, for in-

stance, by a change of position in the uterus, or by its prolapsing too low in the vagina, it is very apt to be accompanied by uneasy feelings, for, whenever any action is constrained, sensation is produced. The woman feels irregular, and pretty sharp pain in the region of the uterus, and from sympathetic irritation, both the bladder and rectum may be affected, and occasionally a difficulty is felt in making water, by which a suspicion is raised that retroversion is taking place. Sometimes the cervical vessels, in these circumstances, yield a little blood, as if abortion were going to happen; but, by keeping the patient at rest, and attending to the state of the rectum and bladder, no harm is done; and when the uterus rises out of the pelvis, no farther uneasiness is felt. Occasionally, a pretty considerable discharge, may take place under these circumstances, if the vascular system be full, or the vessels about the cervix large. But, by care, gestation will go on; for discharge alone, does not indicate that abortion, must necessarily happen. It, indeed, often causes abortion, and is almost always an attendant upon it; but we form our judgment, not from this symptom alone, but also from the state of the muscular fibres, and the vitality of the child.

Retroversion of the uterus likewise constrains very much its action, and may give rise to abortion, though in a greater number of instances, by care, gestation will go on, and the uterus gradually ascend. The bowels are to be kept open, and the urine regularly evacuated.

Sometimes in irritable or hysterical habits, the process of gestation, produces a considerable degree of disturbance, in the actions of the abdominal viscera, particularly the stomach; exciting frequent and distressing retching or vomiting, which may continue for a week or two, and sometimes is so violent as to invert the peristaltic motion of the intestines near the stomach, in which case feculent matter, and, in some instances, lumbrici are vomited.

This affection, is often accompanied by an unsettled state of mind, which adds greatly to the distress. We sometimes in these circumstances, have painful attempts made by the muscles to force the uterus downward, and these are, occasionally attended by a very slight discharge of blood. We have, however, no regular uterine pain; and if we be careful of our patient, abortion is rarely produced.

The best practice is to take away a little blood at first, to keep the bowels open, to lessen the tendency to vomit, by applying leeches, or an opium plaster, or a small blister, to the region of the stomach, and to allay pain, by opiates, alone, or conjoined with carminatives. When the mind is much affected, or the head painful, it is proper to shave the head, and wash it frequently

with cold vinegar, or apply leeches to the temples; at the same time, we keep the patient very quiet, and have recourse to a soothing management, or may even use the lancet.

The uterus being a large vascular organ, is obedient to the laws of vascular action, whilst the ovum is more influenced by those regulating new formed parts; with this difference, however, that new formed parts or tumours, are united firmly to the part from which they grow, by all kinds of vessels, and generally by fibrous or cellular substance, whilst the ovum is connected to the uterus, chiefly by very tender and fragile arteries and veins. If, therefore, more blood be sent to the maternal part of the ovum, than it can easily receive, and circulate, and act under, rupture of the vessels will take place, and an extravasation and consequent separation, be produced; or, even when no rupture is occasioned, the action of the ovum may be so oppressed and disordered, as to unfit it for continuing the process of gestation. There must, therefore, be a perfect correspondence betwixt the uterus and the ovum, not only in growth and vascularity, but in every other circumstance connected with their functions.

Even when they do correspond, if the uterus be plethoric, the ovum must also be full of blood, and rupture is very apt to take place. This is a frequent cause of abortion, more especially in those who menstruate copiously. On the other hand, when the uterus is deficient in vascularity, which often happens, in those, who menstruate sparingly or painfully, or, who have the menses pretty abundant, but watery, the child generally dies before the seventh month, and is expelled. The process is prematurely and imperfectly finished.

The existence of plethora is to be considered as a very frequent cause of abortion, and requires most particular attention. It more especially obtains in the young and vigorous, or in those who live luxuriously, and sleep in soft, warm beds. It renders the uterus too easily supplied with blood: the increase is not made in the regular degree, corresponding to the gradual increase of action, and augmentation of size; but it is, if I may use the expression, forced on the uterus, which is thus made, for a time, to act strongly and rapidly. It is not, however, to be supposed that plethora acts mechanically, for the evil arises, rather, from the effect it produces on the nervous system, and when this is excited either by this state of the vessels, or by any accidental or concurrent cause, the reaction on the vascular system is powerful, and we have hæmorrhage, or inflammation, &c., produced. Or if an organ be, already, in a state of increased activity, it is apt to be disordered. The action of the uterus thus excited, is sometimes so great, that the person feels weight, throbbing, and shooting pains about the pelvis; but, in

other instances, the vessels suddenly give way, without previous warning, and the blood bursts forth at the os uteri. This cause is especially apt to operate, in those who are newly married, and who are of a salacious disposition, as the action of the uterus is thus much increased, and the existence of plethora rendered doubly dangerous. In these cases, whenever the menses have become obstructed, all causes tending to increase the circulation must be avoided, and often a temporary separation from the husband is indispensable. Often do we find, that slight exertion, within a fortnight after the menses stop, will produce a speedy and violent eruption of blood, which continues until the vessels be fully unloaded, and until all that part of the process of forming an ovum, which had been effected, be undone.

It is not difficult to conceive, how an excitement of the origin of the spinal nerves, whether produced by some cause, mental or corporeal, acting immediately on them, or, by such causes, as occasion turgescence of the vessels, in their vicinity, should have a powerful influence on the uterus. The state of the nervous system, has therefore, often, even a more decided effect in predisposing to, or actually producing abortion, than the condition of the vascular system. Those who are peculiarly excitable, or who have any deviation from the healthy state of action, or susceptibility of the medulla spinalis or sympathetic nerve, are thereby liable to abortion. This condition, often passes for one of mere debility, and the error is confirmed, by sometimes finding that tonics and cold bathing lessen it. When they do so, it is by diminishing the morbid susceptibility of the nervous system, and rendering it more perfect in its function. Many causes which are capable of acting also, in another way, on the uterus, do often produce their effect in this manner, by affecting the nerves supplying the uterus; surprise, fatigue, &c., are of this kind. A state of plethora, which I have already noticed, as giving a strong predisposition to abortion, is greatly more hazardous, when combined with increased susceptibility of the nervous system, or of its uterine portion.

Abortion necessarily implies separation of the ovum, which may be produced mechanically, or by spontaneous rupture of the vessels, or by an affection of the muscular fibres. It unavoidably requires for its accomplishment, contraction of those fibres which formerly were in a dormant state. A natural and necessary effect of this contraction, is to develop the cervix uteri. This, when gestation goes on regularly, is accomplished gradually, and slowly, by the extension and formation of fibres. In abortion no fibres are formed, but muscular action does all, except in those instances, where the action of gestation goes on irregularly and too fast; in which case, the cervix distends, sometimes

by the third month, by the same process which distends the fundus. But, much more frequently, the cervix only relaxes during abortion, as the os uteri does in natural labour, and yields to the muscular action, of the fundus and body, or distended part.

The existence and growth of the fœtus, depend on the fœtal portion of the ovum. The means of nourishment, and the accommodation of the fœtus, in respect of lodgement, depend on the uterus; and these circumstances requiring both fœtal and maternal action, are intimately connected. The condition of the uterus qualifying it to enlarge, to continue the existence and operation of the maternal portion of the placenta or ovum, and to transmit blood to the ovum, exactly in the degree correspondent to its want, constitutes the action of gestation. When the action of gestation ceases, universally, in the uterus, another action, namely, muscular contraction, begins, and then all hope of retaining the ovum any longer is at an end.* I am aware that there are cases, where pain has come in paroxysms, and even the os uteri has been affected, and yet no expulsion has taken place. But it is not proved labour had actually begun. We know that pain, like that of labour, is often felt long before the patient is confined, but we have no evidence, that, in any of these cases, the uterus becomes, universally, hard during the pain, indicating general muscular contraction. I do not deny the possibility of partial muscular action occurring, without expulsion following. The os uteri may be prematurely developed; it may be open for some weeks even without pain; but no man will say that, in this case, labour or uterine contraction has begun. We may even have partial muscular action, in a few cases, about the cervix uteri, which has less to do with the action of gestation, than the rest of the uterus; and this action is often attended with considerable pain or uneasiness. Sometimes it is connected, with convulsive agitation, of several of the external muscles of the body. Even in this case, expulsion does not always immediately take place, for, by bleeding, and rest, and opiates, the motion may sometimes be checked; but regular and universal action of the muscular fibres of the uterus, never yet has been stopped. It may, like other muscular actions, be suspended, by anodynes or artificial treatment; but it never has, and never can be stopped, otherwise than by the expulsion of the ovum, when a new train of actions commences. Whenever, then, at any period of pregnancy, we have paroxysms of pain in the

* It may appear to be a strong argument against this, that in cases of twins, one child may be expelled, and another retained. But in such, the one expelled, is generally blighted, and there is no evidence that the whole uterus had contracted.

back,* and region of the uterus, attended with feeling of weight in that region, tenesmus, micturition, descent of the uterus in the pelvis, and opening of the os uteri, we may be pretty sure that expulsion, though retarded, must soon take place. This fact is not always attended to, in abortion, for, many think, that if by anodynes, they can abate the pain, they shall make the woman go to the full time. This is true with regard to many painful sensations, which may attend a threatened abortion, or which may be present, although there be no appearance of abortion; and when the os uteri is not opened, we do not despair, although, the sanguineous discharge be considerable, if the liquor amnii be not evacuated, or the child dead; but it does not hold with regard to those regular pains, proceeding from universal action of the uterine fibres, and accompanied with dilatation of the os uteri. We may save, both ourselves and our patients, some trouble, by keeping this in remembrance.

Seeing, then, that uterine contraction is brought on, by stopping the action of gestation, and that, when it is brought on, it cannot be checked, nor the action of gestation restored, we must next inquire how this action may be stopped. I have already mentioned several circumstances affecting the uterus, and likely to injure its actions; and these I shall not repeat, but go on to notice some others, which are often more perceptible: and first I shall notice violence, such as falls, blows, and much fatigue, which may injure the child, and detach part of the ovum. If part of the ovum be detached, we have not only a discharge of blood, but also the uterus, at that part, suffers in its action, and may influence the whole organ, so as to stop the action universally. But the time required to do this is various: an opportunity is often given to prevent the mischief from spreading, and to stop any farther effusion—perhaps to accomplish a reunion, but this is doubtful.

Violent exercise, as dancing, for instance, or much walking, or the fatiguing dissipations of fashionable life, more especially in the earlier months, by disordering the nervous system, and affecting the circulation, may vary the distribution of blood in

* It may not be improper to mention, that in some febrile affections we have pain in the back and loins, occasionally remitting, or disappearing altogether, for a short space, and then returning. Sometimes along with this, we have, owing to the affection of the circulation, and in some instances to previous exertion, a slight discharge from the vessels about the os uteri. The state is distinguished from uterine contraction, by our finding that the cervix is unaffected, that the pains are increased by motion or pressure, and are more irregular than those attending labour. This state may be prevented from inducing abortion, by rest, by keeping the bowels open, by anodynes preceded by venesection, if the pulse indicate it. Frictions, with camphorated spirits of wine, or laudanum, give relief. Any exertion, during the remaining period of gestation, will renew the pain in the back.

the uterus, so much, as to produce rupture of the vessels, or, otherwise, to destroy the ovum. There is also another way in which fatigue acts, namely, by subducting action and energy from the uterus: for the more energy that is expended on the external muscles, or those of the inferior extremities, the less can be afforded, or directed, to the uterus; and hence abortion may be induced at an early stage of gestation.* Fatigue also, by the effect produced on the medulla spinalis, may directly injure the nerves of the uterus. Even, at a more advanced period, inconvenience will be produced upon the principle formerly mentioned; for, the nerves of the loins conveying less energy, in many instances, though not always, to the muscles, they are really weaker than formerly, and are sooner wearied, producing pain, and prolonged feeling of fatigue for many days after an exertion, which may be considered as moderate. This feeling must not be confounded with a tendency to abortion, though it may sometimes be combined with it, for generally by rest the sensation goes off. Neither must we suppose that the child is dead, from its being unusually quiet during that period, for as soon as the uterus, which has been a little impaired in its action, recovers, it moves as strongly as ever.

In the next place, I mention the death of the child, which may be produced by syphilis, or by diseases perhaps peculiar to itself, or, by that state, which produces too much liquor amnii, or by injury of the functions of the placenta, which may arise from an improper structure of that organ itself, or aneurism, or other diseases of the cord. But in whatever way it is produced, the effect is the same in checking the action of gestation, unless there be twins, in which case it has been known, that the uterus, sometimes, did not suffer universally, but the action went on, and the one child was born of the full size, the other small and injured.† The length of time required for producing abortion, from this cause, is various; sometimes it is brought on in a few hours; at other times not for a fortnight, or even longer. In

* The same effect is observable in the stomach and other organs. If a delicate person, after a hearty meal, use exercise to the extent of fatigue, he feels that the food is not digested, the stomach having been weakened or injured in its actions.

† I have already noticed, that, sometimes in consequence of the death of one child, the uterus has suffered partially, and expulsion taken place; but the other child continuing to live, has preserved the action of gestation in that part of the uterus, which, properly speaking, belonged to it, and pregnancy had still gone on. This, however, is an extremely rare occurrence; for in almost every instance, the death of one child, produces an affection of the action of gestation, in the whole uterus, and the consequent expulsion of both children. In Mr Chalmers' case, a blighted fœtus and placenta were expelled in the seventh month, whilst a living child, which had been retained, was born at the full time. *Med. Reposit.* ix. 194. In some instances the induction of a new state, for instance the formation of hydatids, staves off, for a time, muscular action.

these and similar cases, when the muscular action is commencing, the discharge is trifling, like menstruation, until the contraction become greater, and more of the ovum be separated. When symptoms of abortion proceed from this cause, it is not possible to prevent its completion; and it would be hurtful even if it were possible. When, therefore, after great fatigue, profuse evacuations in delicate habits, violent colic, or other causes, the motion of the child ceases, the breasts become flaccid, and the signs of gestation disappear, we need not attempt to retard expulsion, but should direct our principal attention, to conduct the woman, safely, through the process.

Another cause is, any strong passion of the mind. The influence of fear, joy, and other emotions, on the nervous system, is well known, and the nerves of the uterus, are not exempted from their power; any sudden shock, even of the body, has much effect on this organ. The pulling of a tooth, for instance, sometimes suddenly produces abortion. A thunder storm or violent cannonade, has been supposed to cause abortion by the concussion of the air; but when they have that effect, it is owing to mental trepidation.

Emmenagogues, or acrid substances, such as savin and other irritating drugs, more especially those, which tend to excite a considerable degree of vascular action, or act powerfully on the nervous system, or on the bowels, may produce abortion. Rue has repeatedly produced abortion, when taken in such doses as to produce great affection of the vascular and nervous system, with vomiting and colic, (*Annales d'Hygiene T. xx.*) but it may at the same time kill. Ergot seems, in some instances, to have excited premature labour, but its power, in this respect, is by no means so well established, as in increasing muscular contraction, when that has been otherwise induced.

Such medicines, likewise, as exert a violent action on the stomach or bowels, will upon the principle formerly mentioned, frequently excite abortion; and very often are taken designedly, for that purpose, in such quantity, as to produce fatal effects;*

* It is an old observation, that those purgatives which produce much tenesmus, will excite abortion: and this is certainly true, if their operation be carried to a considerable extent, and continue long violent. Hence dysentery is also apt to bring on a miscarriage. Those strong purges, which are sometimes taken, to promote premature expulsion, not only act by exciting tenesmus, but likewise by inflaming the stomach and bowels, and thus affect the uterus in two ways. It cannot be too generally known, that when these medicines do produce abortion, the mother can seldom survive their effect. It is a mistaken notion, that abortion can be most readily excited by drastic purges, frequent and copious bleeding, &c., immediately after the woman discovers herself to be pregnant: on the contrary, the action of the uterus is then more independent of that of other organs, and therefore not so easily injured by changes in their condition. I have already shown, that abortion more frequently happens, when the pregnancy is farther ad-

hence, emetics, strong purgatives, diuretics, or a full course of mercury, must be avoided during pregnancy.

If any part with which the uterus sympathizes, have its action greatly increased, during pregnancy, the uterus may come to suffer, and abortion be produced. Hence, the accession of morbid action or inflammation, in any important organ, or on a large extent of cuticular surface, may bring on miscarriage, which is one cause, why small-pox often excites abortion, whilst, the same degree of fever, unaccompanied with eruption, would not have that effect. Hence, also, increased secretory action in the vagina, if to a great degree, though it may have even, originally, been excited in consequence of sympathy with the uterus, may come to incapacitate the uterus, for going on with its actions, and, therefore, it ought to be moderated, by means of an astringent injection. Even, when there is no immediate and natural sympathy, a violent local ailment may disorder the whole frame, so as to injure the uterine action. An obstinate pleurisy, for instance, particularly if we require to bleed, freely, to subdue it, generally is followed by premature labour. Typhus fever, frequently causes abortion, and a very considerable proportion of these cases end fatally, owing to peritoneal inflammation.

Mechanical irritation of the os uteri, or attempts to dilate it, prematurely, will also be apt to bring on muscular contraction. At the same time, it is worthy of remark, that the effect of such irritation is generally, at first, confined to the spot on which it acts, a partial affection of the fibres in the immediate vicinity of the os uteri being all that is, for some time, produced; and therefore, slight uneasiness at the lower part of the belly, with or without a tendency in the os uteri to move or dilate, whether brought on by irritation at the upper part of the vagina or os uteri, or by the affection of the neck of the bladder, &c., may be often prevented from extending farther, by rest, anodynes, and having immediate recourse, to such means, as the nature of the irritation may require, for its removal.*

The irritation of a prolapsus ani, or of inflamed piles, with or without, much sanguineous discharge, may excite the uterus to contract; and if the bleeding from the anus have been profuse, and the woman weakly, it may destroy the child. Piles ought, therefore, never to be neglected.

Tapping the ovum, by which the uterus collapses, and its vanced, because then, not only the uterus is more easily affected, but the fetus seems to suffer more readily. It is apt, either from diseases directly affecting itself, or from changes in the uterine action, to die about the middle of the third month, in which case expulsion follows within a fortnight.

* Chronic inflammation of the heart is frequently attended with pain at the bottom of the abdomen, which is sometimes mistaken for symptoms of calculus. In one case abortion seemed to proceed from this disease of the heart.

fibres receive a stimulus to action, is another cause by which abortion may be produced; and this is, sometimes, with great propriety, done at a particular period, in order to avoid a greater evil. It is now the general opinion, that contraction will unavoidably follow the evacuation of the waters. But we can suppose the action of gestation to be, in some cases, so strong, as not, at least for a very considerable time, to stop in consequence of this violence, and, if it do not stop, contraction will not take place. I do not, however, mean to say, that all discharges of watery fluid from the uterus, not followed by abortion, are discharges of the liquor amnii. On the contrary, I know, that these are, often, the consequence of morbid action about the os uteri, the glands yielding a serous, instead of a gelatinous fluid, and this action may continue for many months.

In all these cases, the woman must be confined to bed, and have an anodyne every night at bedtime, for some time, promising venesection if the pulse indicate it, and conjoining gentle laxatives. There is just so much probability of gestation going on, as to encourage us to use endeavours to continue it. In those instances where the discharge is small, and the oozing pretty constant, we conclude that it is yielded chiefly by the glands about the os uteri, and may derive advantage from injecting, three or four times a-day, a strong infusion of galls, or solution of alum. The woman ought to use no exertion, as the membranes are apt to give way.

It is sometimes necessary to lay down rules for the management of pregnant women, even although they may not have been liable to abortion. These are to be drawn, from the remarks already delivered, and it is only requisite to add, that in all cases, it is proper to attend to the effects of utero-gestation, or the diseases of pregnancy, which are to be mitigated, when severe, by suitable remedies.

The danger of abortion, is to be estimated, by considering the previous state of the health, by attending to the violence of the discharge, and the difficulty of checking it; to its duration, and the disposition to expulsion, which accompanies it; to the effects which it has produced, in weakening the system, and to its combination with hysterical or spasmodic affections. In general, we say that abortion is not dangerous, yet, in some cases, even at a very early period of gestation, and under vigorous treatment, it does prove fatal very speedily, from loss of blood, or sometimes from spasm in the stomach, or convulsions. I knew one instance, and have heard of more, which proved fatal, so early, as the end of the second month. It is satisfactory, however, to find, that this termination is rare, that these dangerous attendants are seldom present, and that a great hæmorrhage

may be sustained, and yet the strength soon recover. But if there be any disposition in a particular organ to disease, abortion may make it active, and thus, at a remote period, carry off the patient. Miscarriages, if frequently repeated, are also very apt to injure the health, and break up the constitution. Severe or fatal inflammation of the uterus, or peritoneum, may follow abortion at a very early period, especially, if any puerperal epidemic exist.

When abortion is threatened, the process is very prone to go on to completion; and it is only by interposing, before the expulsive efforts have begun, that we can be successful in preventing it; for, whenever the muscular contraction is universally established, marked by regular pains, and attempts to distend the cervix and os uteri, nothing, I believe, can check the process. As this is often the case before we are called, or, as in many instances, abortion depends on the action of gestation, being stopped by causes, whose action could not be ascertained, until the effect be produced, we shall frequently fail in preventing expulsion.

This is greatly owing to our not being called, until abortion, that is to say, the expulsive process, have begun; whereas, had we been applied to upon the first unusual feeling, it might have been prevented. What I wish then particularly to inculcate is, that no time be lost, in giving notice of any ground of alarm, and that the most prompt measures, be had recourse to, in the very beginning; for, when universal uterine contraction has commenced, then all that we can do, is to conduct the patient safely through a confinement, which the power of medicine cannot prevent.

The case of threatened abortion, in which we most frequently succeed, is that arising from slipping of the foot, or from causes exciting a temporary over-action of the vessels, producing a slight separation: because here the hæmorrhage immediately gives alarm, and we are called before the action of gestation be much affected. Could we impress upon our patients the necessity of equal attention, to other preceding symptoms and circumstances, we might succeed in many cases, where we fail from a delay, occasioned by their not understanding that an expulsion can only be prevented, by interfering before that process begins; for when sensible signs of contraction appear, the mischief has proceeded too far to be checked. Prompt and decided means, used upon the first approach of symptoms, indicating a hazardous state of the uterus, or on the earliest appearance of hæmorrhage, may, provided the child be still alive, be attended with success.

In considering the treatment, I shall, first of all, notice the

most likely method, of preventing abortion, in those who are subject to it ; next, the best means of checking it, when it is immediately threatened ; and, lastly, the proper method of conducting the woman through it, when it cannot be avoided.

The means to be followed, in preventing, what may be called habitual miscarriage, must depend on the cause, supposed to give rise to it. It will, therefore, be necessary to attend to the history of former abortions ; to the usual habitudes and constitution of the woman ; and to her condition when she becomes pregnant.

In many instances, a plethoric disposition, indicated by a pretty full habit, and copious menstruation, will be found to give rise to it. In these cases, we shall find it of advantage to restrict the patient, almost entirely, to a vegetable diet, and, at the same time, make her use considerable and regular exercise.

The sleep should be abridged in quantity, and taken, not on a bed of down, but on a firm mattress, at the same time that we prevent the accumulation, of too much heat, about the body. The bowels ought to be kept open, which may be effected by drinking Cheltenham water, or taking some other laxative, which does not gripe nor produce tenesmus. We must not, however, carry this plan too far, nor make a sudden revolution in the constitution, as this may be productive of permanent mischief, and occasion the diseases which proceed from a broken habit. Whenever the strength is diminished, the appetite impaired, or any other bad effect is produced, we have gone too great length.

There is, in plethoric habits, a weakness of many, if not all of the functions : but this is not to be cured by tonics, but by continued and very gradually increased exercise, laxatives, and light diet, consisting chiefly of vegetables. This plan, however, must not be carried to an imprudent length, nor established too suddenly, but, regard is to be had to the previous habits. It is a general rule, that exercise should not be carried the length of fatigue, and that it should be taken, if possible, in the country, whilst late hours, and many of the modes of fashionable life, must be given up. We must remember, that an excitable state of the nervous system, is apt to take place, and must endeavour, to lessen this, by strict attention to the bowels, friction, with some stimulating embrocation, on the spine, and the use of the shower bath, or sea-bathing, if they do not produce chillness or languor. There is, I believe, no remedy more powerful, in preventing abortion, than the cold bath, and the best time for using it is in the morning. By means of this, conjoined with attention to the vascular system, and prudent conduct on the part of the patient, many who are subject to abortion, may go on to the full time. If the shower bath be employed, we must begin with

a small quantity of water, and, in some instances, may, at first, add so much warm water, as shall make it just feel cold, but not to give too great a shock. If the cold bath cause headach, this may, often, be prevented, by premising one or two doses of physic. Sea water can often be borne, when fresh water disagrees.

After conception, the exercise must be taken with circumspection: but the diet must still be sparing, and the use of the cold bath continued. If the pulse be at any time full, or inclined to throb, or if the patient be of a vigorous habit, a little blood should be taken away, at a very early period. In some cases, where the action is great, we must bleed, almost immediately, after the suppression of the menses. It is not necessary to bleed copiously; it is much better to take away only a few ounces, and repeat the evacuation when required, and we should manage so as to avoid fainting. I believe much good may often be done by taking away once, or, perhaps, twice a week, from two to three ounces of blood, continuing the practice if there be no objection, for a fortnight, and if necessary at a future time, resuming it for two or three times. The cold bath should be conjoined.*

When there is much aching pain in the back, it is of service to apply occasionally cloths to it, dipped in cold water, or gently to dash cold water on it; or employ a partial shower bath, by means of a small watering-can.

In this, as in all other cases of habitual abortion, we must advise, that impregnation shall not take place, until we have corrected the system: and after the woman has conceived, it is proper that she live *absque marito*, at least until gestation be well advanced. I need hardly add, that when consulted respecting habitual abortion, the strictest prudence is required on our part, and that the situation of the patient, and many of our advices, should be concealed from the most intimate friends of the patient.

In other cases, we find that the cause of abortion, is connected with sparing menstruation. This is often the case with women, whose appearance indicates good health, and who have a robust look. This is not often to be rectified by medicine, but it may by regimen, &c. Here, as in the former case, we find it useful to make the greatest part of the diet consist of vegetables: but it is not necessary to restrict the quantity.

When, on the other hand, the patient has a weakly, delicate

* The acetate of lead, has been recommended by the late ingenious and justly celebrated Dr Rush of Philadelphia, in doses of from one to three grains, given three times a-day. Of this practice I cannot speak from my own experience; but Dr Rush informed me, that in his hands it had been attended with great success.

appearance, it will be proper, to give a greater proportion of animal food, and two glasses of wine, in the afternoon, with some mild bitter laxative, so as to strengthen the stomach, and, at the same time, keep the bowels open. It is sometimes useful to give five grains of Dover's powder at night for a short time, then for a little longer every second night.

We also derive, in both cases, advantage from the daily use of the salt water bath, made of a pleasant temperature; but this is to be omitted after conception, at least for the first ten or twelve weeks, after which, if there be symptoms of irritation, or feeling of tension about the belly, or pain about the groins or pubis, it may be employed, and is both safe and advantageous. But when the patient is of a phlegmatic habit, or subject to profuse fluor albus, it is not indicated, and sometimes is pernicious. The internal use of Bath water, previous to conception, is often of service, and the same may be said of Ems water.

I have already mentioned, that abortion is sometimes the consequence of too firm action, the different organs refusing to yield to the uterus, which is thus prevented, from enjoying the due quantity of energy and action. These women, have none of the diseases of pregnancy, or they have them in a slight degree. They have good health at all times, but they either miscarry, or have labour in the seventh or eighth month, the child being dead; or if they go to the full time, I have often observed the child to be sickly, and of a constitution unfitting it for living. Blood-letting is useful, by making the organs more susceptible. The tepid (not hot) bath is, in general, of advantage, and may be employed every second evening for some time.

There is another case, in which all the functions are healthy and firm, except the circulation, which is accelerated by the uterine irritation. This is more or less the case, in every pregnancy, but here, it is a prominent symptom. The woman is very restless, and even feverish, and apt to miscarry, especially if she be of a full habit. I am satisfied that, in many instances, this state is produced, by irritation of the origin of the cardiac nerves, and is quite independent of plethora. Immediate relief is given by venesection, which is the only effectual remedy, but must not be carried to an extreme degree. The bowels are also to be kept regular.

When, on the contrary, abortion arises from too easy yielding of some organ, we must keep down uterine action, by avoiding venery, and pouring cold water, every morning, from a watering-can, upon the loins and ilia; at the same time we must attend, to the state of the organ, sympathizing with the uterus.

Sometimes, it is the stomach which is irritable, and the person is often very sick, takes little food, and digests ill. A small

blister, or leeches applied to the pit of the stomach, often relieves this; a little of the compound tincture of bark, taken three or four times a-day, is serviceable; or a few drops of the tincture of muriated iron, in a tumbler glassful of aerated water. At other times, the bowels yield, and the patient is obstinately constive. This is cured by aloetic pills, or manna with the tartrate of potass. When the muscular system yields, producing a feeling of languor and general weakness, the use of the cold bath, with a grain of opium at bedtime, will be of most service.

It is evident, that it is only by attending, minutely, to the history of the former miscarriages, that we can detect these causes: and we shall generally find, that in each individual case, it is the same organ, in every pregnancy, which has yielded or suffered. Previous to future conception, we may with propriety, endeavour to render it less easily effected.

General weakness, is another condition, giving rise to abortion; and upon this I have already made some remarks. I have here only to add, that the use of the cold bath, the exhibition of quinine alone, or with sulphate of iron, and wearing flannel next the skin, constitute the most successful practice.

Syphilis is likewise a cause of abortion. When it occurs in the mother, it often unfits the uterus, for going on with its actions. At other times, more especially, when the father labours under venereal hectic, or has not been completely cured, the child is evidently affected, and often dies, before the process of gestation can be completed. In these cases, a course of mercury alone, can effect a cure. But we are not to suppose that every child, born without the cuticle, in an early stage of pregnancy, has suffered from this cause; on the contrary, as some of these instances, depend on causes already mentioned, and which cannot be cured by mercury, I wish to caution the student against too hastily concluding, that one of the parents has been diseased, because the child is born dead, or putrid, at an early period. It is not always easy to form a correct judgment; but we may be assisted by finding that the other causes, which I have mentioned, are absent, that we have appearances of ulceration on the child, and that there are some suspicious circumstances, in the former history, and present health of the parents. A child may be born dead, and even putrid, not only in consequence of syphilis, but also of some malformation of the fetus itself, or of its appendages; or of a general imperfection of the ovum, usually, combined with an increased quantity of liquor amnii; or, of original debility of constitution, unfitting the child for coming to maturity; or, of fatal derangement of structure, or action, taking place in utero, from causes not very obvious; or, from weakness or imperfect action of the uterus itself, or such

a condition as sometimes produces epilepsy; or, it is in certain cases occasioned by a convulsion. Most of these causes are not under our control; and indeed, with the exception of the case of syphilis, we can only propose to prevent the death of the child, by the use of such general means, as invigorate the constitution of the parent, or, as obviate palpable, predisposing causes of injury, to the uterine functions. I believe that the health of the father has material influence on the perfection of the ovum, and that it is too much overlooked considering both sterility and abortion. Males subject to insanity, or epilepsy, may be referred to.

Advancement in life, before marriage, is another cause of frequent abortion, the uterus being then somewhat imperfect in its action. In general we cannot do much in this case, except avoiding carefully the exciting causes of abortion; and by attending minutely to the condition of other organs, during menstruation or pregnancy, we may, from the principles formerly laid down, do some good.

It is satisfactory to know, that although we may fail once or twice, yet, by great care, the uterus comes, at last, to act more perfectly, and the woman bears children at the full time.

After these observations, it is only necessary to add, that in every instance of habitual abortion, whatever the condition may be which gives rise to it, we find it is essential, that the greatest attention be paid, to the avoiding of the more evident, and immediate, exciting causes of miscarriage, such as fatigue, dancing, &c. In some cases, it may even be necessary to confine the patient to her room, until the period at which she usually miscarries is past.

When abortion is threatened, we come to consider whether, and by what means, it can be stopped. I have already stated my opinion, that when the action of gestation ceases, it cannot be renewed, and, that universal contraction of the uterine fibres, is a criterion of this cessation.

But there are many cases, where it must be doubtful, if this universal contraction have taken place, and, therefore, where it is necessary, that we proceed on the most favourable supposition. Farther, as some of the means which may be supposed useful in preventing a threatened abortion, are also useful in moderating the symptoms attending its progress, we may properly have recourse to them. Some causes giving rise to abortion do not immediately produce it, but give warning of their operation, producing uneasiness in the vicinity of the uterus, before the action of that organ be materially affected. The detraction of a little blood at this time, if the pulse be in any measure full or frequent, or, if the patient be not of a habit forbidding evacuations, and subsequent exhibition of an anodyne clyster, or a full dose of

opium,* together with a state of absolute rest, in a recumbent posture, for some days, will often be sufficient to prevent further mischief, and constitute the most efficacious practice. The patient should be strictly confined to bed, sleeping with few bed-clothes, and without a fire in her apartment. Indeed, the very first thing to be done, on entering her room, is to order the patient to bed. The diet should, in general be low, consisting of dry toast, biscuit, and fruit; and much fluid, especially warm fluid, should be avoided.

This is the time at which we can interfere, with the most certain prospect of success, and the greatest attention should be paid to the state of the rest of the system, removing uneasiness, wherever it is present, and preventing any organ from continuing in a state of undue action. It is difficult to persuade the patient, to comply with that strict rule, which is necessary at this period; but, being persuaded, that if this period, be allowed to pass over with neglect, and contraction begin, nothing can afterwards prevent abortion, I wish, particularly, to impress the mind of the student with a due sense of its importance; and I must add, that as after every appearance of morbid uterine action is over, the slightest cause will renew our alarm, it is necessary great attention be paid for some time to the patient.

Often, instead of an uneasy feeling about the loins, or lower belly, we have, before the action of gestation stop, a discharge of blood, generally in a moderate, sometimes in a trifling degree. This is more especially the case, when abortion is threatened, owing to an external cause; and if immediately checked, we may prevent contraction from beginning.

Even in those cases, where we do not expect to ward off expulsion, it is useful to prevent, as far as we can, the loss of blood; for as I cannot see that the hæmorrhage is necessary for its accomplishment, although it always attends it, I conclude, that our attempts to prevent bleeding, can never do harm: if they succeed in checking abortion, we gain our object, if they fail, they do not increase, but diminish the danger. It should be carefully remembered, that the more we can save blood, the more do we serve our patient. As the means for checking the discharge, will be immediately pointed out, it is unnecessary here to enter into any detail.

Sometimes the vessels about the cervix and os uteri yield, *post coitum*, a little blood; and this may occur either in those who have the uterus in a high state of activity, or, more frequently, where it is irritable and feeble in its functions. The same dis-

* Opiates are of signal benefit in this situation, and should seldom be omitted after venesection.

charge may sometimes appear in rather greater quantity after impregnation, passing perhaps for the menses, and making the woman uncertain as to her situation;* but it is generally, though not always, irregular in its appearance, and seldom returns above once or twice. In some instances, however, it becomes greater and more frequent in proportion as the vessels increase in size. It is now apt to pass for menorrhagia. If it be allowed to continue, it tends to injure the action of the uterus, and produces expulsion, which sometimes is the first thing which shows the woman her situation. The discharge is best managed by rest, the frequent injection of saturated solution of the sulphate of alumine, or decoction of oak bark, and the internal use of tincture of kino.

When a slight discharge takes place, in consequence of a slip of the foot, or some other external cause, we may also derive advantage from the use of the injection: but if the discharge be considerable, it will often fail. It is better, in such a case, to trust to the formation of a coagulum.

When, in a plethoric habit, abortion is threatened, from a fright, or mental agitation, we have often palpitation, rapidity of the pulse, headach, flushed face, and pain about the back or pubis; blood-letting relieves immediately the uneasiness in the head, and often the pain in the back; afterwards the patient is to be kept cool and quiet, and an anodyne administered.

In those cases, where regular uterine pain, precedes or accompanies the discharge, expulsion cannot be prevented; but when the discharge precedes the pain, it sometimes may, nay, if the child be still alive, it frequently may. Rest is absolutely necessary, if we wish the person to go to the full time; and it is occasionally necessary to confine her to bed for several weeks, and give an anodyne at bedtime, taking care also to keep the bowels in a proper state by gentle medicine. Blood ought also, unless the pulse and habit of the patient forbid it, to be detracted, but it is never to be taken in a large quantity; if so, we bring on palpitation and great debility, and destroy every chance of avoiding abortion.

This is a very critical situation; much depends on the vigour and promptitude of our practice, and much, very much, upon the prudence of the patient. It is teasing to find, that sometimes, after all our care and exertions, one rash act, destroys, in a single day, the effect of the whole.

When we cannot prevent abortion, the next thing is to conduct

* On the other hand, women who are not with child, may, from some imperfection of the uterine action, discharge small clots, along with red fluid, at the menstrual period, several times in succession, and are thus erroneously supposed, to be threatened with abortion.

the patient safely through the process, by lessening the effects of separation, or detachment of the ovum, and accelerating the contraction. The first point, which naturally claims our attention, is the hæmorrhage. Many practitioners, upon a general principle, bleed in order to check this, and prevent miscarriage; but miscarriage cannot be prevented, if the uterine contraction have universally commenced; and the discharge cannot be prudently moderated by venesection, unless there be undue or strong action in the vessels, or much blood in the system; if so, a vein may be opened with advantage. This is not always the case, and, therefore, unless the vessel be at, or above, the natural force or strength of action, the lancet is not at this stage necessary. The fulness and strength of the pulse, are lost much sooner in abortion, than can be explained, by the mere loss of blood. This depends on an affection of the stomach, which has much influence on the pulse; and the proper time for bleeding is before this have taken place. When abortion has made so much progress before we are called, as to have rendered the pulse small and feeble, or when this is the case from the first, bleeding evidently can do no good. I cannot hold out advantage from the use either of digitalis or of nauseating doses of antimony. Internal astringents have been proposed, but they have no effect in copious hæmorrhage, unless they excite sickness, which is a different operation from that which is expected from them. They are more useful in protracted, but moderate hæmorrhage. The injection into the vagina, two or three times a-day, of decoction of oak bark, or some other astringent, is of great benefit in such cases. If the cold injection give pain in the belly, it may be used tepid.

The application of cloths, dipped in cold water, to the back and external parts, ought generally to be had recourse to. The introduction of a very small piece of smooth ice, or a little snow wrapped up in a bit of linen, into the vagina, has often a very speedy effect in retarding the hæmorrhage, whilst it never, if properly managed, does any harm; but we must not continue either of those, so long as to produce pain, or much and prolonged shivering. The heat of the surface is also to be moderated, if there be no pulmonic or rheumatic affection, by having few bedclothes, and a free circulation of cool air.

But, the most effectual local method, of stopping the hæmorrhage, is by plugging the vagina. This is best done, by taking a pretty large piece of soft cloth, and after dipping it in oil, wringing it gently. It is, then, to be introduced with the finger, portion after portion, until more or less of the vagina, according to the urgency of the case, be filled. Any portion which remains out, is to be pressed firmly on the orifice. This acts by allowing the effused blood, time to coagulate. It gives no pain; it pro-

duces no irritation; and those who condemn it, surely, must either have not tried, or misapplied it. If we believe that abortion requires for its completion a continued flow of blood, we ought not, in those cases where the process must go on, to have recourse to cold, or other means of restraining hæmorrhage. If we do not believe this, then, surely, the most effectual method of moderating it, is the best. Plugging, can never retard the process, nor prevent the expulsion of the ovum, for, when the uterus contracts, it sends it down into the clotted blood in the upper part of the vagina, and the flooding ceases.

Faintness, operates, also, in many cases, by allowing coagula to form, in consequence of the blood flowing more slowly; and, when the faintness goes off, the coagula still restrain the hæmorrhage, in the same way, as when the plug has been used. This, naturally, points out the advantages of using the plug, as we thus, produce coagulation at the mouths of the vessels, and, also, diminish the vascular action. It will, likewise show the impropriety of using injections at this time; for, by washing out the coagula, we do more harm, than can be compensated for, by any astringent effects produced on the vessels.

The principal means, then, which we employ for restraining the hæmorrhage, are bleeding, if the pulse be full and sharp; if not, we trust to stuffing the vagina; to the application of cold to the external parts; to keeping the heat of the body, in general, at a low temperature; and to enforcing a state of absolute rest, which must be continued during the whole process, however long it may, in some cases, be. The drink should be cold, and the food light, and taken in small portions.

Opiates have been advised, in order to abate the discharge, and are by many, used in every case of abortion, and in every stage. But as we cannot finish the process, without muscular contraction, and as they tend to suspend that, I do not see, that their constant exhibition, can be defended on rational principles. If given in small quantity, they do no good in the present point of view; if in large doses, they only postpone the evil, for they cannot check abortion after contraction has begun. When the process is going on regularly, opiates only tend to interfere with it and prolong the complaint. But I will not argue against the use of opiates from their abuse. They are very useful in cases of threatened abortion, more especially in accidental separation, of the membranes and consequent discharge. They do not directly preserve the action of gestation, but they prevent the tendency to muscular contraction, and thus do good. In weakly or emaciated habits, opiates alone, if given upon the first appearance of mischief, are often sufficient to prevent abortion; and in opposite conditions, when preceded by venesection, they are of

great service. Opiates are likewise useful, for allaying those sympathetic pains about the bowels, and many of the nervous affections which precede, or accompany abortion. They are also of much benefit in cases where we have considerable and protracted discharge, with trifling pains, as the uterus is not contracting sufficiently to expel the ovum, but merely to separate vessels and excite hæmorrhage. They either at once render the pain brisker, or by suspending for a time, the action, it returns afterwards with more vigour and perfection, and finishes the process. In cases of irregular or spasmodic contraction, a full dose is useful.

It was at one time, a very frequent practice to endeavour, with the finger or small forceps, to extract the fœtus and placenta, in order to stop the discharge. Puzos strongly opposed this practice, and it is now very properly given up as a general rule. I do not wish, however, to be understood as altogether forbidding manual assistance, but it is a useful precept, not to be hasty in attempting to extract the ovum. If the discharge be protracted, and the membranes entire, we may, if the situation of the patient require it, sometimes accelerate expulsion, by evacuating the liquor amnii. But if the pregnancy be not advanced beyond the fourth month, it will be decidedly better, to trust to a smart clyster, and restraining the hæmorrhage by means of the plug. We thus have a greater likelihood, of getting all the ovum off at once, and, if the hæmorrhage be still protracted, we may excite the action, by gently dilating the os uteri, and moving the finger round it. If the membranes have given way, and the fœtus be still retained, we may, by insinuating a finger within the uterus, cautiously, hook it out; or, in many cases it will be found, partly, expelled through the os uteri, and may easily be helped away. But the most tedious and troublesome case, generally, is that in which the fœtus has been expelled, but the secundines are still retained, under one of two circumstances; namely, either they are only partially detached, and still adherent to a certain extent, or there is a circular and spasmodic contraction of the uterine fibres around a portion of them, a state which may occur even before the fœtus itself be expelled. Now, we never can consider the patient as secure from hæmorrhage, until these be thrown off, and therefore, she must be carefully watched, especially when gestation is considerably advanced. In a great majority of instances, the uterus within a few hours, contracts and expels them. But in some cases, the hæmorrhage does become profuse, and there is little disposition to throw them off. By stuffing the vagina, we shall often find, that the discharge is safely stopped, and the womb excited to act, in a short time; or, a warm saline clyster is to be given, of such strength as shall

The effect of abortion on the stomach, seems to be in proportion to the period at which it takes place, being greater when it occurs before the fourth month than after it. The effect, though distressing, and often productive of alarm, may lessen the action of the vessels. The strength of the pulse is much abated; sometimes it becomes slower, but in general it remains much as formerly, in point of frequency; we are, therefore, not to be too anxious in removing this condition, which restrains hæmorrhage, yet, as it may go beyond due bounds, and produce dangerous syncope, we must check it in time. We must likewise be very attentive to the state of the discharge, when this affection is considerable, for, if, notwithstanding this, the hæmorrhage should continue, it will produce greater, and more immediately hurtful effects, than if this were absent.

The best method of abating this sinking and feebleness, is to keep the body perfectly at rest, and the head low. If necessary, we give small quantities of stomachic cordials, such as a little tincture of cinnamon, or a few drops of ether in a glass of aerated water; or we may give a little peppermint water, with twenty drops of tincture of opium. In urgent cases, Madeira wine or undiluted brandy may be given; but these are not to be frequently repeated, and are very rarely necessary. Full doses of opium are also useful.

Sometimes, instead of a feeling of sinking and faintness, the fibres of the stomach are thrown into a spasmodic contraction, producing sudden and violent pain. This is a most alarming symptom, and may kill the patient very unexpectedly. It is to be instantly attacked, by a mixture of sulphuric ether and tincture of opium, in a full dose, whilst a sinapism is applied to the epigastric region; but if, when this pain occurs, there be symptoms of approaching convulsions, then, bleeding should precede the anodyne, and no other should be given.

Spasms about the intestines are more frequent, and much less dangerous. They are very readily relieved, by thirty drops of tincture of opium, in a dessert-spoonful of aromatic tincture, or of the compound tincture of lavender, with a little water.

These disagreeable symptoms, which I have described, fortunately, do not often attend abortion, but the process goes on safely, and without disturbance. In this case, after it is over, we only find it necessary, to confine the person to bed, for a few days, as getting up too soon, is apt to produce debilitating discharge. We must also, by proper treatment, remove any morbid symptoms, which may be present, but which, depending on the peculiarities of individuals, or their previous state of health, cannot here be specified. When the patient continues weakly, the use of the cold bath, and sometimes of quinine, will be of

much service in restoring the strength; and, in future pregnancies, great care must be taken, that abortion may not happen again, at the same period.

Fatal hysteritis may follow abortion.

SECTION THIRTY-EIGHTH.

Of all the incidents to which a pregnant woman is exposed, none is more alarming or troublesome than uterine hæmorrhage, when it occurs in the advanced stages of gestation, or after the delivery of the child. This, from its extent, and impetuosity, has aptly been called a flooding; and from the frequency of its occurrence, it must be extremely interesting to every practitioner.

I have, (pp. 232, 233,) when describing the sinuses which skirt the placenta, and the fragile vessels passing between it and the uterus, noticed how easily they may be ruptured, and, how, great hæmorrhage may result, even if only the mere edge of the placenta be detached; for, it is evident that the discharge is not, necessarily proportioned to the extent of separation. The late Dr Hamilton thought that the discharge proceeds chiefly from the placenta, which, receiving blood from the uterus, pours it out from the detached surface. That blood flows from that surface, as well as from that of the uterus, is doubtless true, for the vessels, whether they be the large marginal sinuses, or veins going directly from the uterine face of the placenta to the uterus, must, when torn, allow their contents to escape. But it is equally clear, that if vessels do pass from the uterus to the placenta, these must also directly pour out blood, and we know how freely the uterine sinuses or veins communicate, and also how much blood the uterine vessels can pass out in flooding, after delivery. If no laceration of placental substance exist, no blood can come from the fetal vessels, nor even directly from the cells, but from them, only, by the returning veins.

As the ovum corresponds exactly to the inner surface of the uterus, and is in close and intimate contact with it, we find, that as long as this union subsists, the vessels, notwithstanding their delicacy, are enabled to transmit blood without effusion. But, whenever a separation of the one from the other takes place, then, these vessels are either directly torn, or, even supposing them to extend a little, they must be ruptured by their own action, or by the force of the blood which they receive and circulate.

The membranes are never so full of water, as to be put upon the stretch, and therefore they cannot forcibly distend the womb, and make pressure on its inner surface. The womb again during gestation, does not embrace the membranes tightly, so as to

compress them. Hence it is evident, that when rupture first takes place, no resistance can, by the action of the one upon the other, be afforded to the flow of the blood. The consequence of uterine hæmorrhage, when considerable, is, that the force of the circulation is diminished, faintness, or absolute syncope, being induced. The blood in this state flows more feebly; coagulation is allowed to take place, on the exposed surface of the uterus, placenta, or in the delicate marginal sinus, and the paroxysm is for the present ended. This coagulation, in slight cases, may take place, even without the intervention of faintness. Reunion, however, when the separation is extensive, and the coagulium considerable, cannot be expected to take place, and therefore when the clot loosens, a return of the hæmorrhage, is in general to be looked for.

One or more copious discharges of blood, must injure the functions of the uterus, and ultimately destroy, altogether, the action of gestation. This tends to excite the muscular action of the uterine fibres, and by their contraction two effects will be produced. The uterine vessels will be diminished in their diameter or capacity, and by the whole surface of the womb, pressing more strongly upon the ovum, a greater resistance will be given to the flow of the blood, from the sinuses, arteries, and placenta or decidua.

Thus, it appears, that nature attempts to save the patient in two ways. First, by the induction of a state of faintness, or sometimes of complete syncope, which tends to check the present attack. Secondly, when the hæmorrhage is so great or obstinate, as to prevent any possibility of the woman going safely to the full time, such effects are produced, as tend to establish muscular contraction, and accelerate expulsion. This double process, ought, in all our reasonings, to be held in view.

Uterine contraction is of two kinds, which may be called permanent and temporary. The permanent, is that continued action of the individual fibres, by which the uterus is rendered more or less tense, so that it feels firm if the hand be introduced into its cavity. The temporary, is that greater contraction, which is excited at intervals, for the expulsion of the fœtus, producing what are called the pains of labour.

In those cases, where nature effects a cure by expulsion, or the production of labour, it is chiefly, to the permanent or tonic contraction, that we are indebted for the stoppage of hæmorrhage; because, this contraction lessens the size of the vessels, and keeps up a regular pressure, of the uterine surface, upon the ovum, until the pains have accomplished the expulsion, or delivery, of the child. The pains, alone, could not do this good, for, coming only at intervals, their effect would be fuga-

cious. On the other hand, the permanent contraction should not be adequate to the purpose, without the pains, for these temporary paroxysms, excite this action to a stronger degree, and, by ultimately forcing down the child, accomplish delivery before the powers of the uterus be worn out.

Such are the steps by which the patient is naturally saved. But we are not to expect that these shall, in every instance, or in a majority of instances, take place at the proper time, or in the due degree. The debility and syncope may go too far; or the clots may not form in proper time, or may come away too soon, or too easily. The action of gestation may continue, notwithstanding the violence of the hæmorrhage, thus preventing the accession of muscular contraction; or before this contraction be established, and the child expelled, the discharge may have been so great and constant, as to render the efforts of the womb, weak and inefficient, and, by still continuing, may destroy them altogether.

These circumstances being considered, it is evident, that, although when the injury is small, and the discharge trifling, nature may permanently check it, or in more serious cases, may preserve the woman by the expulsion of the child, yet we cannot, with prudence, place our whole reliance on her unassisted operations.

There is also another circumstance, relating to a particular species of flooding, which renders the accomplishment of a natural cure, or escape, still more doubtful. This is, that the placenta is sometimes attached to the os uteri, which, necessarily, must produce a hæmorrhage, whenever the cervix comes to be fully developed, and the mouth to open.

The vessels going to, and returning from the placenta, are much larger than those which belong to the decidua; therefore, if part of the placenta be detached, the quantity and velocity of the discharge must be greater, and the effects more to be dreaded, than when a part of the decidua alone is separated. If the placenta be fixed near the cervix uteri, and a part of it be detached, then, the blood which is effused, will separate the membranes down to the os uteri, and a profuse hæmorrhage will appear. But sometimes, if it be fixed high, or near to the fundus uteri, the blood may be confined, especially if the separation have been trifling, and a coagulum will be formed, exterior to the membranes, the lower part of which will still adhere to the uterus; or if, the central portion of the placenta have been detached, a collection of blood may be formed behind it, but may not extend beyond its circular margin. Such cases are rare. But if the placenta, or part of it, be placed over the os uteri, nothing can retain the blood; profuse discharge must take place,

sinking the whole system, and very much enfeebling the uterus itself, so that, most likely, when uterine contraction does come on, it will be weak, and incapable of speedily effecting expulsion. Even although the contraction should be brisk and powerful, it cannot, owing to the vascularity of the placenta, do the same good as in other cases of flooding; and therefore, in every instance, much blood will be lost, and in many, in very many, the patient, if we trust to this contraction alone, shall perish. Contraction, can only be expected, in this case, to do good, when it is powerful, and the pains come on, so briskly, as speedily to empty the uterus, at the same time that coagula shut the mouths of the placental vessels, at the unsupported part.

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 is found to be attached to the middle, and even the upper part, of the uterus, and we cannot suppose, that in all of these, the whole extent of the membranes, from the placenta to the os uteri had 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 near the cervix, are sufficiently able, to throw out a considerable quantity of blood, if their mouths be open. Still, 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.

It is possible for blood to be effused, in consequence of detachment of part of the ovum, and yet it may not be discharged by the os uteri.† This detachment may be produced by fatigue, falls, blows, &c., and the effusion is accompanied with dull internal pain at the spot where it takes place. This pain is something like colic, or, like pain attending the approach of the menses. The part of the womb where the extravasation takes place, swells gradually, and the uterus in a short time feels larger. If the quantity be considerable, the size increases, the uterus is felt to be firmer and tenser, as well as larger, the strength diminishes, and even faintings may come on. In course of time, weak slow

* Long ago, Andrea Pasta questioned the opinion, that flooding was always produced by separation of the placenta.—Vide Discorso del flusso di sangue, &c. We are not, however, to suppose, that hæmorrhage does not proceed from detachment of the placenta, in any instance when it is placed high up, but only that it is a rare occurrence. When the stream is rapid and profuse, we have every reason to suppose, that part of the placenta is separated; but if we have occasion to deliver, it will generally be found that it is placed close by the cervix uteri, or at least not very far from it.

† Vide Albinus Acad. Annot. lib. i. p. 58. Recueil Périodique, tom. ii. p. 13, and tom. iii. p. 1.

pains are felt, but if the injury be great, these decline, as the weakness increases. They may, or may not, be attended with the discharge of coagula from the os uteri. In such a case, it is evident, that nothing but delivery, can save the mother. But, in slighter cases, where the separation is not very extensive, it may not be discovered or suspected, at least, till the child is born, when often a quantity of dark, or even grumous blood is evacuated, without affecting the pulse or strength, which it would be likely to have done, had it come recently, from the vessels of the uterus.

Let us next consider the causes, giving rise to hæmorrhage, in various degrees; and the first that I shall mention is external violence, producing a separation of part of the ovum. As the ovum and uterus correspond exactly to each other, and are, in the advanced stages of gestation, composed of pretty pliable materials, falls or blows do not produce laceration, so frequently as might be supposed. In a majority of instances, the effect is produced, chiefly by the operation on the vessels, their action being violently and suddenly excited, and rupture of their coats thus produced. When the ovum is mechanically detached, the injury must have been considerable, and in general the foetus is destroyed.

Fatigue or much exertion, may injure the action of the uterus, and give rise to premature expulsion, which, in this case, is generally attended with considerable discharge. Such exertions are likewise apt, by their effect on the circulation, to operate on the vessels passing to the ovum, and produce, in them, a greater degree of activity, than they are capable of sustaining without rupture. It is, therefore, very properly laid down as a rule of practice, to forbid pregnant women to undergo much fatigue, or exert any great muscular action; and wherever this rule has been departed from, especially, by a patient of an irritable or of a plethoric habit, it behoves the practitioner to attend, carefully, to the first appearances of injury, or, to the first symptoms of decay, in the uterine action. Rest, and an opiate, upon general principles, are indicated, and when the circulation is affected, or we apprehend increased action, about the uterine vessels, venesection must be premised, and the patient kept cool and tranquil.

Violent straining at stool, or strong exertion of the abdominal muscles, made in lifting heavy bodies, or in stretching to a height, or frequent and continued stooping, may all, by compressing the womb, cause separation. For, the greatest effect will be produced where the resistance is least, or the support smallest, which is at the under part of the uterus, and there, rupture will be apt to take place.

A preternatural degree of action, in the vessels going to the placenta or decidua, must be dangerous, and likely to produce rupture and extravasation. This, may either be connected with a general state of the vascular system, marked by plethora, or by arterial excitation, or, it may be, more immediately dependent on the state of the uterus itself.

When the patient is plethoric, or, when the action of the vascular system is increased, it is natural to suppose, that the effect will be greatest, on those parts of the womb, which are in the highest state of activity. These are chiefly two; the part to which the placenta is attached, for, there, the vessels are large and numerous; and near the cervix uteri, because, there, the greatest changes are going forward. At one or other of these two places, rupture is most likely to take place, and it will happen, still more readily, if the placenta be attached at, or near to, the cervix. It may be excited either by too much blood, circulating permanently in the system, or, by a temporary increase of the strength and velocity of the circulation, produced by passion, agitation, stimulants, &c. A plethoric state, is a frequent cause of hæmorrhage, in the young, the vigorous, and the active; the decidua is separated, and a considerable quantity of blood flows; perhaps, the placenta is detached, and the hæmorrhage is more alarming. In some cases, the rupture is preceded by spitting of blood, or bleeding at the nose, and, in these cases, the lancet may be of much service.

We sometimes find, that extravasation is produced by an increased action of the uterine vessels themselves, existing as a local disease. In this case, the patient, for some time before the attack, feels a weight and uneasy sensation about the hypogastric region, with slight darting pains about the belly or back. These precursors have, generally, been ascribed to a different cause, namely, rigidity of the ligaments of the womb, or of the fibres of the uterus itself.

Spasmodic action about the cervix uteri, must produce a separation of the connecting vessels. The causes giving rise to this, in the advanced period of gestation, are not always obvious, neither can we readily determine the precise cases, in which this action excites flooding. We should expect, that the discharge ought, always, to be preceded by pain, but, we know that motion, may take place, in some instances, about the cervix uteri, without much sensation; and, on the other hand, many cases of flooding, not dependent on motion of the uterine fibres, are attended with uneasiness or irregular pain about the abdomen. This spasmodic action is not unfrequently produced, by hanging pregnant animals.

Whatever stops, prematurely, the action of gestation, may

give rise to a greater or less degree of hæmorrhage. For, in this case, the development of the cervix takes place quickly, and the ovum must be separated. The quantity of the discharge* will depend upon the state of the circulation—the magnitude of the vessels which are torn—the contraction of the uterus—and the care which is taken of the patient. Hence, it follows as a rule, in every premature labour, more especially in its first stage, that we prevent all exertion, refrain from the use of stimulants, and confine the patient to a recumbent posture.

It sometimes happens, that effective contraction does not take place, speedily, after the action of gestation ceases, but a discharge appears. This may stop, by the induction of syncope, or the formation of clots. The blood, which is retained about the cervix and os uteri, putrefying, produces a very offensive smell. Milk is secreted, as if delivery had taken place, and, sometimes, fever is excited. In this state, the patient may remain for some days, when the hæmorrhage is renewed, and she may be lost, if we do not interfere.

Some undue state of action about the os uteri, removing, or stopping the secretion of that jelly, which, naturally, ought to be lodged within it, is another cause.

This, is generally productive of a discharge of watery fluid, tinged with blood, and, if the patient be not careful, pure blood may be thrown out in considerable quantity. It may even happen, that the hæmorrhage, under certain circumstances, may prove fatal; and yet, upon dissection, little or no separation of the ovum be discovered, the discharge taking place from the vessels of the os uteri itself.†

In some instances, where a portion of the placenta has been detached, I have observed, that near the separated part, the structure of the placenta was morbid, being hard and gristly. In these cases, I could not detect any other cause of separation, and suppose, that by the accidental pressure of the child, upon the indurated part, the uterus may have been irritated.

The insertion of the placenta over the os uteri,‡ may give rise to flooding in different ways.

* In those cases where the contraction becomes universal and effective, we have little discharge, and the patient is merely said to have a premature labour; but if the contraction be partial, and do not soon become effective, then we have considerable discharge, and the patient is said to have a flooding.

† Vide a case in point, by M. Heinigke, in the first volume of Brewer's Biblioth. Germ.

‡ So far as I have observed, uterine hæmorrhage, when profuse, is produced most frequently by this cause; at least two-thirds of those cases requiring delivery, proceed, I think, from the presentation of the placenta; and in the majority of the remaining third, it will be found attached near to the cervix. Most of

The uterus and placenta, may remain in contact, until the term of natural labour, the one adapting itself to the other; but whenever the os uteri begins to dilate, separation, and consequent hæmorrhage, must take place. But, often, at an earlier period, in the eighth, or by the middle of the ninth month, we find, that, either, the uterus and placenta no longer grow equally, in consequence of which the fibres about the os uteri are irritated to act, or, so much blood as must necessarily, in this situation, circulate about the cervix uteri, interferes with its regular actions, and induces premature contraction of its fibres, with a consequent separation of the connecting vessels.

In order to ascertain, whether the hæmorrhage proceed from this cause, we ought, in every case, to which we are called, carefully, to examine our patient. The introduction of the finger is sometimes sufficient for this purpose, but frequently it may be necessary, to carry the whole hand into the vagina. But this is not warrantable, unless the hæmorrhage be great, or have produced a decided effect on the system. When we do so, we ought to be prepared to proceed to delivery, if it be thought proper.

If the placenta present, we shall feel the lower part of the uterus thicker than usual, and the child cannot be so distinctly perceived to rest upon it. This is ascertained, by pressing with the finger, on the fore part of the cervix, betwixt the os uteri and bladder, and also a little to either side.*

If the os uteri be a little open, then, by insinuating the finger, and carrying it through the small clots, we may readily ascertain whether the placenta or membranes present, by attending to the difference which exists between them. But in this examination, we must recollect, that if only a small portion of the edge of the placenta present, this may not readily be felt at first, especially if a coagulum fill the upper part of the os uteri.

To conclude this part of the subject, I remark in general, that hæmorrhage from the uterus, is not merely arterial, but also venous, and the orifices of these latter vessels, are extremely large. Almost immediately after conception, the veins enlarge, and dilate, contributing greatly to give to the uterus, the doughy feel which it possesses. In the end of gestation, the sinuses are of immense size, and their extremities so large, that, in many places,

those hæmorrhages, which are cured without delivery, proceed from the detachment of the decidua alone, or of a very small portion of the placenta, which has been separated under circumstances favourable for firm coagulation.

* When a large coagulum occupies the lower part of the uterus, we may be deceived, if we trust to external feeling alone, without introducing the finger within the os uteri. If the uterus have its usual feel, and the child be felt distinctly through it, then we are sure that, however near the placenta may be to the os uteri, it is not fixed exactly over it.

they will admit the point of the finger. Now, as all the veins communicate more freely than the arteries, and as they have in the uterus no valves, we can easily conceive the rapidity, with which discharge may take place, and the necessity of encouraging coagulation, which checks venous, still more readily, than arterial, hæmorrhage. The discharge from the marginal sinuses, at the placenta, is venous.

In whatever way flooding is produced, it has a tendency to injure or disturb gestation, and to excite expulsion; but these effects may be very slowly accomplished, and, in a great many instances, may not take place, in time to save the patient, or her child. Having already noticed those changes, produced on the womb itself, by hæmorrhage, and the danger of trusting to them, for the recovery of the patient, I will not recapitulate, but proceed, very shortly, to mention the effects, produced on the system at large.

During the continuance of the hæmorrhage, or, by the repetition of the paroxysms, if this be allowed to occur, certain alterations, highly important, are taking place. There is much less blood circulating than formerly; and this blood, when the hæmorrhage has been frequently renewed, is less stimulating in its properties, and less capable of affording energy, to the brain and nerves. The consequence of this is, that all the actions of the system, must be performed more incorrectly, and with less strength. The body is much more irritable than formerly, and slight impressions produce greater effects. This gives rise to many hysterical, and sometimes even to convulsive affections. The stomach cannot so readily digest the food—the intestines become more sluggish—the heart beats more feebly—the arteries act with little force—the muscular fibres contract weakly—the whole system descends in the scale of action, and must, if the expression be allowable, move in an inferior sphere. In this state very slight additional injury, shall sink the system irreparably—very trifling causes shall unhinge its actions, and render them irregular. If the debility be carried to a farther degree, no care can recruit the system—no means can renew the vigour of the uterus. We may stop the hæmorrhage, but recovery cannot take place. We may deliver the child, but the womb cannot contract. When much blood has been lost, particularly, if some irritation be conjoined, an approximation is made to a state of fever, which I have explained at the article “menorrhagia.” The pulse is feeble, but sharp, the skin rather warm, and the tongue more or less parched. This state of the vascular system is dangerous, both as it exhausts, still more, a frame already very feeble, and, also, as it tends to renew the hæmorrhage. It will often be found to depend, upon slight uterine irritation, upon

accumulation in the bowels, upon pulmonic affections, upon muscular pain, or, upon the injudicious application of stimuli. But, as has been explained in a former section, the mere loss of blood can, of itself, produce a febrile state.

Such organs as have been previously disposed to disease, or have been directly or indirectly injured, during the continuance of protracted flooding, may come to excite irritation, and give considerable trouble.

An acute attack of hæmorrhage, generally leaves the patient, in a state of simple weakness; but if the discharge be allowed to be frequently repeated, and the case thus protracted, the state of the vascular system which is produced, adds to the danger, and excites, if the patient be not delivered, more speedy returns.

A woman seldom suffers much, or at least, evidently, in a first attack of hæmorrhage. If she be stout and plethoric, she may lose a large quantity of blood, and yet, to appearance, not be greatly injured, although she, in reality, be in that state, in which a very little farther discharge, may produce alarming symptoms. The hæmorrhage may come on in every different situation. She may have no appearance of it, till labour begin, and then it may either break out at once with impetuosity, or, slight at first, it increases rapidly as labour advances. Or she may be attacked, long before her confinement is expected. She may awake, suddenly, from a dream, and feel herself swimming in blood; or, it may take place when walking; or may be preceded by a desire to make water, and she is surprised to find the chamber-pot half filled with blood. If the attack be not very severe, and be soon checked, and there be no labour, she recovers from her consternation; perhaps, in spite of every injunction, she walks about as usual, and finds no bad effect from motion; the feeling of heaviness which may have preceded the accident is gone, she is lighter and better than she was before it, and hopes all is well; but, in a few days, the hæmorrhage is repeated, and again stops; at last, after one or two attacks, for the time is uncertain, the os uteri becomes soft, and opens a little, perhaps without pain, or she feels dull slight pains, which, however, give her very little uneasiness. This state may take place early, and without dangerous debility; it may take place in the second or third attack; or possibly the hæmorrhage may never have entirely ceased, continuing for a day or two like a flow of the menses, and then it is suddenly increased, or flows in a torrent. But although this state of the uterus, whether it be induced before the end of gestation, or in the natural course of labour, may take place without alarming debility, it may also, and that very suddenly, be attended with the utmost danger, or may be accompanied with so much hæmorrhage, as to prove absolutely fatal. The patient is found

without a drop of blood in her face, the extremities cold, the pulse almost gone, the stomach unable to retain drink. She is in the last stage of weakness, but it is not the weakness produced by fever or disease, for we, often, find her voice good, and generally, the intellect clear. The hæmorrhage has, perhaps, stopped, and a young man would suppose it still possible for her to recover. But although not a drop of blood be afterwards lost, the debility increases, the pulse is quite gone, she breathes with difficulty, and gives long sighs, wavers in her speech, and in a short time expires.

We may lay it down as a general observation, that few cases of profuse hæmorrhage, occurring in an advanced stage of gestation, can be cured without delivery, or the expulsion of the child. For, when the discharge is copious or obstinate, the side of the placenta is generally separated, sometimes to a very considerable extent, and a reunion, without which, the woman can never be secure against another attack, can rarely be expected. If the placenta present, the hæmorrhage, although suspended, shall, yet, to a certainty return, and few survive, if the child be not delivered.

But in those cases, where only a portion of the decidua has been detached, and the communicating vessels opened, either, by a state of over-action in the vascular system, or, by too much blood in the vessels, or, by some mechanical exertion, if proper care be taken, the hæmorrhage may be completely and permanently checked; or if it should return, it may be kept so much under, or may consist so much of the watery discharge from the glands, about the os uteri, as neither to interfere with gestation, nor injure the constitution; yet, it is to be recollected, that even these cases of flooding, may sometimes proceed to a dangerous degree, requiring very active and decided means to be used, and in no case, can the patient be considered as safe, unless, the utmost care and attention be paid to her conduct.

It would thus appear, that some hæmorrhages almost inevitably end, either in the delivery of the child, or the death of the parent, whilst others, may be checked or moderated, without an operation. A precise diagnostic line, liable to no exceptions, cannot be drawn betwixt these cases; and, therefore, whilst we believe that rapid and profuse hæmorrhages, which indicate the rupture of large vessels, can seldom be permanently checked, we still, provided the placenta do not present, are not altogether without hopes of that termination, which is more desirable for the mother, and safer for the child, than premature delivery. In slighter cases, our hope is joined with some degree of confidence.

A second attack, especially if it follow soon after the first, and from a slight cause, or without any apparent cause, greatly dimi-

nishes the chance, of carrying the woman to a happy conclusion, without manual interference.

In forming our opinion, respecting the immediate danger of the patient, we must consider her habit of body, and the previous state of her constitution. We must attend to the state of the pulse, connecting that, in our mind, with the quantity and rapidity of the discharge. A feeble pulse, with a hæmorrhage, moderate in regard to quantity and velocity, will, if the patient have been previously in good health, generally be found to depend on some cause, the continuance of which is only temporary. But, when the weakness of the pulse, proceeds from profuse or repeated hæmorrhage, then, although it may sometimes be rendered still more feeble, by oppression, or feeling of sinking at the stomach, yet, when this is relieved, it does not become firm. It is easily compressed, and easily affected by motion, or, sometimes, even by raising the head.

If the paroxysm be to prove fatal, the debility increases—the pulse flutters and becomes imperceptible—the extremities first, and then the whole body, become cold and clammy—the breathing is performed with a sigh—the patient desires to be raised, and have the windows opened—is in constant motion, with great anxiety, perhaps vomits—and syncope closes the scene.

If irritation be conjoined with hæmorrhage, or the vascular system be excited, then the pulse is sharper, and although death be near, it is felt more distinctly, than when irritation is absent.

The termination, in this case, is often more sudden than a person unacquainted with the effect of pain and irritation, on the pulse, would suppose. For, when the pulsation is distinct, and even apparently somewhat firm, a slight increase of the discharge, or sometimes an exertion without discharge, speedily stops it, the heat departs, and the patient never gets the better of the attack.

We must likewise remember, that a discharge which takes place gradually, can be better sustained, than a smaller quantity, which flows more rapidly. For, the vessels in the former case, come to be accustomed to the change, and are able, more easily, to accommodate themselves, to the decreased quantity. But when blood is lost rapidly, then, very speedy and universal contraction, is required in the vascular system, in order that it may adjust itself to its contents, and this is always a debilitating process. The difference, too, betwixt the former, and the present condition of the body, is rapidly produced, and has the same bad effect, as if we were instantly to put a free liver, upon a very low and abstemious diet.

In all cases of considerable flooding, we find, that during the paroxysm, the pulse flags, and the person becomes faint. Com-

plete syncope may even take place; but this, in many cases, is more dependent on sickness, or oppression at the stomach, than on direct loss of blood. In delicate and irritable habits, the number of fainting fits may be great, but unless the patient be much exhausted, we generally find, that the pulse returns, and the strength recruits. The prognosis, here, must depend, greatly, on the quantity and velocity of the discharge, for, it may happen, that the first attack of hæmorrhage, may produce a syncope, from which the patient is never to recover.

When we are called to a patient, recently, attacked with flooding, our most obvious duty is immediately to restrain the violence of the discharge; after which, we can take such measures, as the nature of the case may demand, either for preserving gestation, or for hastening the expulsion of the child.

A state of absolute rest, in a horizontal posture, is to be enforced with great perseverance, as the first rule of practice. By rest alone, without any other assistance, some hæmorrhages may be cured, but without it, no patient can be safe. Even, after the immediate alarm of the attack is over, she must still recollect her danger. She should be confined to bed, upon a firm mattress for several days, and ought not to leave her apartment, for a much longer period.

In general, the patient has gone to bed before we are called, and, perhaps, by the time that we arrive, the bleeding has in a great measure ceased. The partial unloading of the vessels, produced by the rupture, the induction of a state approaching to syncope in consequence of the discharge, the fear of the patient, and a horizontal posture, may all have conspired to stop the hæmorrhage.

The immediate alarm from the flooding having subsided, the patient often expresses herself as more apprehensive of a premature labour, than of the hæmorrhage, which she considers as over. If the attack, have been accompanied with slight abdominal pain, her fears are increased. But we are not to enter into these views of the case; we are to consider the discharge as the prominent symptom, as the chief source of danger. We are to look upon the present abatement, as an uncertain calm, and whatever advice we may give, whatever remedies we may employ, we are not to leave our patient, until we have strongly enforced on her attendants, the danger of negligence, and the necessity of giving early intimation, should the hæmorrhage be renewed. There is no disease to which the practitioner can be called, in which he has greater responsibility, than in uterine hæmorrhage. The most prompt and decided means must be used; the most patient attention must be bestowed; and, whenever he undertakes the management of a case of this kind, whatever be the

situation of the patient, he must watch her with constancy, and forget all considerations of gain and trouble. His own reputation, his peace of mind, the life of his patient, and that of her child, are all at stake. I am doing the student the most essential service, when I earnestly press upon his attention these considerations. And, when I entreat, implore him, to weigh well, the proper practice to be pursued, the necessary care to be bestowed, I am pleading for the existence of his patient, and for his own honour and happiness. Procrastination, irresolution, or timidity, have hurried innumerable victims to the grave; whilst the rash precipitation of unfeeling men, has only been less fatal, because, negligence is more common than activity.

I shall endeavour to point out the proper treatment, in the commencement of uterine hæmorrhage, and the best method of terminating the case, when the patient cannot be conducted, with safety, to the full time. After the patient is laid in bed, it is next to be considered, how the hæmorrhage is to be directly restrained, and whether we may be able to prevent a return. It is at all times, proper to ascertain, exactly, the situation of the patient by examination, as we thus learn, the state of the cervix and os uteri, and whether there be any tendency to labour; whether the discharge be stopped by a coagulum in the mouths of the vessels,* or by a large clot in the upper part of the vagina; whether the placenta be attached to the os uteri, or whether the membranes present. We likewise endeavour to ascertain the quantity of blood which has been lost—the rapidity with which it flowed—the effect which it has produced upon the mother or child—and the cause which appeared to excite the hæmorrhage.

The first remedy which, upon a general principle, offers itself to our attention, is blood-letting. But this is rarely admissible. In those cases, and, in those only, where the attack has been produced, by over-action of the vessels of the decidua, or a plethoric condition, or where it seems to be kept up by these causes, this remedy, employed early, and followed by other means, may be effectual, not only in checking the present paroxysm, but, also, in preventing a return. But, we are not to apply the remedy for this one, and very rare state, to every condition; we must have regard to the cause, and consider how far the hæmorrhage is kept up by plenitude or morbid activity of the vessels. In those cases where the attack is not excited by, or connected with, plethora, or undue action in the vascular system,

* We may conjecture that this is the case, if we find no clot in the vagina plugging the os uteri. We are not warranted to thrust the finger, forcibly, within the os uteri, in this examination; or to rub away the small coagula which may be formed within it, and which may be restraining the hæmorrhage.

venesection is not indicated, nay, may be positively hurtful. We have in these cases, which are, by far the most numerous, other means of safely and powerfully moderating vascular action, without the detraction of blood, which, in this disease, it ought to be a leading principle, to save as much as possible; and it must be impressed on the student, that venesection is rarely required, and its use limited to a single case. Whatever lessens, materially or suddenly, the quantity of blood, must directly enfeeble, and call for a new supply, otherwise the system suffers for a long time.

We shall find, that except under those particular circumstances which I have specified, and where we have ground to believe, that the placenta is entirely adherent, that the rupture of vessels of the decidua has been directly dependent, on their plenitude or over-action, the circulation may be speedily moderated, by other means, and, especially, by the application of cold. This is to be made, not only by applying cloths, dipped in cold water, to the back and vulva, but, also, when the heat is increased, by cold-sponging over the legs, arms, and even the trunk, covering the patient only very lightly with clothes, and promoting a free circulation of cold air, until the effect upon the vessels be produced. After this, we shall find no advantage, but rather harm, from the further application of cold. All that is now necessary, is strictly, and constantly, to watch against the application of heat, that is, raising the temperature above the natural standard.

The extent to which this cooling plan is to be carried, must depend upon circumstances. In a first attack, it is in general to be used freely; but, where the discharge either towards the end of this attack, or in a subsequent paroxysm, has gone so far, as to reduce the heat, below the natural standard, the application of cold, must sink the system too much. In some urgent cases, it may even be necessary, to depart from our general rule, and apply warm cloths to the hands, feet, and stomach. This is the case, where the discharge has been excessive, and been suffered to continue profuse, or for a long time, and where we are afraid that the system is sinking fast, and the powers of life giving way. There are cases, in which some nicety is required, in determining this point, and, in these circumstances, we must never leave our patient, but must watch the effects of our practice. This is a general rule, in all hæmorrhages, whatever their cause may have been, or from whatever vessel the blood may come. A cold skin and a feeble pulse never can require the positive, and vigorous, application of cold; but, on the other hand, they do not indicate the application of heat, unless they be increasing, and the strength declining. Then, we cautiously use heat, to preserve what remains, not rashly and speedily to increase action,

beyond the present state of power. In the application of cold, regard must also be paid, to the previous condition of the patient, and her tendency to rheumatism or pectoral complaints.

When an artery is divided, it is now the practice, to trust for a cure of the hæmorrhage, to compression, applied by a ligature. We cannot, however, apply pressure directly, and mechanically, to the uterine vessels, but we can promote coagulation, which has the same immediate effect. Rest and cold, are favourable to this process, but ought, only in slight cases, to be trusted to, alone. In this country, it has been the practice to depend, very much, upon the application to the back or vulva, of cloths dipped in a cold fluid, generally water, or vinegar and water; but these are not always effectual, and sometimes, from the state of the patient, are not admissible. Astringent injections are seldom of benefit, in any discharge, which deserves the name of hæmorrhage. They commonly do good in a stillicidium, rather troublesome from its duration, than hazardous from its extent. In urgent cases, they are hurtful, by washing away coagula.

Stuffing the vagina with a soft handkerchief,* in the manner described when treating of abortion, answers every purpose, which can be expected from them, in producing coagulation of the blood at the mouths of the vessels; and whenever a discharge takes place, to such a degree, as to be called a flooding, or lasts beyond a very short time, this ought to be resorted to. The advantage is so great and speedy, that I am surprised that it ever should be neglected.† I grant that some women may, from delicacy and other motives, be averse from it, but every consideration must yield to that of safety; and it should be impressed, deeply, on the mind of the patient, as well as the practitioner, that blood is most precious, and not a drop should be spilled, which can be preserved. Unless the flooding shall, in the first attack, be permanently checked, which, when the separated vessels are large and numerous, is rarely accomplished, we may expect one or more returns, before expulsion can be accomplished. The more blood, then, that we allow to be lost at first, the less able shall the patient be, to support the course of the disease,

* The insertion of a *small* piece of ice in the first fold of the napkin, is attended with great advantage, and has often a very powerful effect. Dr Hoffman employed the introduction of lint, dipped in solution of vitriol, but this was rather as an astringent than a plug, and he does not propose it as a general practice. He considers that he was obliged to have recourse *ad anceps et extremum auxilium*. Vide Opera Omnia, Tom. iv. Leroux employed the plug more freely. Vide Observations sur les Pertes, 1776. Some modern writers hold it in little estimation; and Gardien says, that when the placenta is attached over the os uteri it is injurious, by exciting the uterus to dilate its mouth. Tom. ii. p. 404.

† The late Dr Hamilton, whose opinion on any subject is not to be disregarded, pronounces plugging in the latter months, "most hazardous," but I am not shaken by his arguments.

and the more unfavourable shall delivery, when it comes to be performed, prove to her and to the child. It is of consequence, to shorten the paroxysm, as much as possible, and, therefore, when circumstances will permit, we should make it a rule, to have, from the first, a careful nurse, who may be instructed in our absence, to use the napkin without delay, should the hæmorrhage return.

But whilst I so highly commend, and so strongly urge the use of the plug, I do not wish to recommend it, to the neglect of other means, or in every situation. In the early attacks of hæmorrhage, when the os uteri is firm, and manual interference is improper, I know of no method more safe, or more effectual, for restraining the hæmorrhage, and preserving the patient. But, when the hæmorrhage has been profuse, or frequently repeated, and the circumstances of the patient, demand more active practice, and point out the necessity of delivery, then, the use of the plug cannot be proper.* If trusted to, it may be attended with deceitful and fatal effects. We can, indeed, restrain the hæmorrhage, from appearing outwardly; but there have been instances, and these instances, though comparatively few, ought to be constantly remembered, where the blood has collected within the uterus, which, having lost all power, has become relaxed, and been slowly enlarged with coagula—the strength has decreased—the bowels become inflated—the belly swelled beyond its size in the ninth month, although the patient may not have been near that period; and, in these circumstances, whilst an inattentive practitioner, has perhaps concluded that all was well, with regard to the hæmorrhage, the patient has expired, or only lived long enough to permit the child to be extracted. All practical writers, warn us against internal flooding, nay, so far do some carry their apprehension, that they advise us to raise the head of the child, and observe whether blood or liquor amnii be discharged; † an advice, however, to which I cannot subscribe, because, in those cases where the membranes have given way, or been opened, the head cannot be thus moveable, nor these trials made, unless we have waited, until a dangerous relaxation, have taken place, in the uterine fibres; and, if, on the other hand, we have delivery in contemplation, it is our object to confine the liquor amnii, as much as possible, until we turn the child.

* Mr Ingleby, in his work on uterine hæmorrhage, seems to think that I object to the use of the plug in profuse hæmorrhage. Quite the contrary, if delivery be not practicable. But in those cases, where the discharge has been profuse, or repeated, the os uteri is generally dilatable, and then, to the delivery of the mother, we must look for safety.

† Vide Dr Johnson's System of Midwifery, p. 157, and Dr Leak's Diseases of Women, Vol. ii. p. 280.

Blood may also collect in the upper part of the vagina, to a dangerous quantity, when the plug has been trusted to, too late, for then a small loss is of much importance. At an early period, I do not think there is ground for fear on this point, but still it is well to remember the possibility of the occurrence, and examine the actual state of the patient, at proper intervals. If the vagina have been not merely stopped at, or near its orifice, but stuffed as it ought to be, there is little room for much blood. The upper part of the vagina, no doubt, may distend, but not to a great degree in general, as the coagulum restrains, like a continuation of the plug, the hæmorrhage. The feeling of distension, or weight, and the pressure on the bladder, would warn us of the inefficiency of the plug. It will be very difficult to prove, that it has ever caused effusion between the membranes, or placenta, and the uterus, at an early stage of the disease.

Besides using these means, it will also, especially in a first attack, and where we have it not in contemplation, to deliver the woman, be proper to exhibit an opiate, in order to allay irritation, and this is often attended with a very happy effect. On this subject, long experience enables me to speak with decision, and to recommend, in every instance, where the hæmorrhage does not depend on plethora, the exhibition of a full dose of laudanum, which tranquillizes the patient, allays irritation, and checks, for a time, the discharge.

Such are the most effectual methods of speedily, or immediately, stopping the violence of the hæmorrhage. The next points for consideration are, whether we can expect to carry the patient, safely, to the full time, and, by what means, we are to prevent a renewal of the discharge.

It may, I believe, be laid down as a general rule, that when a considerable portion of the decidua has, in the seventh month, or later, been separated, the hæmorrhage, although it may be checked, is apt to return. When a part of the placenta has been detached, and, more especially, if that organ be fixed over the os uteri, gestation cannot continue long; for, either such injury is done to the uterus, as produces expulsion and a natural cure, or, the woman bleeds to death, or we must deliver, in order to prevent that dreadful termination.

If the discharge be in small quantity, and have not flowed with much rapidity—if it stop soon or easily—if no large clots be formed in the vagina—if the under part of the uterus have its usual feel, showing that the placenta is not attached there, and that no large coagula are retained within the os uteri—if the child be still alive—if there be no indication of the accession of labour—and if the slight discharge which is still coming away, be chiefly watery, we may, in these circumstances, con-

clude, that the vessels which have been ruptured, are not very large, and have some reason to expect, that by care and prudent conduct, the full period of gestation may be accomplished. It is difficult to say, whether, in this event, the uterus form new vessels, to supply the place of those which have been torn, or whether reunion be effected by the incorporation of those, with corresponding vessels from the chorion. In the early months we know that reunion may take place; but when, in the advanced period of pregnancy, the decidua has become very thin, soft, and almost gelatinous, it is not probable that the circulation may be renewed. At all events, we know that the power of recovery or reparation, is very limited, and can only be exerted, if at all, when the injury is not extensive. But although no reunion may take place, yet, the vessels at the spot, may contract and come rather to furnish a serous secretion, than pour out pure blood.

When the placenta is partly separated, all the facts of which we are in possession, are against the opinion that reunion can take place. If the spot be very trifling, and the vessels not large, we may have no return of the bleeding, a small coagulum may permanently restrain it; but if the separation be greater, and the placenta attached low, or over the os uteri, the patient cannot go to the full time, unless that be very near its completion. We judge of the case, by the profusion and violence of the discharge, for, all great hæmorrhages proceed from the separation of the placenta, and by the feel of the lower part of the uterus—by the quantity of clots, and the obstinacy of the discharge, which may perhaps require even actual syncope to stop the paroxysm—a circumstance indicating great danger.

The best way, by which we can prevent a return, is to moderate the circulation, and keep down the action of the system, to a proper level with the power. The propriety of attending to this rule, must appear, if we consider, among other circumstances, that when a patient has had an attack of flooding, a surprise, or any agitation which can give a temporary acceleration to the circulation, shall often renew the discharge. The action of the arteries, depends very much, upon that of the heart, and the action of this organ, again, is dependent on the blood. When much blood is lost, the heart is feebly excited to contraction, and, in some cases it beats with no more force, than is barely sufficient to empty itself. This evidently lessens the chance of a renewal of the bleeding; and in several cases, as, for example, in hæmoptysis, we, by suddenly detracting a quantity of blood, speedily excite this state of the heart. Whatever tends to rouse the action of the heart, tends to renew hæmorrhage, and, if the proposition be established, that the rapidity with which the

strength and action of the vessels are diminished, is much influenced by the rapidity with which a stimulus is withdrawn, the converse is also true; and we should find, were it practicable to restore the quantity of blood, as quickly, as it has been taken away, that the same effect would be produced, on the action of the heart, ~~tending to renew hæmorrhage; and if the proposition be established,~~ that the rapidity with which the strength and action of the vessels are diminished, is much influenced by the rapidity with which a stimulus is withdrawn, the converse is also true; and we should find, were it practicable to restore the quantity of blood, as quickly, as it has been taken away, that ~~the same effect would be produced, on the action of the heart,~~ as if a person had taken a liberal dose of wine. It has been the practice to give nourishing diet, to restore the quantity of blood, but until the ruptured vessels be closed, or the tendency to hæmorrhage stopped, this must be hurtful. It is our anxious wish to prevent the loss of blood, but it does not thence follow, that, when it is lost, we should wish rapidly to restore it. This is against every principle of sound pathology, but it is supported by the prejudices of those who do not reflect, or who are ignorant of the matter. When a person is reduced by flooding, even to a slight degree, taking much food, into the stomach, gives considerable irritation; and if much blood be made, vascular action must be increased. What is it which stops the flow of blood, or prevents, for a time, its repetition? Is it not diminished force of the circulation, which cannot overcome the resistance given by the coagula? Does not motion displace these coagula, and renew the bleeding? Does not wine increase, for a time, the force of the circulation, and again excite hæmorrhage? Is it not conformable to every just reasoning, and to the experience of ages, that full diet is dangerous, when vessels are opened? Do we not prohibit nourishing food, and much speaking, in hæmorrhage from the lungs? and can nourishing diet and motion be proper, in hæmorrhage from the uterus? If it were possible to restore, in one hour, the blood which has been lost, in a paroxysm of flooding, it is evident, that unless the local condition of the parts were altered, the flooding should, at the end of that hour, be renewed.

The diet should be light, mild, given in small quantity at a time, so as to produce little irritation;* and much fluid which would soon fill the vessels, should be avoided. We shall do more good, by avoiding every thing which can stimulate and

* Such as vegetable jellies, sago, toasted bread, hard biscuit, &c. These articles, given at proper intervals, are sufficient to support the system without raising the action too much.

raise action,* than by replenishing the system rapidly, and throwing rich nutriment into the stomach.

It is, however, by no means my intention to say, that we must, during the whole remaining course of gestation, (provided that that go on, the attack having been permanently cured,) keep down the quantity of blood. I only mean, that we are not rapidly to increase it. Even, where the strength has been much impaired, by the profusion of the discharge, or the previous state of the system, it is rather by giving food, so as to prevent further sinking, than by cramming the patient, that we promote recovery; and I beg it to be remembered, that although I talk of the management of those who are much reduced, yet, I am not to be understood, as, in any degree, encouraging the practice of delay, and allowing the patient to come into this situation of debility. But when we find her already in this state, it is not by pouring cordials and nutriment, profusely, into the stomach, that we are to save her; it is by giving mild food, so as, gradually, to restore the quantity of blood and the strength; it is by avoiding the stimulating plan on the one hand, and the starving system on the other, that we are to carry her safely through the danger.

Some medicines, possess a great power, over the blood-vessels, and may therefore be supposed to enable us in hæmorrhage, to cure our patient with less expense of blood, than we could otherwise do. Digitalis is of this class. Acetate of lead has also been proposed, in doses of two grains every hour, till at least twelve grains were taken; but I cannot hold out any reliance on either of these, neither would I advise tartrate of antimony.

Whilst we endeavour, to diminish the action of the vascular system, we must also be careful to remove, as far as we can, every irritation. I have already said all that is necessary, with regard to heat, motion, and diet. The intestinal canal must also be attended to, and accumulation, within it, should be care-

* The system, with its power of action, may, for illustration, be compared to a man with his income. He who had formerly two hundred pounds per annum, but has now only one, must, in order to avoid bankruptcy, spend only one half of what he did before; and if he do so, although he have been obliged to live lower, yet, his accounts will be square at the end of the year. The same applies to the system. When its power is reduced, the degree of its action must also be reduced; and, by carefully proportioning the one to the other, we may often conduct a patient, through a very great and continued degree of feebleness. At the same time, it must be observed, that, as there is an income so small, as not to be sufficient to procure the necessaries of life, so also may the vital energy be so much reduced, as to be inadequate to the performance of those actions, which are essential to our existence, and death is the result. But surely he who would attempt to prevent this, by stimulating the system, should only hasten the fatal termination? Does not heat overpower, and destroy those parts, which have been frost-bit?

fully prevented, by the regular exhibition of laxatives. A costive state, is generally attended with a slow circulation, in the veins belonging to the hepatic system, and, of these, the uterine sinuses form a part. If the arterial system, be not proportionally checked, this sluggish motion is apt, by retarding the free transmission along the meseraic veins, to excite the hæmorrhage again.

Uneasiness about the bladder or rectum, or even in more distant parts, should be immediately checked ; for, in many cases, hæmorrhage is renewed by these irritations. In these cases, or where the patient is troubled with cough, or affected with palpitation, or an hysterical state, much advantage may be derived from the exhibition of opiates. In many instances, where an attack of flooding, is brought on, by some irritation, affecting the lower part of the uterus in particular, or the system in general, or, where the bowels are pained, and the pulse not full nor strong, rest, cool air, and a moderate dose of tincture of opium, may terminate the paroxysm, and perhaps prevent a return. This is especially the case, if only a part of the decidua have been separated, and the discharge have not been profuse. When the vascular system is full, venesection, as formerly explained, may, though rarely, be proper, before the anodyne be administered.

It may happen, that we have not been called, early, in a first attack, and that some urgent symptom has appeared. The most frequent of these, is a feeling of faintness or complete syncope. This feeling often arises, rather, from an affection of the stomach, than from absolute loss of blood, and in this case, it is less alarming, than when it follows copious hæmorrhage. In either case, however, we must not be too hasty in exhibiting cordials. When the faintishness depends, chiefly, upon sickness at the stomach, or feeling of failure, circumstances which may accompany, even a small discharge, it will be sufficient to give a few drops of hartshorn in cold water, and sprinkle the face with cold water ; a return is prevented by an anodyne draught, or opium pill. When it is more dependent on absolute loss of blood, we may find it necessary to give a full dose of opium or laudanum, with the addition of small quantities of wine warmed with aromatics, but the latter, even in this case, must not be given with a liberal hand, nor too frequently repeated.* It is

* As syncope and loss of blood have both the effect of relaxing the muscular fibre, as is well known to surgeons, it may be supposed that they should increase the flooding by diminishing the contraction of the uterus, if that have already taken place. But the contrary is the case, for by allowing coagula to form, syncope restrains hæmorrhage, and therefore ought not to be too rapidly removed in a first attack, and before the os uteri have become dilatable.

scarcely necessary for me to add, that we are also to take immediate steps, by the use of the plug, &c., for restraining the discharge. This I may observe once for all.

Sickness and faintness also may depend on spasm of the uterus, which ought to be checked, immediately, by laudanum. It also is a ground for delivery, earlier than would be otherwise required. It is recognised by the continued pain in the back and belly, with much greater sinking, than can, from the mere discharge be accounted for.

Complete syncope is extremely alarming to the by-standers, and, if there have been a great loss of blood, it is, indeed, a most dangerous symptom. It must at all times be relieved, for, although faintness, be a natural mean of checking hæmorrhage, yet, absolute, or prolonged syncope is hazardous. We must keep the patient at perfect rest, in a horizontal posture, with the head low, open the windows, sprinkle the face smartly with cold vinegar, apply volatile salts to the nostrils, and give fifty or sixty drops of laudanum internally, and occasionally a spoonful of warm wine.

Universal coldness, is also a symptom, which must not be allowed to go beyond a certain degree, and this degree, must be greatly determined, by the strength of the patient, and the quantity and rapidity of the discharge. When the strength is not previously much reduced, a moderate degree of coldness, is, if the hæmorrhage threaten to continue, of service; but when there has been a great loss of blood, then, universal coldness, with pale lips, sunk eyes, and approaching delirium, may, too often, be considered as a forerunner of death. When we judge it necessary to interfere, we should apply warm cloths to the hands and feet, a bladder half filled with tepid water to the stomach, and give some hot wine and water inwardly.

Vomiting, is another symptom which sometimes appears. When it proceeds from excessive discharge, it is an alarming symptom. It is less so, when it is caused by the attendants having given more nourishment or fluid than the stomach can bear, or from a gush of blood taking place soon after the patient has had a drink. It, in this case, is commonly preceded by sickness and oppression, which are most distressing, and threaten syncope, until relief be obtained by vomiting. Sometimes, it is rather connected with an hysterical state, or with uterine spasm. If frequently repeated, it is a debilitating operation, and by displacing clots may renew hæmorrhage; but, sometimes, it seems fortunately, to excite the contraction of the uterus, and give it a disposition to empty itself. For abating vomiting, we may apply a cloth, dipped in laudanum and camphorated spirits of wine, to the whole epigastric region. Sometimes a little infusion of

capsicum is of service: it should just be gently pungent. But the principal remedy is soft opium in the dose of two grains, or even more, if the weakness be great. It not merely tends to assist the stomach, but is a most useful and soothing cordial. In flooding it is of importance, to pay much attention to the state of the stomach, and prevent it from being loaded; on the other hand, we must not let it remain too empty, nor allow its action to sink. Small quantities of pleasant nourishment, should be given frequently. We thus prevent it from losing its tone, without oppressing it, or filling the system too fast.

Hysterical affections, often accompany protracted floodings, such as globus, pain in the head, feeling of suffocation, palpitation,* retching, in which nothing but wind is got up, &c. These, are best relieved, by some foetid or carminative substance, conjoined with opium. Laxatives are also of essential service. The retching, sometimes requires an anodyne clyster, or the application of a camphorated plaster† to the region of the stomach.

After having made these observations, on the management of flooding, and the best means of moderating its violence, of preventing a return, and of relieving those dangerous symptoms, which sometimes attend it, I next proceed to speak of the method of delivering the patient, when that is necessary. I have separated the detail of the medical treatment of a paroxysm, from the consideration of the manual assistance, which may be required, because, however intimately connected the different parts of our plan may be, in actual practice, it is useful, in a work of this kind, in order to avoid confusion, that I lay them down apart.

As some peculiarities of practice, arise from the implantation of the placenta, over the os uteri, I shall confine my present remarks, to those cases, in which the membranes are found at the mouth of the womb, desiring it to be remembered, however, that this circumstance shall not necessarily indicate, that the hæmorrhage does not proceed, from separation of the placenta, which may be fixed very near the cervix although it cannot be felt.

The operation of delivering the child, is not difficult to describe or to perform. I am generally in the practice, unless the system be already under the influence of opium, of giving, a quarter of an hour before I begin, if the case admit of this delay,

* The quantity of blood lost, is sometimes so great, as to do irreparable injury to the heart, and ever after to impair its action. One well marked instance of this is related by Van Swieten, in his commentary on Aph. 1304, where for twelve years the woman, after a severe flooding, could not sit up in bed without violent palpitation and anxiety.

† This may be made by melting a little adhesive plaster, and then adding to it a large proportion of camphor, previously made into a thick liniment by rubbing it with olive oil.

fifty drops of tincture of opium. The hand, previously lubricated, is then to be slowly, and gently, introduced completely into the vagina. The finger is to be introduced into the os uteri, and cautiously moved so as to dilate it; or, if it have already dilated a little more, two fingers may be inserted, and very slow and gentle attempts made, at short intervals, to distend it without injuring the membranes; and the practitioner shall succeed best, when he acts, so as rather to stimulate the uterus, and make it dilate its mouth, than forcibly to distend it. On the part of the operator, is demanded much tenderness, caution, firmness, and composure; on the part of the patient, is to be desired patience and resolution. The operator is to keep in mind, that painful dilatation is dangerous, it irritates and inflames the parts, and that the woman should complain rather of the uterine pains which are excited, than of the fingers of the practitioner. More or less time will be required, fully, to dilate the os uteri, according to the state in which the uterus was, when the operation was begun. If the os uteri be soft and pliable, and have already, by slight pains, been in part distended, a quarter of an hour, perhaps only a few minutes, will often be sufficient for this purpose; but, if it have scarcely been affected, before, by pains, and be pretty firm, though not unyielding, then, half an hour, may be required. I speak in general terms, for no rule can be given applicable to every case, and we rarely require to deliver, where the os uteri is not already partially dilated, and *dilatable*. Not unfrequently, although the patient have felt scarcely any pains, and certainly no regular pains, the os uteri will be found as large as a penny piece, and its margin soft and thin. The os uteri being sufficiently dilated, the membranes are to be gently detached, and the hand carried up between them and the uterus, till near the feet. They are then to be ruptured, the feet or the knees laid hold of, and the child slowly turned and delivered, as in footling cases. The object of this manipulation is to confine the water as much as possible, that the child may be more easily moved. We endeavour rather to have the child *expelled*, by uterine contraction, than *brought away* by the hand. Hasty extraction is dangerous, for the uterus may not contract after it. And, therefore, if when we are turning, we do not feel the uterus acting, we must move the hand a little, and although we turn, yet we should not begin to deliver, until we perceive that the womb is contracting. The delivery must be but slow until the breach be passing; then, we must be careful, that the cord be not too long compressed, before the rest of the child be born. The child being removed, and the belly properly supported, or pressed on, by an assistant, the hand should again be cautiously introduced into the womb, and

the back of it placed on the surface of the placenta, so as to press it a little, and excite the uterus to separate it. The hand may also be gently moved, in a little time, and the motion repeated at intervals, so as to excite the uterus to expel its contents; but if the placenta shall adhere, upon no account are we to separate it. This must be done by the uterus; for we have no other sign, that the contraction will be sufficient to save the woman from future hæmorrhage. If the placenta be detached, and the uterus contracting, we may safely extract it, if we only bring it away without the smallest force; we then reintroduce gently the hand, and retain it for some time, for reasons to be presently mentioned. The whole process, from first to last, must be slow and deliberate, and we are never to lose sight of our object, which is to excite the expulsive power of the uterus. It is not merely to empty the uterus—it is not merely to deliver the child, that we introduce our hand: all this we may do, and leave the woman worse than if we had done nothing. The fibres must contract and press upon the vessels, and as nothing else can save the patient, it is essential that the practitioner have clear ideas of his object, and be convinced on what the security of the patient depends. The aid of a firm bandage has been advised, but it is not, even when it can be applied, to be trusted to alone.

But to teach the method of delivery, and say nothing of the circumstances under which it is to be performed, would be a most dangerous error. I have, in the beginning of this section, pointed out the effect of hæmorrhage, both on the constitution and on the uterus; and I have stated, that the action of gestation is always impaired, by a certain loss of blood, and a tendency to expulsion brought on. But before the uterine contraction can be fully excited, or become effective, the woman may perish, or the uterus be so enfeebled as to render expulsion impossible. Whilst then we look upon the one hand to the induction of contraction, we must not on the other, delay too long. We must not witness many and repeated attacks of hæmorrhage, sinking the strength, bleaching the lips and tongue, producing repeated fainting fits, and bringing life itself into immediate danger. Such delay is most inexcusable and dangerous; it may end in the sudden loss of mother and child; it may enfeeble the uterus, and render it unable afterwards to contract; or it may so ruin the constitution, as to bring the patient, after a long train of sufferings, to the grave.

Are we then uniformly to deliver upon the first attack of flooding, and forcibly open the os uteri? By no means: safety is not to be found, either in rashness, or procrastination.

The treatment which I have pointed out, will always secure the patient, until the delivery can be safely accomplished. As

long as the os uteri is firm and unyielding—as long as there is no tendency to open, no attempt to establish contraction, it is perfectly safe to trust to the plug, rest, and cold. But I must particularly state to the reader, that the os uteri may dilate without regular pains; and in almost every instance it does, whether there be or be not pains, become *dilatatable*. Did I not know the danger of establishing positive rules, I would say, that as long as the os uteri is firm, and has no disposition to open, the patient can be in little risk, if we understand the use of the plug; we may even stuff the os uteri itself, which will excite contraction.* But if the patient be neglected, then I grant, that long before a tendency to labour or contraction be induced, she may perish. I am not, however, considering what may happen in the hands of a negligent practitioner, for of this there would be no end, but what ought to be the result of diligence and care. The only exception I can conceive to this rule, is, when a prodigious quantity of blood has been all at once discharged, a case of rare occurrence.

It is evident, that when the uterus has a disposition to contract, and the os uteri to open, delivery must be much safer and easier, than when it is still inert, and the os uteri hard.

We may, with confidence, trust to the methodical stuffing of the vagina, until these desirable effects be produced, and in some instances, we shall find, that by the plug alone, we may secure the patient: the contraction may become brisk, if we have prevented much loss of blood, and expulsion may naturally take place. Who would, in these circumstances, propose to turn the child, and deliver it? Who would not prefer the operation of nature, to that of the accoucheur? To determine in any individual case, whether this shall take place, or whether delivery must be resorted to, will require deliberation on the part of the practitioner. If we have used the plug early and effectually, and the pains have become brisk, he has good reason to expect natural expulsion; and the labour must be conducted on the general principles of midwifery. But if the uterus have been enfeebled by loss of blood—if the pains be indefinite—if they have done little more than just open the os uteri, and have no disposition to increase, then he is not justified in expecting, that expulsion shall be naturally and safely accomplished, and he ought to deliver. When he dilates the os uteri, he excites the

* Dr Hamilton mentions two instances, in which the patients seemed to be in articulo mortis, from the great discharge, and yet the os uteri was rigid. It appears, that the blood came in a deluge, and therefore no time was allowed for an effect on the os uteri. He introduced the hand into the vagina, and, with two fingers, acted on the presentation, through the entire membranes, so as to whirl it round, and enable him to hook a foot, and bring it through the membranes and os uteri.

uterine action, and feels the membranes become tense. But he must not trust to this; he must finish what he has begun.

Thus it appears, that by the early and effective use of the plug, by filling the vagina with a soft napkin, or with tow, we may safely and readily restrain the hæmorrhage until such changes have taken place on the os uteri, as to render delivery easy; and then, we either interfere, or trust to natural expulsion, according to the briskness and force of the contraction, and state of the patient.

By this treatment, we obtain all the advantage that can be derived from the operations of nature; and, where these fail, are enabled to look with confidence, to the aid of the artificial delivery.

But it may happen, that we have not had an opportunity of restraining the hæmorrhage early; we may not have seen the patient, until she have suffered much from the bleeding.* In this case, we shall generally be obliged to deliver, and must, upon no account, delay too long; yet, if the os uteri be very firm, without disposition to open, and require hazardous force to dilate it, we shall generally find that the sinking is temporary: we may still trust, for some time to the plug, and give opiates to support the strength.

Hæmorrhage is naturally restrained by faintness. A repetition is checked in the same way; and faintness takes place sooner than formerly. In one or two attacks the uterus suffers, and the os uteri becomes dilatable. Slight pains come on, or are readily excited, by attempts to distend the os uteri. Syncope then will, in general, even when the plug has not been used, and the patient has been neglected, restrain hæmorrhage, and prevent it from proving fatal, until the os uteri have relaxed; but a little delay beyond that period will destroy the patient, and it is possible, by giving wine, and otherwise treating her injudiciously, to make hæmorrhage prove fatal, even before this take place. But although I have considered it as a general rule, that where the os uteri is firm and unyielding, we may, notwithstanding present alarm, trust some time to the plug, yet I beg it to be remembered, that there may be exceptions to this rule; for the constitution may be so delicate, and the hæmorrhage so sudden, or so much increased by stimulants, as to induce a permanent effect, and make it highly desirable that delivery should be accomplished; but such instances are rare; and, although I have spoken of the effects of syncope in restraining hæmorrhage, I hope it will not be imagined by the student, that I wish to make him

* We are not to confine our attention to the quantity which has been lost, but to the effect it has produced; and this will *ceteris paribus* be great in proportion as the hæmorrhage has been sudden.

familiar with this symptom. It is very seldom safe, when we have our choice, to wait till syncope be induced; and if it have occurred, it is not usually prudent to run the risk of a second attack.

The old practitioners, not aware of the value of the plug, endeavoured to empty the uterus early; but it was uniformly a remark, that those women died who had the os uteri firm and hard.* It was the fatal consequence; of this practice being sometimes prematurely and rashly resorted to, that suggested to M. Puzos, the propriety of puncturing the membranes, and thus endeavouring to excite labour. His reasoning was ingenious; his proposal was in one respect, an improvement on the practice which then prevailed. The ease of the operation, and its occasional success, recommend it to our notice; but, unfortunately, it cannot be relied on. If we use it early, and on the first attack, before any tendency to labour exist, we do not know when the contraction may be established; for, even in a healthy uterus, when, on account of a deformed pelvis, we let out the water, it is sometimes days before labour can be produced. We cannot say what may take place in the interval. The uterus being slacker, the hæmorrhage, if not more, is at least not less, apt to return, and we may be obliged, after all, to have recourse to other means, particularly to the plug. Now we know that the plug can, without any other operation, safely restrain hæmorrhage, until the os uteri be in a proper state for delivery.† The proposal of M. Puzos then is, I apprehend, inadmissible before this time. If after this, there be occasion to interfere, it is evident, that we must desire some interference, which can be depended on, both with respect to time and degree. This method can be relied on in neither; for we know not how long it may be of exciting contraction, nor whether it may be able to excite effective contraction, after any lapse of time. If it fail, we render delivery more painful, and consequently more dangerous to the mother, and bring the child into hazard. It has been observed, in objection to this, by Dr Denman,‡ that if turning be

* Guillemeau distinctly recommends turning, and extracting the child, and gives the history of the case of Paré's daughter, (1699.) whose life he saved in this way, having been taught by her late father to do so. Mauriceau explicitly says, we must not always expect pains to forward labour, neither defer turning, till the os uteri be opened enough, for it is relaxed, and easily dilated.

† The late Alphonse Le Roy seems much inclined, to trust almost entirely to the plug, and supposes that the blood will act as a foreign body, and excite contraction; but this, as a general doctrine, must be greatly qualified. Respecting the proposal of M. Puzos, he observes, "Puzos en conseillant assez hardiment de percer les eaux, n'avoit d'autres vues que la contraction de la matrice, qui est la suite de cette operation et la cessation de la perte, et il la conseilla même dans les cas des pertes qu'arrivent avant terme. Mais un grand nombre de femmes sont périées par l'effet de cette même pratique." *Leçons sur les pertes de sang*, p. 45.

‡ Introduction to the Practice of Midwifery, Vol. ii. p. 310.

difficult, the flooding will be stopped by the contraction of the womb. But we know that the uterus, emptied of its water, may embrace the child so closely as to render turning, if not difficult, at least painful, and more dangerous, and yet not be acting so briskly, and universally, as to restrain flooding: nothing but brisk contraction can save the patient in flooding, if the vessels be large or numerous. Spasmodic action may also take place.

The only case then which remains to be considered, is that in which pains come on, and expulsion is going forward. Now, in this case, the flooding is stopped, either by the contraction, or by the plug, and the membranes burst in the natural course of labour. Here then, it is true, interference is not required; but if, after going on in a brisk way, for some time, the membranes being yet entire, the pains abate a little, which often happens, even in a natural labour, it may be proposed to rupture them, in the hope that this shall prove a stimulus to the uterus, and renew its action. In deciding on this, the practitioner must be somewhat influenced by the previous discharge. Certainly if the uterus have been much reduced by that in its vigour, it will be less under the influence of a stimulus; and if, upon the present diminution of the pains, the flooding be disposed to return, I should think that we surely ought to trust rather to the hand, which can finish the process with safety, than to a method which is much more uncertain, and less under our command.*

The proposal of M. Puzos is very limited in its utility. Its simplicity gave me at first a strong partiality in its favour; but I soon found cause to alter my opinion. I consider that we are only warranted in trusting to it in those slighter cases which would *almost* do well without it. Having given my opinion, faithfully and decidedly, I must not conceal, that many eminent men are still favourable to the plan, yet, so far as may be judged of, by cases recorded by these high authorities, a larger proportion of women die in this species of hæmorrhage, than in that where the placenta is attached to the cervix uteri. Dr Clarke has four out of ten, Dr Ramsbottom seven out of sixteen. Dr Collins† has a somewhat different result, for out of thirteen, only two women died, but the loss of children was great, only one being born alive. In the placental presentations, only two women died, but there were six living children born. Dr

* In those cases where the placenta presents, few practitioners would think of trusting to the evacuation of the liquor amnii; they would deliver. If then delivery be considered as safe and proper in one species of flooding, it cannot be dangerous in the other; and whenever interference in the way of operation is necessary, the security afforded by the introduction of the hand will much more than compensate for any additional pain. But even in this respect, the two operations are little different, if properly performed.

† Practical Treatise, p. 112.

Hamilton,* who argues strongly against the plan of Puzos, 221, & he has seen fully as many fatal cases in accidental, as in unavoidable, hæmorrhage. On the other hand, Dr Merriman says, that thirty cases of the former all did well.

There still remains a most important question to be answered. In those cases, where the patient has been allowed to lose a great deal of blood, frequently and suddenly, when the strength is gone, the pulse scarcely to be felt, the extremities cold, the lips and tongue without blood, and the eye ghastly, shall we venture to deliver the woman? Shall we, by plugging, endeavour to prevent farther loss, and by nourishment and care, recruit the strength; or empty the uterus, and then, endeavour to restore the loss? We have only a choice of two dangers. The situation of the patient is most perilous, and I have, in practice, weighed the argument, with that attention, which the awful circumstances of the case required. I think myself justified in saying, that we give both mother and child, the best chance of surviving, by a cautious delivery. For in these cases, the uterus is almost torpid, it possesses no tonic contraction.† The general system is completely exhausted, and cannot support its condition long. The very presence of the ovum within the uterus is a cause of danger. I have never known a woman live twenty-four hours in these circumstances.

On the other hand, I grant, that it is possible the woman may die in the act of delivery, or very soon after it; but if she can be supported for one day, we have hopes of recovery. By a very slow and cautious delivery, and by endeavouring thereafter, by retaining the hand for some time in the womb, to excite its action, so as to prevent discharge afterwards, we not only remove the irritation of the distended womb, but we likewise take away a receptacle of blood. During the contraction of the uterus, the blood in its sinuses, will be thrown into the system, and tend to support it. Part, no doubt, will escape; but by keeping the hand in the uterus, by supporting the abdomen with a compress, and exciting the uterine action by cold applications to the belly, or pressing firmly on the uterus, with the expanded hand, or moving the abdominal parietes over it, we may excite the uterine action; or, if the application suddenly to the belly of cloths wrung out of iced water, do not produce distressing shivering, it may be used for a short time, if we find that it makes the uterus contract; or the loose coagula ought to be extracted, and the hand again introduced. When to these considerations,

* Practical Observations, Vol. ii. p. 239.

† The use of the plug cannot here certainly prevent the further loss of blood, for the uterus affords no resistance, the hæmorrhage continues, and after death large coagula will be found within the womb.

we add the additional chance which the child has for life, our practice, I apprehend, will, in this very hazardous case, be decided. When the pulse becomes firmer, and fuller, upon the contraction of the uterus, the risk from debility is diminished. A full dose of laudanum ought, uniformly, to be given previous to delivery, as I have uniformly advised; and, afterwards, twenty drops of the same medicine are to be given, if necessary, at intervals, longer or shorter, according to the urgency of the case, in order to allay restlessness and irritability. But I do not wish to give more than is absolutely necessary, for if given, so as to affect either the stomach or nervous system much, we find that detriment results. If the stomach be irritable, solid opium may be given, or an opiate-clyster is to be administered. Small quantities of light nourishment, must also be given frequently, and a state of rest strictly enforced, in so much, that the patient, for some time after delivery, ought not even to be shifted, but only have a firm bandage applied over the abdomen, in order to support the muscles and contained viscera, a precaution which never ought to be omitted. It has been proposed, in cases of extreme debility, from hæmorrhage, to inject slowly, by means of a small syringe, into a vein of the arm, blood recently drawn from another person. But as yet, we have too few cases, to enable us to determine the value, of the proposal.

Having already taken notice of the effects of hæmorrhage, and the management of these, I shall refer, on this important subject, to the section on menorrhagia, which the student is requested to reconsider at this place.

At one time it was supposed, that the placenta was, in every instance, attached originally to the fundus uteri, and that it could only be found presenting, in consequence of having been loosened, and falling down. This accident was supposed to retard the birth of the child, by stopping up the passage, and also, was considered as dangerous, on account of the flooding which attended it. On this account, Daventer endeavoured to accelerate the delivery, by tearing the placenta, or rupturing the membranes when they could be found. This was a dangerous practice, and very few survived when it was employed. Mr Gifford, P. Portal, Dr Smellie, and M. Levret* were among the first, who established it as a rule, that the placenta did not fall down, but was originally implanted over the os uteri; and

* Je m'engage à prouver, 1mo. Que le placenta s'implante, quelquefois, sur la circonférence de l'orifice de la matrice; ce'est-a-dire, sur celui qui du col va joindre l'intérieur de ce viscere, et non sur celui qui regarde de la vagin.

2do. Qu'en ce cas la perte de sang est *inevitable* dans les dernier tems de la grossesse.

Et Stio. Qu'il n'y a pas de voye plus sure, pour remédier a cet accident urgent, que de fair l'accouchement forcé.—L'Art des Accouchemens, p. 343.

the last gentleman, published a very concise, and accurate view, of the treatment to be pursued. Mr Rigby, of Norwich, afterwards, published an abstract of the doctrine of Puzos and Levret, with the addition of cases from his own practice.

We know, that during the eighth month of gestation, very considerable changes take place, about the cervix uteri. It is more developed and expanded, and its lower portion near the mouth, comes in contact with that part of the placenta which was above it, but being destitute of decidua, and furnishing only jelly, no firm union can take place. Farther, either the placenta does not in its growth adapt itself, to the changes in the shape of the cervix, or, which happens more frequently, some slight mechanical cause, or action of the fibres above the os uteri, produces a rupture. This seems more likely to occur, and to be more serious, when the edge of the placenta is attached there. When the placenta stretches fairly across the cervix, it is possible for union to continue, till labour cause detachment.

This rupture, may, doubtless, take place, at any period of pregnancy,* but it is much more frequent, in the end of the eighth, and beginning of the ninth month, than at any other time, though it may be postponed, till the commencement of labour, at its full time. But whether the separation happen in the seventh, eighth, or ninth month, the consequent hæmorrhage is always profuse, and the effect most alarming. The quantity, but especially the rapidity of the discharge, very frequently produce a tendency to faint, or even complete syncope, during which the hæmorrhage ceases, and the woman may continue, for several days, without experiencing a renewal of it. In some instances, she is able to sustain many, and repeated attacks, which may take place, daily, for some weeks. These, however, it is evident, cannot be very severe, and the strength must, originally, have been great. In other instances, she never gets the better of the first attack. It indeed diminishes, but does not altogether leave her, and a slight exertion renews it in its former violence. But whether the patient suffer much or little in the first attack—whether she be feeble or robust, the practice must be prompt, and the most solemn call, is made upon the practitioner, for activity. The moment that a discharge of blood takes place, he ought to ascertain, by careful examination, the precise nature of the case, and must take instant steps for checking it, if nature have not, already, accomplished that event.

* In some cases hæmorrhage has taken place so early as the third month. By proper means this has been stopped, and the patient has continued well for some months, when the flooding has returned, and the placenta been discovered to present.

If the os uteri be firm and close, in a first attack, we ought to use the plug, which will restrain the hæmorrhage, and ensure the present safety of the patient. If this practice have been immediately followed, she shall in general soon recover; and the length of time, which she shall remain free, from a second attack, will depend, very much, upon the care which is taken of her; but sooner or later, the attack must and will return. If the uterus have been injured in its action, by the first attack, this, will generally be attended with very slight dull pains, and we shall feel the os uteri, more open, and laxer than usual. But if the first and second discharges, have been promptly checked, it may be later, before these effects be perceived; the moment, however, that they are produced, we ought to deliver. It should even be a rule, that, where they are not likely soon to take place, and the discharge has been profuse and rapid, and produced those effects on the system, which I have already pointed out, as the consequences of dangerous hæmorrhage, we must not delay, until pains begin to open the os uteri. Fortunately, we are not often obliged to interfere thus early, for, by careful management, and the use of the plug, we can secure our patient, till some effect, be produced, on the os uteri.

Although, I have said that we may wait, safely, until the os uteri begin to open, and asserted, that no woman can die from mere hæmorrhage, before the state of the os uteri admit of delivery, I must yet add, on this important subject, that this state does not consist merely in *dilatation*, for it may be very little dilated, but in *dilatability*. We may safely deliver, whenever, the hand can be introduced, without much force. A forcible introduction of the hand, on the first attack of hæmorrhage, would, in many cases, be attended with the greatest danger, and, in almost every case, is improper and unnecessary. I have never yet seen an instance, where delivery was required during the first paroxysm, if the proper treatment were followed. Whether it may be required in a second or third attack, or even later, must depend upon the quantity and rapidity of the discharge, its effects, and the strength of the patient. But, whenever we find the os uteri more open, than in its usual state, before labour, admitting the finger to be introduced, easily, beyond it, and feel no rigid resistance, we may safely deliver, and, if the hæmorrhage be continuing, ought not to delay. This state, will, generally, be found accompanied with obscure pains, but we attend less to the degree of pain, than of discharge, in determining on delivery. The pains, gradually, increase for a certain period, and then go off. During their continuance, the os uteri dilates more; but if the hæmorrhage have been, or continues to be, considerable, we must not wait

until the os uteri be much dilated, as we thus reduce the woman to great danger, and diminish the chance of her recovery. A prudent practitioner will not, on the one hand, violently open up the os uteri, at an early period, but will use the plug,* until the os uteri become soft and dilatable. If the hæmorrhage be not considerable, he will even, if the state of the patient allow him, wait until the os uteri begin sensibly to open without them, for, the more violence that is done to the os uteri, the greater is the risk of bad symptoms supervening. It is an error, into which some have fallen, to look upon debility from discharge, as the only barrier to recovery. Violent delivery may produce inflammation, or a very troublesome fever. On the other hand, he will not allow his patient to lose much blood, or have many attacks; he will deliver her immediately, for he knows that whenever this is necessary, it is easy, the os uteri yielding to his cautious endeavours.

But we may not be called until the patient have had one or two attacks, and been reduced to great danger. We find her with feeble pulse, ghastly countenance, frequent vomiting, and complaining, occasionally, of slight pains. On examination, the vagina is so filled with clotted blood, adhering firmly, by its fibrin, to the uterus, that, at first, we find some difficulty, in discovering the os uteri. We cannot here hesitate, a moment, what course to follow. If the patient is to be saved, it is by delivery. The os uteri will be in part dilated; it may, easily, be fully opened. We perhaps find an edge of the placenta projecting into the vagina, perhaps the centre of the placenta, presenting or protruding like a cup into the vagina; but, in both cases, the rule is the same. We pass by the placenta, to the membranes, detach and rupture them,† turn and deliver the child, according to the directions which I have already given, and treating the patient, in all other respects, in the exhibition of opiates, and cordials, and nourishment, and exciting the subsequent contraction of the womb, as in the case formerly considered.

It may be supposed, that as the treatment is so nearly the same, it is not material, that we distinguish, whether the placenta or membranes present. But it is convenient to make a distinction, because in those cases where the placenta does not present, it is possible, in certain circumstances, to check the flooding, and carry the patient to the full time; and in those cases, which are indeed the most numerous, where this cannot

* Gardien thinks, that in such cases, the plug will do harm by exciting the uterus, to detach more of the placenta, and thus increase the hæmorrhage. Tom. ii. p. 404.

† This is much safer for the child than pushing the hand through the placenta; and is equally advantageous for the mother, and easy to the operator.

be done, we always look to uterine contraction as a very great assistance, and expect that where that is greatest, the danger will be least. But when the placenta presents, we have no hope of safety to the woman, from the accession of labour. We have no ground, to look to contraction, or labour, as a mean of safety, for, on the contrary, every effort to dilate the os uteri, separates, still more, the placenta, and increases the hæmorrhage.* The very circumstance, which, in some other cases, should save the patient, shall here, in general, increase the danger. I say in general, for there are doubtless examples, where the patient has, by labour, been safely, and without assistance, delivered of the child, when part of the placenta has presented. Nay, there have been instances, where the placenta has been expelled first, and the child after it.† These examples are to be met with, in collections of cases by practical writers, and some solitary instances, are likewise to be found, in different journals. It would be much to be lamented, if these should ever appear, without having, at the same time, a most solemn warning, sent along with them, to the accoucheur, to pay no attention to them in his practice. I am convinced that they may do inexpressible mischief, by affording argument for delay, and excusing the practitioner, to himself, for procrastination. There is scarcely any malady, so very dreadful, as not to afford some examples, of a cure effected by the powers of nature alone: but ought we, thence, to tamper with the safety of those, whose lives are committed to our charge? Ought we to neglect the early, and vigorous, use of an approved remedy, because the patient has not, in every instance, perished from the negligence of the attendant? It is highly proper, to publish the case of a patient who, from hernia, has had an anus formed at his groin, because it adds to our stock of knowledge: but what should we think of a surgeon, who should put such a case, into the hands of a young man, without, at the same time saying, "Sir, if such a case ever happen in your practice, either you, or your patient, must be very much to blame." I do not mean from this to say, that we are to censure, in every instance, the accoucheur who

* The greatest number of profuse or alarming hæmorrhages proceed from the presentation of the placenta, or the implantation of its margin over the os uteri; and consequently the greatest number of cases requiring delivery are of this kind.

† Even in those cases where the placenta is expelled first, the flooding may recur, and the woman die, if she be not assisted. Vide La Motte, Obs. cccxxviii. and cccxxix. In two cases related by Dr Collins, the hæmorrhage ceased on the expulsion of the placenta before the child. Similar instances are met with, and it is easy to explain these; for the placenta being entirely separated, the hæmorrhage from its veins, both marginal and from the disc, ought to cease; and if the action of the uterus be strong, the uterine orifices may be diminished, and the circulation confined to the substance of the uterus.

has attended a case, where the placenta has presented, and the patient been delivered by nature; far from it, for by the use of the plug, he may have restrained the hæmorrhage, pains may have come on, and the child, descending, may have carried the plug before it; or when he was called to his patient, he may have found her already in labour, and the process going on so well and so safely, that all interference would have been injudicious. But these instances, are not to be converted into general rules, nor allowed to furnish any pretext, for procrastination. They happen very seldom, and never ought to be related to a young man, without an express intimation, that he is not to neglect delivery, when it is required, upon any pretence whatsoever.

SECTION THIRTY-NINTH.

Many women are subject, in the end of gestation to pains about the back or bowels, somewhat resembling those of labour, but which, in reality, are not connected with it. These, therefore, are called false pains. They sometimes only precede labour a few hours, but in many cases, they come on several days, or even some weeks before the end of pregnancy, and may be very frequently repeated, especially during the night, depriving the woman of sleep. They are often confined altogether to the belly, though shifting their place, and are very irregular both in their attacks and continuance. In some cases they affect the side, particularly the right side, in the region of the liver, and are exceedingly severe, especially in the evening; they are accompanied with acidity or water-brash, or retching, and generally the child is at that time very restless. These pains may doubtless occur in any habit, but they most frequently harass those, who are addicted to the use of cordials. On other occasions, the false pains occupy, chiefly, the back or hips, or upper part of the thighs. They even, sometimes, resemble still more nearly, parturient pains, in being attended with an involuntary effort, on the part of the abdominal muscles, to press down, so as to make the woman suppose that she is about to be delivered; and this is occasionally accompanied with tenesmus, or, with protrusion of the bladder into the vagina, very like the membranes of the ovum. In other cases, they are attended with a discharge of watery fluid from the vagina. False pains may be occasioned by many causes: the most frequent are flatulence; a spasmodic state of the bowels, resembling slight colic; or irritation, connected with costiveness or diarrhoea; or nephritic affections, often accompanied with strangury. A sudden motion of the back, or unusual degree of fatigue, may cause a remitting pain in the back and loins; or getting suddenly out of bed when

warm, and placing the feet on the cold floor, may have the same effect. A slight degree of lumbago may also resemble the parturient pains. Agitation of mind, or a febrile state of the body, or some irritation in the neighbourhood of the uterus, or some unusual motion of the child, may produce an uneasy sensation in the uterus; and sometimes this is accompanied by a discharge of watery fluid from the vagina. Other uterine irritations may excite painful action in the uterus itself, or sympathetically in other parts, as the intestines or muscles of the abdomen. Amongst these irritations, may be mentioned that, which sometimes attends the full development of the cervix, in the last week of gestation, or the expansion of the portion immediately adjoining the os uteri. Excitement of the origin of some of the spinal nerves may cause pain—relieved by bleeding and gentle friction. It is not uncommon for pains, very like those in the commencement of labour, to come on either a month or a fortnight, before true labour. They are apparently dependent on some change in the action, or condition, of the uterus itself.

False pains may often be distinguished by their situation, as for instance, when they affect the bowels or kidneys; by their shifting their situation; by their duration; by their irregularities; and by the symptoms with which they are attended. But the best criterion is, that they are not attended with any alteration in the uterine fibres, which, during true or efficient labour pains, contract so as to render the uterus more compact, and make it feel harder, when the hand is placed, over it, on the abdomen. They also seldom affect the os uteri, that part, not being dilated during their continuance. It is necessary, however, to observe, that a dilated state of the os uteri, does not always prove, that the pains are those of labour; for, it may be found prematurely dilated to a slight degree, before the proper term of labour, without any pain. In this case, if the pains proceed from affections of the bowels, no effect is produced during the pain, in rendering the os uteri tense, or making it larger. On the other hand, it sometimes happens, that the fibres about the os uteri are prematurely irritated; and this state may be accompanied with pain, and with a perceptible change, on the os uteri, during a pain. This is a very ambiguous case, but we may be assisted in our judgment, by discovering, that the term of utero-gestation is not completed, that the os uteri is hard or thick, and the pains irregular, both in severity and duration, coming on at long intervals, or being frequently repeated for some hours, and then going off altogether for so many more, and thus, perhaps, continuing even for several days. This seems sometimes to depend, on preternatural sympathy, of the neighbouring parts with the os uteri, so that when it begins to dilate,

the abdominal or perinæal muscles, &c., are excited to painful action, which, on the principle of the sympathy of equilibrium, which I have elsewhere explained, immediately calls off the uterine action, which, for a long time, rather excites those other parts to unprofitable pain, than establishes itself into regular labour. In all such cases it is best to proceed on the supposition, that the woman is not actually in labour, and use means for relieving her. By letting her alone, she most likely shall have a continuance of pain, terminating perhaps in labour, but the process will be tedious and fatiguing; whereas, by suspending the action by an opiate, and if necessary by venesection, or a laxative, or a clyster, she may go on, for some time longer, and shall, at all events, have an easier delivery.

When the false pains are accompanied with a febrile state, or are very distressing during the night, it will be proper to detract blood, and afterwards if the bowels be regular, give an anodyne. In all other cases, it is generally sufficient to keep the woman in a state of rest; open the bowels by means of a clyster, if there be no diarrhœa, and, afterwards, give an opiate to be succeeded by a laxative. Rubbing with anodyne balsam is also useful, or gentle friction with the flesh brush. Motion also often relieves the muscular pain, whilst a quiescent state increases it, and hence, it is, in many cases, worst during the night. In other instances, the erect posture, or walking, probably from irritation of the cervix and os uteri, by pressure of the child's head, excites pain.

Nephritic pain, is known by its situation, by the restlessness it produces, the frequent desire to make water, the sickness, and soft, perhaps, slow pulse. An anodyne clyster is the best remedy.

Shivering and tremor, occur in some cases, in the end of pregnancy, and as they also occasionally precede labour, they often give rise to an unfounded expectation, that delivery is approaching. They appear to be connected sometimes with the state of the stomach, or alimentary canal; in other instances, with some change in the os uteri itself, which even without pain, may be so far opened and relaxed, as to allow the finger, very easily, to touch the child's head, through the membranes. It is usually in the evening, or through the night, that the shivering is felt; and it is occasionally pretty severe, and may be several times repeated. Nothing, however, is required, except a little warm gruel, or a moderate dose of laudanum, which is always effectual.

sentations, 1st, The vertex toward the upper part of the hollow of the sacrum, and the right parietal protuberance presenting; 2d, the reverse, the left side presenting.

Calculations have been made, of the proportion which these different kinds of labour, bear to each other in practice. Thus, Dr Smellie supposes, that out of a thousand women in labour, eight shall be found to require instruments, or to have the child turned, in order to avoid them; two children shall present the superior extremities; five the breech; two or three the face; one or two the ear; and ten shall present with the forehead turned to the acetabulum.

Dr Bland has, from an hospital register, stated the proportion of the different kinds of labour, to be as follows: of 1807 women, 1792 had natural labour. Sixty-three, or one out of 20, had unnatural labour; in 18 of these, the child presented the feet; in 36, the breech; in 8, the arm; and in 1, the funis. Seventeen, or one out of 111, had laborious labour; in 8 of these, the head of the child required to be lessened; in 4, the forceps were employed; and in the other 5, the face was directed toward the pubis. Nine or one in 210, had uterine hæmorrhage before, or during labour. It is evident, however, that this register cannot form a ground for general calculation; and the reader will perceive, that the number of crotchet cases, exceeds those requiring the forceps, which is not observed in the usual course of practice.* Dr Merriman says, the breech presents once in 86, the feet once in 80, and the arm once in 170 cases; Dr Naegelé, in the hospital of Heidelberg, says, out of 263 cases, there were four twins; 256 children presented the head, and 2 of those the face; 5 the breech; 3 the feet; 1 the arm; 1 the breast; 1 the hip. Hence, 1 in 26 cases was preternatural.

made it as high as 80. The second, only one in 1200 cases. The third as 29 per cent.; whilst others made it only .05. The fourth, as only .03; and others not above .05.

* Farther information may be obtained by consulting the Report of the Dublin Lying-in Hospital, by Dr Clarke. From this it appears, that out of 10,387, only 184 had twins—9748 had natural labour, that is presentation of the head, and the labour terminating within 24 hours; of these 71 died; 134 had tedious labour, but in what number of these, the forceps were used, is not mentioned; 21 died; 49 appear to have had the crotchet used, of these 16 died; 184 presented the feet, 1 died; 61 the breech, 4 died; 48 the superior extremity, 6 died; 14 cases of uterine hæmorrhage previous to delivery, in 4 of which the placenta presented; 17 cases of convulsions before delivery; 66 cases of presentation of the chord, 17 of these children were born alive. There were 17 fontanelle, and 44 face presentations, neither of these, he says, gave rise to tedious parturition. Vide Trans. of the Assoc. &c., vol. 1st, page 387. See farther, the Report of the Westminster Hospital, by Dr Granville, and Dr Collins' valuable Practical Treatise.

At Dresden, out of 221 labours, the vertex presented in 211, the face in 5, the breech in 3, and the feet in 1. At Wurttemberg, the proportion of cases requiring artificial aid, was $3\frac{1}{2}$ per cent. In 1000 of these artificial deliveries, the forceps were used 314 times.

We cannot form an estimate of the proportion of labours, with much accuracy, from the practice of individuals, as one man may, from particular circumstances, meet with a greater number of difficult cases, than is duly proportioned to the number of his patients. Thus Dr Hagen of Berlin says, that out of 350 patients, he employed the forceps 93 times, and the crotchet in 28 cases; 26 of his patients died. Dr Dewees, again, of Philadelphia, says, that in more than 3000 cases, he has not met with one requiring the use of the crotchet.

CHAP. II.

Of Natural Labour.

SECTION FIRST.

PREVIOUS to the accession of labour, we generally have some precursory signs, which appear, perhaps, for several days, oftener, only, for a few hours, before pains be felt. The uterine fibres begin slowly, and gradually to contract, or shorten themselves, by which the uterus becomes tenser and smaller. It subsides in the belly; the woman feels as if she carried the child lower, than formerly, and thinks herself slacker, and less, than she was before. For some days, before gestation be completed, she, in many cases, is indolent and inactive, but, now, often, feels lighter and more alert. At the same time that the uterus subsides, the vagina and os uteri are found to secrete a quantity of glairy mucus, rendering the organs of generation moister than usual, and these are somewhat tumid and relaxed, the vagina, especially, becoming softer and more yielding. These changes, are often attended with a slight irritation, of the neighbouring parts, producing an inclination to go to stool, or to make water frequently, and, very often, griping precedes labour, or attends its commencement.

The intention of labour, is, to expel the child and secundines. For this purpose, the first thing to be done, is to dilate, to a sufficient degree, the os uteri, so that the child may pass through it. The next step, is to expel the child itself: and, last of all, the foetal appendages are to be thrown off. The process may therefore be divided into three stages. The first stage is generally the most tedious. It is attended with frequent, but usually short pains, which are described as being sharp, and sometimes so severe, as to be called cutting or grinding. They, commonly, begin in the back, and extend toward the pubis or top of the thighs, but there is, in this respect, a great diversity with dif-

ferent women, or the same woman, at different times. Sometimes, the pain is felt, chiefly, or entirely, in the abdomen, the back being not at all affected, during this stage; and it is generally observed, that such pains, are not so effective, as those which affect the back. Or, the pain produced, by the contraction of the womb, may be felt in the uterine region; and when it goes off, may be succeeded by a distressing aching in the back. In other cases the pain is confined to the small of the back, and upper part of the sacrum, and is either of a dull aching kind, or sharp and acute, and, in some instances, is attended with a considerable degree of sickness, or tendency to syncope. The most regular manner of attack, is, for pains to be at first confined to the back, descending lower by degrees, and extending round to the belly, pubis, or top and fore part of the thighs, and gradually stretching down the back part of the thighs, the fore part becoming easy: occasionally one thigh alone is affected. At this time also, one of the legs is sometimes affected with cramp. The duration of each pain is variable; at first it is very short, not lasting above half a minute, perhaps not so long, but by degrees it remains longer, and becomes more severe.* The aggravation, however, is not uniform, for sometimes in the middle of the stage, the pains are shorter, and more trifling, than in the former part of it. During the intermission of the pains, the woman, sometimes, is either very drowsy, or particularly irritable and watchful. The pains are early attended, with a desire to grasp, or hold by the nearest object, and, at the same time, the cheeks become flushed, and the colour increases with the severity of the pain. The hand being placed on the abdomen, the uterus is felt to become hard during a pain, and more compact or contracted.

The pains of labour, often, begin with a considerable degree of chiliness, or an unusual shaking or trembling of the body, with or without a sensation of coldness. These tremors may take place, however, at any period of labour; they may usher in the second stage, and be altogether wanting during the first; or they may not appear at all, even in the slightest degree, or they may be present only for a very short time. They can scarcely be said to precede the uterine pain, but are rather almost synchronous in their attack; in other cases they do not appear until the pains have lasted for a short space of time, and then, it is usual for the uterine pain to be speedily removed. Hence, it might be supposed, that they should materially retard labour, but this is far from being always the case. In degree, they

* M. Sacombe details the interval between the pains, and their duration. It diminished from 15 to 4 minutes, and the duration increased from 21 to 93 seconds.

vary from a gentle tremor to an agitation of the frame, so violent, as to shake the bed on which the patient rests, and even to bear some resemblance to a convulsion. The stomach also sympathizes with the uterus, during this stage, the patient complaining of a sense of oppression, sometimes, of heartburn or sickness, or even of vomiting, which is considered as a good symptom, when it does not proceed from exhaustion; or a feeling of sinking or faintness, but the pulse is generally good. When there is, in a natural labour, a sudden attack of sickness, faintishness, and feeble pulse, the patient is generally soon relieved by vomiting bile. These symptoms, however, are often wanting, or attack at different periods of labour; like the rigors, they may be absent during the greatest part of the first stage, or until its end, ushering in the second; but in general, they are confined to the first stage, going off when the os uteri is fully dilated. That sickness and feeling of depression, depend on sympathetic connexion of the nerves of the os uteri, with those of the stomach, is confirmed by observing, that touching the os uteri, with the finger, at this stage, sometimes induces them. In consequence, partly of these feelings, partly of the anxiety and solicitude connected with a state of suffering and danger, and partly from the pains being free from any sensation of bearing-down, the woman, during this stage, sometimes becomes desponding, or fretful. She supposes that the pains are doing no good; that she has been or is to be, long in labour: that something might be done to assist her, or has been done, which had better have been avoided; and that there is a wrong position of the child, or deficiency of her own powers.

When the pains of labour begin, there is an increased discharge of mucus from the vagina, which proceeds from the vaginal lacunæ, and from the os uteri. It is glairy, clear, and possesses a peculiar odour. When the os uteri is considerably dilated, though sometimes at an earlier period, there is, in consequence of the separation of the decidua, a small portion of blood discharged, which gives a red tinge to the mucus.

The distention of the os uteri, is often attended with irritation of the neighbouring parts, the woman complaining of a degree of strangury; or having one or two stools with or without griping, especially in the earlier part of the stage. The pulse is sometimes accelerated, more frequently not.

The os uteri being considerably dilated, the second stage begins. The pains become different, they are felt lower, are more protracted, and are attended with a sense of bearing down, or an involuntary desire to expel or strain with the muscles; and this desire, is very often accompanied, with a strong inclination to go to stool. A perspiration breaks out, and the pulse, which,

during the first stage, beat perhaps, more frequently than usual, becomes still quicker, during the exertion; the patient complains of being hot, and, generally, the mouth is parched. Soon after the commencement of this stage, it is usual for the liquor amnii to be discharged. This is often followed by a short respite from pain, but presently the efforts are redoubled. Sometimes there is no cessation, but the pains immediately become more severe, and sensibly effective. The perinæum now begins to be pressed down, so as to feel full or protruded, and the labia are put upon the stretch. The protrusion of the perinæum gradually increases. The labia are more stretched, and, at last, extended downward, like an inverted arch or hoop, on the head. The nymphæ are unfolded, so that the inside of the labia projects a little, like a narrow rim, beyond the outer skin. The coccyx is pushed a little back, and consequently downward. The anus is carried directly downward, and its anterior lip or margin, somewhat forward, so that even a little of the inner surface, of the orifice or extremity, is seen in front. Sometimes the whole anus is carried forward. The perinæum is stretched both downward and forward, and becomes very thin. Together with the front of the extremity of the rectum, or anus, it is spread over the head of the child. Then, as the head passes out, it glides back, over the brow and face of the child, becoming narrower, as it is distended laterally. The extension of the parts is gradual, and at intervals; for, when the pain goes off, the head recedes, and the perinæum is relaxed, but at last the head is fixed, and does not recede; for a short time the perinæum is permanently distended, and then, as mentioned, moves backward, which diminishes the risk of its being lacerated. As the head passes out, the vertex either turns up, toward the pubis, so as to cover the orifice of the urethra, and sometimes nearly touch the clitoris, and then after a pain, sweeps round with the face to the thigh, or, it does so, at once. Delivery of the head, is accomplished with very severe suffering, but immediately afterwards, the woman feels easy, and free from pain. In a very little time, however, the uterus again acts, and the rest of the child is expelled, which completes the second stage of labour. The one shoulder, usually the right, is found at the arch of the pubis, the other at the perinæum; they are often both expelled nearly at the same time, but the top of the one at the pubis, generally passes forward, a little from under the arch, and, then, the one behind, clears the perinæum, and taking the lead, as it were, may be said to be delivered first. Next, both elbows pass nearly at once, and after a short pause, the breech, which had been diagonal, passes, with one hip to the pubis, the other to the sacrum. The expulsion of the body is generally accom-

plished very easily, and quickly; but sometimes the woman suffers several strong and forcing pains, before the shoulders be expelled. The birth of the child is succeeded, after a short calm, seldom exceeding twenty minutes, by a very slight degree of pain, which is consequent to that contraction, which is necessary for the expulsion of the placenta. It comes down edgeways, and folded, and the membranes going off from it are inverted, so as to form a kind of pouch, which receives, at least, part of the fluid or clotted blood, which may have been discharged from the uterus. This expulsion is accompanied, and succeeded, by a moderate discharge of blood, which is continued, but in decreasing quantity, for a few days, under the name of the red lochia.

The particular changes, in the position of the head, in its passage, will be noticed in the third section.

SECTION SECOND.

The duration of this process, and of its stages, varies not only in different women, but in the same individual in successive labours; for, although some, without any mechanical cause, be uniformly slow or expeditious, others, are tedious in one labour, and, perhaps, extremely quick, in the next, and this variation cannot be foreseen, from any previous state of the system. A natural labour ought to be finished within twenty-four hours after the first attack of pain, provided the pains be truly uterine, and be continued regularly; for occasionally, after being repeated two or three times, they become suspended, and the woman keeps well for many hours, after which, the process begins properly. In such cases, the labour cannot be dated from the first sensation of pain, nor deemed tedious. The greatest number of women, do not complain for more than twelve hours; many, for a much shorter period; and some, for not more than one hour.* Few women call the accoucheur, until, from the regularity and frequency of the pains, they be sure that they are in labour, and feel themselves becoming worse. As the celerity of the process cannot be previously determined, many thus bear their children alone, becoming rapidly and unexpectedly worse. On an average of numerous cases, it will be found, that, in natural labour, the accoucheur is not called, above four hours, previous to delivery.

A greater number of women are delivered between midnight and noon, than between noon and midnight.

* Dr Collins says, that out of 15,850 cases, 15,084 were delivered within 12 hours. The greatest number, viz., 10,987, were from 1 to 4 hours in labour; of these, 3,513 were only one hour. No certain calculation can however be made, as we find 166 women delivered in 24 hours, and only two in 25; 1 in 44 hours, and 47 in 48 hours; 161 were only ill a quarter of an hour; 156 nine hours.

The regularity, and comparative length, of the different stages is also various; but it will, generally be observed, that when the woman has a natural labour protracted to its utmost extent, the delay takes place in the first stage; and, in those cases, where the second stage is protracted, the delay occurs, in the latter end of that stage. In most cases, the first stage, is triple the length of the second. The first stage, may be tedious, from the pains not acting freely on the os uteri, or being weak, and inadequate to the effect intended, or becoming, prematurely, blended with the second stage, that is to say, bearing-down efforts being made, before the os uteri be much dilated. Various circumstances may conspire to produce this delay, such as inactivity of the uterus, rigidity of its mouth, premature evacuation of the water, improper irritation, injudicious voluntary efforts, &c. The second stage may be tedious, from irregularity of the uterine contraction, or from a suspension of the bearing-down efforts, or from the head not turning into the most favourable direction, or from the rigidity of the external organs.

These, and other causes, which will hereafter be considered, may not only protract the labour, but may even render it so tedious, as to remove it from the class of natural labour altogether. It is a general opinion, that a first labour is always more lingering, than those which succeed. We should be led, however, to suppose, that parturition, being a natural function, ought to be as well and as easily performed the first time, as the fifth, the process not depending upon either habit or instruction. But we do find, that here, as in many other cases, popular opinion is founded on fact, for although in several instances, a first labour be as quick as a second, yet, in general, it is longer in both its stages. This, perhaps, depends chiefly on the facility, with which the different soft parts dilate, after they have been once fully distended. Some have attributed the pain of parturition, to mechanical causes, ascribing it to the shape of the pelvis, and the size of the child's head. But in a great majority of cases, the pelvis is so proportioned, as to permit the head to pass with facility. The pain and difficulty, attending the expulsion of the child, in natural labour, are to be attributed, to the strong contraction, of the muscular fibres of the uterus, and to the dilatation, of the os uteri and vulva, in consequence thereof, together with the effect thus produced on the nerves, and, perhaps, the temporary excitement of the nerves themselves. Women will, therefore, *ceteris paribus*, suffer according to the sensibility of the organs concerned, and the difficulty with which the parts dilate. 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. The quality or quantity of the food, has much less influence, than the general habit of life, upon the process of parturition. In a savage state, women, though living abstemiously, and often compelled to work more than men, bear children with facility; whilst in this country, women who live on plain diet, are not easier than those, who indulge in rich viands. In all ranks, we often find the os uteri considerably dilated, and occasionally meet with instances of labour making great progress, with scarcely any pain, and I have known cases, where the patient declared, she had no pain, even at the last, but only a sensation of strong pressure, so that she expressed her amazement that the child was born. A knowledge of this fact, of which I am well assured from my own observation, may prove of importance in some questions of jurisprudence. On the same account, I add, that the pains sometimes become suddenly, and very unexpectedly, bearing-down, whether severe or not, and

* "The Greenlanders, mostly do all their common business just before and after their delivery; and a still-born or deformed child is seldom heard of."—Grantz'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 tres-aisés en Perse, de meme que dans les autres pays chauds de l'Orient, il n'y a point de sages femmes. Les parentes âgées et les plus graves, font cet office, mais comme il n'y a guères de vieilles matrones dans le harum, on en fait venir dehors dans le besoin." Voyages de M. Chardin, Tom. iv. p. 230.

Lempriere says, "Women in this country (Morocco) suffer but little inconvenience from child-bearing. They are frequently up next day, and go through all the duties of the house with the infant on their back." Tour, p. 328.

Winterbottom says, that "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." Account of Native Africans, &c., 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 up on 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. 11.

Undomesticated animals generally bring forth their young with considerable ease; but sometimes they suffer much pain, and, when domesticated, occasionally lose their lives.

the child may be born before the patient can be got into bed, or removed from the night-chair, if she had been at stool. A strong desire to go to stool, may predominate over the feeling of uterine pain, and be the immediate precursor of delivery. We, therefore, never, in an advanced stage of parturition, allow the patient to rise, at least, if the process have been going on regularly, and, at no time without due precaution.

SECTION THIRD.

The existence and progress of labour, and the manner in which the child is placed, are ascertained by examination per vaginam. For this purpose the woman ought to be placed in bed, on her left side,* with a counterpane thrown over her, if she be not undressed. The hand is to be passed, along the back part of the thighs, to the perinæum, and thence, immediately to the vagina, into which the forefinger is to be introduced. It never ought to be carried, to the forepart of the vulva, and from that, back to the vagina. The introduction is to be accomplished, as speedily and gently as possibly, and the greatest delicacy must be observed. The information which we wish to procure, is then to be obtained, by a perfect, but very cautious examination, of the os uteri, and presenting part of the child, which gives no pain, and consequently removes the dread, which many women, either from some misconception, or from previous harsh treatment, entertain of this operation. The application of the hand to the abdomen, during the continuance of the pain, may ascertain, from the temporary hardness of the uterus, that its fibres are contracting universally, and this is an evidence that we should never overlook.

When a woman is in labour, we should, if the pains be regular, propose an examination, very soon after our arrival.

It is of importance, that the situation of the child, be early ascertained, and most women, are anxious to know, what progress they have made, and if their condition be safe. As it is usual to examine during a pain, many have called this operation "taking a pain;" but there is no necessity for giving directions, respecting the proper language to be used, as every man of sense and delicacy, must know how to behave, and can easily, through the medium of the nurse, or by turning the conversation to the state of the patient, propose ascertaining the progress of the labour. Some women, from motives of false delicacy, and from

* A standing or half-sitting position has been proposed by some, and may, doubtless, in certain diseases of the uterus, be proper, that it may by its weight, come within reach. Sometimes in the early months of pregnancy, it is allowable from the same motives; but, during labour, it is not often that the uterus is so high, that the examination cannot be performed in a recumbent posture.

not understanding the importance, of procuring early information of their condition, are averse from examination, until the pains become severe. But this delay is very improper; for, should the presentation require any alteration, this is easier effected before the membranes burst, than afterwards. When the presentation is ascertained to be natural, there is no occasion for repeated examinations in the first stage, as this may prove a source of irritation, and, should the stage be tedious, may be a mean of exciting impatience. Sometimes, merely touching the os uteri, with the finger, produces sickness and faintness. In that case it must not be repeated, as even the natural dilatation, renders these effects distressing, for a time. In the second stage, the frequency of examination, must be proportioned, to the rapidity of the process.

In order to avoid pain and irritation, it is customary to anoint the finger with oil or pomatum; but unless this practice be used as a precaution, to prevent the action of morbid matter on the skin, it is not very requisite, the parts being, in labour, generally, supplied with a copious secretion of mucus. It is usual for the room to be darkened, and the bed curtains drawn close, during an examination, and the hand should be wiped with a towel, under the bedclothes, before it be withdrawn. The proper time for examining, is during a pain, and we should begin whenever the pain comes on. We thus ascertain, the effect produced on the os uteri, and by retaining the finger until the pain go off, we determine the degree, to which the os uteri collapses, and the precise situation of the presenting part, which we cannot do during a pain, if the membranes be still entire, lest the pressure of the finger should, were they thin, prematurely rupture them.

An examination should never, if possible, be proposed or made, while an unmarried lady is in the room, but it is always proper that the nurse, or some other matron be present.

The existence of labour, is ascertained by the effects of the pains, on the os uteri; and its progress, by the degree to which that is dilated, and the position of the head with regard to different parts of the pelvis. A preliminary question may here be put, does the development of the os uteri, or its opening to an evident degree, imply the actual existence of labour? The answer must depend somewhat on the definition of labour. If we understand by it, the universal and regular contraction, of the uterine fibres, I would say, that the mere opening of the os uteri, with or without pain, does not prove the actual existence of labour, for it may open considerably, for a week or two, before universal and expulsive efforts be made, and this partial effect may be attended with pain; I doubt, very much, if it be attend-

ed with hardness, and contraction, of the body and fundus, of the uterus. If in any one case of this kind, the whole uterus were felt, during a pain, to become hard, then we must admit that labour, in the strictest sense of the word, may begin, and afterwards be entirely suspended, for a fortnight or longer.

Before labour begins, the os uteri is generally so closed, that the finger cannot, without force, be introduced far within it, and is directed more or less backwards towards the sacrum. The os uteri, is, in one respect, an appendage to the uterus, and hangs down in a cylindrical form. It is not muscular, but is somewhat elastic, for, after being dilated, it contracts again if the force be suspended. The case is different with the cervix, for it is muscular, and the fibres may act, either circularly, or longitudinally. But at first they act on the os uteri alone. If they early acted circularly, they should operate as a sphincter. If the finger be introduced, during labour, into the os uteri, not yet quite distended, then, although its own proper substance may yield more or less, yet, the hard boundary of the lower margin of the cervix is felt, as a resisting circle within, or higher, and this must relax, and the fibres act in no farther degree circularly, than is necessary to keep the longitudinal fibres together, otherwise the head cannot pass. The first effect of the pains is to develop the os uteri, that is, to destroy its projection or protuberance, and next to open it. Sometimes the development goes on quickly, and the os uteri becomes thin, and expanded like a funnel. In other cases, it remains thick and flabby, and circle after circle, expands abruptly, from above downward, and at last a mere hard orifice, admitting only the tip of the finger, and quite flat, is felt. Even when the os uteri is considerably dilated by the pains, it, from its elasticity, falls together again in the absence of a pain; and although at this stage, it may be re-distended by the finger, yet the finger cannot, as I have just noticed, distend the cervix. When we examine in the commencement of labour, the os uteri is to be sought for, near the sacrum, at the back part of the pelvis, whilst between that spot and the pubis, we can pass the finger along the forepart of the cervix uteri. On this, the presenting part of the child rests, so that in natural labour, it assumes somewhat the shape of the head; and, for the sake of distinction, I shall call it the uterine tumour. In some, it is so firmly applied to the head, and so tense, that a superficial observer would take it for the head itself. In this case, the labour often is lingering, when the os uteri is high and far back; but if it be more forward, and soft, and thin, it is rather a good sign. This tumour, or portion of the uterus, is broad in the beginning of labour, but becomes narrower as the os uteri dilates, until at last it be completely effaced, the head, either

naked or covered with the membranes, occupying the vagina. The breadth of this portion of the uterus, therefore, as well as the examination of the os uteri, will serve to ascertain the state of the labour.

The os uteri gradually dilates by the pains of labour, but this dilatation is more easily effected, in some cases, than in others. In some, though the pains have lasted for many hours, and have been frequent, the os uteri will be found still very little opened. In others, a very great effect is produced in a short time; nay, we find, that the os uteri may be partly, even greatly dilated, without any pain at all. We cannot exactly foretell the effect, which the pains may have, by any general rule, nor estimate the progress and probable duration, altogether, by the sensation.

We find in different women, the os uteri in very opposite states. In some, it is thick, soft and dependent like a cylinder; in others, thin and infundibuliform; sometimes it is not very early dependent, but the edges of the mouth are on the same plane, like the mouth of a purse; these edges may be thin or thick, and either of these states, may exist with hardness or softness of the fibre. In some cases, they seem to be swelled, as if they were œdematous, and this state is often combined with œdema of the vulva, or it may proceed from ecchymosis. Now, of these conditions, some are more favourable than others: a rigid os uteri, with the lips either flat or prominent, is generally a mark of slow labour, for, as long as this state continues, dilatation is tardy; a thick œdematous feel of the os uteri is also unfavourable; and usually a projecting or tubulated mouth, especially if the margin be thick and hard,* is connected with a more tedious labour, than where the os uteri is flat. In some cases of slow labour, after the projection of the os uteri is developed, its orifice for many hours is scarcely discernible, resembling a dimple or small hard ring, perfectly level with the rest of the uterus. But although these observations may assist the prognosis, yet we never can form an opinion perfectly correct; for a state of the os uteri, apparently unfavourable, may be speedily exchanged for one very much the reverse, and the labour may be accomplished with unexpected celerity. Our prognosis, therefore, should be very guarded. When the pains produce little apparent effect on the os uteri; when they are slight and few; and when the orifice of the uterus is hard and rigid, or thick and puckered during a pain; or hangs flabby and projecting during a pain, whilst the lower fibres of the cervix, feel, when the finger is introduced within the os uteri, firm and

* If the margin be thin and soft, the os uteri sometimes, in the course of an hour, loses its projecting form, and becomes considerably dilated.

contracted; or when the os uteri does become flatter during a pain, but falls together and projects when it goes off, and especially if the cervix be rigid, there is much ground to expect that the labour may be lingering. On the other hand, when the pains are brisk, the os uteri thin and soft, we may expect a more speedy delivery; but, as in the first case, the unfavourable state of the os uteri may be unexpectedly removed, so, in the second, the pains may become suspended or irregular, and disappoint our hopes. The os uteri seldom dilates equally, in given times, but is more slow at first in opening than afterwards. It has been supposed, that if it require three hours to dilate the os uteri one inch, it will require two to dilate it another inch, and other three to dilate it completely. This calculation, however, is subject to great variation, for, in many cases, though it require four hours to dilate the os uteri one inch, a single hour more, may be sufficient to finish the whole process.

The os uteri is, in the beginning of labour, generally pretty high; but as the process advances, the uterus descends in the pelvis, along with the head, and, in proportion as it descends, the os uteri dilates, whilst the uterine tumour diminishes in breadth. Should the os uteri remain long high, even although it be considerably dilated, but more especially if it be not, there is reason to suppose that the labour shall be continued still, for some time. On the other hand, should the uterus descend too rapidly, there may be a species of prolapsus induced, the os uteri appearing at the orifice of the vagina. This state is generally attended with premature bearing-down pains, and indicates a painful, and rather tedious labour.

The protrusion of the membranes, and discharge of the liquor amnii, ought to bear a certain relation to the advancement of labour. Whilst the os uteri is beginning to dilate, the membranes have little tension; they scarcely protrude through the os uteri, until it be considerably opened. But in proportion as the dilatation advances, and the pains become of the pressing kind, the membranes are rendered more tense, protruding during a pain, and becoming slack, and receding when it goes off. In some cases, by examination, we find the membranes forced out, very low into the vagina, like a portion of a bladder, tense and firm during a pain, but disappearing in its absence. Sometimes although the head be so high as not to touch the perinæum, the membranes protrude the perinæum, and the fæces are evacuated or pressed out, as if the head were about to be expelled. When the membranes burst, the head is, in such cases, often delivered in a few seconds, but the pains may remit, for a short time, and the woman be easier than formerly. The protrusion of the membranes, which has been described by some as constituting a

part of a natural labour, is by no means an universal occurrence; for, in numerous instances, the membranes protrude very little and scarcely form a perceptible bag in the vagina. When the pains have acted some time on the membranes, pushing the liquor amnii against them, and especially when they become pressing, the membranes burst, and the water escapes, sometimes in a considerable quantity; but, in other cases, very little comes away, the head occupying the pelvis so completely, that most of the water is retained above it, and is not discharged until the child be born. If there be great irregularity in the degree to which the membranes protrude, there is no less in the period at which they break. In some cases, from natural ~~weakness~~ ^{thinness} or thinness, they break very early, and the liquor amnii comes away slowly. Sometimes they break in the middle or latter end of the first stage, in the commencement of the second, or not until the very end, when the head is about to be born. The opening is sometimes very large, and the head enlarging it, passes through it; at other times it is small, and the membranes are not perforated by the head, but they come along with it like a cap or cover. By examination, we ascertain the state of the membranes, and may be assisted in our judgment of the progress of the labour. When the membranes feel tense, and are protruded during a pain, we may be sure that the action of the uterus is brisk and good. When much water is collected beneath the head, forming a pretty large bag in the vagina, or, when, during the pain, there is a tense protrusion of the membranes, though they be flat, forming a small segment of a large circle, we may expect, that if the pains continue as they promise to do, the membranes will soon burst, and the pains become more pressing. If, during each pain, after the rupture, a quantity of water come away, it is probable, that whenever the uterus is pretty well emptied of the fluid, it will contract more powerfully. Should the membranes break, when the os uteri is not fully opened, perhaps only half-dilated, we may, if there be a large discharge, expect a brisker action, and that the full dilatation of the os uteri will be soon accomplished; but if the water only ooze away, and the pains become less frequent, and not more severe, the labour may probably be protracted for some hours.

In the first stage of labour, the head will be found placed, obliquely, along the upper part of the pelvis, with the vertex directed toward one of the acetabula, generally to the left.* In an examination, at the commencement of labour, we touch,

* Two papers may be consulted on the subject of the motion of the head, one by Nægelé in Journ. Comp. T. ix. Another by Gerdy, in Archives, xxviii. 351. Nægelé on the mechanism of parturition, translated by Dr Rigby, is a valuable work.

through the os uteri, either the flat shelving portion of the under and posterior part of the parietal bone, (I speak of its uterine position, otherwise, it should be called upper), which is between the squamous and lambdoidal sutures, (p. 26,) or we feel the parietal protuberance presenting. It is the right parietal bone which usually presents. If we carry the finger backward, we feel the sagittal suture, and tracing that, in the direction of the left acetabulum, we feel the posterior fontanelle. The position is oblique, in a two-fold way; the vertex is lower than the forehead, and the head also enters, somewhat sideways, into the brim of the pelvis, the one parietal, that which is toward the pubis, being the lowest, so that the diameter of the entering part, is not so great, as the space between the one protuberance and the other, by about a quarter of an inch. The head continues to descend obliquely, with the vertex, lower than the forehead, and the chin directed toward, or pressed on the breast, or throat, of the child, and it is not until the act of expulsion, that it rises or departs from that position. As the head continues to descend, it is still the parietal bone, near the protuberance, which meets the finger, and even when the head is so low, as to press on the perinæum, and be felt at the orifice of the vagina, it is usually that part of the bone which directly presents. At this time the ear is behind the pubis, and nearly on a line with its upper margin. In the usual position, its posterior margin is parallel to the median line of the symphysis, and is itself rather behind the right pubis. The brow is level with the linea ilipectinea, from behind the acetabulum, back to the sacro-iliac junction. When the whole of the cranial portion of the head, has entered the cavity of the pelvis, the chin and the cheeks, are still above the brim. The end of the nose, is on a line with the brim, or a very little above it, and scarcely farther forward, than the sacro-iliac junction. The ear is felt still behind the body of the pubis, the parietal protuberance has moved a little more round, to the right side, so that it has got nearer the pubal margin of the foramen thyroideum, and the vertex has come more forward, toward the left ramus, of the pubis and ischium. The forcing pains continuing, the perinæum is more distended, and the head brought lower; but it is not the vertex which we feel, at the orifice of the vagina, for, till the last, the head is more or less diagonal, and is not turned, with the vertex, completely forward, till in the very act of expulsion, when the vertex sometimes comes out, and turns directly up between the labia, and then round to one side. At other times, the vertex, does not come quite round, but passes out obliquely, the protuberance, or that part of the parietal bone, already noticed, issuing first, and the face, when expelled, is directed to the right

thigh of the mother. By attending to this account, of the progress of the head, we can ascertain the advancement of labour. If we feel the parietal protuberance presenting, the sagittal suture a little farther back, and the posterior fontanelle toward the acetabulum, especially if to the left one, we look on the presentation as natural. If, on the other hand, we can feel the anterior fontanelle, the vertex is generally directed to the sacro-iliac junction, and, particularly, if we feel also the forehead, if we be not careful, we may have a face presentation. The ear merits particular attention, as its higher or lower position, determines the degree to which the head has advanced, and the direction of the cartilage will, if we have any doubt, decide the position of the vertex.

When the pelvis is well formed, and the cranium of due size, the head may commonly be felt in every stage of labour; but there are cases in which, even although the pelvis be ample, it is not easily touched for some time. Such instances, however, are rare; and whenever we are long of feeling the presentation, and do not discover a round uterine tumour, we may suspect that some other part of the child, than the head, presents. Even in the end of pregnancy, and long before labour begins, the head can usually be discovered, resting on the distended cervix uteri: but different circumstances may, for a time, prevent it from being felt; the head, perhaps, in some cases, as from a fall for instance, being for a short time displaced towards one side.

When the head comes to present, at the orifice of the vagina, or passes a line drawn from the under edge of the symphysis pubis back to the sacrum, the perinæum and skin, near the tuberosities of the ischia, become full, as if swelled, but not tense. This at first proceeds from relaxation of the muscles, and some degree of descent of the vagina and rectum. Whenever this is felt, we may be sure that the head is descending; but, although, a few pains may distend the perinæum, yet it may be some hours before this take place, the pains, for all that time, appearing to produce very little effect, although the pelvis be well formed. Should the perinæum become stretched, and the anus be carried forward a little during the pain, we may expect that delivery is at hand, unless the parts be firm and rigid, as often happens with a first child. If the woman have already born children, the child is sometimes delivered, within a few minutes, after the perinæum is first felt to become full.

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kled, or protruded from the parietal bone, like a tumour filled with blood.

By examination, we ascertain the presentation, and the progress which the labour has made; but, in forming an opinion, respecting the probable duration of the process, we must be greatly influenced, by the state of the pains, and, in part, also, by our knowledge of former labours, if the woman have born many children. The different stages of labour, are generally marked, by a different mode of expressing pain. In the first stage, the pains are sharp, and the woman either moans or frets, or sometimes bears in silence. The second stage, is marked by a sound, indicating a straining exertion, a kind of protracted groan, so that, by the change of the cry, a practitioner may often determine the stage of the labour. Sometimes in this stage, the woman clinches her teeth, or holds in her breath, so that she is scarcely heard to complain. In the moment of expelling the head, some women are quite silent, or utter a low groan, others scream aloud. When the pains, in the first stage, are increasing in frequency, in severity, and in duration, and when they are accompanied, with a corresponding dilatation of the os uteri, and, especially, when the head, along with the undilated portion of the os and cervix uteri, gradually descends, the prognosis is very favourable. When the pains, after the os uteri is considerably dilated, become forcing, with an inclination to void the urine or fæces, and when these pains are accompanied with a full dilatation of the os uteri, the head at the same time descending lower, and the vertex beginning to turn a little more forward, we may look for a speedy delivery. But if the pains in the first stage, be weak and few, and occur at long intervals, or, though not unfrequent, if they last only for a few seconds, and, especially, if, at the same time, the os uteri be high up, or hard, or thick, we may conclude that the process is not likely to be rapid. If, when the os uteri is little dilated, there be an inclination to bear down, the labour is generally slow, and hence all attempts, at this time, to press with the abdominal muscles, are improper; for, whether these be made voluntarily or involuntarily, they, during this stage, add to the suffering, fatigue the woman, produce a tendency to prolapsus uteri, so that, in some instances, the os uteri is forced to the orifice of the vagina, and render the labour slow and severe.

When the head is brought so low, as to protrude the perinæum, the pains generally become more frequent and severe, and very soon effect the expulsion. But if they be forcing, and propel the head considerably each time, and it recede completely thereafter, the soft parts being rigid, it is likely that the

delivery of the head, shall be slow and painful; for, in some cases, the external parts are long of yielding, and require repeated efforts to distend them, before the head can safely be expelled.

Sometimes the pains, after beginning regularly and briskly, become suspended, or less effective, and this alteration cannot be foreseen. It is a popular opinion, that if a woman be not delivered, within twelve hours after she is taken ill, the labour will become brisker, at the same hour, at which it began, that is to say, twelve hours after its commencement; and this opinion, is in many instances, countenanced by fact. In other cases, the labour becomes decidedly brisker, six hours after its commencement. Most women begin to complain during the night, or early in the morning, and a great majority are delivered, betwixt twelve at night, and twelve o'clock noon.

SECTION FOURTH.

Different attempts have been made, to explain why labour commenced, at the end of the ninth month of pregnancy. The mysterious power of numbers, the influence of the planets, the distention of the uterine fibres, the pressure of the child upon the developed cervix and os uteri, have all in succession been enumerated, as affording a solution of the question. It can serve no good purpose to enter into the investigation, for the purpose of refuting these opinions, which might be easily done, especially as I have no satisfactory explanation to offer. We know, that whenever the process of utero-gestation is completed, the womb begins to contract. If, by any means, this process could be protracted, then, labour would be kept off; and, on the other hand, if this process be stopped prematurely, either from some peculiarity connected with it, by which it is completed earlier than usual, or, from being interrupted by extraneous causes, acting either on the uterus, or by killing the child, then, contraction does very soon commence. The immediate cause of the delivery of the child, has been attributed to efforts made by the fœtus itself, the expulsive force of the abdominal muscles, or the contraction of the uterus. The first, is fully set aside, by our finding that the fœtus, when dead, is born, *ceteris paribus*, as easily as when it is alive and active. That the muscles, alone, cause the expulsion of the child, is disproved, by observing, that in the early part of labour they are perfectly quiescent, and no voluntary effort made with them, is attended with any good effect. That the delivery is, in a great measure, owing to the action of the uterus, is proved by observing, that the uterus contracts, in proportion, as the delivery advances, and when the child is born, it is found to be very greatly diminished in size.

But we have still a more positive proof of this, in attempting to turn the child, for we then feel, very powerfully, the action of the uterus, and the efforts which it makes, to expel its contents. It is not just, however, to consider the action of the womb itself, as the sole agent in parturition; for in the second stage, the abdominal muscles do assist in the expulsion, not only by supporting the uterus, and thus enabling it to contract better, but also directly, by endeavouring to force the uterus, and consequently its contents, down through the pelvis. Two purposes are intended, by the uterine action; the first, is to open the os uteri, the second, to propel the fœtus through it. Whilst, then, the fibres of the uterus itself contract, those of the os uteri must relax and dilate, and in proportion as the fœtus advances through the pelvis, the uterine fibres must shorten themselves. Thus, the uterine cavity is gradually diminished, so that the placenta can very easily, by a continuation of the same process, be thrown off; and the uterine vessels having their diameter greatly lessened, hæmorrhage is prevented, after the separation of the placenta. There are then two processes taking place, during parturition, contraction and relaxation, and these are, in natural labour, proportionate to each other. As the os uteri relaxes, the rest of the uterus, increases in the activity, of its contraction. This fact, I fear, has not been sufficiently attended to, and a very great mistake has often been made, in supposing that there is greatest contractive or expulsive effort made, when the resistance is greatest. This is no doubt true if we look to duration, but not if we attend to the degree, exhibited in a given time. Were there no resistance offered, the uterus would contract at once, and expel the fœtus by a single effort; and this, or nearly this, in a few cases has taken place, and almost no pain has attended the process. On the other hand, even a very slight resistance does, in many cases, diminish the degree of contraction, or expulsive effort, and in proportion as this resistance is removed, so does the contraction increase. Hence, as the os uteri relaxes or opens, so does the expulsive power augment, and it is experience alone, which can convince us how small a resistance, may be the mean of parrying, if I may use the expression, the contraction of the fibres, or preventing them from acting briskly and quickly. Labour, therefore is more certainly shortened, by promoting relaxation, and diminishing resistance, than by means intended to stimulate to action. At the same time, it must not be forgotten, that continued resistance, does, at last, rouse up the uterine action, and call forth frequent and powerful efforts, often accompanied with great pain. These are more easily excited, when the resistance proceeds from the pelvis or perinæum, and orifice of the vagina, or the position of the

child, than when it arises from the state of the os uteri, or even of the membranes, in which case the uterine action is long feeble or inefficient. It is necessary further to remark, that often a mistake is committed, by confounding frequent and painful contraction of the uterus, with powerful and efficient action.

Parturition is a muscular action, and we might in one view conceive, that it should be most speedy and easy, in those who possessed a powerful muscular system, and great vigour. But this is far from being the case, for the process is tedious or speedy, easy or difficult, according to the relation, which the power bears, to the obstacle to be overcome. Now, in many weak and debilitated women, the parts very easily relax and dilate, and a very small power is required to complete the expulsion; whilst we often find, that those who possess a tense fibre, and great strength of the muscular system, accomplish the dilatation of the os uteri, not without much pain, and repeated efforts.

A fundamental principle, then, in midwifery is, that relaxation, or diminution of resistance, is essential to an easy delivery; and could we discover any agent, capable of effecting this rapidly and safely, we should have no tedious labour, excepting from the state of the pelvis, or position of the child. This agent has not yet been discovered. Bloodletting does often produce salutary relaxation, but it cannot always be depended on, neither is it always safe.

SECTION FIFTH.

Women, in a state of nature, make little preparation for their delivery, and conduct the process of parturition, without much ceremony. They retire to the woods, or seclude themselves in a hut or bower, until they bear the child; after which, if the religious customs of their country, do not require their separation for a time, they return to their usual mode of living.

In Europe, we find that the process of parturition is conducted with more care, and is supposed to require greater preparation. Different countries, have different customs, in this respect. In some, women are delivered upon a chair of a particular construction; in others, seated on the lap of a female friend. Some women use a little bed, on which they rest, until the process be completed; and others are delivered on the bed on which they usually sleep. This last, for many reasons, is the best and most proper practice; but in order to prevent the bed from being spoiled, or wet with the liquor amnii or blood, and also from other motives of comfort, it is usual to make it up, in a particular manner. The mattress ought to be placed upper-

most, and a dressed skin, or folded blanket, placed on that part of it, on which the breech of the woman is to rest. The bed is then to be made up as usual; after which, a sheet folded into the breadth of about three feet, is put across the under fold of the bed-sheet. This is intended to absorb the moisture, and, after delivery, if not during labour, that part which is wet, is to be drawn completely away, so that a dry portion, may be brought under the woman. This arrangement, is generally attended to by the nurse, whenever labour begins. When the pains begin, the patient generally dresses in dishabille; but when the process is considerably advanced, it is necessary to undress, and lie in bed. Some, at this time, put on a half shift, that is to say, one that does not reach below the waist, so that it is not liable to be wet. Others, are satisfied with having the shift, pushed up over the pelvis, so as to be kept dry; its place, in either case, is supplied with a petticoat. These, and other circumstances, relating to dress, and to the quantity of bedclothes, must be determined by the patient herself, and the season of the year.

It is of consequence, that the room be not overheated by fire, or the patient kept too warm with clothes. Heat makes her restless and feverish, adds to the feeling of fatigue, and often, by rendering the pains irregular or ineffective, protracts the labour. No more people should be in the room, than are absolutely necessary. The nurse and one female friend, are perfectly sufficient, for every useful purpose, and a greater number, by their conversation, disturb the patient, or by their imprudence, may diminish her confidence, in her own powers, and, also, in her necessary attendants. The mind, in a state of distress, is easily alarmed; therefore, whispering, and all appearance of concealment, ought to be prohibited in the room.

If the patient be disposed to sleep, betwixt the pains, she ought not to be disturbed, but allowed to indulge in repose. If she have not this inclination, and be not fatigued, cheerful conversation, upon subjects, totally, unconnected with her situation, will be very proper.

Women have seldom an inclination for food, whilst they are in labour, and, if the process be not long protracted, there is no occasion for it. If, however, the patient have a desire to eat, she may have a little tea or coffee, with dry toast, or a little soup, or some panado; but every thing which is heavy or difficult of digestion, must be avoided, lest she be made sick and restless, or have her recovery afterwards interrupted. Even very light food, is apt at this time to sour, and cause heartburn.

Stimulants and cordials, such as spiced gruel, cinnamon water, wines, and possets, were, at one time, very much employed, but

now are deservedly abandoned, by those who follow the dictates of nature. Given in liberal doses, they are productive of great danger, disposing to fever or inflammation after delivery; and in smaller doses, they disorder the stomach, and often, instead of forwarding, retard the labour. If, however, the woman be weak, or the process tedious, then a small quantity of wine, given prudently, may be of considerable advantage.

Some women, wish to keep out of bed, as much as possible, in order that labour may be forwarded, by walking about; others, have the same desire, from feeling easier, when they are sitting. In this respect, they may be allowed to please themselves, but they ought to be, as much as possible, out of bed, provided, they do not feel tired.

The urine ought to be regularly, and frequently evacuated; and, on that account, the practitioner should, occasionally, leave the room. If the patient be costive, or the rectum contain fæces, a clyster ought always to be given early, which facilitates the labour. On the other hand, if the bowels be very loose, a few drops of tincture of opium, may be given, with much advantage.

It is immaterial in what posture, the patient place herself, during the first stage of labour, when it is brisk; but, in the second stage, when delivery is approaching, it is proper that she be placed on her side, and it is usual for her to lie on the left side, as this enables the practitioner to use his right hand. If the vertex be directed to the right side, it is often useful to place the patient on her right side, unless the pains be efficient, and the process advancing. In that case, it is not material on which side she lies. The knees are a little drawn up, and generally towards the end, kept separate, by means of a small pillow, placed between them. Many women, wish to have their feet supported, or pressed against, by an assistant, and it is customary to give a towel, to grasp in the hand. This is either held by the nurse, or fastened to the bed-post. We must, however, be careful that these contrivances, do not encourage the woman to make premature, or too strong and exhausting efforts, to bear down.

When the patient is in bed, it is proper to have a soft warm cloth applied to the external parts, in order to absorb any mucus, or water, that may be discharged, and this is to be removed when it is wet.

Attempts to dilate the os uteri or the vagina, and the application of unctuous substances, to lubricate the parts, are now very properly abandoned, by well instructed practitioners.

The membranes ought, generally, to be allowed to burst, by the efforts of the uterus alone, for this is the regular course of

nature ; and a premature evacuation of the water, either disorders the process and retards the labour, or, if it accelerate the labour, it renders it more painful. I cannot, however, go the length of some, who say, that the artificial evacuation of the water is always hurtful ; for there are circumstances, in which, it may be allowable, and is beneficial. It is allowable, when the os uteri is fully dilated, and the membranes protruded, perhaps even out of the vagina. In such a case, they would, in a very few pains at farthest, give way, but by rupturing them, we can take precautions, to keep the person dry, and more comfortable, than she should otherwise have been. Even if the membranes be not considerably protruded, if the os uteri be completely dilated, no injury can arise from rupturing them ; for they ought, in the natural course of labour, to give way at this time. But, although the practice be not detrimental, yet, it does not thence follow, that it is always expedient ; and it will be useful to remember, that the seldomer we interfere, in this respect, in natural labour, the more prudent shall our conduct be.

Examination ought, in the first stage of labour, to be practised seldom ; but in the second stage, we must have recourse to it more frequently ; and, when the pains are becoming stronger, and the head advancing, we must not leave the bedside. At this time we should be prepared for the reception of the child. A pair of scissors, with some short pieces of narrow tape, must be laid upon the bed or chair, and a warm cloth or receiver, must be at hand, or spread under the clothes, to wrap the child in. As the fæces are generally passed, at this time, involuntarily, a soft cloth is to be laid on the perinæum, and when the second stage of labour is drawing to a conclusion, the hand is to be placed on this, in order to prevent the too rapid delivery of the head, and the consequent laceration of the perinæum. This is a point of very great importance, and which requires to be, carefully, considered by the practitioner. There are several arguments, against this practice ; for we should, *a priori*, conceive, that as parturition is a natural process, it ought not, in any part to be defective, or to require the regulation of art. Next, we should strengthen this doctrine, by finding, that, in the savage state, a lacerated perinæum is rarely discovered, and in all those women, who are speedily delivered by themselves, the recto-vaginal septum is seldom torn. But, on the other hand, the fact is ascertained, beyond all dispute, that the perinæum is sometimes lacerated, notwithstanding these presumptive proofs, against the occurrence of the accident. This being ascertained, it becomes our duty, however rare the case may be, to determine its causes, and prevent its occurrence in every instance ; for we cannot exactly say, who the unfortunate indivi-

dual may be, to whom it is to happen. We may decidedly say, that the perinæum is torn in consequence of distention; but in every delivery, the perinæum must be distended, and in some to a great degree. In proportion to the facility of the distention, and the ease with which the orifice of the vagina dilates, is the risk of laceration diminished. It has, therefore, become a practical rule, to resist, with the hand placed on the perinæum, the delivery of the head, until the parts be sufficiently relaxed; and this pressure ought to be exerted over the whole tumour, but especially at the fourchette; for, although the perinæum have been perforated by the head, which did not pass through the orifice of the vagina, but through it, yet, usually, the rent begins at the fourchette; and proceeds backwards, to a greater or less degree. Till the relaxation be such as to allow the head safely to pass by the existing pressure, we must steadily support the perinæum, and especially at that part where the effect is greatest. This is generally at the margin or fourchette. But it may also be between the vagina, and anus, or, the face of the rectum, may even by the expansion of the anus become extended over the head. In this case, whilst we attend to the margin, we also pay peculiar attention to the whole distended tumour, else we might have a perforation of the perinæum. At this stage, the direction of the pressure or support, is not only upward, but somewhat forward. In every case, the fourchette, often, a small part of the posterior surface of the vagina, is lacerated, though the integuments of the perinæum remain sound. By firmly supporting the perinæum, and, at the same time, exhorting the patient not to force down, during a pain, and thus retarding the delivery of the head, until we feel the vulva, as well as the perinæum relaxing, we may generally prevent laceration; and therefore, this accident shall seldom, if ever, happen in the hands of a prudent practitioner. Still, it is possible, for the perinæum to be torn, under good management. A little bit of it is not unfrequently lacerated, notwithstanding all our precaution; and although, in this slight degree, it be of no consequence, yet, we thus see, that art cannot, completely prevent the accident. Sometimes, the restlessness of the patient, almost inevitably, prevents the necessary precautions from being used;* and it may happen, that the frame is so very irritable, that the perinæum, unexpectedly, lacerates, at the time when it is supposed, to be in a favourable state. As there must be some point, where the resistance ought to stop, else the labour should be unnecessarily protracted, or perhaps even the uterus injured,

* Dr Denman, with a candour which does him honour, acknowledges, that, from this cause, the accident occurred in his own practice.

it is possible that such resistance may be made, as generally is sufficient to prevent the accident, but, which may not, in some particular case, owing to the irritable state of the perinæum, be adequate to the intended purpose; or, the power of the uterus may be so strong, as to expel the head, in spite of every allowable resistance; and, in some of these cases, it is possible, for the perinæum to be torn.

It is not sufficient, that the practitioner support the perinæum, until the head is going to be expelled; he must continue to do so, whilst it is passing out, for there is then a great strain on the part, as the forehead is passing over the perinæum; even the face or chin, moving along it, may produce injury. He ought, not only, steadily, to support the perinæum, with the whole hand, but have that, so placed, that the thumb, forefinger, and their junction, shall form an arch, embracing the margin, of the perinæum and distended labia, and sustaining the head, as it projects. The perinæum, whilst the head is actually passing out, is to be, as it were, guided, and at the same time, supported, backward, over the head and face, that it do not lacerate. For this purpose, we particularly press against the thin margin of the perinæum, or posterior part of the vagina, as these glide backward, and sometimes even grasp, laterally, with the finger and thumb, the distended perinæum to aid the support.* After the head is delivered, it is still necessary to place the hand under the chin, and on the perinæum, for the arm of the child comes, next, to press against this part, and may either tear it by pressure, or by coming out with a jerk. Farther, to prevent injury, and avoid pain, the body of the child, should be allowed, to pass out, in a direction, corresponding to the outlet of the pelvis, that is to say, moving a little forward. But there is no occasion, that the child should be pressed forward, betwixt the thighs, for, in a natural labour, the back of the child comes out, directed to the thighs; he can easily bend, and will, naturally, so incline himself, in the delivery, as to take the proper direction, provided the thighs be not too close together. The last advice to be

* This advice, which I consider as very important, has been objected to by Dr Hamilton. With all deference to the opinion of my late justly celebrated friend, I would say, that when the parts are prepared for the evolution of the head, that can only take place safely, as I have already explained, by the perinæum gliding backward. To continue the pressure forward, can only, in so far as it is efficient, interfere with the change which the perinæum naturally undergoes, and endanger either its laceration or perforation. The sole question is, whether it be safer to allow it to glide backward without support, or to afford support in that process, for backward it must go. It is rare, and only in very relaxed parts, that the head can go through the orifice by merely stretching it in its forward position. The perinæum, just before the head passes, is much extended, and covers the child's head, both laterally and antero-posteriorly; as the head passes, it shortens in the latter direction.

given, respecting this stage of labour, is, that as we retard, rather than encourage the expulsion of the head, so, we are not to accelerate the delivery of the body. Women in a state of pain, call for relief, and expect that the midwife, is to assist the delivery of the child; but no entreaties ought to make us hasten the expulsion of the head, and after that event, there is little inducement to accelerate the labour. Sometimes, in a few seconds, the child is expelled, but there may be a cessation of pain for a minute or two. In the first case, we take care that the body, be not propelled rapidly, and with a jerk; in the second, we attend to the head, ascertaining that the membranes do not cover the mouth, but that the child be enabled to breathe, should the circulation in the cord be obstructed. There is no danger in delay, whilst rashly pulling away the child, is apt to produce flooding, and other dangerous accidents. Should there, however, be a considerable interval betwixt the expulsion of the head, and the accession of new pains, we may rub gently on the belly of the mother, or pull the child slightly, so as to excite the uterus to contract. Or, should the woman have several pains, without expelling the body of the child, it may be allowable gently to insinuate the finger, and bring down the shoulder; but even this assistance is rarely required, and on no account, ought we to attempt the delivery, by pulling the head. Sometimes a delay is produced, by the cord being twisted round the neck, and in this case, all we have to do, is to slip it off over the head.

The child being born, a ligature is to be applied on the cord, very near the navel, and another, about two inches nearer the placenta. It is then to be divided betwixt them, and the child removed. The hand is, next, to be placed on the belly, to ascertain that there be not a second child, and the finger may, for the same purpose, be slid gently along the cord, to the os uteri. The hand of an assistant, should be applied on the abdomen, and gently pressed on the uterus, which may excite it to action, and prevent torpor. If the placenta be not expelled soon, the uterine region may be rubbed with the hand, to excite the contraction of the womb. Immediately after the expulsion of the child, there is often a copious evacuation of water, which is sometimes mistaken, by the patient, for a discharge of blood. But hæmorrhage never takes place so instantaneously, in such quantity. It is generally a minute or two, sometimes much longer, before flooding come on; against the occurrence of this, we are to be on our guard.

The woman, after the delivery of the child, feels quite well, and expresses in the strongest language, the transition from suffering to tranquillity. But, in a short time, generally within half an hour, often in much less (Dr Clark supposed twenty-five

minutes to be the average,) one or two trifling pains are felt, and the placenta is expelled, which completes the last stage of parturition; and when the process goes on regularly, nothing is required in this stage, except watchfulness, lest hæmorrhage occur.

The full, and universal, contraction of the uterus, after the child is expelled, must, by diminishing its surface, detach the placenta, whilst the membranes, being thinner and more pliant, may wrinkle, and continue their adhesion, and sometimes do so, till they be peeled off, as the placenta protrudes. Hæmorrhage is prevented, even when the placenta is detached, by the contraction of the uterine fibres on the vessels, and by the adhesion of the membranes, still to the uterus, which, for a time at least, will prevent blood from flowing, unless the extravasation be considerable. But to these causes, we must also add the condition of the uterine vessels themselves, which, immediately after delivery, have, if the state be natural, their circulation much affected, by the alteration, in the action of the nerves, of the uterus itself.

But it sometimes happens, that the placenta does not come away, so early, or so readily, as we expect. It may be retained for many hours, nay, even for some days. This retention can be caused, by preternatural adhesion of the placenta, or, by the uterus contracting, spasmodically, round the placenta, forming a kind of cyst, in which it is contained; or the uterus may not contract on the placenta, so strongly, as to expel it. Some, from a confidence in the powers of nature, have inculcated, as a rule of conduct, that, unless flooding take place, the placenta ought not to be extracted. Others have, with equal zeal, advised it to be brought away, immediately after the birth of the child. The safest practice seems to lie, betwixt the two extremes. To leave the expulsion of the placenta, altogether, to nature, is a step attended with great danger; for, so long as it is retained, we may be sure, that the uterus has not contracted, strongly, and regularly. If, then, in these circumstances, the placenta should be partially, or completely, detached, hæmorrhage is very likely to occur. If it still adhere to the uterus, the risk of hæmorrhage certainly is diminished, for those vessels, alone, which opened on the decidua, can be exposed; but we have no security, that this adhesion, shall remain universal, for any given time. As long, then, as the placenta is retained, the patient is never free from the risk of flooding. In many cases, she has died from this cause, before the placenta was expelled; or, if, after a long delay, the placenta have come away, its exclusion has, sometimes, been followed by fatal hæmorrhage.* But this, although a dreadful

* Mr Whyte has, in his Treatise on the Management of Pregnant and Lying-in

accident, is not the only one, arising from retention of the whole, or part of the placenta. For, great debility, constant retching, and fever, are often produced by this cause, and may ultimately, carry off the patient. It is, therefore, not without great reason, that women are anxious for the expulsion of the placenta; and this prejudice may have a good effect, in operating against the conceits of speculative men, who suppose that nature is, in every instance, adequate to the accomplishment of her own purposes.

On the other hand, daily experience must convince every one, that there is no occasion, for extracting the placenta, immediately, after the birth of the child, for it is usually expelled, with perfect safety, within forty minutes, after the child is delivered. Nay, we find that the speedy extraction of the placenta is directly hurtful, both as it is painful, and also, as it is, sometimes, followed by uterine hæmorrhage, or if rashly performed, accompanied by inversion, or, productive of inflammation of the womb. The practice, then, I think, may be comprised in two directions:—First, that we ought never to leave the bedroom, and scarcely the bedside, until the placenta be expelled; and, second, that if it be not excluded, within an hour after delivery, we ought cautiously to extract it. This point being adjusted, it is next to be inquired, how the retention is to be prevented, and if not prevented, how the placenta is to be extracted. With regard to the first question, it may be answered, that the placenta will be least apt to be retained, if the expulsion of the child, be conducted slowly, and the uterus made to contract, fully, upon it. The action, if not likely soon to take place, may be sometimes excited, by pressing on the uterine region, and rubbing the abdominal covering, over the uterus, or gently grasping the womb, through the relaxed parietes. As to the mode of extracting the placenta, we can be at no loss, if we recollect, that the expulsion is accomplished, by the contraction of the uterus. Our object, then, is to excite this, when the placenta is retained, in consequence of the womb, not acting strongly. The hand is to be slid slowly, and cautiously, into the uterus, which is often sufficient to make it contract; but, if it do not, the hand is to be moved a little, or pressed, gently, on the placenta, at the same time that we pull, very slightly, by the cord, or lay hold of the detached placenta, with our hand, and, with caution, extract it slowly. This requires no exertion, for the uterus is pressing it down, and if any force be used, we do harm. Attempts to bring away the placenta, by pulling strongly at the cord, whether the hand be introduced into the uterus or not, are always improper. If per-

Women, p. 507, related several cases where the practice of leaving the placenta to be expelled by nature alone, was productive of fatal hæmorrhage; and, in one instance, this event took place, although the placenta was at last expelled.

sisted in, they are likely to end, either in the laceration of the cord, or the inversion of the uterus.

There are two circumstances, however, under which the placenta may be retained, which require some modification of the practice.

The first is, when the placenta is retained by spasm. In this case, when the hand is conducted along the cord, through the os uteri, the placenta is not perceived, but it is led, by the cord, to a stricture, like a second, but contracted os uteri, beyond which the placenta is lodged. This contraction, usually seated in the upper part of the cervix, or lower part of the body, must be overcome, before the placenta can be brought away, which may be accomplished, by gradual attempts, to introduce one, two, and ultimately all the fingers through it, and these, if cautiously made, are perfectly safe. It will, however, be observed, that the uterus, at short intervals, contracts, which is accompanied with pain; but this contraction, is confined to the stricture alone, the cavity of the womb not being lessened by it, and, during this state, all attempts to dilate the aperture are hurtful. We must be satisfied, with keeping the fingers in their place, to preserve the ground we have gained. It is also of advantage to press externally on the fundus, so as to prevent the uterus being raised or stretched by the effort to introduce the fingers into the upper division. It is not necessary to pass the whole hand so as to grasp or include the placenta. That may be laid hold of between two fingers, or by two on each side, and drawn down, aiding the descent by cautiously pulling the cord, if that be not frail. If any part of the placenta adhere, that may be cautiously separated by the finger. We must if possible, bring the membranes with the placenta, for if torn, and part be left adhering to the uterus, afterpains, foetid discharge, or fever, may be caused thereby. Opiates have been proposed, to remove this spasm, and render the introduction of the hand unnecessary; they seldom, however, succeed alone; given in a full dose, they may make the manual attempt more easy, but should there be hæmorrhage, it is evident, we cannot delay, till they take effect. Sometimes, the sudden application of a cloth, dipped in cold water, to the belly, has the effect of relaxing the spasm, perhaps, by exciting, rapidly, the more universal contraction, of the uterus. A retention of the placenta, from spasm, is rarely a simple consideration, for, in the majority of instances, it is attended with hæmorrhage, and will fall to be noticed, again, in another chapter. Here, I must add, that even, with very little discharge, there is a great feeling of sinking, and often of sickness, a feeling almost invariably attending this spasm, and which is only relieved, by introducing the hand, so as to dilate the stricture,

at the same time, that we excite the uterus, to more general and uniform contraction. Opiates are also proper, and if the symptoms be urgent, wine must be given, for some patients may die, if this state continue long, although there have been little hæmorrhage.

The second circumstance to which I alluded is, adhesion of the placenta, which usually is only partial. This may occur, with, or without, a change of structure; but in general, the structure is more or less altered, the adhering part, being denser than usual, and sometimes almost like cartilage. The separation of the adhering portion, should not be attempted hastily, nor by insinuating the fingers between it, and the uterine surface. It is better to press on the surface of the placenta, so, as thus, to excite the uterine fibres, to contract more briskly, at the spot; or, by gently rubbing, or, as it were, pinching up the placenta, between the fingers and thumb, it may be separated. If, however, the adhesion of the part of the placenta, be very intimate, we must not, in order to destroy it, scrape and irritate the surface of the uterus, but ought, rather, to remove all that does not adhere intimately, leaving the rest to be separated by nature.* But, in taking this step, we are not to proceed with impatience, nor to attempt to bring away the non-adhering portion, until a considerable time have elapsed, and cautious efforts have been made, to remove the entire placenta, thus satisfying ourselves of the existence of an obstinate and intimate union. Cases, where this conduct is necessary, are very rare, and when they do occur, there is, usually, an induration of the adhering part. It is generally thrown off, in a fetid state, in forty-eight hours. Sometimes, the placenta adheres, when it is usually tender and soft, and then we must, with peculiar care, avoid hasty efforts, by which the placenta should be lacerated, and part left behind, which should be hurtful afterwards; whereas by a little more patience, and gentle pressure, on the surface of the placenta, the uterus might have been excited, to throw the whole off.

In every case, the utmost caution and gentleness, must be employed, in removing, or extracting the placenta, lest disorder, or inflammation of the uterus, to a greater or less degree, be excited.†

* Dr Smellie relates two cases of this kind. In the first, he brought away the indurated portion, but the woman died from hæmorrhage. In the second, he left the adhering portion, and the woman recovered. Col. 23. c. 1. and 2. See also Gifford's Cases, c. 119 and 127; and La Motte, c. 358 and 362. In these, although the adhesion was very intimate, he brought away the placenta in pieces.

† Dr Collins thinks it useful in all cases where the patient suffers much in the extraction, to give small doses of calomel and ipecacuanha, and if the abdomen be tender, to put the patient for an hour in the warm bath. Both of these advices, particularly the last, must be acted on with caution. From his table it appears, that in 60 cases of retention, 38 were in first pregnancies, and the greatest number

CHAP. III.

Of Premature Labour.

WHEN a woman bears a child, in the seventh or eighth month of pregnancy, she is said to have a premature labour; a medium between abortion, and natural labour.

In some cases, the uterus is fully developed, before the usual term of gestation, and then contraction commences; but, in a great majority of instances, premature labour proceeds from accidental causes, exciting the expulsive action of the uterus, before the cervix and os uteri, have gone through their regular changes. The cervix must, therefore, relax, and be expanded, before the os uteri can be properly dilated. It is not unusual to find from the first, or even before pain be felt, the os uteri so open as easily to admit the fingers, but it is not extended, its lips hanging still down, thick and protuberant. This preparatory stage, is generally marked, by irregular pains, and, not unfrequently, by a feverish state, preceded by shivering. A feeling of slackness about the belly, with different anomalous sensations, often accompany this stage of premature labour. When the cervix is expanded, then the os uteri begins to dilate, and its lips gradually to be effaced, and this part of the process is often more tedious, than the same period of natural labour, and generally as painful. It is, also, frequently attended with a bearing-down sensation. The second stage of labour, is usually expeditious, owing to the small size of the child. The decidua being thicker than at the full time, the protrusion of the membranes is often attended with more sanguineous discharge, and if the woman move much, or exert herself, considerable hæmorrhage may take place. The third stage is likewise slow, for the placenta is not soon thrown off. In the last place, spasmodic contraction of the uterus is more apt to take place, in all the stages of premature, than of natural labour.

A variety of causes may excite the action of the uterus, prematurely, such as distention from too much water; or, the death of the child, which is indicated by shivering, subsidence of the breasts, cessation of motion, and of the symptoms of pregnancy; or, the artificial evacuation of the liquor amnii; or violent muscular exertion; or, drugs acting strongly on the stomach and bowels; or, passions of the mind; or acute diseases; or, affec-

occurred when the patient had been only from 2 to 4 hours in labour. But this I should say, is not the general rule.

tions of the uterine fibres, often dependent on or produced by the state of the nerves, which go to the uterus, and which may be induced directly, or sympathetically. Certain general conditions of the system, render the operation of these causes more easy, such as plethora, debility, but especially morbid irritability, or sensitiveness. Colic, in some instances, and diarrhœa in others, seems to be a cause, and, in such cases, anodyne clysters are useful. Premature labour is often preceded, by severe shivering, during, or immediately before which, the child dies, and in some time thereafter pains come on. It is worthy of notice, that a much larger proportion of premature labours are preternatural, than of labours at the full time.

A tendency to premature labour, is to be prevented, by the means pointed out, when treating of abortion. I have only to add, that when the abdomen is tense and hard, or painful, indicating a sensibility of the uterine fibres, or of the abdominal muscles, tepid fomentations, gentle laxatives, repeated small bleedings, and anodyne clysters, are useful.

When a woman is threatened, with premature labour, we ought, unless there be very decided marks, of the death of the child, to endeavour to check the process, which is done by exhibiting an opiate, keeping the patient cool and tranquil, and removing any irritation which may exist. If she be plethoric, or the pulse be throbbing, blood is to be detracted.

When labour is established, it is to be conducted much in the same way, with parturition at the full time; but the following observations should be attended to. The patient must avoid much motion, lest hæmorrhage be excited. Frequent examination, and every irritation, are hurtful, by retarding the process, and tending to produce spasmodic contraction. If this contraction take place, marked by paroxysms of pain referred to the belly or pubis, often attended with feeling of sinking, whilst little or no effect, is produced on the os uteri, a full dose of tincture of opium should be given, after the administration of a clyster. Severe pains, with premature efforts to bear down, and a rigid state of the os uteri, require venesection, to a moderate extent, and afterwards an opiate. The delivery of the child is to be retarded, rather than accelerated, in the last stage, that the uterus may contract on the placenta. This is farther assisted, by rubbing, and gently pressing on the uterine region, after delivery. If the placenta be long retained, or hæmorrhage come on, the hand is to be gently introduced into the uterus, and pressed on the placenta, to excite the fibres to throw it off, whilst we also stimulate the uterus to act, by rubbing externally. We should not rashly attempt to remove it, for we are apt to tear it; neither are we to pull the cord, for it is easily broken. In those cases,

where premature labour, is connected with redundancy of liquor amnii, I think it useful, to introduce the hand, immediately on the delivery of the child, for I have observed, that the placenta is apt to be retained, by irregular contraction. We do not instantly extract the placenta, but it is desirable to get the hand in contact with it, before the circular fibres contract. Great attention is paid to the patient, for some days after delivery, as she is liable to a febrile affection, which may be either of the inflammatory type, or of the nature of weed, to be afterwards noticed.

Whilst we must not confound the effects of premature labour, with those of the causes which give rise to it; and particularly, the antecedent condition of the nervous system, or some of the viscera, we are not practically to overlook, or neglect them.

Premature labour, is sometimes intentionally excited, on account of deformity in the pelvis, or more rarely, as a mean of getting rid of some of the diseases of pregnancy, when these go to an alarming degree.

CHAP. IV.

Of Preternatural Labour.

VARIOUS signs have been enumerated, by which it was supposed, that malposition of the child might be discovered, previous to labour. An unusual shape of the abdomen; some peculiar feeling, of which the mother is conscious, and which she has not felt in any former pregnancy; greater pain or numbness in one leg, than in the other; a sensation, of the child rising, suddenly, towards the stomach, or motion different from what used to be felt; have all been mentioned as indicating this, but are all, even when taken collectively, uncertain tokens. We cannot, positively determine the presentation, until labour have begun.* This is much more frequently premature than when the child presents aright. In a great majority of instances, the head, during the end of gestation, may be felt resting on the cervix uteri; but, in repeated instances, I have not been able to distinguish it, in a pregnancy, which ended in natural labour. Sometimes, in consequence of a fall, or other causes, the head

* It has been proposed to ascertain the position, by attending to the pulsation of the foetal heart. Some remarks on this subject may be found in Naegelé's work on Auscultation. There is also a paper by Devilliers and Chailly, in Rev. Med. Juin. 1842, p. 321. Their errors were as 68 to 223.

seems to recede, but afterwards returns to its proper position. When labour begins, we may generally distinguish the head by its proper characters; but, if it lie high, and, especially, if the pelvis be deformed, we may not find it always easy, to ascertain the presentation, at a very early period. In such cases, it is of great consequence, to preserve the membranes entire. When the head does not present, the presentation is generally more distant, and longer of being distinctly ascertained,* the lower part of the uterus is more conical, and the tumour formed by the cranium, cannot be felt, through the membranes, or cervix uteri: when the finger touches the part, through the membranes, it very easily recedes, or seems to rise up. If the child lie, more or less, across the uterus, the os uteri is generally long of being fully dilated, the membranes protrude like a gut, and sometimes, during the pains, the woman complains of a remarkable pushing against the sides. The pains are severe, but in cross presentations she is sensible, that they are not advancing the labour.

It is a fact well ascertained, that, although the head have been felt, distinctly, in the commencement of labour, yet when the membranes break, it may be exchanged for the shoulder,† or some other part. On this account, as well as for other reasons, it is always proper to examine, immediately, after the membranes have given way.

Dr Collins calculates that the presentation is preternatural, in one out of forty cases. The most frequent is that of the breech.

It has not unreasonably been said, that the child, naturally, must present one end of the ellipse, either pelvic or cranial. But causes may render the position more oblique. Wigand says, the chief cause is the uterus not having the normal shape, but being too wide. Dr Rigby speaking of shoulder presentations, says, they depend on two causes, an unusual quantity of water distending the womb, or a faulty condition of the early pains altering its form, and at the same time the position of the child. He notices a case of Naegelé's, where in five pregnancies, the patient toward the end suffered much from spasmodic pain, and had always a cross birth. In a sixth he gave anodyne clysters, and the presentation was natural. It was the opinion of Sir F. Ould, p. 25, that the head did not present properly in the end

* When the presentation is long of being felt, we have been advised to examine the woman in a kneeling posture, or even to introduce the hand into the vagina, and rupture the membranes. This last advice is sometimes useful, as it enables us, if the presentation require it, to turn the child at a time when it can be easily done. But this is not to be hastily practised, nor adopted till the os uteri be well dilated, or at least quite dilatable.

† I have been informed of a case, where the shoulder was exchanged for the head, and Joerg seems to have met with the same circumstance. *Hist. Partus*, p. 99.

of pregnancy, and that the correct position did "not happen till after the first labour pains" had pressed it right.

ORDER FIRST.

The breech is distinguished by its fleshy feel, by the tuberosities of the ischia, the shape of the ilium, the sulcus between the thighs, the parts of generation, and by the discharge of meconium, which very often takes place in the progress of labour,* or is found on the finger after an examination. Sometimes the scrotum is pressed down, and elongated into a firm elastic bag. After the breech has descended, some way into the pelvis, the integuments may become tense or swelled, so as to make it resemble the head or face. If the breech present more obliquely than usual, the ribs approach the ilium more, and it is sometimes difficult, till the hand be introduced, to say whether it be the shoulder or ischium. Before the membranes burst, the presentation is usually very mobile, and bounds up readily from the finger, so that it is not always easy at this stage, to determine the nature of the case. In some instances, however, it is, from the first, firmly pressed down in the pelvis, and felt, through the uterus, very much resembling the head. Dr Collins says the child's heart is distinctly heard beating near the umbilicus of the mother.

Breech presentations are more hazardous to the child, than when the head presents, naturally, for the cord is apt to be compressed, when the head is entering the cavity of the pelvis. They are also, generally, more tedious, for the presentation is not so well adapted to the shape of the pelvis, and does not pass so readily, although the size be really less, than that of the cranium. The lateral diameter, whether taken from one trochanter, or one crest of the ilium, to the other, is $3\frac{1}{4}$ inches. From the back of the pelvis, to the back of the thighs, when they are laid upon the belly, is barely 3 inches. It has actually occurred, that the breech has been expelled by nature, when the perforator was required, before the head could be brought down. The chest is larger than the breech, for, if the fœtus be injected, the lateral diameter, at the under end of the thorax, is $3\frac{1}{2}$, the antero-posterior, $3\frac{1}{4}$ inches. In the Dublin hospital, out of 242 cases, 73 children were stillborn, and of these 42 were putrid. Even if these 42 were struck off altogether, as having died previous to labour, the fatality of this presentation is great.

The breech, and consequently the body, of the child, may vary in its position with regard to the mother; but there are chiefly two situations requiring our attention, because the rest are ulti-

* A discharge of liquor amnii, apparently coloured with meconium, is no proof that the breech presents, still less is it a sign that the child is dead.

mately reduced to these. First, where the thighs of the child are directed to the sacro-iliac junction of the pelvis; and, secondly, where they are directed to the acetabulum. These are ascertained by the relation of the thighs, the ilium, and the sacrum, to the pelvis of the mother. In either of these cases, delivery goes on with equal ease, until the head come to pass. Then, if the thighs have been directed to the fore part of the pelvis, the face sometimes continues turned toward the pubis, and cannot clear its arch so easily as the vertex. In by far the greatest number of cases, the thighs are directed to the right sacro-iliac symphysis; next to that, to the left; in some to the pubis; in a few to the sacrum.

When the thighs, are directed to the back part of the pelvis, we find that the process of delivery is as follows: the breech which lay with its longest diameter, corresponding to the diagonal diameter of the pelvis, generally descends obliquely, one tuberosity, the foremost, or that nearest the pubis, being lower than the other. This follows the same turns, as the presenting part of the parietal bone does, in natural labour, and observes the same relation, to the axis of the brim, and outlet of the pelvis. Coming to the outlet, one ischium, is placed at the arch of the pubis, and the other, on the perinæum. The first, protrudes a little, at the pubis, but the second, is generally cleared sooner, the distended perinæum slipping back, over it, as it does over the head, and, almost at the same moment, the other hip comes out, forward from the pubis. Whilst the breech is protruding, it gradually turns round a little, so that the belly of the child, is directed to the back of the inside of the mother's thigh, and the shoulders come to pass the brim diagonally. The breech being delivered, a continuance of the pains pushes it gradually away, in the direction of the axis of the outlet, until the legs come so low as to clear the vagina. When this takes place, the head is generally passing the brim obliquely, the face being turned toward the sacro-iliac junction; and most frequently the arms pass along with it, being laid over the ears. They then slip down into the vagina, by the action of the uterus, are born at the same time, with the chest, and the head alone, occupies the cavity of the pelvis. The face turns into the hollow of the sacrum, and the chin tends toward the breast of the child. Then, it clears the perinæum, which slips over the face, and the vertex comes, last of all, from under the pubis.

The long diameter of every part of the child, breech, shoulder, and head, in descending, should correspond to the largest diameter of that part of the pelvis through which they are passing.

Many have advised, that when the breech presented, the feet should be brought down first; but the established practice now

is, when the pelvis is well formed, and other circumstances do not require speedy delivery, to allow the breech to be expelled, without any interference, until it have passed the external parts.

The management of this labour is very simple. Whilst the breech is coming forth, the perinæum is to be supported, and nothing more is to be done till the knees be so low, as to be on a line with the fourchette. If they do not naturally bend, and the feet slip out, the finger of one hand is to be employed to bend the leg gently, and bring down the foot; the knee, in this process, pressing obliquely on the abdomen of the child. But whether the legs be expelled naturally, or be brought down, we must carefully protect the perinæum, lest it should be torn, by a sudden stroke of the leg in passing. Next, the cord is to be pulled gently down a little, to make the circulation more free. Thirdly, we attend to the arms; if these do not descend by the natural efforts, along with the breast, but be turned up by the sides of the head, occupying the brim of the pelvis, together with it, we bring down first one, and then the other, using no force, lest the bone should break. We pass the finger along the breast and neck of the child, over the shoulder, to the fore part of the humerus, and gently press it downward, and backward, with relation to the child, so as to make it sweep down by its side. The perinæum is, in doing this, to be guarded, to prevent a slap of the arm from injuring it. Fourthly, if the head do not directly turn down, the finger is to be carried up, and placed upon the chin or in the mouth, in order gently to depress it toward the breast, and this is generally sufficient. No extricating force is to be used, for this would injure the jaw. It has been proposed to depress by placing a finger on each side of the nose on the upper jaw. To guard the perinæum, the hand must be applied on it, and the body of the child moved near the thighs of the mother, that the vertex may more readily rise behind the pubis, whilst the face is passing. If the body be, on the contrary, removed farther from the mother, and nearer the operator, the head can neither so easily pass into the pelvis, nor out from the vagina. In a natural labour, after the head is expelled, the whole body, should be allowed to be slowly born, by the efforts of the womb alone. But, in breech cases, should the process, after the breech is expelled, be slow, the delivery of the body and head must, by the means I have related, be accelerated, lest the umbilical cord, suffer fatal compression. For the head, on entering the pelvis, is apt to jam the cord, between itself and the brim, and it is well known that the uterus does not act so efficiently on the head as on a larger body. The first symptom of danger, is a convulsive jerk of the body, and if the head be not brought speedily down, the child will be lost. Should delay

inevitably arise, we must try to bring the cord to the widest part of the pelvis. But even, although all pressure could be removed, the child might be lost, if it be not soon delivered, as the placenta, is sometimes speedily detached from the womb and its function destroyed. At the same time, we must not interfere, by drawing the child down, if we can help it, as this separates the chin from the breast, and makes the head enter unfavourably into the pelvis, and we are, also, more apt to have the arms turned up, and laid along the head, instead of coming down before it, with the chest. Pulling the child by the shoulders is dangerous, if more than very slight force be employed, for the spinal cord, in the neck, is apt to suffer. It has been proposed to accelerate the expulsion of the head by ergot. But it is evident that if this is to be given, it must be by anticipation at an earlier stage. It has also been advised to have immediate recourse to the forceps.

When the thighs in breech cases, are directed to the acetabulum, or pubis, the face, as in the former case, is generally born first. It might be expected, that it should always continue, directed to the pubis, from under the arch of which, it would come with some difficulty. But, whatever may happen in some instances, we usually find, that the trunk does, in its expulsion, so turn round, that the face is directed, at birth, to the perinæum,* and we may, if there be any doubt of this taking place, aid it, remembering, that if the left hip be foremost, as it most frequently is, the turn is made to the left of the mother and *vice versa*. Should we be disappointed, and find the face, when the body is born, directed forward, we do not turn the body, which might twist and injure the neck, but introduce two fingers, and press with them on the head itself, endeavouring thus to turn the chin from the acetabulum, to the sacro-iliac junction of the same side. If the position be not thus rectified, then, we assist the descent, by depressing the chin, and gently bringing it under the pubis; and this may be facilitated, by pressing the vertex upward and backward, and making it turn up, on the curve of the sacrum, to favour the descent of the face. We must be careful of the perinæum.

When the pelvis is contracted or deformed, it will be prudent at an early stage of the labour, to bring down the feet. The danger, in such cases, is great to the child, but this is not diminished, by leaving the case to nature. For, granting the breech to have been at last expelled, there has not only been protracted suffering to the mother, but the time and effort re-

* Dr Hamilton says that in every case where the child is born as far as the head, that part cannot easily be disengaged, unless the chin be brought in contact with the point of the coccyx.

quired, may render the uterus, less able to assist the descent of the head, which can in no way be facilitated, in the case of a contracted pelvis, by the previous passage of the breech. But if this measure have not been adopted, at the proper stage, it will be necessary to have recourse to artificial means, to be afterwards explained. When the resistance is slight, the insinuation of the fingers over the groin may, sometimes, enable us to use such extracting force, as at least excites the uterus more briskly to expel. Should the head not easily follow the body, we must not attempt to extract it, by pulling forcibly at the shoulders, as we may thus tear the neck, and leave the head in utero.* The cord is, first of all, to be freed, as much as possible, from compression; then, we gently depress the shoulders, in the direction of the axis of the brim, at the same time that we, with a finger, act upon the chin. Should this not succeed, we must apply the lever over the head, and depress in the proper direction. If this fail, the only resource is to open the cranium above or behind the ear, and fix a hook in the aperture; but this is not to be done until we have fully tried other means, and by that time the child will be dead.

When the breech presents, and 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.

ORDER SECOND.

Presentation of the feet is known, by there being no rounded tumour formed, by the lower part of the uterus. The membranes also protrude, in a more elongated form, than when the head or breech presents. The presenting part, when touched during the remission of the pain, is felt to be small, and affords no resistance to the finger. When the membranes break, we may discover the shape of the heel and toes, and the articulation at the ankle. The heel has been mistaken for the elbow, and *vice versa*. The toes from being long, may be taken for the fingers, till the heel and ankle be felt.

In presentation of the feet, the position differs less, from that,

* La Motte, Chapman, Smellie, and Perfect, give examples of the head being left in utero, without the body, and the body without the head. There are chiefly two sources of danger: the first and most immediate is uterine hæmorrhage; the second proceeds from putrefaction, which produces sickness, nausea, fever, and great debility. The head may be extracted, by fixing a finger in the mouth, or by the crotchet, with or without perforation.

in which the breech presents, than some suppose, for a little more or less obliquity of the child, determines which shall come down. The greater the obliquity, the lower are the feet, and the higher the breech; and, in a kind of medium degree, both the breech, and the feet, may be said to present, and enter at the same time, into the pelvis. In footling cases, the legs are laid along the back of the thighs, and the feet are either turned up, along the front of the tibiæ, so that the heels are felt first, as the lowest parts, or the feet cross each other, somewhat, so as rather to present the sole, or side of the foot; or the toes may be first felt. The feet naturally go down before the breech, which is directed obliquely upward; one or both feet, may pass into the pelvis. Generally, if they do not enter at the same time, the one soon follows the other, but one may come down, whilst the other turns up along the belly, as both legs do, in a common breech case.

Two circumstances are supposed to contribute to an easy delivery: first, that the toes be turned toward the sacro-iliac junction of the mother; and, secondly, that both feet come down together, but, as we have seen in breech cases, it seldom makes much difference in the evolution of the head, whether the toes be backward, or forward. The best practice is, to avoid rupturing the membranes, till the os uteri be sufficiently dilated; then we grasp both feet, and bring them into the vagina; or, if both present, together, at the os uteri, we may allow them to come down unassisted. In either case, we do not accelerate the delivery, till the cord be in a situation to suffer from pressure, that is, till the knees be fully protruded, and the thick part of the thighs, near the breech, can be felt; then, if the face be toward the belly of the mother, and do not seem to move toward the back, we grasp the thighs, and gently turn the body round, so that the breech of the child shall be directed to the foramen ovale. The management, is the same as in breech cases. There is little danger, of the feet of two different children, being brought down together, as twins are included in separate membranes. But as the case is possible, it is proper to ascertain, that the feet be right and left, which we do by attending to the relation of the great toes.

Sometimes a knee and foot, or the knees alone, present, and, as they form a larger tumour than the feet, they may, at first, be taken for the shoulder, or even the breech or the head. Generally, only one knee presents, and it lies obliquely, with its side on the os uteri. It is known by its shape, and the flexure of the joint. Some advise that the case should be left altogether to nature, but it is better to bring down the knee or both feet, as may be most easily accomplished.

ORDER THIRD.

When the shoulder or arm presents, the case has the general character of preternatural presentations.* The round tumour, formed by the head in natural labour, is absent, whilst we can ascertain the shape, and connexion, of the arm and shoulder. A shoulder presentation, can only be confounded, with that of the breech. But, in the former case, the shape of the scapula, the ribs, the sharpness of the shoulder joint, and the direction of the humerus, together with our often feeling, in our examination, either the hand or neck, will be distinguishing marks. In the latter, the round shape, and greater firmness of the ischium, the size of the thigh, its direction upwards, and its lying in contact with the soft belly, the spine of the ilium, the parts of generation, the size of the tuberosity of the ischium, and the general shape of the back parts of the pelvis, contribute, with certainty, to ascertain the nature of the case.

The hand and arm may present under different circumstances. The original presentation, may have been that of the shoulder, but the arm may have, in the course of the labour, been expelled; or the hand may rest upon the os uteri, before the membranes have broken, or the fore-arm may, for a length of time, lie across the os uteri, the hand not being protruded for some hours. Sometimes, both hands are felt at the os uteri, and even both arms may be expelled into the vagina; but, in most cases, this does not happen, unless an improper conduct be pursued. In some rare instances, the hands of twins have been found presenting together, both sets of membranes having given way; it is more common to find both the hands and feet of the same child presenting; and this, next to the presentation of the feet alone, is the easiest case to manage.† It is not uncommon, in this case, to find the cord presenting at the same time, and then, by delay the child may be lost.

In most cases where the superior extremities present, the feet of the child are found in the fore part of the uterus, toward the navel of the mother. But their situation may be known by examining the presentation. If we feel the shoulder, we know, that if the scapula be felt toward the sacrum, the feet will be found toward the belly. If the arm be protruded into the vagina, the palm of the hand is found, in supination, directed toward the side where the feet lie. It is easy to know which hand pre-

* In the *Maison d'Accouchement* at Paris, the right shoulder is presented at least five times oftener than the left.

† If the uterus be firmly contracted, the liquor amnii having been all evacuated, it may sometimes be necessary to carry the hand up to the knees, before we can change the situation.

sents. If we examine with the right hand, we shall find, that if the palm of the child's hand, be laid upon our palm, the thumb of the right hand, or the little finger of the left hand, will correspond to our thumb.

In these preternatural presentations, the ancients were acquainted with the practice of turning, and delivering the child by the feet.* But their remarks on this subject formed no general rule of conduct; on the contrary, practitioners were almost invariably in the habit of endeavouring to remove the presentation, and to bring the head to the os uteri. Paré was among the first, who advised turning as a general practice; but even his pupil Guillemeau disregarded the rule, and left it to Mauriceau to enforce it both by reasoning and practice.† Franco also was an advocate for turning. There may, however, be cases, where it would not only be safe, but also more proper, to resort to the old practice, although as a general rule it ought to be abandoned. For instance, if the patient be known usually to have a short labour, if the pains be brisk, the os uteri dilated, or in a relaxed and easily dilatible state, the liquor amnii retained, and the child moveable, then, the head may, without any difficulty, or much irritation, be placed in the proper position, with a fair and reasonable chance of success. This I have held to be a maxim in practice, and see no reason to alter it. The labour, no doubt, is slower than if we had brought down the feet, but the child is in much less danger, and this I hold to be the great inducement to return, in favourable cases, to an old practice. On the other hand, if the liquor amnii have been evacuated, or any irritation attend the rectification of the presentation, it is better at once to bring down the feet, and ensure a delivery, safe at least to the mother. Were the head in such a case made to present, the irritation produced, might throw the uterus into spasmodic action, or it might not act with any efficiency, and a tedious labour, of the worst and most dangerous kind, might be

* They also tried, by changing the posture of the patient to alter the position of the child. Mr Buchanan of Hull, informs me, that he succeeded, in one instance lately, where "the left side of the breast of the fœtus lay diagonally over the pelvis, with the head forward," in bringing the head right, by making the patient kneel and raise the breech, whilst the shoulders were brought as low as possible. The water had not been discharged. The situation of the head, when it came down, was made more favourable by the finger. The child was alive. It is still proposed to alter the position by external manipulation.

† Mauriceau justly observes, that although, after much fatigue, (the water having run off,) the head can be brought to the os uteri, the woman may not have strength to finish the delivery.—In a case mentioned by Dr Smellie, the patient died of flooding.—Joerg still admits the propriety of bringing the head, when it is nearer than the feet, to the os uteri, or the fœtus is so placed, that the feet cannot, without difficulty and danger, be brought down.

the consequence of this injudicious practice, whereby both parent and child might be lost. Dr Hunter proposed to push up the shoulder, and make the breech present, but this proposal has never been adopted.

We should be careful, in all cases, not to rupture the membranes prematurely; and, more effectually to preserve them entire, we must prevent exertion, or much motion, on the part of the mother. As soon as the os uteri is soft, and easily dilatable, the hand should be introduced slowly into the vagina, the os uteri gently dilated, and the membranes detached for some way up, and there ruptured.* The hand is then to be immediately carried into the uterus, and directed to the feet. Both feet are to be grasped betwixt our fingers, and brought down into the vagina, taking care that the toes be turned to the back of the mother. The remaining steps have been already described. If we find a knee more readily than a foot, it is right to turn by it; we may also turn by only one foot. This operation is not very painful to the mother; it is easily accomplished by the accoucheur, and it is not more hazardous to the child, than an original presentation of the feet. But it is necessary, in order to render these assertions correct, that the operation be undertaken, before the liquor amnii be evacuated; and it is of importance to fix upon a proper time. We are not to attempt the introduction of the hand, whilst the os uteri is hard and undilated; this is an axiom in practice; on the other hand we are not to delay until the os uteri be dilated so much, as to be apparently sufficient for the passage of a bulky body. In the cases now under consideration, the os uteri does not dilate so regularly, and to so great a degree, before the membranes break, as when the head presents. If we wait in this expectation, the membranes may give way before we be aware. If the os uteri be dilated to the size of half a crown, thin and lax, the delivery ought not to be delayed, for every pain endangers the rupture of the membranes. If they do give way, we are immediately to introduce the hand, and shall still find the operation easy, for the whole of the water is not discharged at once, nor does the uterus immediately embrace the child closely. If the liquor amnii have been discharged in considerable quantity, previous to labour, or, if the membranes have burst, at the commencement of it, when the os uteri is firm and small, we must, by a recumbent posture, try still to preserve a portion of the waters, till the orifice will permit delivery. The introduction of the hand into the vagina and os uteri may be

* Dr Hamilton says, he has succeeded in turning the child, without opening the membranes, by pushing back parts, successively, with the finger acting through them.

rendered easier, and less painful, by previously dipping it in oil or linseed tea, or any other lubricating substance. Oil may also be injected into the vagina.

But if the water have been long evacuated, then the fibres of the uterus contract strongly on the child, the presentation is forced firmly down, and the whole body is compressed so much, that the circulation in the cord frequently is impeded, and, if the labour be protracted, the child may be killed. This is a very troublesome case, and requires great caution. If the pains be frequent, and the contraction strong, then all attempts to introduce the hand, and turn the child, must not only produce great agony, but if obstinately persisted in, may tear the uterus from the vagina, or lacerate its cervix or body. No intelligent man, therefore, would think of turning, under these circumstances. After a delay of some hours, however, the uterus may be less violent, in its action, but, as laceration or other evils may, in the mean time, occur, it is wrong to wait, or trust to this. Copious blood-letting, certainly, has a power in many cases of rendering turning easy, but it impairs the strength, and often retards the recovery. If the patient be restless and feverish, it may, to a certain extent, be necessary and proper; but if not, we shall generally succeed, by giving a powerful dose of tincture of opium, not less than sixty or eighty drops.* Previous to this, if necessary, a clyster is to be given, and if the urine be not voided, the catheter is to be introduced, lest the bladder should be injured during the operation. The patient is then to be left, if possible, to rest. Sometimes in half an hour, but almost always within two hours after the anodyne has been taken, the pains become so far suspended, as to render the operation safe, and perhaps easy. But it must not be forgotten, that the effect of the opiate is merely to suspend the forcing pains, not to prevent the action of the uterus, if it be excited. We must, therefore, speedily and steadily, but not hurriedly, take advantage of the uterus having ceased to press down strongly the presentation, and endeavour to slip the hand beyond it, before strong action be again excited. Our first object being to get the hand into the uterus, we must raise up the shoulder a little, working the fingers past it, by cautious and steady efforts, quicker or slower, according to the degree of contraction and resistance. The cervix often contracts spasmodically round the presentation, and is the chief obstacle to the delivery, but the opiate generally allays this;† and we are not to be in too great a hurry, nor use

* Dr Collins advises tartar emetic. I have fortunately no experience of its effects in such cases.

† The spasm may yield rather suddenly to the hand, as if rupture of the fibres

violence to overcome this. I believe that slow efforts, after the use of opium, shall always prove successful. These efforts generally renew the pains, which, although they may not prevent the operation, yet make it more painful, and cramp and benumb the hand. Having passed the hand beyond the cervix, we carry it on, betwixt the body of the child, and the surface of the uterus, which is felt hard and smooth, from the tonic or permanent action of the fibres, until we reach the feet, both of which, if near each other, we seize; but if we cannot easily bring both, one is to be brought down into the vagina, and retained there. The child will be born, with the other folded up on the belly. We may even, sometimes, find it necessary to be satisfied by bringing down one knee. Indeed, it has been proposed by Valpeau and others, uniformly to prefer the knee to the feet. It is, generally, if not always, easier, when the uterus is contracted, to bring down one knee or foot, than both at once; it is less painful to the mother, and presses less on the uterus. In bringing down the feet, as well as in carrying up the hand, we must not act during a pain, but should keep the hand flat on the child, for a contrary practice may lacerate the uterus. It is sometimes very difficult, even after the feet are found, to bring down the breech. This is the case when there is strong spasmodic contraction. Before introducing the hand, we must ascertain, by examining the presentation, which way the feet lie, that we may proceed directly to the proper place. If the child be placed with its back to the mother's front, we have been advised to use the right hand, and very properly to carry it to the posterior part of the uterus. The position is known by examining the scapula or clavicle, or, if the arm protrude, the back of the hand in supination corresponds to the feet of the child. If the palm of the hand be directed to the front, we are to expect the feet, in the fore part of the uterus, and have been desired to use the left hand; but much must depend on the dexterity of the operator, and the position of the patient. The position of the patient is usually the same as in natural labour. But sometimes we may find it useful to make her lie forward on the side of the bed, with her feet on the ground, and to place ourselves behind her. If we should in any case, from spasm or other causes, find it very difficult to turn the child, we must consider how far it is practicable to make the head present and use the forceps, if spasm still prevent delivery.

When the hand and arm have been protruded, and the shoulder forced down in the vagina, it has been the practice with many, before attempting to turn, to return the arm again within the

had taken place. I was informed of one case of this kind, but the womb was entire, and no bad symptoms appeared.

uterus; and when this was impracticable, it has been torn or cut off, especially, if the child were supposed to be dead, but children have been born alive, in this mutilated state. Others advise, that we should not attempt to reduce the arm; nay, even say, that in difficult cases we shall facilitate the operation, by bringing down the other arm, in order to change, to a certain degree, the position of the child. So far from it being necessary to replace the arm, we may sometimes find advantage from taking hold of it with one hand, whilst we introduce the other along it; as the parts are thus a little stretched, and it serves as a director along which we slip into the uterus.

By the means pointed out, and by a steady, patient, conduct, we may, in almost every instance, succeed in delivering the child. But it must be acknowledged, that, in some cases, from neglect or mismanagement, the woman is brought into great danger, or may even be allowed to die undelivered. This catastrophe proceeds sometimes from mere exhaustion, or from inflammation, but oftener, I apprehend, from rupture of the uterus; or, in a neglected case, so much irritation may be given to the system, as well as to the parts concerned in parturition, that, although the delivery be easily accomplished, the woman does not recover, but dies, either from pulmonic or abdominal inflammation, or fever, or flooding. Moreover, such tedious cases, generally, end unfavourably for the child.

When turning has not been practicable, if the child were supposed to be alive, the os uteri has been cut, or the Cæsarean operation has been proposed and practised.* If dead, it has been extracted, by pulling down the breech with a crotchet;† and sometimes, in order to assist delivery, the body has been mutilated;‡ or the head opened with the perforator. This ought always to be done, when, on the one hand, the presentation cannot be raised to admit of turning; and on the other, there is no appearance of the process immediately to be described, under the name of spontaneous evolution, taking place.

When the child has been small or premature, it has happened that the arm and shoulder have been forced out of the vagina, and then, by pulling the arm, the delivery has been accomplish-

* Vide Memoir by M. Baudelocque, in *Recueil Périod.* Tom. v. table i. cases 5 and 12.

† *Peu*, in one case where both arms were protruded, applied a fillet over the breech to bring it down. *Pratique*, p. 412.—*Smellie*, in 1722, brought down the breech with the crotchet. Col. 35, case 3.—*Giffard* did the same in 1725. Case 8.

‡ Vide *Perfect*, Vol. i. p. 351.—*Dr J. Hamilton's cases*, p. 104. He found it necessary to separate three of the vertebrae.—*Dr Clarke* twisted off the arm, and perforated the thorax freely. At the end of 36 hours, the foetus was expelled double. *Med. and Phys. Jour.* Vol. viii. p. 394.

ed.* In other cases, the child has been expelled double. There have been many instances, where a spontaneous evolution, or doubling of the child has taken place, and the breech has been expelled first. The action of the uterus is exerted in the direction of its long axis, and therefore tends to push its contents through the os uteri. The child forms an ellipse; and either in natural labour, or presentation of the breech, the long axis of the ellipse corresponds to the long axis of the uterus. But, in a shoulder presentation, the axis of the ellipse lies obliquely with regard to that of the uterus, or to the direction of the force; and therefore the continued action of the uterus may tend, by operating on the side of the ellipse, to depress the upper end, and force it gradually into the pelvis. This event can only be hoped for, when the shoulder is forced low, and pressed forward against the pelvis, as a fixed or resisting point, around which, to a limited extent, it revolves, the trunk curving, more and more, the latero-posterior part of the thorax coming into view, till, at last, the uterus force the breech down on the perinæum. The uterus must contract efficiently, not spasmodically.

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. The last stage is generally rapid. In Dr Denman's third case, he vaguely says, "the exertions of the mother were wonderfully strong. I sat down, whilst she had two pains, by the latter of which the child was doubled, and the head expelled." When the breech gets into the cavity of the pelvis, expulsion is speedily completed. It does not appear that the child being large, is an insuperable obstacle to the delivery.§

A diversity of opinion has prevailed, as to the mode in which expulsion takes place. Dr Denman supposed, that the lower extremities descended during a pain, and made room for the upper, which ascended as the others came down, till, the body turning round on its axis, the breech was expelled, "as in an original presentation of that part." Dr Kelly agrees with Dr Denman, as to the existence of an actual revolution, or turning of the child, but differs from him, in maintaining that the ori-

* Giffard, case 211; and Baudelocque L'Art, § 1530, in a note.—In Mr Gardiner's case, the head followed the shoulders. Med. Comment. Tom. v. p. 307.

† Acta Havn. Tom. ii. art. xxiii.

‡ Lond. Med. Jour. Vol. v. p. 64.—See also case by Mr Outwait, in New Lond. Med. Jour. Vol. ii. p. 172.—Mr Simmons, Med. Facts and Obs. Vol. i. p. 76.—Perfect's cases, ii. 367.—Med. and Phys. Journ. Vol. iii. p. 5.—Medico-Chirurgical Review, Vol. i. 2d series.

§ Mr Hey's case, in Lond. Med. Jour. Vol. v. p. 305.

ginal presentation can only recede, not during the action of the uterus, but during its relaxation. The breech, or upper end of the ellipse, he supposes, is pressed down by the action of the uterus, and then, by the elasticity of the child, the shoulder, or presenting part, goes up the moment the uterus relaxes.

This explanation was disputed by Dr Douglas, who maintained that it was impossible, for the upper extremities to mount up, into the contracting uterus; that therefore no part of the child, which once protruded, ever receded; and, consequently, the process is not that of spontaneous turning, but that of expelling the child double. According to him, the shoulder is forced lower by strong pains; the clavicle lies under the arch of the pubis; the ribs press out the perinæum, and then appear at the orifice of the vagina. As the expulsion goes on, the clavicle is found on the pubis, and the acromion rises to the top of the vulva. Presently, the arm, shoulder, and one side of the chest are protruded, and the breech has got into the hollow of the sacrum. By farther efforts, the breech and extremities are expelled, but neither the arm nor the shoulder ever retire. Dr Gooch gives the same account, in the 6th Vol. of the Medical Transactions.

I offer in addition the following remarks. When the shoulder is forced so low, as to protrude at the arch of the pubis, the head is laid on the iliac fossa, and the breech is over, but yet not so low, as to rest on, the opposite fossa, at the sacro-iliac junction, and the trunk, at the end of the thorax, is at the brim. A continuance of the expulsive force, makes the side present, at the orifice of the vagina, and the breech, at this time, is entering the brim of the pelvis. The head still remains in its former position. The breech then descends lower, by the sacro-sciatic notch, and sweeping down from a side, it distends greatly, the perinæum. It then turns forward, and is born as in a common breech presentation, only, the arm and side are, at the same time, protruding at the pubis. In this process, the child must be very much curved, but if the action of the uterus be strong, and laceration do not take place, this bending may be accomplished to a sufficient degree. A line drawn from the side of the neck, to the end of the thorax, which is at the brim of the pelvis, when the shoulder is at the orifice of the vagina, is $4\frac{3}{4}$ inches. The difficulty is to get down the body, from this point to the breech. The line from the upper and lateral part of the neck, to the breech, or upper part of the sacrum, is $5\frac{1}{2}$ inches. This is the greatest length of the substance which is to pass. Sometimes the distance is barely 5 inches, and I doubt not that continued force may make it less. From the arch of the pubis to the brim, at the sacro-iliac junction, is 5 inches, and from the

same part, diagonally, to the sacro-sciatic ligament, at the sacrum is fully 5. It appears, then, that although, at first, we are not prepared to admit, the accommodation of the child, to the passage, yet, in reality, there is no physical impossibility of a child, at the full time, passing, in this way, through the pelvis, and that, if no interruption be, artificially given to the process, it may be effected, if the uterine action be strong and continued, the breech once brought within the sphere of action, so as to be pressed down, and the uterus stand out, without laceration. At an earlier period of gestation the difficulty is less. In the seventh month, the distance from the shoulder to the breech, if the child be stiff, is little more than $3\frac{1}{2}$. If the back be very pliant, it is barely so much.

A knowledge of this fact does not in the slightest degree exonerate us from making attempts to turn, when this can be safely done, the uterus not acting powerfully, in resisting our efforts; for, although a considerable number of cases are recorded, where it has taken place, yet these are few, in proportion to the number of presentations of the shoulder. In this city, estimated to contain above 280,000 inhabitants, I cannot learn that more than three cases of spontaneous evolution have taken place, though some women have either died undelivered, or have not been delivered, until it was too late to save them.*

By opening the thorax at the back or latero-posterior part, and then dividing the spine, we can bend the body much more, and bring down the breech more readily. The abdomen, if necessary, can be opened, and the contents, both of it and the thorax sufficiently removed, to make the body more pliable. Some decapitate the child, by an instrument which cuts through the neck, and then with the crotchet bring down the trunk, leaving the head to be afterwards brought away by a hook inserted into the mouth or foramen magnum; but the opening I have described is easily made, and allows the crotchet to be introduced, and fixed on the pelvis, so as to bring it down. Should however we be in any case unable to effect this, then we must adopt the other plan. Dr Hamilton takes the strong ground, from his own extensive experience, that neither operation can be required, if opiates be given. The stethoscope is useful in ascertaining the life of the child.

Sometimes the arm presents along with the head, and this can only render delivery tedious or difficult, by encroaching on the

* In the Report of Midwifery cases in the kingdom of Wurtemberg, it is mentioned that ten cases of spontaneous evolution occurred. Most frequently the breech or feet came out first. In two cases after the arm had issued it retired and the breech came down. In two others the feet came. In one the presentation of the head was changed for a transverse position which made it necessary to extract by the feet.

dimensions of the pelvis. This case does not require turning; but we should return the arm beyond the head, and even retain it there till a pain come on, and force the head down, so as to prevent the hand from again appearing. If from the degree to which the head had descended, before we were called, we find it impracticable to push up the arm; we may succeed, in bringing it to a place, where it will not interfere, much with the passage of the head. In a case, most probably, at the first, of this description, the arm had protruded, as in an ordinary presentation of the upper extremity, and the shoulder had descended as low, as the *os externum*. Mr Wansborrow, carrying his finger from the presentation, along by the curve of the sacrum, felt the chin of the child, the face presenting within the pelvis, and the occiput reflected against the vertebræ of the child. Very strong pains had no effect in propelling the child; but delivery was effected by means of the long forceps.*

Sometimes the head is placed pretty high, being retained by a spasmodic contraction, of a band of fibres round it, and the arm is the only presentation, which can be felt, until the hand be introduced. Opiates, in this case, may be of service. We must never attempt by force alone, to destroy the stricture, in order either to return the arm, or bring down the head.

Occasionally, both a hand and the feet, have been found presenting with the head, or the feet and head present. In such cases, we can, if necessary, bring down the feet altogether, but when it can be done, it is safer for the child, to push the foot beyond the head, and make it enter the pelvis alone, as in natural labour.

Besides these presentations, we may meet with the back part of the neck, and the upper part of the shoulder; or the nape of the neck alone; or the throat. These, which are very rare, require turning. They are recognised, by their relation to the head and shoulders.

All preternatural are more dangerous than natural presentations, both to mother and child. But Dr Collins says, that in shoulder cases none of the children died from the effects of delivery. Twenty children, out of thirty-three turned, were born alive. Four, out of forty mothers died. Others give a different calculation, and assert that 1 in 4 of children is still-born, either in cases of turning or original presentation of the feet, and that one mother in fifteen, dies when turning is performed.

ORDER FOURTH.

The hips, back, belly, breast, or sides, may, though very

* Med. Repository, Vol. xiii. p. 8.

rarely, present, the child lying more or less transversely. The hip, is sometimes taken for the head,* often perhaps for the shoulder, but is to be distinguished, by the shape and relations of the ilium. In all the other cases, the presentation remains long high, but when the finger can reach it, the precise part may be ascertained, by one who is accustomed to feel the body of a child. If the child lie transversely, it may remain long in the same position, and the woman may die, if it be not turned. But if, as is more frequently the case, it be placed more or less obliquely, then, if the pains continue effective and regular, either the breech or the shoulder, will be brought to the os uteri, according as the original position, favoured the descent of one, or other end of the ellipse, formed by the child. In these presentations, the hand should be introduced, to find the feet, by which the child is to be delivered. But this rule is not absolute, with regard to the presentation of the hip, which only renders labour tedious.

ORDER FIFTH.

The child may present the head, and yet it may be improperly situated, and give rise to painful and tedious labour. The uterus, even when a slight obstacle is opposed, as in some stages of these presentations, frequently does not, as it were, put forth its strength, but the pains remain trifling, and are felt by the patient to be inefficient. If the presentation be rectified, the pains often become speedily effective; if it be not, they are at last excited, but often not till after the lapse of several hours.

The vertex ought, naturally, to be directed at first to the left acetabulum, or foramen thyroideum, but it may also though very rarely be turned to the right. This, it may be thought, can make little or no difference, yet, in general, the labour is more tedious. The great gut, turns down, at the left sacro-iliac articulation, and may so influence the forehead, as to make the head enter less favourably. There is no necessity for interference, still, if the patient be known to have usually a slow labour, we may, if the head be easily moved, press it to the opposite direction, as we thereby diminish her pain. If we do not interfere, it is proper that she be placed on the right, instead of the left side.

Among the more marked deviations I notice, 1. The forehead, instead of the vertex, may be turned to the left acetabulum. This presentation, it has been calculated, occurs more frequently than the last noticed, and in proportion to the natural position, as 1 to 2 $\frac{1}{2}$, but this I do not think correct. We should natu-

* I. A. Motte was of opinion that no part resembled the head more than the hip. Vide Obs. 283 and 284.

rally expect, that, in this position, the occiput should turn into the hollow of the sacrum. This undoubtedly does sometimes take place, but I am satisfied with Naegelé, that the reverse—which Baudelocque, § 701, says, is a rare occurrence—is really the most frequent, and I find it more difficult, for a large head to turn with the occiput into the hollow of the sacrum, than forward like a natural presentation. The head is found, at first, with the forehead directed to the left acetabulum. After some time, the vertex descends a little lower, so that the head comes down a little more obliquely, than it was placed at first, and we feel more easily the posterior fontanelle. But the part which we touch, most readily, at an early stage, as the presentation, is the upper and posterior part of the left frontal, or the upper and fore part of the left parietal bone, according as the head has turned more or less round. Then, as the labour advances, the parietal protuberance comes more round, and is better felt, and ultimately it, or the vertex, turns out from the vagina, as in a natural labour, but the face of the child, is laid by the side of the left thigh. On examining the steps of this revolution, we find, that, by the uterine efforts, the vertex is acted on, by the inclined plane of the right ischium, behind the acetabulum, and thus, the left parietal protuberance is brought nearer the pubis. A continuation of the force, makes the posterior part of the left parietal bone glide forward, first along the inclined plane of the right ischium, then on the obturator internus, then, it and the occiput, move along the right ramus of the pubis. The posterior and lateral parts of the left frontal bone glide, at the same time, obliquely backward, across the plane of the left ischium, toward the spine of that bone, so that the head is ultimately turned into the direction assumed, when the vertex is placed to the right, instead of the left side. If, however, the reverse of all this should take place, the vertex turning to the sacrum, it must glide backward on the sacro-sciatic ligament.

As this presentation, whichever way the head turn, is generally productive of a labour, more tedious than the natural one, we should co-operate, in the acceleration of the process of turning the head. If it be discovered early, it is certainly proper to rupture the membranes, and turn the vertex round, which is easily accomplished, or sometimes it may be hitched round without opening them. If this opportunity be lost, we may still give efficient assistance, by introducing either one or two fingers, between the left side of the head, near the coronal suture, or the temple, and the symphysis of the pubis, and pressing steadily, during a pain, against the frontal, or parietal bone. Smellie knew the benefit of this, and the late Dr Clark says, that in thirteen, out of fourteen of these presentations, he was success-

ful in this practice. Even in those cases, where the head seems rather to be turning, with the vertex toward the sacrum, I have, although it had descended so low as to have the nose on a line with the arch of the pubis, succeeded in turning the face round to the hollow of the sacrum, with great promptitude, and with so much facility, that the patient did not know that I was doing more, than making an ordinary examination. We should keep up the forehead during a pain, by means of two fingers introduced into the vagina, or press it up gently, during the absence of pain, to make the vertex descend. It has been advised that we should, with the finger, depress the occiput, but this is more difficult to be done.

On this subject I must add, that the manipulation proposed is not to be resorted to, if pain or difficulty attend it, for it is meant to prevent these in the course of the labour. Naegelé, whose authority is not small, says, that in 93 out of 96 cases, the head turned by the natural effort, which I have already explained, and that such labours are neither more tedious, nor more difficult than in ordinary presentations.

2d, The fontanelle, or crown of the head, may also present, although the face be turned to the sacro-iliac junction. In this case it is felt early, and, by tracing the coronal suture, we may ascertain whether the frontal bones lie before or behind. Technically, the chin is said to have receded from the breast. The labour is necessarily slower, than in a natural presentation, but, by degrees, the head becomes more oblique, the vertex descending. This should be promoted by supporting the forehead during a pain, or pressing it up during the remission, and preserving the ground we have gained, by steady support with the finger, when the uterus acts. The rectification, usually renders the pains efficient, although before, they had been teasing the patient, rather than making any impression.

3d, The crown of the head may also present, with the face toward the pubis or the sacrum. It has been admitted by Baudelocque, and other authorities, that the long diameter of the head, may correspond to the conjugate one of the pelvis, but this has with good reason been denied. On examination, it will be found, that such supposed cases, which are rare, are merely less diagonal, the vertex, for example, being to the side of the symphysis pubis. In time, the head will generally become more diagonal, and descend obliquely, but we ought not to trust to this. We should rectify the position, for it is by no means difficult to move the head, with the finger, if we attempt it early. We can even carry the forehead, from the pubis, to the sacro-iliac junction. The process is still more simple, when the occiput is turned to the pubis, if we perform it early. If, however, we

neglect it, we find that, in a few instances, the head enters the pelvis, in the original unfavourable direction, where it soon stops, requiring the use of instruments. For, a moderate resistance often curbs the action of the uterus, which every one must have seen become suddenly brisk, when that was removed.

4th, The side of the head may present, but this is so rare that it has been deemed impossible. In this case the presentation is long of being felt, but it is recognised by the ear. If, however, it have been long pressed in the pelvis, it is extremely difficult to determine the case. In some instances, the child has been turned, but it is better to rectify the position of the head, by introducing the hand.

5th, The occiput may present, the triangular part of the bone being felt at the os uteri. It is known by its shape, by the lambdoidal suture, and its vicinity to the neck. The forehead rests on the margin of one of the psoæ muscles, and, from this oblique position of the head, the labour is tedious. It has been proposed, to turn; but here also, it is better to rectify the position of the head with the hand, by raising the occiput a little. Nature is, however, adequate to the delivery, even if not assisted. Some advise, that the woman should, by a change of position, endeavour to remedy the obliquity, making the child incline, so as to affect the situation of the head, but this has not much power in altering the position of the presentation, at least after the water has been evacuated.

6th, When the face presents, the chin is generally turned to one of the acetabula, more frequently to the right, than to the left; and the forehead, which is usually a little lower than the chin, is directed toward the opposite sacro-iliac articulation. At the very commencement of labour, we often feel first the forehead; hence La Motte tells us, that although at first he thought the presentation to be natural, yet, when the membranes broke, the face came down. Soon, the upper part of the right cheek, somewhere between the zygoma and side of the nose, presents at the os uteri. By a continuation of the uterine force, the head descends, with the forehead still lowest. The chin gradually turns forward, whilst the cranium in the same proportion, moves into the hollow of the sacrum, and the presenting part is a lower portion of the cheek. The chin finally turns quite round to the pubis, and passes out, under the arch, which then embraces the throat, whilst the perinæum glides back over the skull. When the chin is coming out, from under the arch, the sagittal suture, is in the hollow of the sacrum, its anterior extremity near the frontal bone, being on the last bone of the sacrum, or the first of the coccyx. From the chin to the top of the forehead, where the hair begins, measures from $3\frac{1}{2}$ to $3\frac{7}{8}$ inches; from the chin

to the middle of sagittal suture $4\frac{1}{2}$; to the end $4\frac{3}{4}$: in large heads, to the extremity of the vertex 5. From the root of the neck, near the sternum, to the vertex, when the head is bent back, is full $4\frac{3}{8}$. Comparing these dimensions, with the capacity of the pelvis, we see that there is space for the head to pass, though not so easily, as when it presents naturally. But the firmness of the bones of the face, which do not really yield, the shape of the presenting part, the unfavourable way in which the head passes through the pelvis, the width of the skull between the parietal protuberances, which is sometimes near four inches, and is not so easily or quickly forced down, after the tedious descent of the face, all conspire to prolong labour. At the same time it is true, that there are instances, where the process is not unusually severe.

The face is recognised by the features, particularly the nose and mouth, but, by a continuance of the labour, the parts become swollen, and more indistinct, so that it has been taken, either for a natural presentation, or the breech.

By rude examination, the features may be injured, or even the skin may be torn; and, even under the best management, the face, when born, is very unseemly, and sometimes quite black and elongated, so that it has been known to measure nearly seven inches. This is especially the case, when the chin turns to the sacrum. Some children die from obstructed circulation, owing to the continual pressure on the jugular veins.

Face presentations, have been attributed, sometimes to convulsive vomiting, cough, or frequent examination, but generally no evident cause can be assigned.

In face presentations, the more general practice at present, is to leave the case to nature, and in favour of this, it is contended, that sometimes the labour has been so easy and quick, that the presentation was not known till birth; whilst in many others, it did not exceed the usual time. There is no doubt, that the position is unfavourable with regard to easy descent and expulsion, and is hazardous to the child, from cerebral engorgement; nevertheless, Boer of Vienna, says, that of 80 children, only 4 were still-born; and Dr Collins, that in Dublin, not $\frac{1}{8}$ were dead, but even this is a great mortality, compared to natural labour. Dr Hamilton says, that the chin is to be directed toward the nearest sacro-iliac articulation, till it be brought in contact with the coccygei muscles, when it is to be gradually turned into the arch of the pubis. If the presentation be discovered early, and when the head is moveable, the water having either not been discharged, or only recently, we may, by pressing up the forehead turn the vertex down, and towards the left acetabulum. If the face be more jammed in the pelvis, we must let it alone,

till the chin turn forward to the pubis; then, by pressing it more forward, we aid the turn, and when this is accomplished, by depressing it we make it more readily clear the arch. But if the head have descended, and from the size of the pelvis, or smallness of the child, or power of the uterine action, the process be going on with tolerable ease, we need not make any attempt to aid the passage. As the perinæum in these cases is much distended, we must support it, and not hurry the issue of the head.

The face may also present, with the chin toward one of the sacro-iliac articulations, and, in this case, it is supposed, that the chin will, in the end of labour, turn to the sacrum, and come out at the perinæum. But it will often be found, that the forehead moves obliquely forward, on the inclined plane of the ischium, and sacro-sciatic ligament, whilst the chin comes forward, so that it, at last, comes out, as in the former case, from under the arch of the pubis. In all face cases, the chin usually emerges first. But if it should move backward, toward the coccyx, the case is more difficult. It is easier for the forehead to turn down, at the arch, than for the chin to descend behind, and we find that it may move up more, along the hollow of the sacrum, and in the same proportion, the forehead revolves backward, and the vertex comes down and passes out under the arch. This will explain, how face, have sometimes, ultimately, been converted into natural presentations. We shall also understand the treatment, namely, when the chin is disposed to turn forward to the pubis, either to assist it, or let it altogether alone, whilst if it turn to the sacrum, and the labour be protracted, we press it up, and endeavour to bring the vertex down.

There are other two varieties, of face presentations, enumerated, namely, when the chin is directed, either to the pubis or the sacrum, the long diameter of the face, corresponding to the conjugate diameter of the pelvis. These rarely exist at first, or otherwise than as the concluding stage, of the two former presentations. If such a position be found at an earlier period, it ought to be rectified, by pressing up the forehead, turning it more round.*

Some have advised in face cases, that the child should be turned, but this ought never to be done, if there be no urgent reason inducing us, quite irrespective of the presentation. It is hazardous to the mother, and peculiarly so to the child.

ORDER SIXTH.

Sometimes the cord descends before, or along with, the pre-

* Dr Ramsbottom, p. 360, gives a case of this kind, which required perforation. The forehead was to the pubis, but the greater part of the head was above the brim.

senting part of the child. This has no influence on the process of delivery, but it may have a fatal effect on the child; for, if the cord be strongly compressed, or compressed for a length of time, the child shall die, as certainly as if respiration were interrupted after birth. If the cord be discovered presenting, before the membranes burst, or if the os uteri be properly dilated when they burst, and the pelvis be well formed, the safest practice, in so far as the child is concerned, is to turn. But as this is more dangerous than natural labour to the mother, it has been reprobated by many excellent practitioners. I would decide, in my own practice, in any particular case, much by the facility with which I expected to accomplish turning, for it is not the mere pressure of the hand on the uterus, nor its pressure on the os uteri, which causes the danger, so much as efforts made, especially partial efforts on particular spots, against the contraction or resistance of the uterus. By carrying up the cord beyond the head, and endeavouring to have it so placed, as neither to be compressed between the uterus and the child, nor to fall down again, it has been thought that there was more safety than by turning. But even if the hand be retained, till a pain come on, and force the head a little lower, the cord may partially descend. It has indeed been proposed, to push the cord beyond the presenting part, or hook it upon one of the limbs; but, if the hand is to be introduced so far, it is better at once to turn the child.* If turning appear to be difficult, from the evacuation of the water and the briskness of the pain, we ought clearly to be satisfied with pushing up the cord beyond the presentation, or that part of the child which would press on it in the pelvis, or endeavour to place it in such a relation as shall, as far as we can, prevent pressure. As soon as the forceps can be applied, they should be employed. If the os uteri be dilated, and the head not within the reach of the short, it may be justifiable to use the long, forceps. But this is a rare case. If the head have advanced so far as to enable us to use the forceps, we should do so, unless the progress be rapid. If the os uteri be not sufficiently relaxed, we must not use force to expand it, and little can be done, except by rest, to prevent as much as possible, the evacuation of the water. If the os uteri be dilated to a narrow band in front, that may safely if not rigid be effaced. If the pulsation in the cord be stopped, and the foetal heart be found, by the stethoscope to have ceased to act, then labour may be allowed to go on, without paying any atten-

* It has been proposed to push back the cord, and then retain it with a sponge, and the instrument-mongers have invented and depicted contrivances for this purpose. Some have even advised that the cord should be tied! Oniander, not certainly a theorist, proposes to lodge the cord in the midst of a sponge, and replace it.

tion to the cord, for it is the child alone that is concerned in the prolapse of the cord. When the presentation is preternatural, these directions are likewise to be attended to, and the practice is also to be regulated, by the general rules applicable to such labours.

In Dr Clarke's practice in the Dublin Hospital, out of 66 cases, 17 children were born alive. In Dr Collins' cases, out of 97, there were 24 born alive. In several of the fatal cases, the presentation was preternatural, or the child putrid.

ORDER SEVENTH.

Various signs have been mentioned, whereby the presence of a plurality of children in utero, might be discovered, previous to their delivery. These are, an unusual size, or an unequal distention of the abdomen, an uncommon motion within the uterus, a very slow labour, or a second discharge of liquor amnii during parturition. The labour is often more protracted, and the pains, if not more severe, at least more teasing than usual. These signs, however, are so completely fallacious, that no reliance can be placed upon them, nor can we generally determine the existence of twins, until the first child be born.* Then, by placing the hand on the abdomen, the uterus is felt large,† if it contain another child; and, by an examination per vaginam, the second set of membranes, or some part of the child, is found to present. This mode of inquiry is proper after every delivery.‡

Soon, generally within a quarter of an hour,§ after the first child is born, pains come on, like those which throw off the placenta, but more severe; and they have not the effect of expelling it, for it is generally retained, till after the delivery of the second child. No intimation of the existence of another child, is to be given to the mother, but the practitioner is quietly to make his examination, and ascertain the presentation. If it be such as require no alteration, and the labour of the first child, have not been tedious or severe, he is to allow the labour to proceed according to the rules of art, and usually the expulsion is speedily accomplished. The most that is allowable, or necessary, in such a case, is to rupture the membranes. Should,

* The stethoscope has been used, to ascertain whether the sound of the heart be heard in two places, or only in one.

† In a case related by Mr Aitken, the uterus was felt, after delivery, large and hard, as if it contained another child, but none was discovered. In the course of a fortnight the tumour gradually disappeared. Med. Comment. Vol. ii. p. 300.

‡ In the Dublin Hospital, fully one half of the children were males.

§ In the Dublin Hospital, a greater number were delivered of the second child, at the end of a quarter of an hour, than either before or after that, next to that in five minutes, then half an hour, then ten minutes, then twenty. Four women out of 240, were ten hours.

however, the birth of the first child, have been protracted, and the uterus fatigued, it will be better at once, even in a natural presentation, to turn the child, but by no means to hurry the delivery, but let it be slow, and accomplished by the action of the uterus, till the cord be in danger. If the first child present the head, the second generally presents the breech or feet, and *vice versa*; but sometimes the first presents the arm, and in that case, when we turn, we must be careful that the feet of the same child be brought down. This one being delivered, the hand is to be again introduced, to search for the feet of the second child, which are to be brought into the vagina, but the delivery is not to be hurried.

It sometimes happens, that after the first child is born, the pains become suspended, and the second is not born for several hours, or even days, nay, there have been instances, authenticated, of weeks intervening. Now, this is an unpleasant state, both for the patient and practitioner. She must discover, that there is something unusual about her; he must be conscious, that hæmorrhage, or some other dangerous symptom may supervene. The first rule to be observed is, that the accoucheur is upon no account to leave his patient, till she be delivered. The second, regards the time for delivering. Some have advised, that the case be entirely left to the efforts of nature,* whilst others recommend a speedy delivery. The safest practice, if the head present, lies between the two opinions. If effective pains do not come on in a quarter of an hour, the uterine contraction should be excited, by gently rubbing the abdominal tumour, with the hand. If this do not efficiently excite the pains, within an hour, (which is rare,) and no circumstance forbid interference, the second set of membranes should be ruptured, and the child delivered by turning, unless we feel the head descending in the act of introducing the hand, or some other indication of brisk action commencing. I believe that turning is both easier and safer in this, than in a single birth. The forceps can seldom be required, for, if the head have come so low, as to admit of their application, the delivery most likely shall be accomplished without assistance. If the second child present in such a way, as that the feet are near the os uteri, as for instance, the breech, or any part of the lower extremities, then the feet are cautiously, but without delay, to be brought down into the vagina, and the expulsion afterwards left, if nothing forbid it, to nature.

* A case is mentioned in the Bulletin de la Faculté for 1818, p. 6, where a second child was born by aid of the forceps after the interval of more than a day. Were the forceps necessary in the first delivery? On what principle can we justify such a delay?

If, however, the position of the second child be such as to require turning, we are to lose no time, but introduce the hand for that purpose, before the liquor amnii be evacuated, or the uterus begin to act strongly on the child. Turning, in such circumstances, is generally easy.

In the event of hæmorrhage, convulsions, or other dangerous symptoms, supervening between the birth of the first and second child, the delivery must be accelerated, whatever be the presentation, and managed upon general principles.

When there are more children than two, the woman seldom goes to the full time, and the children survive only a short time. There is nothing peculiar in the management of such labours.

It still remains to be observed, that we ought to be peculiarly careful, in conducting the expulsion of the placentæ of twins. Owing to the distention of the uterus, and its continued action in expelling two children, there is a greater than usual risk of uterine hæmorrhage taking place. The patient must be kept very quiet and cool, moderate pressure should be made with the hand externally on the womb, or gentle friction may be employed, and no forcible attempts are to be permitted, for the extraction of the placentæ, by pulling the cords. If hæmorrhage come on, then the hand is to be introduced to excite the uterine action, and the two placentæ are to be extracted together. The application of the bandage, and other subsequent arrangements, must be conducted with caution, lest hæmorrhage be excited.

The placentæ are often connected, and therefore they are naturally expelled together, but this adds nothing to the difficulty of the process. Sometimes they are separate, and the one is thrown off before the other; or it may even happen, that the placenta of the first child is expelled before the second child be born, but this is very rare, and is not desirable.

Women, 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.

It has happened that when the first child presented the feet, and was so far delivered, the head of the second child got down, into the pelvis, before that of the first, which remained above it, and could not be extracted without great difficulty. There can be little hope of the child being born alive, in this case; and as we are not able to push up the head of the second child, it has been proposed to sever the body of the protruded child, which would permit the delivery, either by nature, or the use of the forceps, of the second child, after which the head which had been severed could be extracted. Mr Allan, who has proposed the plan just advised, has published a case, where both heads

powerfully, and doubtless the uterus itself, is at last roused, or excited, to strong action, when the resistance is continued, as, for instance, by a contracted pelvis, or bad position of the child. The patient says, she feels as if she would burst; and in some cases the uterus is actually ruptured, but in many more, inflammation is excited by the efforts. Nevertheless, even in this kind of resistance, which does not depend on the os uteri, it is usual for the action of the uterus at first to be impeded; the primary stage of labour is slow, and the pains inefficient. But this is more remarkably the case, when the resistance is situated in the os uteri, for then, although the pains may be frequent, they are long of becoming powerful. Then, the abdominal muscles co-operate strongly, and press down the uterus, along with the head, into the pelvis. This is particularly illustrated, by cases of morbid contraction, or obliteration, of the os uteri.

Various causes may protract labour, and, although, I have thought it right to divide tedious labour into two orders, yet, in point of fact, the causes sometimes operate in such a way, as to make the case a mixed one, referrible partly to both divisions. They may be arranged under the following heads: First, feeble or sluggish and languid action of the uterus. Second, partial or spasmodic action of the uterus. Third, restrained action, the energy of the uterus being prevented from being put forth by some other cause. Fourth, an unusual obstacle to the issue of the child. These states, or causes, may be excited, by circumstances, in many respects, differing from one another, and which, at first view, we would not suppose to act on one principle. The most important of these, we must presently consider separately.

When, again, we come to view the means which we possess, of counteracting these causes, and accelerating labour, in order that we may choose the one best adapted to the case, we find that they may be referred to the following: First, diminishing resistance, or promoting relaxation, which increases contraction. Under this head may be included blood-letting, gently dilating the os uteri, rupturing the membranes, improving the position of the presentation. Second, exciting the action of the uterus, by stimulating its fibres, directly or by sympathy. Under this head may be included, the effect of cordials prudently given, heat, gentle exercise, clysters, spontaneous vomiting. Friction has also often a good effect, in exciting the action of the uterus, after its mouth is dilated, or nearly so. Third, suspending weak and useless, or wearing out, action, by a suitable anodyne, in order that the energy of the womb, and of the system, may recruit by rest. Fourth, removing partial, or spasmodic action, by a full dose of opium. Fifth, diminishing high excitement, of

the nervous and vascular system, marked by heat of skin, frequency and throbbing of the pulse, confusion of the head or delirium, by the timely use of the lancet, cool air, and tranquillity. Sixth, allaying general irritation of the system, which is interfering with the individual action of the uterus, by a small or moderate dose of laudanum, and thus concentrating the action in the uterus, premising venesection, if the state of the vascular system indicate this. Laudanum, in this case seems to have the effect of a stimulant, on the uterine fibres, so also has ergot. Seventh, removing undue action from other parts, which are acting in place of the uterus, and checking or subduing its action, on the principle of the sympathy of equilibrium, which I have alluded to in page 312, and more fully explained in another work. Eighth, if none of these are applicable, or effectual, then, it only remains to employ artificial or instrumental aid.

Having made these general remarks, I now proceed to consider particular states.

The first to be noticed, is that dependent on a weak or inefficient action of the uterine fibres. This may be occasioned by a general debility or inactivity, but more frequently it proceeds from the state of the uterus itself. It is marked by feeble pains, which dilate the os uteri slowly, and are long of forcing down the head. But although the pains be feeble, they may produce as great sensation as usual, for this is proportioned rather to the sensibility, than to the vigour of the part. It is, however, usual, when labour is protracted from this cause, for the pains to be less severe, than in natural labour. They may come much seldomer, or, if frequent, they may last much shorter, and be less acute. The whole process of labour is sometimes equally tedious, but, in most cases, the delay principally takes place in one of the stages, generally in the first, if the cause exist chiefly in the uterus. If, however, it proceed from general debility, we often find, that if the first stage be tedious, the powers are thereby so exhausted, that the second can with difficulty be accomplished. Hence, although consumptive patients often have a rapid delivery, yet, if the first stage be slow, the head frequently cannot be expelled without assistance. It is not always easy to say, what the cause of this slow action of the uterus is. Sometimes it proceeds from contraction commencing rather prematurely; or from the membranes breaking very early, and the water oozing slowly away; or from some other organ becoming too active; or from the uterus being greatly distended by liquor amnii, or a plurality of children; or from fear or other passions of the mind operating on the uterus; or from torpor of the uterine fibres, frequently combined with a dull leucophlegmatic habit,

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or with a constitution disposed to obesity; or from general weakness of the system.

In a state of suffering and anxiety, the mind is apt to exaggerate every evil, to foresee imaginary dangers, to become peevish or desponding, and to press, with injudicious impatience, for assistance, which cannot safely be granted. Great forbearance, care, and judgment, then, are required on the part of the practitioner, who, whilst he treats his patient with that gentleness and compassionate encouragement, which humanity and refinement of manners will dictate, is steadily to do his duty, being neither swayed by her fears and entreaties, nor by a selfish regard to the saving of his own time.

Some women seem constitutionally, to have a lingering labour, being always slow. In such cases, unless the process be considerably protracted, or attended with circumstances requiring our interference, it is neither useful nor proper, to do more than encourage the patient, and preserve her strength.

A variety of means were at one time employed for exciting the action of the uterus, such as forcible dilatation of the os uteri, and the use of emetics, purgatives, or stimulants. A very different practice now happily obtains; the patient is kept cool, tranquil, and permitted to repose; only the mildest diet is allowed, such as panado, dry toast with tea, gruel, a little weak soup, &c.; all fatiguing efforts are prohibited; and she is encouraged by the mental stimuli of cheerfulness and hope, rather than by wine and cordials, which are generally injurious, and indeed, the suffering and anxiety of labour are best borne by those, who take least during it. But, whilst in cases where labour is only a little protracted, and the cause not very well marked, we trust entirely to this treatment, with the addition of a saline clyster,* which is of much service, and ought seldom to be omitted, yet, where it is longer delayed, some other means are allowable, and may be necessary.

The pains in tedious labour, connected with defective uterine action, may be continuing regular, but weak, not from exhaustion, but rather from the uterus not exerting the power it has, or there may be a tendency to remit, the pains coming on seldom. It is quite a mistake to suppose, that defective, and what may be called restrained action, necessarily depends on debility of the uterus. A very small impediment, as I shall presently notice, can bridle, if I may so speak, the efforts of the uterus. If there be heat of the skin, full pulse, with thirst and restless-

* Dr Hamilton I find objects to the use of clysters, on the supposition that they rather exhaust than do good.

ness, perhaps starting, and especially if the os uteri be not relaxed, and the parts tight or rigid, venesection will be of great benefit, by making the uterus act with more freedom, and its mouth yield with great readiness. Long ago, Mauriceau advised bleeding, and Baudelocque, with most practical writers, has confirmed its utility. The late Dr Rush informed me, that in America it was resorted to with great advantage, and Dr Dewees published a short treatise on the subject. In some instances, fifty ounces were taken, before the parts relaxed, but I hold it to be dangerous to bleed to this extent. We know that in most cases of uterine hæmorrhage, the os uteri, even when there is no effective labour, and scarcely any pain, is not merely dilatable, but is partially dilated. In this instance, however, the benefit of evacuation cannot be derived, for the discharge injures and impairs, the whole power of the uterus, and in proportion as the os uteri is extended, the quantity of the blood which flows is increased; besides, the evacuation usually begins before labour commences, and pains do not come on till the loss of blood excite them. We learn, however, from this example, the influence of hæmorrhage in relaxing the os uteri, and if we can do this, without impairing the power of the womb, we have certainly a powerful mean of accelerating labour; venesection does this in certain cases. In cases where the parts, through which the child must pass, are rigid or dry, or hot and tender, or where the pains are great, but irregular, and inefficient, or the membranes have given way prematurely, the pains sharp, but abortive, and the os uteri thick or hard, or the patient is feverish, blood-letting is safe, and may be expected to do good. That it is safe, we know from the experience of former ages, and other countries, as well as from the result in cases of convulsions, where a great quantity of blood, is taken away, with present advantage and future impunity. It is, however, a remedy, which, if imprudently employed, may do much mischief. In debilitated women, and cases of exhaustion, for instance, it must be dangerous; or where the resistance is afforded, by a contracted pelvis, all other circumstances being right; and, in every constitution, and under every circumstance, in which it would, independent of labour, be improper to evacuate, it is evident that it will be hurtful, unless we can thereby save the patient prolonged exertion, and exhaustion. In natural labour, it is neither necessary nor proper; in labour not greatly protracted, nor unusually severe and slow in its steps, it is not to be resorted to. It is better to trust in these cases, to the use of clysters, to gentle motion, and change of posture, or to sleep, if it offer naturally, and the patient require to be recruited.

The effect of venesection, in shortening the process of labour,

and in rendering the pains in many cases brisker, is to be explained, by its power in relaxing the parts, and diminishing the resistance afforded. It is a fact, not sufficiently attended to, that, in many cases, a *very moderate resistance*, which we should think the uterus might easily overcome, does retard the expulsive process, and render the pains irregular or inefficient. Thus, I know from experience, that the membranes may be so tough as not readily to give way, and in this case the pains do become less effective, and the labour is protracted till they be opened. Whenever the resistance is removed, the pains become brisk and forcing. In the same way, relaxing the os uteri, by blood-letting, excites the uterine fibres to brisker action. This is the direct effect of venesection, but it also ensures safety, and subsequently accelerates delivery, when it removes an existing febrile state, or one of general excitement, which is interfering with the due performance of the uterine action. Further, it cannot be disputed, that the uterus must be influenced, by the state of its nerves, and I beg it to be remembered, that there may be a condition of these nerves removable by venesection, which, although referrible to excitement, does retard, instead of producing, muscular contraction. The nerves, or division of nerves destined for sensation, are more affected, than those, on which the proper function, of uterine contraction depends.

Solution of tartar emetic has been employed by some for whom I have a high respect. But I have no great partiality for this medicine, especially in parturition. Infusion of ipecacuanha has been proposed as a glyster.

When the pains come at long intervals, and are trifling in effect, wearying the patient, we must consider the state of the os uteri and soft parts. If it be thick, and little dilated, and the vagina rigid, we must either soothe and temporize, or, if the patient be not delicate, or weak, take some blood. If this fail, or have not been proper, and the pains be still troublesome, but useless, we must act according to the state of the os uteri. If that be little dilated, and the bowels regular, we may endeavour to suspend the inefficient pains, by giving forty drops of laudanum, or a clyster, containing a small tea-spoonful of laudanum mixed with thin starch, or a suppository of three grains of soft opium. Should the bowels be costive, a saline clyster ought to be premised. If the patient become drowsy, she must be left to sleep, and during all her labour, we avoid excitation, keep her cool, and allow only a little toast-water, tea, or food of the lightest kind. Sometimes, instead of these doses of laudanum suspending the pain, they render it brisker, and the parts yield. This is also desirable.

If the os uteri be dilated, but the pains be weak, seldom, and

inefficient, we rarely find it proper to bleed, certainly not, unless the vagina be tight or dry, and the patient robust. Other means are more useful, such as a saline clyster, which often excites the labour. A gentle purge has been advised, but it is slower, and more uncertain, in its effect. A moderate dose of laudanum is often useful, and, unless it disagree with the patient is always safe. Twenty drops may be given, and other ten, if no good be done, in two hours. In this small dose, laudanum acts, if it act at all, as a stimulus to the uterus, through the medium of its nerves, and also, by sympathy with those of the stomach. In less than a quarter of an hour, there is often an effect produced. Thirty or forty drops may also be given as a clyster, if that be preferred.

When the os uteri is well dilated, its lips thin, and the presentation natural, we may also derive advantage, from the use of friction, during a pain. In general, it is efficient, in proportion, to the progress the labour has made. It is best employed, by placing the flat hand, on the region of the uterus, particularly the upper part, and making the abdominal parietes move, backward and forward over it. The hand is not moved, so as to rub the skin but is kept steadily on the same part, so as to carry the skin along with it, in its motions. This is only to be done during the existence of a pain, when the uterus is felt to become hard; and different parts of it, particularly those which feel softest, may be successively acted upon. It has often a decided effect in rendering the pains more uniform and efficient; but, as it also increases the sensation of pain, it is apt to be objected to. If it be to prove beneficial, it does so soon.

When every thing is well disposed for the birth of the child, the lips of the os uteri thin, and soft, and the aperture considerable, letting out the water, has often a good effect, especially, if the uterus have been unusually distended. I shall immediately notice the inconveniences, which often result, from premature discharge of the water, but under the circumstances at present enumerated, the rupture of the membranes is beneficial. Taking away, at a favourable time, the resistance afforded, tends to excite, efficiently, the action of the uterus, and promotes labour. If the os uteri be lax, and especially if its edges be thin and soft, and the orifice considerably dilated, the same effects may be produced on it by this practice, that would follow in cases of greater rigidity from venesection; for both excite labour by diminishing resistance. Another way in which this acts is by the stimulus given by the speedy contraction of the uterus permitted by the flow of water. This often excites efficient efforts. There are two principles to be remembered in exciting uterine action; one, and that most important, is, that *diminishing re-*

according to the constitution of the patient, and the degree of pain. It is an undeniable proposition, that there is, in every case, a period beyond which, it cannot be protracted without exhaustion: and it is no less certain, that if we wish to avoid this exhaustion, which may be followed by pernicious effects, we have only the choice, of either suspending the action altogether for a time, or, of endeavouring to render it more efficient, and of effecting the desired object within a safe period. The first is sometimes adopted, but is not always practicable, nor is it always prudent to counteract uterine action, by strong opiates. The second is safer, and one of the means of doing so, is that under consideration. If the pains be continuing without suspension, or an interval of some hours, and the labour be going on all the time, but slowly, it is a good general rule, to effect the dilatation of the os uteri, within ten or twelve hours, at the farthest, from the commencement of regular labour. This is done, if the os uteri be flat and applied to the head, by the method above described. If it be somewhat projecting, it is aided by introducing two fingers, and extending them laterally with gentleness, during a pain. The dilatation is easily and safely effected, if the case be proper for it; if not, bleeding or an opiate, if the former be not indicated, will soon bring about a favourable state. Of the benefit, and perfect safety, of this practice, I can speak positively, and am happy to strengthen my position, by the authority of Dr Hamilton, who made it a rule, to have the first stage of labour finished within a given time. I need scarcely, however, add, that, in enforcing this rule of conduct, it should be recollected that, to render it proper, the pains must be continuing so often, and so decidedly, that the patient can be said to be in actual labour all the time. I think I have sufficiently qualified my advice, to prevent rash, premature, and painful attempts being made.

At a certain stage, when the os uteri is dilated, resistance may prove a stimulus to greater effort, and it is well that it is so. If there be any tendency to yield, the actual degree of expulsive force increases, as we see in the end of labour, to overcome the resistance of the perinæum, &c. We also observe that if the presentation be unfavourable, or the pelvis contracted, and there be little or no yielding, the pains are severe, but the suffering often is greater than the absolute effort.

Means which act on the uterus as a muscular organ, increase the intensity of its contraction, of this description is ergot. This, which was known to produce very deleterious effects, when mixed with food, was recommended long ago, for promoting the birth of the child, and its use has, in the present century, been revived by Dr Dewees, in cases of tedious

labour, arising from deficient pains. It is given in the dose of a scruple of the powder, every quarter of an hour, and he says, that it is seldom necessary, to give more than three doses. Sometimes, half a drachm is given at once, or, two drachms may be infused, in a breakfast cupful of boiling water, for at least ten minutes. The infusion, which is of a red or pink colour, and has a strong peculiar smell, is to be drunk by the patient, and may be repeated, if necessary, in half an hour. The oil may also be employed in doses of twenty, but sometimes even fifty drops, in any warm fluid.* In some instances, no effect whatever is produced, but, in others a very rapid change takes place. There is a peculiarity in the uterine action, caused by ergot, namely, that when it is strong, it is seldom completely intermittent, like natural pains, but is almost constant. There is not only an increase of pain, but also very strong pressing down, while both, generally, go off, as soon as the uterus is emptied. From the strength and constancy of the action, when it is excited at all, it is evident, that ergot ought not to be administered, if there be any obstacle, to the delivery of the child, which it cannot remove. Hence, it ought not to be given if the pelvis be contracted, or the presentation unfavourable, unless under circumstances to be mentioned, when treating of instrumental labour. It ought not to be given, unless the os uteri be dilated, and generally unless the membranes have burst. No doubt, if the os uteri be very thin and dilatable, though not quite effaced, ergot might accelerate the process, but it is rarely in such circumstances, that we can have occasion for the medicine, and may always delay till the os uteri be dilated. In a thick and unyielding state of the orifice, ergot will either have no effect at all, or a bad one, and in a deformed pelvis, even rupture of the uterus may take place. The case, proper for the exhibition of ergot, is that, in which every thing is prepared for delivery, the os uteri open, the parts lax, the pelvis well formed, and the presentation natural; nothing is wanting to complete the delivery, but efficient action of the uterus. In such a case, we would say of the patient, one or two good forcing pains, would finish the labour. That ergot shall, infallibly, produce this, I am very far from asserting, but that it does so, in many instances, is fully established. 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.† It has been observed, that children born after the

* See a paper by Mr Wright, in *Edin. Med. Journ.* Vol. liv. p. 61. This oil is to be had from apothecaries, and if future trials confirm its powers, it is more ready than the infusion. Some combine borax with ergot.

† Desgranges remarks that it often causes vomiting, and this aids farther 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. It has also been supposed that the powerful contraction of the uterus, might make it surround the placenta and retain it, but we do not find this retention more frequent, when ergot is given, than when it is not, neither is it usual, for the pains and strong action induced, to continue after the uterus has been emptied. When they do, opium is advised to check the action, but I have never seen this required. We do not yet know on what the property of ergot depends.

Though premature, but spontaneous breaking of the membranes, and discharge of part of the liquor amnii, often have no effect in retarding labour, yet, in some cases it does so, by occasioning spasmodic action of the uterus, or irregular and inefficient pains; in others, a little water passes between the head of the child and the os uteri, during every pain, and the effect is rather to press out gradually the water, than to open the os uteri, which may not be effectually acted on, till the whole, or almost the whole, water have been evacuated, so as to allow the head to be pressed on the orifice, and the uterine fibres to act, on that orifice, over the presenting part. In a natural state, the bag remains entire, until the os uteri have been considerably opened, and every pain gently dilates it, both by the uterus acting on the orifice, and also by the membranes when pushed out, doing naturally, what may be effected, in some cases, artificially, by the finger, that is, mechanically dilating the mouth. The pressure of the membranes also excites active pains. When the presentation is preternatural, the os uteri is longer of opening than when the head presents; the membranes do not protrude so broadly, nor does the presentation act so well on the os uteri, or excite it so effectually. Whilst rupture of the membranes, as

labour; but he does not attribute its effect to this. It is active, in proportion, to the minuteness of the powder and its recency. It fatigues those of a delicate and nervous constitution, but produces no effect on labour, if given before the os uteri be dilated four or five lines. *Nouv. Journ. Tom. i. p. 54.*

we have seen, may, in some cases, prove a useful stimulus, in others, when it is, without judgment or necessity, resorted to, it must be prejudicial. If the water be discharged very early in labour, or before the pains come on, the process is often lingering, but is not always so. The os uteri is, when we first examine, projecting, then it becomes flat, but the lips thick; then they become thinner and more dilated, and presently very thin; and the lower part of the uterus is perhaps applied so closely to the head, that, at first, it might be taken for the head itself. In favourable cases these changes may take place quickly, but they may also be very slow, and the labour tedious, the pains sharp and ineffective, and the water discharged in small quantity with each pain. The pains are severe, but produce very little effect, and often when they go off, are succeeded by a most distressing uneasiness in the back, lasting for nearly a minute after the pain, indicating in general the existence of spasmodic action. A saline clyster is of much benefit in this kind of labour; and it is useful to press up the head, especially during the pains, to favour the evacuation of the water, for, whenever this is accomplished, naturally or artificially, the action becomes much stronger. It is also useful to detract blood, if the os uteri be rigid, the parts not disposed to yield, and the pains very severe. It is peculiarly proper when the woman has rigors. When the organs are firm, and the pains lingering, it causes relaxation, and quickens the pains. Opiates are also useful, either in a full or small dose, according to our intention, founded on the view already presented, respecting their operation, and the different states of the uterus, or of the pains. I refer also to what I have already said, as to the circumstances, under which, the os uteri, may be artificially, but gently dilated.

There are many cases where pains, at first regular, have gone off for many hours, or where they have come occasionally, in a dull slight way, for a couple of days, but they have given little inconvenience, have scarcely interrupted sleep, and had little effect on the os uteri. They are more of the nature of false pains: the patient can hardly be said to be in labour, and is in no respect fatigued. If interference be proper in such cases, it is by other means, by opiates, by enemata, or remedies and applications, evidently pointed out by the nature of the pains, which have formerly been considered.

Sometimes after the first stage has advanced, and the os uteri is nearly dilated, the second does not commence for some hours; but the first kind of pains continue, in different degrees of severity, without producing any perceptible effect. If no particular cause require our interference, it is best to trust to time; but, if there be no change soon, labour may be accelerated by rupturing

the membranes, or, if they have already broken, we may place two fingers on the margin of the os uteri, which is next the pubis, and gently assist it, during the pains, to slip over the head.

When a woman is greatly reduced in strength, previous to labour, that process is looked forward to with apprehension. It is, however, often very easy. But if it should be protracted, the patient is to be kept from every exertion. The general plan of treatment, pointed out for such cases, is to be followed, and, if the strength fail, the child must be delivered. We must be particularly careful, that hæmorrhage do not take place after delivery, or that it be promptly stopped.

There is another state, in which the pains are weak, or remiss, or are ineffective from absolute exhaustion or debility; and we distinguish this case, by the weak pulse, languor, and previous fatigue, and, in part, by the constitution of the woman. This is the only case in which cordials are proper, and they must even here be given prudently, lest they produce a febrile state. It is also useful to suspend, for a time, the uterine action, and procure rest by an anodyne clyster. We must take care, that we do not delay delivery too long, or trust too much to nature.

If the head rest long on the perinæum in tedious labour, the pains having little effect in protruding it, especially if the first stage have been lingering, it comes to be a question, whether we shall deliver the woman. This case is different from that, where the difficulty proceeds from a contracted pelvis, for the head is low down, the bones are not squeezed nor mis-shapen, there is only a swelling of the scalp, the finger can be passed round the head, and two or three strong pains might expel it. The propriety of employing the forceps, in such cases, will soon be considered.

An efficient state of the uterine action, may be produced, by some other part acting too much, or being in a state of irritation; and so long as that continues, the womb cannot be expected to contract briskly. Such a state is often produced, by changes in the action or condition of the origins of the nerves supplying the uterus, caused by the particular action of their extremities, and thus nerves arising near the same place, or otherwise connected with them, though going to very different organs, or distributed more universally, come to be affected, and the remote actions thereby excited, may have a powerful and injurious effect on the uterine action. Do we not sometimes even find convulsions produced, by the accession of a labour pain, and these again, carrying off the pain, almost as soon as it begins? We ascertain the state, by examining the sensations and state of the patient. If the stomach be irritated, she is sick and oppressed, and probably desponding, and sometimes, almost at every pain,

has an inclination to vomit. This is often the effect of the connexion between the nerves of the os uteri and stomach, and in that case is always increased by an examination, or the slightest irritation of the os uteri. The treatment must depend somewhat on a knowledge of the habitudes of the patient with regard to certain medicines. If opium agree with her, a moderate dose alone, or with some aromatic, is useful; a little spirit of lavender, or a glassful of hot water, or a little hartshorn, may be employed; or the epigastric region rubbed with some stimulant embrocation, but in general it is best to do very little, and trust to time. Vomiting, without distressing sickness, and not dependent on exhaustion, but occurring early in labour, often excites, rather than retards the action. In other cases the bowels suffer, and, in these, twenty drops of laudanum generally give relief. A distended bladder also is a cause of protracted labour. In other cases, the muscles of the back or belly become painfully affected, producing what Daventer called "wild and wandering pains," or that state in which the pains no sooner cease to come on, than they "are changed into a colic or a cramp, and an impotency of labour." In such cases he forbade forcing medicines, and advised anodynes. This advice is a good one; and, in all these cases, twenty-five drops of laudanum will be useful, at the same time that the pained part be rubbed with the hand, or an embrocation. In cases of muscular pain, walking or change of posture often gives relief. When there is no particular organ or part affected, but only a general irritation, attended with teasing, inefficient pains, the same remedy is often of service, and the energy is directed presently to the uterus. In all these kinds of cases, it is also useful, in general, to endeavour to excite the uterus itself, by a warm saline enema, or by some of the other means already, or still to be, mentioned, or by rubbing the uterine region itself, in the manner I have described. Mr Power, who has insisted more than any other writer on metastasis of action, and on the utility of friction in exciting uterine action, effects it by drawing the fingers and thumb rapidly together, over the uterus, so as to make a brisk friction on the part; but this is more uncomfortable, and less efficient, than the plan I have proposed of moving the abdominal parietes over the uterus. That general agitation of the muscular system, known under the name of rigor, which often attends the first stage of labour, if carried too far, or continued too long, may also retard delivery, but in general, it goes off spontaneously, and the action concentrates more powerfully in the uterus. Hence, it is a practical remark, that these rigors often are followed by a brisk labour. This effect, and consequently the propriety of interfering, must depend on their prolongation, and on their influence in carrying

off the uterine pain. When we require to interpose, the practice consists in blood-letting, the use of opiates, or administration of a clyster, according as the vascular or nervous system, or bowels, seem to be principally concerned. Sometimes friction on the uterus, during a pain, seems to concentrate the action.

In tedious labour, it is not necessary to confine the woman to bed, or to one posture; she may be allowed to sit, lie, or walk, as she feels inclined, and we are not to urge her to stand long, or use exertion by way of promoting labour. She has, generally, not much inclination for food, and, like most travellers, gets best on, by taking little, and that only of the lightest kind; but if the process be protracted, it is useful to give some weak soup, and even a little wine, if she desire it, or feel exhausted. If the urine be not regularly passed in tedious labour, the catheter ought to be introduced. It is not necessary that the practitioner remain constantly with the patient. It will have a better effect upon her, if he see her at proper intervals, whilst he is thus prevented himself, from being so fatigued, as he otherwise would be, and is therefore better able to discharge his duty, with firmness and judgment.

The second general cause of tedious labour, and one much more frequent in its operation than many suppose, is irregular action of the uterine fibres. After the child is born the uterus sometimes contracts like a sand-glass, and retains the placenta. The same spasmodic action may occur, before the child be expelled, and it usually affects the circular fibre of the cervix. Many causes, and some of them obscure, may excite spasm; it is apt to take place when the membranes have given way prematurely, and before the os uteri be in a relaxed state, or have begun to dilate. Improper irritation of the os uteri, often excites it, especially attempts to dilate it, in absence of a pain, or hurriedly during one. Letting out the water, when the uterus is not contracting, and when there is no pain at the time, may also cause it, probably by allowing the lower part of the uterus, to collapse suddenly around the head or presentation. Preternatural distention of the womb may also produce it, even previous to the discharge of the water. Irritation of the bowels, and mental anxiety may also be causes of spasmodic action. It is marked by pain coming, or increasing at intervals, like proper pains, but it has little effect on the os uteri, or in forcing down the child, nay, the os uteri sometimes seems even to contract during a pain. If there be any bearing-down, the pressure is only momentary. The pain does not go entirely off, as in natural labour; but the patient complains of constant uneasiness in the back, or some part of the belly, but usually in the former. The paroxysm of pain, is generally described by the patient, as af-

fecting some part of the belly, particularly the lower part, corresponding to the cervix uteri. The contraction does not go off with the pain, it only lessens; hence the band of fibres still compresses the child or ovum, and, if the membranes have not broken, they are often kept so tense, as at first to resemble a part of the child, and may mislead the practitioner with respect to the presentation. There is often a frequent desire to void urine—the spirits are generally depressed, and very often there is a feeling of sinking or sickness, and oppression of stomach, from the nervous sympathy between the nerves of the stomach and those of the cervix uteri. If this spasmodic affection be slight, it may soon go off; but, if strong, it sometimes continues for many hours. A smart clyster is often of great service. Blood-letting sometimes, though rarely, does good, and I prefer opening the membranes if the presentation be good, and the os uteri lax; this I have found very successful. If, on the contrary, the os uteri be rigid or undilated, and especially if the presentation be not determined, they must be kept entire, until the os uteri will permit of turning, should the position of the child require it. In such cases, and even when the state of the os uteri has warranted the rupture of the membranes, but the expected benefit has not accrued, we may derive advantage from giving a large dose of laudanum; for in this spasm, like tetanus, it may be taken in great doses. Even ten grains of opium have been given, but in general sixty drops of laudanum are sufficient, and when this remains on the stomach, it is, from its more speedy effect, preferable to solid opium; or an anodyne clyster may be employed. After the child is born, the hand should be introduced into the uterus, not to extract the placenta quickly, but to come easily in contact with it, and excite the uterus to regular action; for, generally, the spasm returns, and the placenta may be long retained, or hæmorrhage produced.

A frequent cause of tedious labour, is a state of over-action, or unproductive action in the first stage, by which the powers of the uterus are exhausted, and the subsequent process is rendered very slow. This exhaustion may also be produced, by the continuance of feeble and useless pains. In the first case, the pains are sharp and frequent, but do not dilate the os uteri properly, nor advance the process in general. It may be produced by irregular action of the fibres, or by rupture of the membranes, before the cervical fibres be disposed to relax. In the second case, the pains are lingering, short, and unusually weak. I have already considered the remedies for these states; blood-letting, clysters, gentle dilatation of the os uteri, &c., and have here only to observe, that the exhaustion of the uterus, and consequently an additional prolongation of the labour is to be pre-

vented, either by suspending the pains for a time, or by rendering them more effective; and, upon this subject I refer to what I have already said, in the beginning of this chapter. Unproductive action, ought never to be allowed to continue so long, as materially to impair the action of the womb. If we cannot safely render the action more efficient, we must endeavour to suspend it, by which the womb recruits, and the retarding cause may, in the mean time, be removed, or cease to exist.

Another cause of tedious labour, is the accession of fever, with or without local inflammation. Fever is recognised by its usual symptoms, and may be produced by the injudicious use of stimulants, heated rooms, irritation of the parts, &c. It is to be allayed, by opening the bowels, keeping the patient cool in bed, and giving some saline julep, at the same time that the mind is to be tranquillized. If these means do not immediately abate the heat, frequency of the pulse, &c., and render the pains more effective, it will generally be proper to detract blood, especially if the head or chest be pained. When local inflammation accompanies fever, it is commonly of the pleura, or peritonæum, or vagina. The first is discovered by pain in the thorax, cough, dyspnoea; the second by pain in the belly, gradually increasing and becoming constant; pressure increases it, and, in some time, the patient cannot lie down, but breathes with difficulty, or is greatly oppressed and vomits. The labour pains are sometimes suspended; on other occasions, they do ultimately expel the fetus, but the woman dies in a few hours. On the appearance of these symptoms, blood should be freely detracted, the bowels opened, and a gentle perspiration excited. In all these cases of inflammation, if immediate relief be not obtained, the child must be delivered by the forceps. If the vagina be hot and dry, we are also to deliver immediately, as these symptoms indicate danger from inflammation.

Labour may also be rendered tedious, by the different stages not going on regularly, but efforts being prematurely made to bear down. In consequence of these, the uterus descends, in the pelvis, before the os uteri be dilated, and the process is often both painful and protracted. These premature bearing-down pains, may often be mitigated, by a recumbent posture, and the use of a mild clyster to empty the rectum. In some cases, the womb prolapses, so that its mouth appears at the orifice of the vagina. This prolapsus may take place during pregnancy, or after parturition begins. It is often met with, in a slight degree, whilst the os uteri is not greatly dilated, and uniformly injures the labour. We are to prevent it from increasing, by supporting the head, or the uterus, with two fingers, during the continuance of a pain, at the same time that the woman avoids,

as much as possible, every bearing-down effort, and remains in a recumbent posture. If the os uteri be slow of dilating, some blood should be taken away, and an opiate administered, or the os uteri gently but completely dilated, during successive pains. It has happened, that by neglecting these precautions, the uterus has protruded beyond the external parts. In this case, no time is to be lost in attempting the reduction, which will be rendered easier by cautiously pulling back the perinæum.* If this cannot be done, the os uteri, if lax and yielding, must be gently farther dilated, the membranes ruptured, the child turned, and the uterus replaced.† The os uteri has been cut,‡ but this can never be necessary if the structure of that part be natural.§ When the womb does not actually protrude, the vagina may be inverted like a prolapsus ani. A soft cloth, dipped in oil, should be placed on the part, and pressure made with the hand. Giesman cut the inverted vagina on a probe, but this operation can never be required. If the womb prolapse before labour, as happened to Rœderer's patient, we must manage the case as a simple prolapsus. She had severe pains, although she was not in labour.

The anterior lip of the os uteri has become prolonged, and extended, during labour, for some inches into the vagina, or has even protruded at its orifice with great pain. It ought to be supported with the finger, and very gradually pushed above, or over, the head. It has been mistaken for the placenta.

ORDER SECOND."

There exists, naturally, such a proportion between the size of the head, and the capacity of the pelvis, that the one can pass easily through the other. But this proportion may be destroyed, either by the head being larger, or more completely ossified, or the pelvis smaller than usual. In such cases, which are to be discovered by careful examination, it is evident that the labour must be more tedious, and more painful than it otherwise would be. The first stage of the process is generally, but not always slow; the second is uniformly so. The head is long of descend-

* Vide Mem. of Med. Soc. Vol. i. p. 313.

† Vide Portal's 10th Obs.; and Decreux's case, in Mem. de l'Acad. de Chir. Tom. iii. p. 368. See also a case by Saxtorph. There is a case by Fasola, where the uterus, with the child, appears to have been protruded for thirty hours. The child was expelled by a rent, and the placenta being extracted, the mother recovered.

‡ Vide a case by Dr Archer, New York Med. Rep. Vol. i. p. 323.

§ In Dr Henschel's case, the difficulty of delivery, from the protruded cervix, was so great, that the forceps were employed. The cervix was torn, but the patient recovered. There had previously been some black spots. Lond. Med. and Phys. Journ. lxxvi. 461. In Mr Coulson's case the womb was prolapsed before impregnation, and at last could not be replaced. It was as large as a cocoa nut, but by rest, fomentation, &c., it gradually went up to a considerable degree, but premature labour took place in the fifth month. Med. Gazette, vi. 404.

ing into the pelvis, it rests long on the perinæum, the pains are frequent, severe, but often not very forcing, and the woman says they are doing no good. Now this state requires both patience and discretion. The bowels should be opened with a clyster; the urine regularly expelled or drawn off; the strength preserved by quietness, avoiding unnecessary exertion, indulging any disposition to sleep which may exist, and taking a little light nourishment occasionally; the mind is to be soothed, and the hopes supported. The rule formerly laid down, with regard to effecting the dilatation of the os uteri, or accomplishing the first stage of labour, within a certain period, is, if practicable, to be attended to, by which the energy of the uterus is saved, and it is enabled, to go through the second stage, more readily and safely. If the pains begin to slacken, whilst the strength remains good, an opiate may be given to procure some rest. How long the case may be trusted to nature, must depend on the strength of the patient, and the degree of suffering; but assuredly, we are not at liberty to carry the trial to a great extent. The consideration of this question, however, must be reserved for the next chapter.

Malposition of the head may likewise retard the labour; but this has already been considered.

Another cause of tedious labour, is rigidity of the soft parts, which may be dependent on advancement in life, or some local peculiarity; and these causes generally act more powerfully, in a first than a subsequent labour. This rigidity may exist in the os uteri, in the external parts, or in both; and if, along with this, there be premature rupture of the membranes, the difficulty is usually increased. When it exists in the os uteri, that part is very long of dilating; the effect of the pains, for a long time is, rather to soften than to dilate; and, after the woman has been many hours in labour, it is found, when the pain goes off, to be collapsed, and projecting like the os uteri in the eighth month of pregnancy. In this case, the first stage is very slow, lasting, if we do not interfere, sometimes two or three days; and the second is likewise tedious. The whole process takes up, perhaps, three days or more. When the rigidity exists chiefly, or partly, in the external parts, they are found to be at first dry, tight, and firm. By degrees, they become moister and more relaxed, but they may still be so unyielding, as to keep the head for many hours resting on the perinæum. Some methods have been proposed for abating the rigidity; such as baths and fomentations; or digitalis and sickening medicines given internally; but these have no good effects, and some of them do harm. Oil has been injected into the vagina, when it was dry or rigid, or a ball of soft tallow, has been pushed up in order to melt slowly.

They are at least harmless. It has also been a practice to rub the back, and sides, and belly, with warm oil, every night for some weeks previous to labour. Blood-letting is the best remedy in such cases, and its effects are often almost immediate. It is so beneficial and so much to be depended on, that it is never to be omitted, in any case of labour, protracted from rigidity, unless the patient be much debilitated.* Indeed we ought not, in cases of decided rigidity, to wait till the labour have been tedious, but should bleed to prevent that. It is even useful, if resorted to before labour. In delicate women, we must consider whether the loss of blood, may exhaust most, or be most dangerous afterwards. It is specially proper, if any degree of fever attend the labour, and in whatever part the rigidity exists. If, however, the state of the patient forbid this, then an opiate clyster is the appropriate remedy. It has been proposed by Chaussier, to apply extract of belladonna, diluted with oil to the consistence of cream, to the os uteri, by means of a small syringe. He says it generally acts within forty minutes. It has never come into general use, and cannot be relied on.

The direction already given, respecting the completion of the first stage of labour, within a reasonable time, must be attended to, and is always practicable, when the means of relaxation have been employed. When the head descends to the perinæum, it is of service to keep the patient, for some time, in an erect or kneeling posture. We must not allow either the general, or the uterine, vigour, to be too much diminished; but must finish the labour by the forceps, before any considerable exhaustion takes place.

In some cases, the os uteri or external parts, instead of being rigid, are tumid, and apparently œdematous. In these, the labour is often protracted for several hours, especially when the os uteri is affected. In tedious labour, the os uteri, and even the cervix, sometimes become swelled, as if blood were effused into the substance. This requires venesection, and then a smart clyster.

The os uteri may be naturally very small. In some instances it has, with difficulty admitted a sewing needle; and in two cases, during labour, I found it almost impervious, hard, circular, and with difficulty discovered,† but it gradually dilated. Venesection is, in this state, of service. Sometimes it is hard and

* Dr Dewees bleeds even delicate women, and those who are disposed to faint on being bled, but takes a smaller quantity from them.

† In a case probably of this kind, from Guy's Hospital Reports, no os uteri could be felt. An incision was made into the tumour formed by the uterus in the vagina, and the uterine contractions seem to have lacerated this farther. Great exhaustion followed the laceration and birth of the child, with rapid pulse, but the patient recovered. *Lancet*, June, 1837, p. 392.

schirrous, so that it has been deemed necessary, to make an incision into the os uteri, to make it dilate.* It is also possible for the os uteri to be closed, in consequence of inflammation, so that it has been necessary to make an artificial opening.†

Contraction and cicatrices‡ in the vagina, likewise retard labour, and cause very great pain, until they either relax or be torn, but it is seldom necessary to perform any operation. If it should, they must be cut. If the constitution of the patient permit, we may try the effect of venesection.§ From the great contraction of the orifice of the vagina, it has been found necessary, to make an incision backward, through a considerable part of the distended perinæum. A firm hymen, may also afford so much resistance, as to require division. It has been maintained, that, in all such cases, the hymen was not entire, or quite shut, but cribriform, otherwise impregnation could not have taken place. I need not, here, discuss that point.

Excrescences proceeding from the os uteri, an enlarged ovarium remaining in the pelvis, or tumours attached to the ligaments, or a stone in the bladder, may all obviously retard the labour, some of them so much, as to require instruments. A stone in the bladder ought, if possible, to be pushed up beyond the head, if not, it must be extracted.||

* A case of this kind occurred to Dr Simson of St Andrew's, and another to a practitioner in America. Dubosc mentions a woman 40 years of age, who had convulsions for two days, during labour, from this cause. The face was pale and the extremities cold. The orifice was very rigid, and little dilated. He cut it, and she was delivered of a dead child. Gautier mentions a case where, after labour had continued 15 hours, no os uteri could be found. The uterus had descended considerably in the pelvis, and there was no reason to suppose the os uteri was high from obliquity; an incision was made, and the child extracted by the forceps. In six weeks the patient menstruated, and when examined after that, the uterus was found in an adherent state of antiveraion. Other cases are to be found in the *Dict. des Sciences Medic. Art. Hystertomie.*

† Vide Case by Campardon in *Recueil Périod. Tom. xii. p. 227.* Moscati gives a case, where, in consequence of injury by the forceps, the os uteri was so small that it would not admit a probe. A number of incisions were made round it, after which it dilated. In the next pregnancy slighter incisions sufficed, and in the last none were required. Aubertin performed, in a case of the kind, the Cæsarean operation. In a subsequent pregnancy, in the 7th month, the cicatrix was ruptured, and by a very little enlargement, a child was successfully extracted. In a case given by Gautier, the os uteri was obliterated after a labour in which the shoulder presented. The menses were retained and required a perforation for their evacuation.

‡ Kroon, in the case of a woman whose vagina was much contracted by cicatrices, and when the head which had advanced, took a direction to the anus, cut the perinæum, and delivered by the vagina, being afraid that the recto-vaginal septum would give way. *Archives, xvii. p. 614.*

§ Dr Hamilton says that in one case he advised 30 or 40 oz. of blood to be taken after the first stage of labour was completed. This succeeded. In other two cases the contraction was divided.

|| A case is related in the *Edin. Med. Journ. for January, 1829,* where a tumour existed in the fore part of the pelvis, which could not be pushed up, and so large

A hernia of the bladder, by one side of the vagina, or a descent of the bladder in front, has the effect of rendering labour tedious. The urine should be drawn off, and the bladder supported cautiously during a pain. I refer to page 97, for farther remarks on this subject, and for the mode of distinguishing, between the descending bladder, and the membranes of the ovum.

A small vagina may require a long time to be dilated.

A great degree of obliquity of the uterus protracts labour. The os uteri may be turned very much to one side, but oftener it is directed backwards and upwards, and may be out of the reach of the finger. Time rectifies this, but much time and pain may be spared, by gently drawing the os uteri forward with the finger. The patient may also be placed for some time on her back, with the hips somewhat raised with a pillow. The fundus uteri may also be elevated, or supported, by the hand placed on the abdomen. Daventer, who was both a candid and an experienced man, has, perhaps, made the moderns too inattentive, to obliquity of the womb, by going to the opposite extreme.

Retroversion of the uterus may likewise prove a cause of tedious labour, and can only be remedied, by cautiously attempting to press down the os uteri, from above the pubis.

Malformation of the organs of generation, may afford great obstacles to the passage of the child, so that even an incision may be required, as happened in the case, related by Mr Bonnet, in the thirty-third volume of the Philosophical Transactions.

By shortness of the umbilical cord, or still more frequently, by the cord being twisted round the neck, the labour may be retarded, particularly the latter end of the second stage. The cord may be on the stretch, but it never happens that it is torn, and very seldom that the placenta is detached. We have no certain sign of the existence of this situation; but there is presumptive evidence of it, when the head is drawn up again, upon the recession of each pain. It often remains long in a position, which we should expect to be capable of very quick delivery. By patience, the labour shall be safely terminated, but it may often be accelerated, by keeping the person, for some time, in an erect posture, on her knees. After the head is born, it is usual to bring the cord over the child's head, so as to set it at liberty; and this is very proper when it can easily be done, as it prevents the neck from being compressed with the cord in the delivery of the child, by which the respiration, if it had begun, would be checked, or the circulation in the cord be obstructed.*

as to require the use of the crotchet. After death it was discovered to be a stone in the bladder.

* Dr Churchill (Dub. Journ. March, 1837) does not consider this state of the cord, as of importance.

Preternatural strength of the membranes, may, also, to a certainty, prove a cause of tedious labour. This is at once obviated, by tearing them, which is done by laying hold of them when slack, during the remission of the pains, or, by pressing a probe, or goose quill, against them, when tense. It sometimes requires a considerable effort to rupture them.

CHAP. VI.

Of Instrumental Labour.

ORDER FIRST.

VARIOUS causes may render it necessary to accelerate delivery, such as spitting of blood, convulsions, uterine hæmorrhage, emphysema, the existence of aneurism, &c. These are, however, to be considered as in some respects adventitious; and, at present, I mean to confine myself to an account of those, which are more immediately connected with the power of expulsion.

It must be very evident, that if the head of the child be unusually large, or the capacity of the pelvis be diminished, a mechanical obstacle must arise, to the delivery of the child. Of these two states, the last is by far the most frequent, and constitutes one prominent cause of instrumental labour. I have already explained the effect of resistance, in checking the free and brisk action of the uterus, until, at last, the muscular power be more roused, and strong efforts made. These circumstances require to be maturely considered, for, in such cases, the first stage of labour, is very frequently, although not invariably slow, and, if not accelerated by proper management, the action of the uterus is apt to become exhausted, and its vigour prove inadequate, to the safe accomplishment of the second stage. Different effects must be produced by the resistance, according to its degree, the constitution of the patient, and concomitant circumstances. A slight opposition may operate, chiefly by impeding, or rendering irregular or inefficient, the action of the uterus, and the consequences may vary much in different labours, and under different treatment. A greater degree of resistance, must invariably produce, from the obstacle afforded, a protracted and severe labour, and, in particular, we apprehend the occurrence of two different conditions, which are very often conjoined. First, the head, by the gradual and severe efforts of the uterus, and abdominal muscles, is pressed more or less into the pelvis, and becomes impacted there, so that it cannot, by the power of

nature, be forced lower, and may even, in many cases, require considerable pressure, to raise it in any degree upward, by the accoucheur. This is known, technically, under the name of the locked head, or case of impaction. It is evident, that in this state, natural delivery is next to hopeless, for all farther efforts are generally unavailing. Secondly, the continued pressure of the head, on the soft parts, is productive of farther diminution of the capacity of the pelvis, for inflammation is excited, and, at the same time, the return of blood by the veins is obstructed, and of serum by the lymphatics. This impairs the power of the soft parts, and renders the inflammation of the low kind, so that, even when delivery is accomplished, sloughing succeeds, whereby very dreadful or loathsome effects are produced, if these, indeed, be not prevented by the death of the patient, in consequence of a similar low inflammation, being communicated to the uterus or peritonæum. This swelling of the parts contained within the pelvis, may take place, although the head be not impacted, but the head cannot be long impacted, without producing that. Here, then, is one effect of a most formidable and alarming nature, which we apprehend in the case under consideration. But this is not the whole of the evil; for the upper part of the vagina, or the cervix uteri, may be lacerated in consequence of this debilitated state, or any part of the uterus may be ruptured by strong or spasmodic action; or uterine or peritonæal inflammation may be excited previous to delivery, proving fatal, in a few hours, after labour is terminated; or hæmorrhage may occur, to a fatal degree, from want of energy in the uterus, after delivery; or general irritation and exhaustion are produced, the pulse becomes frequent and at last feeble, the mouth parched, the skin hot, the mind confused, and the strength sunk; or the powers of life may be worn out, so that the patient shall die, without any decided inflammation, or disease referrible to a common nosological system. Such may, and must, in general, be the result, if assistance be long withheld, or, if the patient, from unusual strength, or some fortunate yielding of the cranial bones, be able, at last, to bring forth her child. When we turn from the mother to the fœtus, we find that this continued pressure, alters the shape of the head, and affects the action of the brain, or the important function of circulation; first, the scalp tumefies, and we think the head is descending, when in reality it is stationary, and the integument is only becoming raised; then, the bones are squeezed closer together, and the presenting part of the cranium, forms an angle more or less acute, which has been compared to a sow's back. In some instances, the two parietal protuberances are not more than two inches and a half, distant from one another, but the head is not always lengthened

in the same proportion ; on the contrary, in a few cases, it is even shortened, from one bone sliding under another. Children have been brought to me, where the bones have been separated, and the one parietal bone forced completely beneath the other. Farther, we are not to estimate the possibility of propulsion, by the approximation of the parietal, or more compressible bones ; for, not only the greatest breadth, but the greatest resistance is near the ear, from the one zygoma to the other, and if the whole of the upper part of the cranium were totally wanting, still delivery should not be facilitated. The very yielding of the parietal bones, allows the margin of the less compressible portion, to become more distinct, and to be more readily caught by the brim of the pelvis, and also to make, by its ridge, more injurious pressure on the bladder and other soft parts. Last of all, partly from pressure on the brain, but independently of that, from continued pressure on the cord, or organs of circulation, the child perishes, and whether born by the natural efforts, or delivered by art, is dead. Such, then, are the effects, to parent and child, of a locked head, effects which can only be avoided, by accelerating the progress of labour, and taking the aid of extraneous force.

When we talk of a case of impaction, which is not a very happy term, we must not, however, suppose, that the head is literally, and entirely, immovable. That it is, in the strict sense of the word, sometimes impacted, and cannot be moved, is no doubt true, but this is not a case in which we can safely use the forceps ; more frequently, the hand can make it recede a little, although the uterus cannot make it advance any more. Levret, took the word in its strictest meaning, and imagined that the head was jammed between two points of the pelvis. Rœderer went farther, and maintained that every part of the head was so fixed and pressed on, that not even a needle could be passed, any where, between it and the pelvis. If so, how can the forceps be applied ? If the head be jammed at every point, even making allowance for the elasticity of its bones, we could not introduce the finger between it and the pelvis, or reach the ear. This case of universal impaction rarely exists, and when it does, it requires the head to be opened. The impacted head, admitting of the use of the forceps, is stopt by the promontory of the sacrum on the one hand, and part of the pubis on the other. The resisting point generally is the projection of the sacrum ; but, even in this case, the term impaction is not strictly proper, for, if the forceps can be used, the head can be a little raised, and the blades must be capable of being introduced. We can be at no loss to ascertain the existence of this state. The slow progress of the labour, the severity of the pains, the tardy

descent, or stationary condition of the head, its gradual impaction, or increasing immobility, its alteration of shape, the deformity or diminished capacity of the pelvis, the progressive tumefaction of the vagina, all point it out, too clearly to be mistaken; and many of these symptoms, together with those of general irritation and exhaustion, increase with the period, to which labour is allowed to extend. This state may be anticipated, when the pelvis is ascertained to be deformed. We know that if the head measure, in its diameter, only three inches and a half, from one parietal protuberance to another, and in large males measures fully four, even that part, must be compressed more or less in order to pass.* But the distance from one zygoma to the other, marking the transverse diameter of the firm and resisting base of the skull, when the protuberances are not large, is occasionally the greatest diameter, perhaps nearly four inches, and even if only $3\frac{5}{8}$, this portion is so firm and unyielding, that a small diminution of the pelvic space, especially if the protuberances have been wide, requires a great and protracted force to push it through. The more that the brim is reduced below its natural dimensions, the longer and more painful must the labour be, until we come to such a degree of contraction, as will either render expulsion altogether impossible, or delay it until great danger have been induced.

It is difficult to draw the line of distinction, betwixt that degree of contraction, which will render it impossible, for delivery to take place naturally, and that which will only render it extremely difficult. It has been proposed to ascertain this, by a rule founded on the dimensions of the pelvis. But this method cannot be brought to a sufficient degree of perfection, for the result of cases is much influenced by the size of the child, the pliability of its head, the vigour of the uterus, and other causes. Besides it is difficult, if not impossible, to determine, with minute precision, the dimensions of the pelvis, in the living subject, and they are apt to vary, according as the soft parts, within the pelvis, are more or less swelled.

There is another case of protracted labour, requiring instrumental aid, where the head is not impacted; the pelvis may even be of ample size. It is much more frequent in its occurrence, and is known under the name of the case of arrest, or by the French writers, *la tête arrêtée au passage*. The head is not fixed or jammed, the finger can more readily be passed round it,

* The head can bear much more pressure before the child is born, than after it has breathed. Respiration is more under the influence of the brain, than the action of the heart is; and the action of the latter, after birth, ceases when the brain is injured or compressed, not so much because it is directly affected, as because respiration, with which it is associated, ceases.

the scalp may be swelled, but it is to a less degree and firmer. The bones are nearer the perinæum, and are never so squeezed or misplaced, and the retardation appears to arise, rather from the nature of the pains, or the unyielding state of the soft parts, at the outlet of the pelvis, than from any great obstruction, offered by the pelvis, to the delivery; but I have already noticed, that a very small obstacle, often decidedly impairs the actual force of the uterus, though perhaps not the degree of pain. Further, the head descends lower than in a case of impaction. The ear is more easily felt, not only from there being more room for the finger, but also from being farther down. It can be felt by introducing two fingers, whereas, in greater contraction, the hand sometimes must be introduced into the vagina, to feel the ear fully. It is a mere case of tedious labour, but a case protracted to the utmost limits of prudence, in spite of the employment of those means, which have been pointed out in the last chapter. It may arise from some slight disproportion between the size of the head, and the capacity of the pelvis, or, more frequently from variations and irregularities of the uterine action, which have already been fully considered. The case of impaction is clearly marked, by the symptoms formerly detailed; that of arrest, is ascertained, by the simple condition, of the head being stationary, but not jammed in the pelvis. There are many cases, then, of arrest which are safely terminated by nature, and which are placed under the class of tedious labour; but there are many others, where it becomes prudent to accelerate delivery, by artificial force, and the question for deliberation is, at what period we shall thus interfere, or, when further delay is hazardous?

I have fully, and I hope, practically, detailed and considered, the causes which render labour tedious, and have pointed out the impropriety, of permitting the first stage to be protracted, for, thereby, the uterus becomes enfeebled, and less able to accomplish the second. But, when this advice has not been acted on, or when the treatment proper for the particular cases, already described, has not been successful in effecting delivery, what is the consequence, ultimately, of delay? The uterus, by continued, but inefficient action, or unavailing contraction, becomes gradually debilitated, and, when, at last, delivery is effected, it cannot contract with vigour and regularity, whereby hæmorrhage is occasioned, or, the same event is produced, by spasmodic action of the uterus. Here, then, is one very serious evil which may be anticipated. Next, there is a strong disposition given to puerperal disease, not merely to those troublesome, though less dangerous complaints, known under the name of weeds, or irregular febrile paroxysms, but also to more formi-

dable affections, of an inflammatory nature, especially of the womb or peritonæum. Accordingly, we find that a much larger proportion of women die, after protracted, than after natural labour. Here, then, is another class of evils to be apprehended. Again, although the same local mischief, that we meet with in locked head, is not so apt to take place, yet, the patient is not exempted from risk even of that; by a continuation of labour, the soft parts at last inflame and swell, which adds not only to the difficulty of delivery, but also greatly to the danger of the case. If it be necessary to enumerate other hazards, I may set down the consequence of protracted irritation and exertion, marked by the induction of a state of fever, and at last of great exhaustion, insomuch, that the patient may actually die undelivered, but this event, as well as rupture of the uterus, is less apt to occur than in locked head. Besides all these hazards to the mother, the child is in danger of perishing, not, alone, from compression of the brain, but from the continued pressure of the uterus, after the evacuation of the water, interfering with the regular performance of the function of circulation. These are surely no trivial evils resulting from protracted labour; and the utmost that I feel at liberty to concede, in favour of delay, is that it may be permitted longer in cases of arrest, than of impaction. Many eminent men, have placed an undue confidence, in the power of nature, and have been hostile to the use of instruments. For a long time I was influenced, by the high authority and plausible arguments, as well as bold assertions of these practitioners, but experience has compelled me to adopt the opinion, I am now, with a firm and solemn belief of its correctness and importance, to maintain in this chapter. From the strength of the recommendations of the partisans of nature, we should suppose, that whenever the child could actually be born without aid, no hazard occurred, and, on the other hand, that instruments must of necessity, prove not only very painful in their application, but dangerous in their effects. Now, the first supposition is notoriously wrong, for innumerable instances are met with, where the mother does bear her child, without artificial aid, and much doubtless, to the temporary exultation of the practitioner, but, nevertheless, death takes place, or, at the best, a tedious and bad recovery, is the consequence. Or, granting the recovery to be excellent, is it no consideration, that the patient has been subjected to twelve, perhaps twenty-four hours of suffering of body, and anxiety of mind, which might have been spared? The second supposition, is just as positively untrue; for, in the majority of cases, if the practitioner be humane and gentle, the introduction of the instrument, gives little or no pain, in so much so, that in many books we meet with strong and just

reprehension, of the clandestine and unnecessary use of instruments, which could never possibly take place, if their application were attended, in such cases, with much pain. Then, as to the pain occasioned by extraction, that may be greater than the patient was just before suffering, and yet not be greater than is often experienced in a natural labour; or, even granting it to be uniformly greater, a concession I make for the sake of argument, it is but for a short time and on the whole, the suffering of the patient is less, than if nature had been allowed, at length, to expel the child. These positions, are perfectly correct in all cases of arrest, when the practitioner is well instructed and cautious. Next, as to the danger to be apprehended, I cannot, in cases of arrest, see any source whence it can arise. The mere introduction of the forceps, if gently accomplished, can scarcely be more hazardous, than the introduction of the finger, for no force is, or ought to be, exerted. If there be hazard, it must be in the process of extraction, and this, it is evident, can arise, only, either from pressure of the instrument on the soft parts, or from the head and instrument lacerating the perinæum. The last event must, in general, be the consequence of want of caution, and the first, can never be carried to any dangerous degree, in a case of arrest, if the operator know how to direct his efforts.

In such cases, then, we may experience much evil, from trusting too long to nature, but add little to the sufferings of the patient, and nothing to her hazard, by instrumental aid.* When, however, we turn our attention, to the cases of impaction the matter is different. There is greater difficulty in introducing, and fixing accurately the instrument, and doubtless more pain, even in this stage, is given than in cases of arrest. When again we come to act with it, the suffering or pain must be increased, even in the hands of a gentle operator, in proportion to the resistance to be overcome. The soft parts have already been pressed on, during labour by the head; they must still be pressed to a greater degree, and even if the maxim, that time is equivalent to force, were acted on, to a certain extent, it would be vain to deny, that there must be both greater suffering, and greater danger, than in natural labour, or than in cases of arrest. These sufferings, and this danger, must be in a certain degree, proportioned to the tenderness, which has already taken place in the soft parts, and therefore may be greatly lessened, but cannot be increased, by an early application. Their production depends

* Dr Beatty states that out of 111 cases in which he used the forceps or lever, not one of the mothers died, nor did "any unpleasant result follow." None of the children, supposed to be alive when the instrument was used, perished, and not one received any blemish. Dublin Med. Trans. Vol. i. p. 51.

on the obstacle afforded. When the head has arrived at a station, rendering the application of the short forceps practicable, no good can arise from delay; we only add, unprofitably, to the suffering in the mean time, or lay the foundation of a state, which is to render the later application of the instrument, more painful and more hazardous. When mischief arises from the application of the forceps, it always is owing, either to harsh and unskilful conduct, or to the state induced, by delaying their use too long. If it require strong efforts to extract the child, could that child have been safely born, by the power of nature, or could the uterus and abdominal muscles, after long action, retain vigour sufficient, to exert a force equal to that, which is often required, to extract an impacted head? Indeed, our best writers, however fond they may have been of delay, in cases of arrest, are disposed to deliver, whenever the head has been locked. Nothing can be expected from delay, except sloughing, and the alternative of speedy death, or a miserable existence; and in all cases of decided impaction, the question, I apprehend, is not whether we shall immediately deliver, but whether we may succeed with the forceps, or shall be obliged to use the crotchet.

Holding the opinion I have been laying down, it was not without astonishment and regret, that I found Dr Osborn stating, that in a case requiring the use of the forceps, "all the powers of life are exhausted, all capacity for farther exertion is at an end, and the mind as much depressed as the body, they would at length sink together, under the influence of such continued but unavailing struggles, unless rescued from it by means of art." If such a state be allowed to take place, even in a case of arrest, but more especially of impaction, it is much to be dreaded, that the interference of art, shall prove as unavailing as the struggles of nature. Were this the opinion only of Dr Osborn, I should pass it in silence; but unfortunately it is the prevailing doctrine of the day, and the modern disciples of the school of patience, men of talent and observation, carry their fears of the mischief, resulting from the use of the forceps, to an extravagant length, and place a mistaken confidence in the efficacy, and safety of a continued action of the expulsive powers. I have much pleasure, however, in strengthening my opinion, with the authority of Dr Hamilton, the late excellent Professor of Midwifery in Edinburgh, who had long seen the hurtful effect of the temporizing system, and of Dr Osiander, in Gottingen.*

To place the argument in a yet stronger light, I shall examine

* In Dr Smellie's time, he calculated that the forceps were required once in 125 cases of labour; since then there has been rather a deterioration in practice so far as delay is concerned, for the more modern calculations are 1 in from 158 to 188, or even 1 in 353. One gentleman, for whom I have great respect, states,

the result of delay, as deduced from the tables, published by Dr Breen, of the cases occurring in the Dublin Hospital, because these appear to have been published without reference to any particular opinion.

In the course of 57 years, 78,001 women were delivered, of whom, one out of every 92 died, and one child, out of every 18 was still-born. If, however, we were to exclude cases of tedious labour, and attend to the rest of cases of natural labour, or the consequences of a correct and healthy process of parturition, we would find the proportion of deaths to be altogether trifling; I am willing, however, to adopt this average. Let us now see the result of tedious labour.

In women, who were in labour of their first child, from between 30 to 40 hours, one in 34 died, and one child in 5 was still-born. Here then is a prodigious difference, between even the average result of all labour, good and bad, and a protracted labour. During the same period of labour, amongst women, who had previously born children, and, therefore, if requiring instruments, might be supposed to have a more permanent obstacle, or contracted pelvis, though this is not stated, about one in every eleven died, and one child in every six was still-born.

When labour was protracted between 40 and 50 hours, in women who had not previously born children, one in 13 died, and the proportion of still-born children was as one in $3\frac{1}{2}$.

If labour were protracted other ten hours, that is between 50 and 60, one-eleventh of the women died, and when we proceed to the period of between 60 and 70 hours, one-eighth died, and nearly one-half of the children. It is observable, however, that only one-twelfth died in the next ten hours, but this variation must arise from accidental circumstances.

It is impossible to give any comparison of these results, with those afforded in the same hospital, by the use of instruments; for artificial aid, it is evident, was always long delayed, unless in cases, where dangerous symptoms, not essential to labour, occurred. Instruments were used, on account of tedious labour, in 44 cases, and of these 18 died. Compare this, with Dr Beatty's report, already noticed.

Now, taking the proportion of deaths in the parturient state that the forceps were not necessary in the hospital practice, above once in 728 cases, and in private practice, above once in 1000.

Dr Merriman's practice comes nearer the line of safety, for it exhibits 1 in 93. Dr Naegels has employed them once in about 53 cases, which corresponds very much with my own list; but I must qualify this, by saying, that I include, with the result of my general practice, those cases where I have been called in consultation, which, I admit, increases beyond the due proportion the number of instrumental deliveries. In former editions of this work, I expressed an opinion, which I still adhere to, that of two evils it is infinitely safer, for the mother, to interfere too soon, than to procrastinate.

to be, including all disasters whatever, as 1 in 92, it is most important, to observe the progressive fatality arising from delay. Suffering above 30 hours destroys 1 in 34; in other 10 hours the danger more than doubles, for 1 in 13 die; then 1 in 11, and next 1 in 8, to say nothing of the children.

Dr Collins' tables exhibit a different result; out of 16,414 cases, 164 proved fatal, but in these the duration of labour seems to have had no influence. Classified by time, the greatest proportion were only 3 hours, in labour.

To deliver a system of rules, precisely applicable to every case, is quite impossible, for much must be left to the judgment of the practitioner, who is to be guided by general principles; I can therefore only offer for his consideration, the following observations.

First, It is important in every case of parturition, where we have reason to anticipate a tedious labour, to prevent the first stage from being protracted. Whenever the uterus is in a state of unsuspended action, that is to say, the pains decidedly parturient, and continuing without long intervals, but producing a slow effect on the os uteri, the means whether medical or mechanical, formerly pointed out, for effecting its dilatation, within a limited time, generally twelve hours, ought to be resorted to.

Second, The forceps cannot be applied, till the os uteri be completely dilated.

Third, It has been stated by Dr Osborn, that a living child, cannot pass, if the conjugate diameter of the pelvis be only $2\frac{1}{2}$. Dr Clarke is more correct, when he says, that the head cannot pass entire, if the diameter be under $3\frac{1}{2}$, and even this will generally require the perforator. A case, indeed, is related, by Baudelocque, where the distance between the parietal bones was diminished to $2\frac{1}{2}$, and the length, from the chin to the vertex, increased to $7\frac{1}{2}$. The child was alive, and by next day, the head had recovered its shape. As the more unyielding part of the skull, measures from 3 to 4 inches, according to the size of the head, it is evident, that in this case, the pelvis, must either have been larger, than was supposed, from the compression of the parietal bones, or the base of the cranium, must have descended very obliquely. But no proof can be drawn, from any individual case, where an entire head, has passed through a very small pelvis, by the power of nature, of the possibility of always bringing an unopened head, or the squeezed head of a dead child, to say nothing of a living one, through such a pelvis. The effect of pressure by instruments, and by the propulsive efforts of the uterus, on the head, in the pelvis, is quite different. In this last case, whilst the lateral bones are brought nearer to each other, to as great a degree as the connecting membrane will allow, by

the edge of one, slipping a little under that of the other, the bones before, but particularly behind, are separated, according to the long diameter of the head, as far from each other, as the stretching of the membrane will allow, and thus the head is lengthened, and the shape of the brain altered. On the other hand, when pressure is made by instruments, the effect is chiefly to bring the lateral bones nearer, but the length is not much increased. The degree to which the bones can be made to approach, will depend chiefly on the breadth, and partly on the extensibility, of the connecting membranes. The temporal, are connected to the parietal bones, by a very narrow intermediate membrane, which admits of little play. The membrane at the sagittal suture, is generally also narrow, and in cases where it is greatest, it is not above half an inch broad. It is here that we should expect the most change, and it is evident that if the parietal bones were strongly pressed, the one might be pushed under the other to the extent of the breadth of the membrane, that is, half an inch. But in the majority of crania, there is no such breadth of membrane, and, including the effect of stretching it here, and at the narrower connexion at the squamous suture, the forceps as I have ascertained by experiments on recent fœtuses cannot diminish the lateral diameter, above a quarter or at the most $\frac{5}{8}$ of an inch, without altering the shape of the bone itself, that is fracturing it. The occipital bone shelves, a very little, under the parietals, and cannot be much pressed back. Lateral pressure, therefore, with the forceps, does not elongate the head, and the shape is little altered, which is the reverse of what happens, in slow, but continued pressure, by the uterus. Now, taking the maximum of the effect of the forceps, to be a diminution of half an inch, and this is allowing more than can usually be calculated on, without pressing in, or breaking the bones, it is evident, that the power of altering the head, is very limited.* But, granting the parietal bones, to be brought as near, by artificial pressure, as they sometimes are, by the uterine efforts, so as to form the ridge, called the sow's back, still we have the resisting base, which cannot be taken at less than $3\frac{1}{2}$, often, as we have seen, considerably more. Strong forceps certainly might

* Baudelocque took a head which measured four 2-10ths in its diameter, and tried to compress it with the forceps. The instrument bent in reducing it two-tenths.

If the parietal protuberances be very prominent, one, or both, perhaps, may be depressed, so as to diminish the diameter at that part. Dr Campbell mentions a case, where, from exostosis within the pelvis, the left frontal bone was so greatly sunk in, as to make the eye protrude. The child was alive, and the deformity disappeared. It is a point of some importance to know, that even in premature labour, the parietal bones may be fractured in delivery, where the pelvis is contracted. A similar case, by Dr Duntzar, is noticed in Brit. and For. Rev., July, 1842, p. 236.

crush, or squeeze this part, into smaller size, as they might readily press in the more limber bones, but the question is not, to what degree we could, without perforating the skin, diminish the size of the cranium, by fracturing or bending the bones, or lacerating their membranous connexion. It simply is, what is the smallest pelvis, through which, we can bring an entire head, by instruments? and this being answered, we next ask, if the head can be brought through this minimum pelvis, with safety to the mother, and without death to the child? We must dismiss from consideration, those cases, where, the head being pliable, and the pains strong and continued, the shape has been progressively altered, and the diameter steadily diminished, till the whole could pass, and also, those, where the head is small, and the joinings of the bones lax, and the forceps capable of readily lessening the size. In ordinary cases, it is evident, that we cannot expect to bring the head, and the forceps, through a pelvis, whose conjugate diameter is only $3\frac{1}{2}$, and often it is impossible, though it measures $3\frac{1}{2}$. Cases of decided impaction, oftener call for the crotchet, than admit of the use of the forceps, and a head may be expelled by the natural efforts, through a pelvis which is too small to permit of delivery by the forceps, for we not only get rid of the thickness of the blades, but the head moulds itself better, and passes in a line, more correctly corresponding, to the axis of the pelvis, than it often does, when the forceps are employed. But then, on the other hand, we may either have deficient pains, or before the end could be accomplished, the power of the womb, and of the system might be worn out.

Fourth, It is possible to apply the forceps, and yet not be able to act with them, that is to say, we might have them securely fixed on the head, and yet require to use such force, and for such a length of time, as must destroy both mother and child. The truth is, that this instrument is not proper, when much resistance is to be overcome, or when the pelvis is barely sufficient to allow, with great exertion, the head to be brought through. We may at last succeed, but the child is killed, and the soft parts of the mother inflame and slough, or she is exhausted and dies. We cannot easily, sometimes at all, apply the forceps, in cases of considerable contraction, but, even when we can, we are not to persevere in the employment of great force. It has been said, that time is equivalent to force, and in many cases it is, but there is a limit to both, and that limit is more easily recognised by experience, than fixed by written rules. Do not let me be misunderstood, when I say, that cases of arrest, are those which are peculiarly adapted for the forceps, and that their utility is limited, in cases of impaction. Neither let me be assailed, with the charge, of wishing to substitute the crotchet for the forceps. I

distinctly say, that in all cases, where the latter instrument, long or short, can be introduced, and securely applied to the head, we ought to attempt to deliver with them, but we are neither to make pertinacious and abortive, far less, harsh endeavours, to apply the instrument, nor having applied it, are we, violently or doggedly, to persevere in attempts to bring down an immovable head, in which, we must either totally fail, or, if we succeed, must do so, at too great an expense.

Fifth, The lower that the head has descended, the more easy, and the safer, is the use of the instrument. In almost every case, where the forceps are beneficial, the head has so far entered the pelvis, as to have the ear, corresponding to the inner surface, of the upper part of the pubis, and the cranial bones touching the perinæum. Until this descent have taken place, the common or short forceps cannot be employed; and it is to this instrument that I confine my remarks, leaving the use of the long forceps, to be *especially* considered. When the finger, without the introduction of the hand into the vagina, can easily touch the ear, and when the cranium is in contact with, although not protruding, the perinæum, the forceps are applicable.

Sixth, It has been laid down as a rule, that the head should have rested on the perinæum, for six hours, previous to the use of the forceps; but this is quite unsatisfactory, for it may, in many cases, be allowed to rest there longer, and, in others, especially when the head is impacted, it would be both unnecessary, and dangerous, to permit it to remain so long. It is confessedly, in every instance, allowing the labour, whether with or without propriety, to be continued, for six hours, after delivery has become practicable.

Seventh, Whenever the pelvis, is ascertained to be contracted, we are to take care that the vigour of the uterus, be not allowed to be exhausted, or the soft parts too long pressed on. As soon as the head, has come within reach, of the ordinary, or short forceps, unless it be descending farther, and the labour going on briskly, we ought to deliver, and whenever the head becomes impacted, we are warranted, and imperatively called on, to interfere. In cases, then, where the pelvis is disproportionate to the head, we do not wait any definite time, and pay no regard to duration, farther than becoming, every hour that labour is prolonged, more solicitous that the head, may come within reach of the short, and save the necessity of trying the long forceps, or resorting to the perforator.

Eighth, Neither are we, in cases of arrest, to proceed strictly on a rule, founded altogether on time, unless we vary that, according to the strength of the constitution, and the actual efforts made by the uterus. We cannot, with reference to the present

question, consider a patient to have been, decidedly, 30 or 40 hours in labour, who has had slight pains at first; then a suspension of these, for a number of hours, and again, perhaps, a return of trifling pains, at long intervals, scarcely affecting the os uteri. These, can scarcely be called the pains of labour; and whether they should be checked or let-alone, must depend on considerations formerly brought forward. We date our time, from the commencement of evident and progressive effects, on the os uteri, and are also, in part, regulated, by the state of the pains, in the second stage. The patient may have the os uteri fully dilated, and yet, the next stage, may be suspended, for some hours; there may be a pause in the uterine action, occupied in sleep, or passed in ease. It is quite different when there has, from the first, been continued uterine action, which has brought the head into the pelvis; but whether from weak, or restrained, or irregular action, has not been sufficient for its expulsion. In this case, presuming that the rule has been acted on, of having the first stage accomplished, within a certain number of hours of actual labour, that pains, producing little or no effect on the uterus, or its mouth, have been either stopped or rendered efficient, I am inclined to lay it down as a principle, that the second stage, should be accomplished within a little longer period of time, than was allowed for the first. But, to prevent all mistake, in a rule which is connected with time, I must again expressly state to the reader, that, as I formerly spoke of the first stage, being accomplished within a certain period of actual labour, and dated from the commencement, not of mere pain, which may not even have been truly uterine, but of pain affecting the os uteri; so, the second stage, is to be considered, also, as a state of uterine pain, and is not to have included in its duration, those hours of suspension, which may have been passed in sleep or tranquillity. When I come to lay down a rule, as to the time of interference, I would say, and that from reflection and experience, that few cases ought to be trusted to nature, beyond 36 hours of actual labour, and in general it is safe to interfere within 30. There may be cases, especially of impaction, where particular symptoms shall justify, and call for, aid, within 24 hours; but in an ordinary state of health and strength, a mere case of arrest, may be safely trusted till between 24 and 36 hours, and the point of interference, in this range of twelve hours, must be regulated by the efforts which have been made, the uninterrupted continuance of labour, the obstinacy of irregular action, the situation of the head, or length of time it has remained in a situation, rendering the forceps applicable, and, last of all, the general vigour of the patient. Finally, the longer that the first stage has been protracted, and

the more painful or severe that it has been, the shorter should we wait in the second, and *vice versa*: this remark, however, is only applicable to cases of arrest, and not of impaction.

Ninth, In cases where we anticipate the necessity of using the forceps, and find considerable fever or excitement of the vascular system, with or without local tumefaction, we should have recourse to the lancet before delivery. This renders delivery safer, or may, in certain cases, happily supersede the necessity of instruments. We must not, however, mistake mere frequency of pulse, from long continued efforts and excitement, for synochal fever; a state tending to exhaustion, for one requiring depletion.

The doctrine I have now been supporting, rests on this principle, that it is safer to extract the child with the forceps, than to allow the uterus to remain long in a state of action, whether that be regular or spasmodic, and whether it lead directly to exhaustion, or ultimately to disease arising from irritation. If I have been tedious in my argument, or been betrayed into repetition, I plead, that the great importance of the question to society, has led me to trespass.

Some patients urge the adoption of any means, which can abridge their suffering, and are inclined to submit to delivery, in cases where the practitioner, can, by no means, give his consent. But in general, an opposite state of mind prevails, and it is not, until after much distress, that the patient is reconciled to the use of instruments. The result of a labour is often uncertain: on this account, as well as from motives of humanity, no hint ought, in the early part of the process, to be given, of the probability of instruments being required. But, as their necessity becomes more apparent, and the time of their application draws nearer, it will be proper to prepare the mind of the relations, for what may be necessary, if the delivery be not naturally accomplished. With regard to the patient herself, we must proceed according to her disposition. If she be, from what we have already learned, strongly prepossessed against interference, it will be necessary to give such prudent hints, and such explanations of the practice, as relating to others, though not to herself, as will prepare her for her consent. But if we can perceive, that she is disposed to agree readily, to whatever may be necessary, nothing ought to be said till very near the time, as the anticipation of evil, is often as distressing as the enduring of it. When we are to deliver, it is useful to explain shortly, and delicately, what we mean to do, which has a great effect in calming the mind.

When the child could not be born by the efforts of nature, it was, anciently, the practice, to apply strong forceps, which destroyed the child, or to open the head, and pull it out with a hook. To give the child a chance of living, it was next proposed,

and soon became a general practice, to turn the child, and deliver by the feet, as thereby much force could be exerted. If the resistance were great, however, death was invariably the consequence; nay, in many instances, the body was pulled away from the head, which was left in utero. This gave rise to many inventions, for the extraction of the head, under this circumstance. Fillets, or bands of cloth, were also applied over the head, to enable the practitioner to pull it out.* These were preferred by Daventer, who informs us at the same time, that single or double hooks might also be employed, and these sometimes even brought out a living child. I have been in possession of these instruments, which consist of two blades, like the forceps, and lock like them. The blades are narrow, and end in a hook, which was fixed at the ear. The danger of this instrument, arises from its hook, which, in all cases of contracted pelvis, must have sunk through the cranium. In cases of arrest, it might sometimes only go through the integuments, and these are the cases where living children were born.

It is surprising that it did not, at once, occur to practitioners, that, by taking away the hook, this danger might be avoided, and still the head remain fixed between the blades. It only illustrates, what I have often shown in my lectures on surgery, that men come, frequently, within a single step of a great improvement, without taking that step, and often rest satisfied with imperfect knowledge, and hazardous, if not almost fatal practice, rather than exert the faculties of reflection and investigation. That it is owing to this cause, and not to any superior degree of the inventive faculty, in the man who actually does make the discovery, is evident from this, that no sooner is the fact published, than an improvement has been made, than skilful men discover it in spite of every endeavour to conceal it. Dr Chamberlain, in 1672, published a translation of the treatise of Mauriceau, in the preface to which he mentions, that his father, himself, and his brother, possessed a secret, by which they could deliver women, without destroying the child, although the pelvis were small. Previous to this publication, however, he had gone over to Paris, in hopes of selling his nostrum; but rashly boasting, that he could thereby deliver a woman, whom Mauriceau had declared could not be delivered, otherwise, than by the Cæsarean operation, and failing to effect what he promised, he was obliged to return, with empty pockets, and little reputation. Next, he went to Holland, where he sold at least part of his secret, to Roger Roonhuysen, from whom it passed to the celebrated Ruisch, as thorough a nostrum-monger as any of them; nor was

* Dr Merriman, p. 239, relates a case, where the fillet actually cut through the neck, thus decapitating the child.

it made public, till 1753, when De Vischer and Van de Pole purchased the information, and divulged it. The instrument so revealed, is known under the name of the lever, but it is now ascertained, that Chamberlain also employed the forceps. Whether he only sold one-half of his secret to Roonhuysen, or whether the latter preferred the lever, or only made others acquainted with it, preserving the forceps to himself, may, like the lithotomy of Raw, be important in the history of quackery, but is of little consequence to us. Of late, the original instruments of Chamberlain, have been discovered, which, it is supposed, he had manufactured himself; one of them is a lever, the other two are forceps, of which one, is a little more improved than the other.* Soon after this, other practitioners in Britain, seem to have devised similar instruments, which they also kept secret, and, perhaps, the first public description, is to be found by Mr Butler, in the Edin. Medical Essays, for 1733. In the same volume, Chapman is severely reprimanded, for concealing the instrument, which he gives intimation of, in his treatise. This fault he made reparation for, in his next edition. Dr Smellie, in 1752, published his system, containing, amongst other useful instructions, a full account of the mode of using the forceps, the construction of which he improved; and nearly about the same time, Levret, in Paris, performed a similar service to his countrymen.

I do not conceive it necessary, to detail the various alterations which have been made on the forceps, but shall only offer a few remarks on their construction. They may be divided into the short and long; into the straight, that is, those with a single curve; and those with a double or lateral curve; and those, where both rims, of the corresponding blades are equidistant, or the one a little nearer than the other. The endless variety shows, that much depends on the dexterity or whim of the practitioner, and also, that there is either no single shape the best, or that this has not been admitted to be as yet discovered. As the size of the head, and capacity of the pelvis, and state of the presentation vary, it is not wonderful, that sometimes one shape, should be found more useful, than another; it would rather be astonishing, if any one instrument, fitted equally well in every case. We should expect, that the most perfect instrument might be obtained, by taking a mould of the head, of the breadth of the blades, along that part, on which they are usually applied. I have done so, and obtained very different results; for, the mould of one head, will by no means fit another. We may, therefore, at once say, that no instrument can be made, which

* Vide paper by Mr Cansardine, in *Med. Chir. Trans.* ix. 181.

shall perfectly fit, and embrace, every head, even if it could always be applied, on the same lines. We shall also find, that although in some directions, the two margins, anterior and posterior, of the opposite sides of the mould, be equidistant, yet, in general, one shall be nearer, sometimes, by a quarter of an inch, than the other, and whether it be the anterior or posterior margin, which is nearest, does not always depend on the part, but also on the shape, of the individual head. Now, if this principle were adopted, as it has been, in some forceps, we should find, that, generally speaking, such an instrument would be more apt to slip, and more likely to injure the scalp, by pressing chiefly with one rim, than forceps of a simpler construction would be.* The original forceps were straight, and Levret first added the lateral, or what was called the new curve. This was supposed to give great advantage, by corresponding, better, with the shape of the pelvis, and curve of the vagina. It is evident, that little good can be gained in these views, for the instrument is applied closely on the head, and ought not to depart from it, in any way, which could make it, at a single point, pass beyond it, and encroach on the pelvis. It is the head that we look to, and the instrument passes with it as an appendage, not at all affecting the shape of the moving body.† If any effect be produced, it must be by the portion, between the lock and the head, but it has never been proposed, to confine the curve to that portion. The comparative merit, then, of the straight and the curved forceps, is to be decided, by the answer to the question, which takes the best hold of the head, and applies best to it? This is only to be determined by experiment, and I believe, that although either may be safe and efficient, the straight blades will be least apt to go wrong. Next, as to the length; we find the length of the line, from the presenting part of the head, to the side of the chin, to be 5 or $5\frac{1}{2}$ inches. The blades must, therefore, be at least that length; but, as it would not be convenient, to have the lock, exactly, in contact with the head, a little more must be added. Dr Orme's forceps which are straight, and fit well, are $5\frac{1}{2}$ inches.‡ Dr Lowder retained the same form, but added

* In heads of moderate size, we find on applying the straight forceps in the usual line, that if the lock admit of any play, laterally, the corresponding rims, of the blades behind, are $\frac{1}{4}$ nearer each other, than those before.

† In proof of this, I may mention, that I have known the curved forceps, applied the wrong way, by mistake, and yet the operator delivered the child, without difficulty, and only discovered his mistake, after the birth of the head.

‡ The best form of forceps, is a modification of Dr Orme's. These apply well to a head of moderate size, but if it be large, we find that the blades for an extent of $3\frac{1}{2}$ inches from their extremities, toward the lock, are not quite in contact with the surface, which they ought to embrace, of the lower, and anterior part of the parietal bone, the temporal bone, and the cheek, whilst their points nip the jaw. This defect is best seen, by applying them on an accurate cast of the head, which

another inch. Some, still meant to be called short forceps, measure, but without advantage, longer, and I believe, Dr Burton's on the other hand, measure less than 4 inches. As it is not to be expected, that the head can be safely brought through a pelvis, whose conjugate diameter is only $3\frac{1}{4}$, it may appear unnecessary, to have the blades capable of approaching nearer to each other, externally than that: but it does no harm, and may be desirable. Some have been so wide as $3\frac{1}{2}$, at the most distant part, others so low as $1\frac{1}{2}$. The generality are not above $2\frac{3}{4}$, which affords every advantage. The distance of the extremities, from each other, when closed, varies, but it is never expected, nor intended, that when applied, they should approximate to their utmost degree. If they did, the head would suffer, and if the extremities grasped the jaw, it might be much injured. It is necessary, not only to have both long and short forceps, but also it will be useful, to have a pair, more curved toward the extremities, than at the middle, like the blades of the lever.* This will be found to answer better, in face presentations, than the common forceps. The lock may be so disposed, as to make one blade of these, fit one of the common straight forceps, for it is not necessary, that the two blades should be exactly the same: on the contrary, there are cases, where blades of different curvature, can be most easily introduced, and most efficiently acted with. I believe Dr D. Davis was the first, who went methodically, on this principle, but perhaps carried it too far.

If the forceps with the double curve be employed, the blades must be so introduced, that their convex edge, shall be next the face. It is, therefore necessary, to determine, which blade, shall be placed next the pubis, before we begin, and this we do, by ascertaining to which side the face lies, by examining the position of the ear, as well as the general shape of the presentation. The blade to be first used, is to be placed nearest us, to prevent mistake. If we use the forceps with a single curve, it is a matter of indifference, which blade is first inserted, and my directions apply to this instrument.

does not yield, for, on the head itself, it is often less visible, from the soft skin rising up to the surface; perhaps, also, by our being able to compress, somewhat, the bones, so as to make the instrument fit better. There is, without any advantage, added to the diameter, of the passing head and instrument, from $\frac{1}{4}$ to $\frac{1}{2}$ inch. In some cases, I have found the extreme width, taken from the outer surface of the blades, to be $4\frac{1}{4}$. The defect is remedied, by making the blades, for $3\frac{1}{2}$ from their end, a very little straighter, and the higher part nearer the lock, to curve in a trifle more; but the first alteration is the most important.

The lock may also be brought a little nearer the fenestra, so that the curve may be rather more abrupt. There is no occasion for $\frac{1}{2}$ of an inch, intervening between the lock and the scalp.

* The curve may be the same as in the lever, till 3 inches from the extremity. Then, in place of being so straight as the lever, let the blades bend in, toward the lock, like the forceps.

The blades are to be gently heated, by placing them in tepid water. The bladder being emptied, and the patient laid on her left side, in the usual posture, but with the pelvis near the edge of the bed, a female assistant, is to go to the opposite side, to allow her to hold by her, if she wish it; another, may be required, to support and hold up the knee and thigh, when the second blade is introducing.

All things being prepared, and the head being supposed to be placed in the same position as in natural labour, the operator, gently introducing two fingers, between the head and the pubis, feels for the ear;* that he may the better guide the instrument; then, taking up the blade, he carries the extremity of it, along the hollow of the hand, cautiously and gently, into the vagina, sliding it on, between the two fingers and the head. In this introduction, but more especially, in its passage over that part of the head, which it first touches, it is, owing to the curve of the blade, necessary to have the handle directed backwards, and almost parallel with the perinæum; but, as the blade advances, the handle will come more forward. The point of the blade is gently to be insinuated, between the head and the pelvis, with a slight wriggling motion: and when the fingers are no longer useful, in guiding the point, they are to be, so far, withdrawn, as not to occupy room. When the extremity gets opposite to the ear, it in general slips very easily onward, and the complete introduction, is sometimes succeeded, by a gush of water, which may be foetid, and tinged with meconium, although the child be alive. When the blade is fully inserted, the handle is in a line, nearly parallel, with the inner surface of the symphysis pubis, but not always perfectly corresponding, to the axis of the brim of the pelvis, for it is often, as we shall soon observe, carried on a little too far. In a natural presentation, the blade does not traverse a line, from the vertex to the chin, but rather from the parietal protuberance, obliquely forward on the head, with the vertex considerably beyond the rim. The anterior rim, or that toward the face, traverses the parietal, perhaps a little of the frontal, the squamous portion of the temporal bone, and the zygoma, but the precise spots of the different bones, which the rim may rest on, need not be detailed, nor are they always exactly the same. In general, the fenestra includes the protuberance, so also does it the ear, but sometimes the posterior rim, merely skirts the ear, perhaps rests on it. The central part of the points, is generally on the angle of the jaw; the anterior,

* This Dr Hamilton does not think necessary. It certainly is not necessary to feel the ear in order to ascertain the position, for that may be done by the sutures and fontanelle. In cases of impaction, it may be difficult or at least painful, but it is seldom so in cases of arrest.

rounded, part of the extremity of the rim, is on the jaw blade; the posterior on the side of the neck, below the ear. If the head be small, and the forceps a little more advanced, the angle of the jaw, is in the end of the fenestra. The distance of the points, of the two blades, will vary from $1\frac{1}{2}$ to $2\frac{1}{2}$. The distance of the lock from the scalp from $\frac{1}{2}$ to one inch.

In this introduction and application of the blade, however, we do not nicely manœuvre, in order to describe any given line; but are sure, if we introduce it directly behind the pubis, or a little toward the acetabulum, generally the right, and fairly over the ear, onwards, till it rest, and the handle be brought forward, that it has gone, almost *sua sponte* in a right direction. If we carry, too much, to either side of the pelvis, we have an insecure and bad hold of the head, and the instrument is almost certain to slip. The head is not transverse, but more or less oblique, and the blades should intersect that line.

If the blades be not introduced, far enough beyond the ear, to get their extremities over the base of the skull, so as to embrace fully the head, in their grasp, it is impossible to act with them. The extremities going only as far as the ears, or a little beyond them, may indeed catch the head between their points, but can do no more, and they slip the moment we begin to pull.

The first blade being applied, it seldom requires to be supported, but remains sufficiently fixed, between the head and the pubis, and the operator proceeds to introduce the second, exactly in a reversed manner. When the first was inserted into the vagina, its handle was placed almost directly backwards; when the second is inserted, its handle is directed forward; and, therefore, at this time, the thigh of the patient must be raised from the other, by an assistant. Two fingers are to be introduced into the vagina, and along these, the extremity of the blade is to be gently slid, either by the side, or behind, into the passage, and guided past the root of the first blade. In whatever way it is inserted, it is to be cautiously brought to lie, on the inside of the perinæum, or posterior part of the vagina. Then, by moving the handle backward, and carrying, in the same degree, the extremity of the blade up along the sacrum, it traverses the head, in a line corresponding to the blade, on the opposite side. It glides easily between the head and vagina, along the curve of the sacrum; and in doing so, comes, sometimes very readily, and at once, to meet the lock of the other blade, and join correctly. But, more frequently, it requires a little address to lock the instrument, so, that it may be necessary, to withdraw the one, or the other, a little, generally the first, which has been pushed too far on, in order to make them meet. If this be not sufficient, it will probably be found, that the difficulty arises, from the

blades not being correctly placed, on parallel lines, on the opposite sides of the head, but the one a little nearer the face, or occiput, than the other, or obliquely, so that when we attempt to join them, they do not lock, but the handles cross, or pass each other. This is rectified, by moving the one, which seems wrong placed, gently to a correct position; or, if this cannot be done, it must be withdrawn, and re-introduced. To attempt, by force, to thrust the handles together, to make them unite, would give pain, and, most likely, the instrument should slip, when we begin to act; and, if a young practitioner, who tried the forceps for the first time, were foolishly to attempt to pull with the blades, without locking them, he would only pull them out, without bringing away the head. In joining the instrument, care must be taken, that neither the nympha, nor any other part of the mother, be included in the lock. The finger is therefore passed round the point of junction, before the handles be pressed together, or correctly locked. As the blades are fixed along the sides of the head, which is lying in the axis of the brim of the pelvis, it is evident that when they are joined, the handles will be situated in the same line or axis, and therefore will be directed downward, and backward, the lock resting on the margin of the perinæum.

I have described the first blade as being introduced in front, between the head and the pubis, but this is by no means necessary. On the contrary, we sometimes find it much easier, to introduce the posterior blade first, and, in that case, should do so.

In this process, we must be deliberate and cautious. We must never restrict ourselves in point of time, nor promise that it shall be very speedily accomplished. If we act otherwise, we shall be very apt to do mischief, or, if we find difficulty, to abandon the attempt. When the pelvis is so contracted, as to make it just practicable, to introduce the forceps, that part of the head, which is above the pubis, sometimes projects a little over it, so that we cannot pass the blade until we press backward a little with the finger, on that part which we can reach, or when the head is impacted we may find it necessary, before we can insinuate the forceps, to endeavour to raise it a little, so as to facilitate the introduction of the blade. All attempts to overcome the resistance by force, every trial which gives much pain, must be reprobated. But, on the other hand, so long as his conduct is gentle and prudent, the young practitioner must not be deterred, because the patient complains, for the uterine pains are often excited by his attempt; or, some women, from timidity, complain, when no unusual irritation is given to the parts. Slow, persevering, careful trials, must be made; and I beg, as he values the life of a human being, and his own peace of mind, that he

do not desist, and have recourse to the crotchet in cases at all doubtful, until it have been well ascertained, that a safer instrument cannot be applied.

The blades being joined, we pull the instrument downward, and move it, a little, to ascertain that it is well applied. We then begin to extract, taking advantage of the first pain. If the pains still continue, we pull downward, and backward, in the direction of the axis of the brim. Then we move the handle a little forward, toward the pubis; and next, after halting a second, move it slowly back again, still pulling down. We must not carry the forceps rapidly or strongly, forward or backward, against the pubis or perinæum, for the direction of our force should be downward, in the line of the axis of the brim. The motion of the pendulum kind, is intended to facilitate this, but, if performed with a free and forcible swing, the soft parts must be bruised, and great pain occasioned. The operation of extracting, is not to be carried on rapidly, or without intermission: on the contrary, we must be circumspect, and imitate the steps of nature. We must act, and cease to act, alternately, and examine, as we go on, the progress we are making, and also ascertain that the instrument be still properly adapted to the head; for it sometimes slips, or shifts, and this is particularly the case, if it have not been, at first, very correctly applied. It is sure to slip, if the blades have not been introduced, far enough, to embrace fully the head, or if they be too near the face or the occiput, or be not quite parallel to each other, and however correctly they may at first have been applied, the efforts for extraction may make them shift a little. In this event, we must stop and rectify the error; and, in every instance, must ascertain that the head be descending along with the instrument, otherwise the forceps may come suddenly away. The head being made to descend, the face begins to turn into the hollow of the sacrum, and, in the same degree, the handles must move round on their axis; and when the face is thrown fully into the hollow, the handles must be turned more forward and upward, being placed in the axis of the outlet. The pendulum kind of motion, must now be very little, and is to be directed from one ischium toward another. As the head passes out, the handles turn up, over the symphysis pubis. In this stage, we must proceed circumspectly, otherwise the perinæum may be torn. This is more apt to happen, if we be not attentive to the correct position of the forceps on the head. The blades are apt to slip a little, and not embrace the head properly, but when it has descended, and is just about to turn, the blades press much on the perinæum, and when the head does turn, their edge is apt to act so much on the perinæum, as readily to tear it.

The power required to be exerted, in bringing down the head, must, evidently, be proportioned to the resistance, and is sometimes very considerable. But much pain to the mother, and fatigue to the operator, are sometimes produced, by not pulling or acting in the proper direction.

When the head is brought down a certain length, the natural pains sometimes expel it, even before we can well get the blades off. The assistance given by uterine contraction is great, and ergot may be a very useful adjuvant, if given just after the forceps are found to be correctly applied.

If we cannot, in the usual way, apply the blades efficiently, or act with them, we sometimes, readily succeed, by introducing them at the sides of the pelvis, over the face and vertex, and almost immediately make an impression on the head. The blades often shift gradually, so as to get on the sides of the head, as it descends. I have not seen the features injured in this way.

If the forceps be injudiciously introduced, the bladder or uterus may be perforated; or if the head be allowed to remain too long jammed in the pelvis, some of the soft parts may slough. The under and posterior part of the bladder is apt to slough off, leaving the woman incapable of retaining her urine. This is best prevented, by being extremely attentive in every case, especially in those, where the soft parts have suffered much or long from pressure, to evacuate the urine regularly twice a-day, employing, if necessary, the catheter. The parts ought also to be kept very clean, and may be frequently bathed, with decoction of chamomile flowers.

If the fontanelle, or crown of the head, present, the blades of the forceps are placed directly over the ears, which are included in the fenestræ. The posterior rim, will pass very near the parietal protuberance, either on it, or just before or behind its projection, according to the size of the head, and its obliquity of position. The points, are at the side of the neck, or sometimes directed toward the back. The anterior rim, skirts, or perhaps even presses on, the very angle of the jaw. We endeavour, as the head advances, to make the vertex rather than the face, descend, raising as much as possible the forehead. If the change in the position of the head, be such, as to make it useful to withdraw the blades, and apply them in a better direction, we do so. Indeed, if any favourable change can be effected, before the forceps be applied, it will be so much the better.

I have formerly noticed those circumstances, which, usually, render a face presentation tedious; and if the pelvis be in any degree contracted, or the head above the average size, the difficulty is increased, and the forceps may be required. The

ordinary instrument does not apply well to the head, but its extremities pass off from the occiput. It is, therefore, better to have forceps more curved at their ends, as I have, a little before, described. The blades are applied, as in natural presentation, on the sides of the head. The lock, is nearly opposite the lower part of the forehead, or root of the nose, and the extremities, embrace the back part of the temporal, and side of the occipital bone, near the neck. The forehead is generally lowest, and we have seen, that usually it turns backward, so as ultimately to rest on the perinæum, whilst the chin passes out from under the arch of the pubis. We act with the forceps, in the direction of the axis of the brim, till the forehead distend the perinæum, and then we either may desist, or continue to act, but more in the direction of the outlet. It is seldom necessary to alter the course of the blades.

In face cases, Dr Davis proposes, to bring down the occiput, by fixing on it a vectis, having sharp projections on its concavity, to fix it on the scalp. But this advice, I believe, has not been adopted.

The pelvis is sometimes sufficiently large at the brim, to allow the head to enter, more or less easily, into the cavity, but the outlet is more contracted, or altered in the shape, so that the head is stopped there, and the forceps are required. This is rare, but when it does occur, the blades ought to be applied on the sides of the head, if possible, in the usual way. Mere rigidity of the perinæum and soft parts, can scarcely ever of itself, require instrumental aid. Timely bleeding, &c., may prevent this necessity.

When the breech presents, and artificial aid is required, it was customary, to apply the blunt hook, on one of the groins, as the thigh is folded upon the belly. This requires care, lest the end of it, injure some of the skin of the child, or the external parts of generation. We ought to introduce the finger, and feel for the point of the hook, after that is passed over the thigh, and keep on it as a guide and defence till it be fairly drawn down and fixed. I have known the extremity forced into the thigh. If much force be employed, the bone may be fractured, for, it is more easily broken, than dislocated. For these reasons, the hook is not so frequently employed now as formerly.

If the breech be within reach of the short forceps, we should apply the blades, over the sides of the child's pelvis, which will be diagonal with regard to that of the mother. Dr Hamilton advises the convex edge of the blades to be directed towards the child's belly.

Having offered these practical directions, for the use of the forceps, in cases where the head has descended, considerably, in

the pelvis, I am next to state, that sometimes it remains long very high, or is absolutely prevented, by the contraction of the brim, from making any great progress. When it is altogether above the brim, or only a small part, after many pains has entered, the forceps cannot be used, and no remarks that I make, are to be construed as applicable to such a case. But, if no such deformity exist, we may contemplate the application of long forceps, in a high situation of the head. There are two causes, which may keep the head high. The first is such a degree of contraction of the brim, as barely renders it difficult, for the uterus to force the head so low, as in ordinary forceps cases, and dangerous to wait until time ascertain, experimentally, the impossibility of accomplishing this. The more yielding parts of the cranium have entered, the scalp probably is swollen, but the more solid and resisting part of the head, is still above the brim, yet the contraction of the pelvis, is not so decided, as to make us sure of the necessity of using the instrument. The finger must be carried high, to feel the ear, and ascertain the position, and the common forceps are too short, as the lock, if not part of their handles, would be buried perhaps in the vagina. The second cause is, spasmodic action of the uterus, complicated with some degree of contraction in the brim, but not so much as to prevent regular and efficient action, from forcing down the head; for I have known this state occur, in those, who have formerly born living children, without aid. When spasm, in such instances, takes place, and is not speedily removed, this very formidable state may be met with; and so far from the head being forced lower, by the pains, it is sometimes, rather, raised a little, during the pain. Long delay, in this state, is dangerous, and whatever practice is to be adopted, must be resorted to promptly. Inflammation is a frequent consequence, and may begin previous to delivery.

It long ago was, and still with some is, the practice, in this state, to turn the child; but the force required, to pull the head through a contracted pelvis, can scarcely fail to be fatal to the child, to say nothing of the difficulty, and danger of turning, in a uterus much contracted. Lessening the head implies, to a certainty, the death of the child, which is barely possible to be avoided, by the other practice; but it does not necessarily endanger the mother. A third practice, and that which comes before us, now, for consideration, is the application of long forceps.* Smellie, first used the long forceps, in this high situa-

* Baudelocque prefers turning, when that is practicable. Saxtorph and Plenck positively forbid the forceps. Hamilton and Osiander use them. The former limits their employment, 1st, to the necessity of speedy delivery, whilst there are no pains; the head is beyond the reach of the short forceps, and the pelvis is contracted. In such a case, he tries them before perforating. 2d, The necessity

tion, and advises the blades to be applied, over the ears, in the same way as the short ones. It is vain to attempt this mode of application, when the head is of the ordinary size and firmness, if the pelvis, including its soft lining, do not measure more than $3\frac{1}{4}$ inches. The lateral diameter of the head cannot be calculated at less than $3\frac{1}{2}$, and it may be more. To this, we may, in the cases I am considering, and the thickness of the blades of the forceps, or $\frac{1}{2}$, for although it be said, that the fenestra allows the protuberance to enter, and consequently, the blades to sink, to a level with their surface, yet this cannot be always depended on. It is difficult to compress the skull beyond $\frac{1}{2}$ of an inch by instruments, and therefore the applicability of the forceps, either long or short, must be very limited in cases of contracted pelvis. I have carefully made trials, in a pelvis measuring $3\frac{1}{2}$, and found the head could not be grasped, unless it were free above the brim. In this case, the lock, although the blades from that to their extremity, measure 7 inches, must be within the vagina, and no part of the head can be made to enter the pelvis; even if it could, we should find it very difficult, to act with the instrument, or draw the head down, in the proper direction, for, in order to do so, the handles must press the perinæum, as far back as the coccyx, and if this bone, and the sacrum, curve much forward, even this position of the handle, would not be far enough back, to give us any advantage. Granting that, in every case, the forceps could be applied, over the ears of the child, when the head is above the brim, or when only a small part has entered, how far could we bring down the head and forceps, in a pelvis measuring $3\frac{1}{2}$. This may be determined, by marking the distance from the lock, to that part of the blades, which recedes exactly to this extent. It is $2\frac{1}{2}$ inches, and only about half an inch of the head, shall have entered the brim. If we increase the diameter of the pelvis, to $3\frac{3}{4}$, the distance from the lock to that part of the blades, where the instrument would stop, would be $3\frac{1}{2}$, and about $1\frac{1}{2}$ of the head shall have entered. Next, supposing that by the pressure of the blades, we can squeeze the head smaller, even to the extent of half an inch, which is more than can be depended on, we should find, that the minimum diameter, of a pelvis, through which we can bring a head, in the most favourable circumstances, cannot be under $3\frac{1}{2}$; and even then, if practicable, it will be both difficult and dangerous, to use the forceps, applied in this way, when the head is above the brim. From the best consideration I can give to the subject, I must say, that we really cannot expect to act, in this mode, with the long forceps, in a pelvis so contracted, as not, if the pains be of delivery, the head being high, but the pelvis well formed, and the soft part relaxed.

strong, to admit, ultimately, of the use of the short forceps. But an important question, will be, the dimensions being the same, can we or ought we to use the long forceps, rather than wait, till the head have come, within reach of the short? for I am satisfied, that we cannot safely use the former, in a pelvis, necessarily, preventing the employment of the latter. We can easily conceive cases, where the head has descended, not quite low enough to use the latter, and yet not far from it, and in which, if the pains were brisker, and a little more could be pushed down, we could apply them. But the strength is wearing out, and the pains are defective, and we dare not wait longer. Here we are decided, not by the greater contraction of the pelvis, requiring us to do with one instrument, what we never could have done with another, but by circumstances of a very different nature, of expediency.

But it may well be said, that this argument applies only to the application of the forceps in an unfavourable way, for, that if we placed the blades differently, namely, at the sides of the pelvis, and consequently on the occiput and face of the child, we should save something, at least, the thickness of the blades, besides applying them more easily. The objection is just, and I am quite satisfied, that we may thus bring down a head, which barely could not have come within reach of the short forceps, and never could have been delivered by the long ones, applied on the sides of the head. To facilitate the application and action, forceps with the double curve are generally used. Still, the power of this instrument, is limited to a very narrow line, which I shall, at the conclusion of this consideration, define. Baudelocque, first distinctly mentions the plan, and argues against it, not only from the insecurity of the hold, but from its increasing, by pressure, the lateral diameter of the head, although his own experiments prove, that this sometimes does not take place at all, and, in any case, only to a very limited degree. He mentions it as the proposal of De Leurve,* but it is evident, that he only applied them diagonally. If we place one blade, toward the sacro-iliac articulation, and the other, behind the body of the opposite pubis, its inner margin being at the symphysis, we can make the top of the head, just project into the brim, but no more. If we introduce the blades at the *sides of the pelvis*, and apply one on the occiput, and the other on the face, as is now most properly done, when the long forceps are used, we

* " Le forceps ne s'applique jamais latéralement, une branche est presque toujours sous le corp du pubis, et c'est la plus difficile a placer : l'autre se place près la tuberosité de l'ischion, et je peux certifier que, malgré toutes les precautions, on n'embrasse jamais la tête complètement, surtout avec la branche qui est la plus près de la face." *Traité des Accouchemens*, § 796.

find, that the extremity of the one, on the face, rests on, or embraces the chin.* The extreme width, between the blades varies, of course, with the size of the head, from $4\frac{1}{2}$ to 5 inches, and the distance from the lock to the scalp, from $1\frac{1}{2}$ to $2\frac{1}{4}$. In this way, we not only introduce, and apply the forceps, more easily than in the other, but we have a good hold, and save $\frac{1}{2}$ on the thickness of the blades. We also find that we can better act, in the proper direction of the axis of the brim. We must, however, have a lateral diameter of at least 5 inches, if the head be large. In order to save the face, Dr Davis proposes to have the inside of the blade, which is placed on the face, stuffed; but, whilst this, must add to the diameter of the passing body, it will afford little additional security to the face. The os uteri must be fully dilated, so that the blades can be introduced between it and the head, without injuring it. One blade is to be gently glided along the hand, at the side of the vagina, into the uterus, close by the head, so that its point gets over the occiput or face, and then the other is to be introduced on the opposite side. When we have got the blades fixed, we must endeavour to extract, during the existence of a pain, but never can succeed, if we do not pull sufficiently backward; for if we pull directly down, we only press the head, more firmly, against the upper part of the pubis. Although the upper margin of the sacrum, be sometimes level with the linea ilio-pectinea, yet, often it is half an inch higher, and projects nearly as much, over the surface of the first bone. In such cases, the head can enter easier, if directed obliquely backward, which is another reason for doing so, and also for placing the blades at the sides. We must not use great nor continued force, but act at intervals, and especially during a pain. There is no fear of the face being hurt. If we succeed, in bringing down the head into the cavity of the pelvis, we may then exchange the long for the short forceps, and apply them in the usual way, over the sides of the head. On the whole, I would give it as my opinion, that a well instructed practitioner, who has had, already, some experience in the use of the short forceps, is warranted to make a cautious, steady, but gentle attempt, to apply, and act with the long forceps, in a case where he is not quite decided, that the perforator is indispensable, and where the head is higher than permits the application of the short forceps. But where the head is very high, the success will bear but a small proportion, indeed, to the failure, and I do strongly urge the operator, never to make reiterated trials and efforts, which can only end, in the production of fatal inflammation.

* If the forceps have a lateral curve, the convex margin of the blade must be introduced toward the sacrum.

As a general rule, it is to be remembered, that the employment of the forceps is dangerous, in proportion to the difficulty of applying them, and the force required in acting with them. We therefore, when the child is dead, invariably prefer lessening the head.

I doubt not, that many young practitioners, when examining the position of the head, in a case of tedious labour, or of arrest, have imagined, that by using the finger, as a hook, over the bulging part of the skull, they might accomplish delivery. But were the fingers strong enough, they are too thick, and occupy too much room, and even if they did not, they have not sufficient strength. But, what the fingers cannot do, may often be done with the Lever, which is unfortunately named, for it ought not to be employed to wrench, but to hook, or draw down, the head, and its proper application, would be less apt to be mistaken, were it called the Tractor. In using this, our first object, is to have it placed on some rounded or projecting, and, likewise, firm part of the head, which can afford a secure fixture, to the extremity of the instrument, and which, at the same time, may not be injured by it. It has a good hold, on the side of the jaw and chin, but the bone may be injured or broken: another, equally good, and safer, as being a stronger part, is the back of the head, comprising the lower and back part of the parietal bone, the very lower and back part of the temporal, where the mastoid process is afterward to be developed, and the lower and lateral part of the occipital bone, as near the vertebræ, as the neck will allow. Here the extremity of the lever ought to rest. When the head is so oblique, as to have the face much directed upward, the end has been placed on the forehead. Some advise, that we should let it remain on the first place, where we find it fit, and obtain a hold, without regard to what that may be. The instrument, may be introduced under the pubis, but the extremity being curved, it is often easier, to introduce it, at the side of the pelvis, or even at the back, along the side of the sacrum, working it gently round, toward the front, and till it rest on a good place, generally, the one I have described. We wait, then, till a pain come on, during which, we draw or press down the head, in the direction of the axis, of the brim, that is, toward the coccyx, keeping the blade steady, by pressing it on the head, with the fingers of the left hand, in the vagina, and if we do, in any degree, employ it as a lever, by bringing slightly forward the handle, we make these fingers, and not the pubis or soft parts, the fulcrum. Sometimes we may press, with the thumb, on the stalk of the blade, and with the fingers, on the opposite part of the head, in the hollow of the sacrum. But we never wrench down the head, nor allow the blade, to squeeze the lining of the

pelvis, making it a fulcrum. There must, indeed, be more or less pressure made, by the head itself, against the back of the pelvis, as it moves down along it. When we act with the forceps, the one blade is an antagonist to the other, and no pressure is made, necessarily on the soft parts, beyond that proceeding from the mere bulk of the passing body. But it is otherwise with the lever, for, although we use it, as much as possible, as a hook or tractor, yet, it cannot act exclusively on the head, as the crotchet might do, but must, by its pressure on the one side of the head, make the other, rub or press on the opposite part of the pelvis, and, therefore, with all our care, and even if we used two fingers as antagonists, the soft parts must be more pressed on, than by the forceps.

We shall always find the lever, more or less effectual, in proportion to the assistance afforded by the uterus itself, and it ought not to be employed, when we have no reason to expect the active co-operation of the pains. It should be considered more in the light of an aid to the pains, than the forceps, and more dependent on them for success, consequently, more limited in its utility. In this view it is a subordinate instrument, in so far as it is used in milder cases of arrest, which perhaps might, ultimately, have been terminated by the natural efforts, but to which, it might not have been prudent, longer to have trusted. The pains may not be strong, but still they assist the instrument, and are generally excited by it to greater efficiency, otherwise we do less good.* But, in another view, it is to be considered as superior, in so far, as it may be proposed, in cases, midway, between those admitting the use of the short, and demanding that of the long forceps. Some will say, that it can be used, whenever the long forceps can be employed. When the head is brought into the cavity of the pelvis, the difficulty is overcome, and we may either remove the instrument, expecting the head to pass out, speedily, by the natural efforts, or we change the direction of the lever, and act with it, in that of the axis of the outlet. Some employ the forceps, but if we have gone thus far with the lever we may safely make it finish its own work.

When the crown of the head presents, the fixture of the blade, is generally near the situation of the mastoid process, or toward the occiput. The last, has the advantage, of sooner rendering the position of the head, properly oblique.

In face cases, the lever passes in a line, from the forehead or root of the nose, its extremity resting on the side of the occiput,

* If there be scarcely any pain, and the circumstances be, otherwise, such as to make us believe, that with the aid of uterine action, the delivery might be soon effected by the instrument, we may, after applying it, give ergot, before we act with it. This may also be proper in some forceps cases.

between the vertex and neck, but scarcely so far back as the vertex.

I have long been of opinion, that although practice may enable a man, to use either the lever or the forceps with dexterity, yet a young practitioner shall be less apt to injure his patient, and less likely to be foiled in his attempts, with the latter than with the former, and therefore I give a decided preference to the forceps. At the same time, I think I have done justice to the lever.

ORDER SECOND.

It unfortunately happens, that sometimes the pelvis is so greatly deformed, as not to permit the head to pass, until it have been lessened by being opened.

It is universally agreed, that a living child, at the full time, cannot pass through a pelvis, whose conjugate diameter, is only two inches and a half. It has been stated by high authority, that if the dimensions were "certainly under three inches, a living child could not be born." This opinion is decidedly true, and the few exceptions which may, perchance, occur, depend on the original size, and peculiar constitution of the child, together with the pliability of the cranium, or the peculiar shape of the pelvis, and the force and activity of the uterus, as well as the general strength of the woman. The resisting part of the base of the skull, often measures above three inches and a half, sometimes near four inches; and, in this case, with all the efforts made by the forceps, even supposing that they could be applied, it must be, in every instance, laborious, and, in many, next to impossible, with safety to the mother, leaving the child altogether out of the question, to bring down the head. There have indeed, been instances, where, even by the efforts of nature, living children have been expelled, through a pelvis, supposed to measure only three inches; and there are similar examples of the delivery being under the same conformation, accomplished by instrumental aid.* But we have no ground to expect, from what has already been said, that the head can be brought unopened, by the forceps through a pelvis whose conjugate diameter is not fully $3\frac{1}{2}$, inclusive of the soft parts. Every one knows, that even at the full time, the child is sometimes very small; or the head, when not very diminutive, may be either small at the base, or

* M. Baudelocque relates a most interesting case, where there were decided marks (the stethoscope was not then known,) of the fetus being dead in utero, and yet these were delusive; for, by the forceps, the woman was delivered of a living child, although the pelvis was supposed to measure, only about three inches. *L'Art des Accouch.* last edition, sect. 1917.—Cases in point may also be seen in *Dr Alexander Hamilton's Letters*, pp. 94, 102, 13.—Similar instances have come within my own knowledge.

more than usually pliant. But in making up our judgment, in a case of deformity, we are not justified in calculating on the happy coincidence of such a state; but ought, unless the finger can inform us to the contrary, to reason on the ordinary size and firmness of the cranium. We are not warranted, however, instantly, to open the head, merely because we estimate that the pelvis does not, in its conjugate diameter, measure fully three inches; but because we have ascertained, by a sufficient, but not a dangerous trial, that the uterine action cannot force down the head, so that the forceps or vectis may be applied, or acted with, effectively. If no part of the head have entered the brim of a contracted pelvis, the case decidedly is not, at this time, one for the long forceps, or lever. If only a little of it have entered, or perhaps rather the swollen scalp, we have not a better opinion. But when more has been pressed in, and in all cases where the dimensions, and circumstances of the case, are *barely* such, as to warrant a belief that the head must be opened, an attempt ought previously to be made, not in a careless or hasty, far less in a dangerous manner, but deliberately and attentively, to introduce, and act with, the vectis or forceps. To ascertain the dimensions of the pelvis, the hand, in general, will require to be introduced into the vagina.

We may, however, if the dimensions be under three inches and a quarter, be assured, that delivery at the full time, cannot be accomplished by instruments, without the destruction of the child. But, as it is a matter of great nicety to determine, within a fraction of an inch, the capacity of the pelvis, a practice, founded altogether on arithmetical directions, must be unsafe. In every case, therefore, we ought to allow some time, for the pains to produce an effect; and this time, should be longer or shorter, according as, in our estimation, the dimensions diminish below three inches and a half. When this is the case, we have no reason to expect, that the head can pass, unless it be unusually pliable or small, or burst,* or be artificially opened; and if only three inches, inclusive of the soft parts, the head should, for the advantage of the mother, be perforated, as soon as the os uteri is properly dilated, which ought always to be effected, in the time formerly specified. Until the os uteri be fully opened, no attempt to introduce the perforator can be sanctioned. One circumstance, however, must be attended to, in our consideration, namely, that the promontory of the sacrum may be directed somewhat obliquely, in which case, although the conjugate dia-

* So far as I can judge, the sutures yield sooner than the scalp, and the brain is effused, or pushed out like a bag. When the integuments open first, it is owing, I apprehend, to sloughing from pressure and injury. A very distinct case of spontaneous bursting of the cranium may be found in Dr Hamilton's Cases, p. 17.

meter, measured from that to the front, do not extend beyond three inches, yet, toward the side, the diameter may be greater. The thickest part of the head, may find its way down there, whilst a narrower, or more compressible portion, may pass at the smaller part. In cases at all doubtful, it is imperative to wait for some time, to ascertain what can be effected; not that delay is less injurious in crotchet, than in forceps, cases, but, because interference in the latter, may be productive of much benefit, without purchasing that, at the certainty of mischief; whilst in the former, the greater safety, or abridged suffering of the mother, arising from the perforation, necessarily implies the destruction of the child. Some eminent men on the continent, seem to think that the long forceps may, in most cases, supersede the necessity of the crotchet: but I must dissent from this opinion, and whilst I endeavour to prevent the unnecessary loss of the child, I cannot place out of consideration, the danger, if not the destruction, of the mother, which may follow from improper delay, and the injudicious employment of the forceps.

It is calculated, that about a fifth part of the mothers die, in crotchet cases. Previous measures and long delay must add to the risk.

But although it be thus laid down as a general rule, that the pelvis, which measures fully three inches and a quarter in its conjugate diameter, may, possibly, admit a living child to pass, either by the application of the vectis or forceps, or still more rarely by the efforts of the womb, yet, it is nevertheless true, that sometimes the child must be destroyed, even when the space is greater. This may become necessary, owing to the great size of the child, and firmness of the cranium, or a hydrocephalic state of the head;* or the soft parts in the pelvis may swell so much, as to diminish in an increasing ratio, the size of the pelvis and effectually to obstruct delivery;† or spasmodic action of the uterus, may so retard the descent of the head, as to prevent it from coming within reach of the forceps, within a time, safe for the mother, or of avail to the child. The parts may also be so tender, as to render even a common examination painful, and to prevent the application of the forceps, or their effective action, in a case merely equivocal. I have seen in a first labour, from the tardiness of the process, and slow descent of the head, the long forceps fail in the hands of a very judicious operator, now

* I have seen a cranium so enlarged with water, that when it was inflated after delivery, so as to resume its former size, it measured twenty-two inches in circumference.

† Baudelocque *l'Art des Accouch.* sect. 1705.—See also a case in point, in Dr A. Hamilton's Letters, p. 83.—Every attentive practitioner must, from his own experience admit the fact.

dead, although the conjugate diameter of the pelvis measured fully three inches and a half, and, in that case, even the use of the crotchet required exertion. I know some will be ready to say, the operator failed, when he ought to have succeeded; but I was most attentive to the steps, and quite satisfied of the correctness of the opinion I give, of the impracticability of delivering with the forceps, in this particular case. Alarming convulsions, may likewise induce us to perforate the head, in a case of deformity, where it is perhaps possible, that the vectis or long forceps might succeed, after a greater delay or length of time, than is compatible with the safety of the mother; but this combination of evils must be rare. No practitioner, I believe, in this city, has met with such a case. At one period, however, the crotchet was employed in cases of convulsions, where the vectis or forceps would now be used.

By the rash and unwarrantable use of the crotchet, living children, have been drawn through the pelvis, with the skull opened, and have survived, in this shocking state, for a day or two.*

To prevent all risk, of bringing a living mutilated child, to the world, and to avoid, at the same time, killing or giving pain to the child,† even in those cases which clearly demanded the use of the perforator, some have delayed operating, until the child appeared to have been destroyed, by the expulsive efforts, or other causes, and have therefore been anxious to ascertain the signs, by which the death of the child might be known.‡ It was still more desirable to know these, at a time when the forceps were undiscovered. But the signs enumerated, are in general extremely equivocal. Of late, the stethoscope has been

* Vide Mauriceau, obs. 584.—La Motte, case exc.—Hamilton's Letters, p. 153. *Peu La Pratique*, p. 346.—Crantz de Re Instrument., &c., sect. 38.—Mr Hammond relates a case where the child lived 46 hours. It was able to cry, and was supposed to die more immediately from loss of blood than injury of the brain. The cerebellum was not hurt. *Med. and Chir. Trans.* Vol. xii. part 2d.

† It has been disputed, whether the child in utero was capable of sensation; but both facts and reasoning are in favour of its sensibility.

‡ The signs of a dead child have been described to be a feeling of weight, or sensation of rolling in the uterus, want of motion of the child, pallid countenance and sunk eye, coldness of the abdomen, with diminution of size, flaccid breasts which contain no milk, foster of the discharge from the vagina, liquor amnii coloured apparently with meconium, although the head presents, puffy feeling of the head, want of firm tumour formed by the scalp when the head is pressed in a narrow pelvis, no pulsation in the cord, &c. Vide Mauriceau, Obs. 281. These signs, even if conclusive, can only apply to cases where the child had died, some time before labour commenced. When a woman bears a child which has been for some time dead, we must watch, lest her recovery prove bad.

I may notice here, that in order to get rid of the crotchet, small forceps have been applied over the collapsed head, or a kind of crutch, or *tire tête* has been inserted within the cranium. Some have employed a trephine, in place of a perforator.

employed to decide the case, by the presence or absence of the sound of the fetal heart. Much and *unnecessary* suffering, may thus be saved. When the heart is distinctly heard, there can be no doubt, but the converse of this is not so satisfactory; one man is more acute than another in hearing, and something must be conceded to the effect of practice. It is certainly desirable, that students should take every opportunity of becoming expert in this truly important matter.

The steps of the operation are very simple: the rectum, but especially the bladder, being properly emptied, we place the forefinger of one hand, on the head of the child, and with the other hand, convey the perforator, to the spot on which the finger rests. The instrument, being carried cautiously along the finger as a director, can neither injure the vagina nor os uteri, and, in general, no difficulty is met with in this part of the operation. Sometimes, however, in very great deformity, the os uteri is placed so obliquely, that it must, previously, be gently brought into the most favourable, that is, the widest part of the pelvis; and afterwards, the perforator, being placed on the head, must have its handle in the axis of the brim, which may require the perinæum to be stretched back. These points being attended to, the scalp is then to be pierced, and the point of the instrument rests on the bone, through which it directly, or after a momentary pause is to be pushed, either by a steady thrust, or a boring motion. It is to be carried on, till checked by the stops. The blades are then to be opened, so as to tear up the cranium, and in order to enlarge the opening, they may be closed, and turned at right angles to their former position, and again opened, so as to make a crucial aperture. If the liquor amnii have been well evacuated, and a portion of the cranium have entered the pelvis, the perforation can be made without any assistance, but if the whole of the head be above the brim, it may be necessary to keep it steady, by pressure above the pubis. It is proper to add, that if the face present, we must perforate the forehead, just above the nose.

If we have turned the child, and wished to open the head, the instrument must be introduced behind the ear, and the bones freely opened, both laterally and upward. The crotchet is then introduced, and obtains a good fixture, on the base of the occipital bone and foramen magnum.

It is scarcely necessary to break the brain down, by turning the perforator round within the head. If part of the cranium have entered the pelvis, some of the brain, may come out with a squirt, whenever the bones are opened; and at all times we have more or less hæmorrhage, from the vessels of the brain. Sometimes the blood flows very copiously. We have been advised

always to delay, a considerable time, after opening the head, before we apply the crotchet, and doubtless, if the perforation have been made early, we may leave the case, for a little, to the operation of the uterine efforts, which, although they cannot effect delivery, yet, may force the yielding head down, and render the action of the crotchet less severe. But when the labour has been already long protracted, the propriety of this direction, is to be strongly disputed, on grounds I have formerly explained, relating to instrumental aid. If there be reason to believe, that the crotchet can at once be easily used, what advantage is there in delay? In greater deformity, there may sometimes be advantage, in delaying for some time. Dr Osborn, in his Essays, advises that the head should be opened early, and that we should then delay to extract for thirty hours. In cases of deformity, decidedly requiring the use of the crotchet, the first direction is important; but the delay of the specific number of thirty hours is, in most cases, if not in every instance, much too long; it is not sufficient to produce, in any case where the child was alive when the skull was perforated, such a degree of putrefaction as materially to facilitate the operation. The chief benefit of delay, is to bring as much of the cranium as possible into the pelvis. But, in obtaining this, we must consider whether we do not exhaust the mother more, by the continuance of the pains. There may be cases, where it would be useful, after perforation, to procure a little sleep, and when this can be done, delay is proper.

If the deformity have been no more, than just sufficient, to require the use of the perforator, then, if the pains become strong, it is possible for the head to be expelled without further assistance. But this is not a general occurrence, for the base of the skull does not readily yield, and it is better at once to use the crotchet. But in all cases, if the deformity be greater, or the pains weak, only the pliable part of the cranium can descend, and the face, and basis of the skull, remain above the brim of the pelvis, until artificial force be used. When this aid is required, which is generally the case, the crotchet is to be introduced through the aperture of the cranium, and fixed upon the petrous bone, or such projection of the sphenoid bone, or occiput, as seems to afford a firm fixture, or on the outside of the base of the skull, at the pubis. This will be, generally, near the mastoid process, and is often found to be a good situation. We then pull gently, to try the hold of the instrument, and this being found secure, we proceed to extract in the direction of the axis of the brim, by steady, cautious, and repeated efforts, exerting, however, as much strength, as may be necessary, to overcome the difficulty. In doing this, we must always keep a hand, or some of the fingers, in the vagina and on

the cranium, to save the soft parts, should the instrument slip. If the force be steadily and cautiously exerted, we may always feel the instrument slipping or tearing the bone, and have warning, before it come away. We should, in extracting, co-operate as much as possible with the pains. Should we not succeed in this way, the instrument may be withdrawn, and fixed on the outside of the head, sinking it in, near the base of the skull. Sometimes an extractor, in the form of pincers, is used in 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: one blade, goes within the bone and the scalp, and the other, without. A kind of double crotchet, one blade going within, and another, with prongs, going without, has been proposed by Dr Davis. In cautious hands, however, I think the crotchet may be safely trusted.

It is quite a mistake to suppose, that because the head is opened, therefore, the delivery must be easy. The force requisite to bring down the base of the skull, even when the pelvis is barely so small, as to prevent the application of the forceps, is often much greater than is generally used in forceps cases. The reason is, that part of the force is spent unprofitably. It is not very easy to fix the crotchet, so as to make its action on the head be direct, without inclining it in any degree obliquely, with regard to the axis of the pelvis, or making it press unprofitably, or even hurtfully, on some part. It is indeed often impossible, to bring down the opened head, without drawing it so, as to make its base enter obliquely, and offer a smaller diameter. We find, after delivery, that the diameter of the unyielding part of the skull, is above a quarter, perhaps near half, an inch broader than the diameter of the pelvis, as ascertained after death. It could, in this case, only pass obliquely. Small forceps, whose blades could come, considerably, within three inches of each other, may, in a particular degree of contraction, act better and require less exertion.

A machine called the cephalotribe, weighing six or eight lbs. has been proposed for crushing the head; and this operation has been called cephalotripsy. In cases where the pelvis is much contracted, it must be difficult, if not impossible, and if possible, most dangerous, to introduce the blades over the head.

When an arm protrudes along with presentation of the head, its bulk increases the difficulty, and if it cannot be returned, it is sometimes necessary to remove it at the shoulder joint, before or after perforating the head. This has been done advantageously by my son.

It may happen, that the pelvis is so small, as to require the head to be broken down, and nothing left but the face and base

of the skull. This is an operation, which will be facilitated, by the softening of the head, which takes place some time after death, rather by pressure than putrefaction. If the child be recently dead, the bones adhere pretty firmly; and, in a contracted space, it will require some management to bring them away. But if the parts have become somewhat putrid, or been much squeezed, or the child have been dead, before labour began, the parietal and squamous bones come easily away, and the frontal bones separate from the face, bringing their orbitary process with them. We have then only the face, and basis of the skull left, and if the pelvis will allow these remains to pass, then the crotchet can be used. I have carefully measured these parts, placed in different ways, and entirely agree with Dr Hull, a practitioner of great judgment and ability, that the smallest diameter offered, is that which extends from the root of the nose to the chin. For, in my experiments, after the frontal bones were completely removed, and the lower jaw pressed back, or its symphysis divided, so as to let its sides be pushed away, this did not, in general, exceed an inch and a half. It is therefore of great advantage, to convert the case into a face presentation, with the root of the nose directed to the pubis. The size of the crotchet, which ought to be passed over the root of the nose, and fixed on the sphenoid bone, must, however, be added to this measurement. I never have yet been so unfortunate, as to meet with what may be considered as the smallest pelvis, admitting of delivery *per vias naturales*;* but I would conclude, that whenever the pelvis, with the soft parts, measures fully an inch and three quarters, † or, if the head be unusually small, the child not being at the full time, an inch and a half, the crotchet may be employed, provided the lateral diameter, of the aperture in the pelvis, be three inches, or within a fraction of that, perhaps two inches and three quarters, if the head be small or very soft; and the operation will be easy, as we extend the diameter of the pelvis beyond what may be considered as the minimum. It is scarcely necessary to add, that if the outlet be much contracted, it will make the case more unfavourable; and where we have any hesitation, owing to the shape and dimensions of the brim, it will determine us against this operation. The hand, if necessary, must be introduced into the vagina, and a careful examination made. The general im-

* I cannot learn that any case of extreme deformity in a pregnant woman, such as to render it barely possible to deliver with the crotchet, or necessary to have recourse to the Cæsarean operation, has occurred in this city, since the year 1775, when Mr White performed the latter operation.

† M. Baudelocque considers the crotchet as inadmissible, when the pelvis measures only an inch and two-thirds. Dr Davis says, that by means of bone nippers, or what he calls an osteotomist, he has so broken the cranium as to bring it through a machine, with an aperture, of only one inch diameter.

pression, from the shape, &c., made by this, of the possibility or impossibility of delivery, and the calculation or deduction, drawn from the supposed dimension, are corrective of each other. It ought not to be forgotten, that it is one thing to extract, and another to extract safely, in extreme deformity. It is possible, after much exertion, to bring away the child; but every one, must have seen the mother lost, in cases where the capacity of the pelvis, was far from being reduced to the minimum. Sometimes the uterus is ruptured, sometimes the soft parts slough; but oftener the patient dies either of peritonitis, or the belly swells without pain, and she sinks. We ought to be satisfied, not only that we can bring through the child, but that we can do so, without so much violence, as must in all probability, kill the mother. I question much, if extreme cases, be not as dangerous to the patient, as the Cæsarean operation; certainly they are more painful.

In this manner of operating, the face is drawn down first, and the back part of the occipital bone, is thrown flat upon the neck, like a tippet. If we reverse this procedure, and bring the occiput first, and the face last, fixing the instrument in the foramen magnum, then as we have the chin thrown down on the throat, we must have both the neck and face, passing at once, or a body equal to two inches and three quarters. If, on the other hand, we fix the instrument in the petrous bone, which is certainly preferable to the foramen magnum, and bring the head sideways, we must have both that bone and the vertebræ passing at once, or a substance equal to two inches and a half in diameter; and if the head pass more obliquely, then it is evident that the size must be a little more. Although, therefore, Dr Osborn be correct, in saying, that the base of the cranium, turned sideways, does not measure more than an inch and a half, yet we must not forget, that when the opposite side comes to pass, the neck passes with it, which increases the size.

The head being brought down and delivered, we then fix a cloth about it, and pull the body through; or, if this cannot be done, we open the thorax, and fix the crotchet on it, endeavouring to bring down first a shoulder, and then the arm.

In operating with the crotchet, we must always bring the head, through the widest part of the pelvis; but where the deformity is considerable, no small force is requisite. This is productive of pain during the operation, and of danger of inflammation afterwards, which may end in the destruction of some of the soft parts; or, affecting the peritonæum, it may prove fatal to the patient. From injury done to the bladder, retention of urine may be produced, which, if neglected, is attended with great risk. Incontinence of urine, is less to be dreaded, as it is sometimes cured

by time. Severe pain in the loins, and about the hips, with lameness, is another troublesome consequence. If the patient be not affected with malacosteon, the warm, and at a more advanced period, the cold bath, friction, and time, generally prove successful. Much advantage is also derived, in this kind of pain, from applying a compress on the sacro-sciatic notch, and binding it on, with a roller, wound firmly round the pelvis, and all the upper part of the thigh.

In considering the necessity of using the crotchet, I have not, more than in the observations on the forceps, made any special remarks on those instances, where the capacity of the pelvis is diminished by an enlarged ovarium, or other tumours, as the practice is the same, or, when a different course is proper, that has been pointed out, in the commencement of this work.

To avoid the destruction of the child, and the severity of the operation of extracting it, the induction of premature labour has been proposed:* and the practice is defensible, on the principle of utility, as well as of safety. We know that the head of a child, in the beginning of the seventh month, does not measure more than two inches and a half in its lateral diameter; two and three quarters in the end of that month; and fully three in the end of the eighth month. We know, further, that there is no reason to expect, that a full grown foetus, can be expelled alive, and very seldom, even after a severe labour, dead, through a pelvis whose dimensions are only three inches; and, lastly, we have a great many instances, where children, born in the seventh month, have lived to old age. Whenever, then, we have, by former experience, ascertained beyond a doubt, that the head, at the full time, must be perforated, it is no longer a matter of choice, whether, in succeeding pregnancies, premature labour ought to be induced. It is certainly easier for the mother, than the application of the crotchet, and no man can say that it is worse for the child.† All the principles of morality, as well as

* This practice was first adopted about the middle of the last century, by Dr Macaulay, in London, and was afterwards followed by others. About twenty years after this, it was proposed on the Continent, by M. Roussel de Vauzeme; and lately, Mr Barlow, in the eighth Vol. of *Med. Facts, &c.*; has given several cases of its success.—See also *Med. and Phys. Journal*, Vols. xix. xx. and xxi. It may not be improper for me to mention as a caution, that I have been called to consider the expediency of evacuating the liquor amnii, where there was no deformity of the pelvis, but merely a collection of indurated fæces in the rectum. Dr Meriman has a very sensible paper on this subject, in *Med. Chir. Trans.* Vol. iii. p. 123, where he 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. He very properly advises that, before puncturing the membranes, it should be ascertained that the presentation is natural. If it be not, it may become so in a day or two.

† It has been proposed, by low diet, to restrain the growth of the child; but this is a very uncertain and precarious practice. It is romantic.

of science, justify the operation ; they do more, they demand the operation. Two methods have been proposed for exciting expulsive action ; First, by insinuating a finger within the os uteri, and gently dilating it, and detaching a part of the membranes, from the 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 and slowly dilate it, and the cervix, 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 os uteri, but is productive of sensation, not amounting to pain, in the back. Let it be understood, that this slight dilatation is not intended to do more than facilitate the subsequent step. Sponge has also been proposed for the purpose, but it seems only a speculation. 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 a few hours, and then detach the membranes cautiously from the cervix uteri, by the finger, to the extent, perhaps, of two inches. But, for this purpose, it may be necessary, if the os uteri be high, to have the hand introduced into the vagina, or, sometimes the detachment has been accomplished cautiously with a catheter, or other small instrument, which, in one respect, is better than the finger, as it occupies less room, and gives less irritation. If this be not followed by indications of labour within three or four days, we must have recourse to the second proposal, which is more certain, namely, evacuating the liquor amnii, by piercing the membranes, with a long probe, conducted by the finger, (within the os uteri, so as to pierce the membranes); or, Dr Hamilton proposes "a male catheter, with an open extremity" to be introduced between the posterior surface of the uterus and the decidua, to the height of about 5 inches, when the membranes are to be punctured by means of a silver wire, and about a table spoonful of liquor amnii drawn off. Could the detachment always be depended on, it would be preferable, in one respect, to the puncture, 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 may therefore be first tried. But, be it remembered, that there is necessarily more irritation of the uterus, if we do not proceed in the most slow and gentle way, especially if we use the finger alone.

In the beginning of the seventh month, the distance from the margin of the lip of the os uteri, to the membranes is nearly an inch and a half. The canal, from the os uteri, along the cervix, is filled with a substance like unclarified jelly. It is flattened,

and, at both extremities, about half an inch broad. From this account it is evident, that there must be considerable dilatation of the cervix produced, before the finger can touch the membranes, and it must also be introduced far, if we expect to detach them.

There may be cases where the uterus is excited to labour, with so much difficulty, that even after puncturing the membranes, it may be necessary to resort to gentle dilatation of the os uteri. But these are exceedingly rare. The period at which the labour should be excited, must depend upon the degree of deformity; and where that is very great, it must be at a period so early, as to afford no prospect of the child surviving. It must be done in this case to save the mother. There are many cases, where the bones gradually yield, and become so distorted, as at last to prevent even the crotchet from being used. Now, granting a succession of pregnancies to take place in this situation, it follows, as a rule of conduct, that if the deformity be progressive, we should regularly shorten the term of gestation, exciting abortion, even in the third month, if necessity require it, and treating the case as a case of abortion, enjoining strict rest, and plugging the vagina to save blood. Some may say, Shall we thus by exciting abortion, destroy many children, to save one woman? This objection is more specious than solid. Those who make it, would not in all probability, scruple to employ the crotchet frequently, and where is the difference to the child, whether it be destroyed in the third, or in the ninth month? How far it is proper for women, in these circumstances, to have children, is not a point for our consideration, nor in which we shall be consulted. I would say, that it is not proper; but it is no less evident that when they are pregnant, we must relieve them. Sometimes it may be requisite to use the lever, even when labour has been prematurely brought on.

The interval which elapses, between the use of the means for promoting labour, and its accession, varies from two, to five or six days; the fourth day is not an unusual time. If shivering come on before pain, an opiate is the best remedy.

Ergot has been employed for inducing premature labour, and praised by some practical men. But as I am not yet satisfied as to its power of doing so, I should in the mean time, depend on other means. But assuredly, if pains have prematurely come on by these, or spontaneously, it is not to be given. It is improper, if the os uteri be not dilated, and it is unnecessary, if it be.

With regard to the effect of the induction of premature labour on mother and child, it is stated by Dr Kilian, that out of 161 cases, 115 children were born alive, and of these, 73 continued

to live. Eight mothers died, but five of these from causes unconnected with labour.

On this subject, I may observe, that the induction of premature labour has, properly, been proposed in cases where the children have, uniformly, died before the natural term arrived. Living children have thus been born.

CHAP. VII.

Of Impracticable Labour.

It may be urged against the reasoning, in the conclusion of the last chapter, that the Cæsarean operation ought to be performed; and, doubtless in cases of extreme deformity, if the proper time for inducing labour be neglected, it must be performed. But the danger is so very great to the mother, that this never can be a matter of choice, but of necessity. In balancing the Cæsarean operation, against the use of the crotchet, or the induction of abortion, we must form a comparative estimate, of the value of the life of the mother and her child. By most men, the life of the mother has been considered as of the greatest importance, and therefore, as the Cæsarean operation is full of danger to her, no British practitioner will perform it, when delivery can, by the destruction of the child, be procured *per vias naturales*. As, in many instances, the woman labours under a disease, found to be hitherto incurable, it may be supposed, that the estimate should rather be formed in favour of the child. But, in the first place, we cannot always be certain that the child is alive, and that the operation is to be successful with respect to it; and, in the second place, it ought to be considered how far it is allowable, in order to make an attempt to save the child, to perform an operation, which, in the circumstances we are now talking of, must, according to our experience, generally, doom the mother to a fate, for which, perhaps, she is very ill prepared.

There are, I think, histories of 36 cases, where this operation has been performed in Britain and Ireland; out of these 7 women are said to have recovered,* and 29 to have died. On the Continent, however, where the operation is performed more frequently, and often in more favourable circumstances, the

* Vide a case by Mr Barlow, in *Med. Records and Researches*, p. 154; and another by Mr Knowles of Birmingham, in 4th vol. of *Trans. of Prov. Association*, and cases in the *Lancet*. An early and extraordinary case is related in *Edin. Med. Essays*, v. 363; where the midwife cut out the child with a razor, and the woman recovered.

number of fatal cases is much less.* If we confine our view to the success of the operation in this island, we must consider it as extremely fatal to the mother. This mortality is owing, not only to the injury done to the cavity of the abdomen, and the consequent risk of inflammation, even under the most favourable circumstances, and with the best management, but also to the morbid condition of the system, at the time when the operation was performed, many of the women being affected with malacosteon, which would in no very long time have, of itself, proved

* 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.—Vide Translation of M. Baudelocque's Memoir, p. 233. A greater number now exists. See also Sprengel, *Hist. de Med.*—In a case fatal to both mother and child, the operation was, on the third day of labour, performed at Pavia, by Dr Omboni. The pelvis measured three inches and a line, but the os uteri could not be dilated by the finger. The occiput lay to the pubis. She was bled without advantage. The practice in such a case, I apprehend ought to be, after free venesection, to introduce the hand into the vagina, and gradually dilate the os uteri, and then use the perforator. If the os uteri from disease could not be dilated, it should be cut. In a case related by Vanderfuhr, the woman was only 3 feet 8 inches high, and the sacro-pubic diameter under two inches. The operation was performed in the linea alba, and the mother was able to nurse her child. In Dr Muller's case, the patient recovered. *Edin. Journ.* xxxi. p. 443. A fatal case by Mr Crichton, xxx. p. 53; also, a fatal case by De Haber, where the operation was performed on account of a large exostosis in the pelvis. *Journ. Compl.* xl. p. 248. Dr M'Kibbin* performed the operation in Belfast, on account of an exostosis in the hollow of the sacrum, which reached to one inch and an eighth of the symphysis. The brim itself was pretty natural. Dr Montgomerie of Dublin, showed me a cast of this pelvis in his museum. The patient died in 17 hours. In the same museum, I saw a preparation of a very large fibrous tumour growing from the uterus, a portion of which entered the pelvis, and filled it up. The operation was performed by Mr Porter. The woman survived 21 hours. *Dublin Journal*, Vol. vi. p. 418, and *Exposition, &c.* p. 184. In the case by Tassinari, the child was lost, but the mother recovered. She could have been delivered by the crotchet, for the conjugate diameter of the pelvis, although said to be scarcely three fingers' breadth, yet, had admitted the head so far, as to make it necessary, after opening the uterus, to introduce the hand into the vagina, and push up the head. *Reperatoire*, vi. p. 55. The operation was lately performed at Arras by M. Duchateau, with success both as to the mother and child. *La Presse Medicale*, No. 7, 1837. It has been performed four times on the same woman by Dr Michaelis, and is reported to have been employed 7 times, on one person, by Sommius. It was performed also successfully by a bull. *Archives*, Juillet, 1836.

Dr Gummel of Weisbaden saved the child, though the mother died. The tumour in the pelvis was occasioned by a fall some years before. Dr Godfrey of Mayence saved both mother and child. He stitched the wound in the uterus. *For. & Brit. Rev.* x. 578.

Kayer, (de eventis, &c.) says, that between 1750 and 1839, there were 338 cases of the operation; 128 mothers recovered, and 210 died. In cases where the labour had lasted more than 72 hours, the mortality was 72 per cent., and 60 per cent., of the children. If the operation was performed within 24 hours, only 28 per cent. died. There was a larger per centage of stillborn, than of living children when the case was fatal. It was as 32 to 27. Of the mothers, 77 died from inflammation, and 29 from the shock. Dr Churchill, in about the same period, makes 321 operations, 149 of which proved successful, and 130 children were saved. In Britain, Ireland, and America, he makes 43 cases, 11 of which were saved.

fatal. These dangers have, probably, sometimes been increased, by delaying the operation, until much irritation had been excited. From this unfavourable view, it may perhaps arise as a question, whether nature, if not interfered with, might not, as in extra-uterine pregnancy, remove by abscess the child from the uterus? It has been said that this event has taken place; but I do not recollect one satisfactory case upon record. Whenever this has happened, the uterus has either been ruptured, and the child expelled into the cavity of the abdomen; or, in a very great majority of the instances, the child has, evidently from the first, been extra-uterine. We are, therefore, led to conclude, that the mother, who cannot be delivered by the crotchet, must submit to the Cæsarean operation, or must inevitably perish, together with the fruit of her womb.

It has been asserted by Dr Osborn, that this operation can seldom, if ever, be necessary; never where there is the space of an inch and a half from pubis to sacrum, or on either side: and that he himself has, in a case where the widest side of the pelvis, was only an inch and three-quarters broad, and not more than two inches long, delivered the woman, by breaking down the cranium, and turning the basis of the skull sideways. As the patient recovered, and afterwards, I think, died in the country, where she could not be examined, we cannot say, to a certainty, what the dimensions of the pelvis were. Dr Osborn must only speak according to the best of his judgment. I have the highest respect for his character and for his works, and nothing but irresistible arguments could make me doubt his accuracy. But, from the statements which I have already given, of the dimensions of the head, when broken down at the full time, as well as from the experiments of Dr Hull, and the arguments of Dr Alexander Hamilton, and Dr Johnson, I am convinced that there must be some mistake in Sherwood's case. Had the child been brought by the face, there might have been room for it to pass, so far as the short diameter of the passage is concerned; but the lateral diameter was too small, for the head, if of the usual size, to pass, in that, which I consider as the most favourable position. In the cases related by Dr Clarke,* who was a

* Vide Dr Osborn's *Essays*, p. 203, and *Lond. Med. Journal*, Vol. vii. p. 40.

Lee's pelvis, as stated by Dr Hull, was semicircular, and the greatest diameter when cleaned was 1 ten-sixteenths. Redman's was triangular, and at each side, the entire particular diameter was only 1 one-sixteenth. There have been pelvises with still smaller diameters. In De Sacher's patient, the ossa pubis were quite overhung by the sacrum. This woman was twice operated on. In a second pregnancy, the uterus ruptured and the child was extracted by operation. A woman was also twice operated on by M. Schenk of Siegen. She had previously born six children, but in the seventh the pelvis from malacosteon had become so much deformed that the ischia were not above two fingers breadth distant. *Archives*, x. 591.

practitioner of the highest authority, we are informed, that the short diameter of the passage, did not exceed an inch and a half, but we are not informed of the lateral extent. As the women both recovered, the precise dimensions and construction of the pelvis cannot be determined. It is likewise much to be regretted, that the diameter of the cranium, or cranium and neck, in the state in which they may have been supposed to come through the passage, was not taken after delivery. Where, and only where, it can be ascertained, that the head placed in the position in which it was drawn through the pelvis, does not form in any part, a substance measuring more than an inch and a half, by two or three inches, is it allowable to infer, that the cavity through which it passed, may have been so small as that.

Finally, this is a question, on which, although we may lay down a general rule, we must admit of some exceptions; for a premature, or a very small child, may be brought through a pelvis, which will not permit, by any means, an ordinary sized foetus to pass. But it behoves us, in our reasoning, to judge every child to be at the full time, unless we know the contrary, and to make an estimate on the average magnitude; and until the contrary be proved, by dissection of the mother, or careful and rigid measurement of the child, after delivery, I must hold to the position formerly laid down, that the crotchet cannot be used, when the child is of the full size, unless we have a passage through the pelvis, and its linings, measuring fully an inch and three-quarters, in the short diameter, and three inches in length; or, if the child be premature and soft, an inch and a half broad, and two inches and three-quarters long.* It is, in this extreme deformity, very, very questionable, whether extraction be not as dangerous, as the Cæsarean operation, and we always ought to consider well, before we give the preference to mutilation, in such cases.

It is calculated that a fifth of the mothers, and, of necessity, all

* I believe few will dispute, that the precise deformity requiring the Cæsarean operation, must, to a certain extent, be modified by the dexterity of the operator. I shall suppose that a surgeon in a remote part of the country, far from assistance, is called to a patient, whose child is evidently alive, and whose pelvis measures just as much as would render it barely possible to use the crotchet, were he dexterous; but he has not a belief that he could accomplish the delivery with that instrument. Would that man be wrong in performing the Cæsarean operation? In such a case I would say, upon the principle that a man is to do the most good in his power, that if no operator more experienced can be had, within such time as can be safely granted, the surgeon ought, after taking the best advice he can procure, to perform the Cæsarean operation, by which he will save one life at least. By the opposite conduct, there is ground for fear that both would be lost. In a case related in the *Jour. de Med.* for 1780, a woman in the village of Son, had the child turned, and even the limbs separated without delivery being accomplished; four days afterwards, the Cæsarean operation was performed, and the woman died.

the children, perish in crotchet cases. On the continent there is a leaning toward this operation, in preference to opening the head.* I shall not be surprised if, in a few years, British practitioners come to resort more frequently, especially in extreme cases, to the section.

The operation itself, though dangerous in its consequences, and formidable in its appearance, is by no means difficult to perform. Some, advise the incision to be made perpendicularly, in the linea alba, others transversely, in the direction of the fibres of the transversalis muscle, others, obliquely, in the direction of the fibres of the external oblique muscles. By cutting along the inner margin, of the rectus muscle, we avoid, as is observed by Dr Campbell, the epigastric artery, but the precise situation and direction of the wound, must be regulated by the circumstances of the case, the shape of the abdomen, and projection of the uterus.† The length of the incision, through the skin and muscles, does not require to be above five or six inches. If a vessel bleed, so as to require the ligature, it will be proper to take it up, before proceeding further, but there may be so little hæmorrhage, as not to make this necessary. The uterus, is next to be opened, by a corresponding incision; and as the fundus, owing to the pendulous shape of the abdomen, is the most prominent part, the incision will in general be made there, unless the external wound be made lower than usual. The child is next to be extracted, and immediately afterward the placenta. If the placenta adhere to the divided part of the uterus, it is better to detach it, and rupture the membranes, at the margin, than to cut through it. One assistant is to take the management of the child, whilst another, takes care to prevent the protrusion of the bowels. In this part of the operation, although the arteries be numerous and the venous sinuses large, yet, the hæmorrhage is seldom great: it has, however, proved fatal.‡ The external wound is now to be cleaned, its sides brought together, and kept in contact, by a sufficient number of stitches, passed through the skin alone, or the skin and muscles, avoiding the peritonæum. Adhesive plasters are to be placed carefully in the intervals; and a bandage with a soft compress being applied,

* Whilst correcting this sheet, I received a letter from Dr Kilian of Bonn, in which he says, that where a living child is "undoubtedly detected," the Cæsarean operation is to be performed in preference to the use of the crotchet. He adds, that he has performed the operation seven times, and in four of these with success.

† The epigastric artery reaches the rectus muscle and ascends between its inner surface and its sheath. One large branch goes up the middle of the muscle, whilst the trunk runs up by, or near, the outer margin and sends ramifications outward. The linea alba, when circumstances permit it, would therefore be the best place, and there, we are also less likely to be troubled with the intestines.

‡ In an operation (which ended fatally) lately performed at Dresden, twenty minutes were required to excite the contraction of the uterus.

the patient is to be laid to rest. An anodyne should be given, to diminish the shock to the system; and our future practice must, upon the general principles of surgery, be directed to the prevention, or removal, of abdominal irritation or inflammation. The patient may die, although there be very little inflammation of the peritonæum. It has been proposed by Dr Hull, to operate as soon as the os uteri is dilated, and before the membranes burst, in order that the wound of the uterus may contract into a smaller size. *It is of great consequence to operate early, before the patient be much excited, far less exhausted.*

Graefe advises the operation to be performed just after the rupture of the membrane and the commencement of the expulsive pains. The place chosen, to be that where the motion of the child is best felt, and the uterus closest to the abdominal parietal. He applies large warm sponges along the line, where the incision is to be made, in order to keep in the intestines. His external incision is five inches long, that in the uterus, about half an inch less; the sutures are of soft silk, a line and a half thick.

When the mother dies in the end of pregnancy, and there is reason to think that the child is alive, there is an imperative call to perform the operation. The uterus may live longer than the body, and after the mother has been quite dead, the child still continue its functions. An instance is lately related, by Dr Ebel, where the uterus expelled a child, after the interment of the mother, and the fact was discovered, by raising the body for examination, owing to a suspicion of murder.

A woman died of dysentery of two months' duration, in the end of pregnancy, and by the operation, performed about twelve minutes after death, a living child was extracted. Dr Jackson restored to animation, a child, extracted half an hour after the mother's death.

Vaginal hysterotomie, as it has been called, does not come to be considered here, as it relates to extra-uterine pregnancy, obliteration of the os uteri, &c.*

In order to supersede the Cæsarean operation, and even to avoid the use of the crotchet, it was many years ago proposed to divide the symphysis pubis, in expectation of thus increasing the capacity of the pelvis. This proposal was founded on an opinion, that the bones of the pelvis, either always, or frequently, did spontaneously separate, or their joinings relax, during gestation and parturition, in order to make the delivery more easy. In deformity of the pelvis, the symphysis was first divided by a

* See a case by Flamant, Jour. Compl. T. xlii. p. 268. Also a successful case by Dr Caffé when the operation was performed on account of obliteration of the cervix. Edin. Jour. xxiv.

knife, during labour, by M. Sigault, in 1777, assisted by the ingenious M. Alphonse Le Roy. The operation was afterwards repeated on the Continent, with various effects, according to the degree of deformity, and extent of the separation. It has only once* been adopted in this country, because it is not only dangerous, in itself, to the mother, but also of limited benefit to the child. We have already seen, that there is a certain degree of deformity of the pelvis, which must prevent a child at the full time and of the average size, from passing alive, or with the head entire. In a case, where it is barely impracticable, to use the lever or forceps, and where it just becomes necessary to open the head, the division may perhaps save the child, and with no more danger to the mother, than would result from the Cæsarean operation, which is the only other chance of saving the infant. If we increase the contraction of the pelvis beyond this degree, then the chance of saving the child is greatly diminished; and the extent to which the bones must be separated to accomplish delivery, would in all probability be attended with fatal effects. In such a case, the crotchet can be employed with safety to the mother, and continues to be eligible, until we find the space so small as to require the Cæsarean operation; and, in this case, the division can do no good. It cannot even make the crotchet eligible, owing to the shape of the pelvis in malacosteon, and the great mischief which would be done to the parts after the division, by the necessary steps of the instrumental delivery. There is only one degree of disproportion, then, betwixt the head and the pelvis, which will admit of the division; but the smallest deviation from this destroys the advantage of the operation. Now, as this disproportion is so nice, we cannot, in practice, ascertain it; for although we could determine, within a hundredth part of an inch, the capacity of the pelvis, yet we cannot determine the precise dimensions of the head, and thus establish the relation of the two. On this account the division of the symphysis pubis cannot be adopted, with advantage, either to the mother or child. I know well, from my experiments on the dead subject, that in the puerperal state, the articulations are soft, and we may, after dividing the symphysis, separate the bones, to the extent of three fingers' breadth, and less than this could do no good. This is invariably attended, with separation of the sacro-iliac articulation, so, that, altogether the operation, even if it could be of any service in delivery, must be as dangerous as the Cæsarean section.

* Vide case by Mr Welchman, in London Med. Journ. for 1790, p. 46.

CHAP. VIII.

Of Complicated Labour.

ORDER FIRST.

DURING labour, there is always a slight discharge of bloody slime, when the membranes begin to protrude, for the small vessels of the decidua, near the cervix uteri, are opened. In some cases, a very considerable quantity of watery fluid, tinged with blood, flows from the womb, but this is attended with no inconvenience. It may happen, however, that pure blood is discharged, and that in no small quantity. If this take place in the commencement of labour, it differs in nothing, from those hæmorrhages, which I have formerly considered. But, occasionally, the flooding does not begin, till the first stage of labour be nearly or altogether completed. If the membranes be still entire, it proceeds certainly from the detachment of part of the placenta or decidua, and often is connected with unusual distention of the uterus, from excessive quantity of liquor amnii, or with ossification of the placenta. If the membranes have broken, then we may consider the possibility of its proceeding from rupture of the uterus, and must inquire into the attending symptoms. Sometimes it will be found to proceed from tedious and exhausting labour, from improper exertion, or rude attempts to dilate the os uteri, or alter the presentation; or it may be caused by rupture of the umbilical cord. Now, in this order of labours, the practice is very simple, and admits of little difference of opinion. For every experienced practitioner must admit, that when the hæmorrhage is considerable, and is increasing, or continuing, the only safety consists in emptying the uterus. If the pains be smart, frequent, and effective, the labour advancing regularly, and there be reason to suppose, that it shall be finished, before the hæmorrhage have continued so long, as to produce injurious effects, we may safely trust to nature. We must keep the patient very cool, and in a state of perfect rest. But if the pains be weak, ineffective, and rather declining than increasing, whilst the hæmorrhage is rather increasing than diminishing, we must deliver the woman, either by turning the child, or applying instruments, according to the circumstances of the case, and the situation of the head. Opiates are useful. There are also cases in which ergot ought to be tried.

ORDER SECOND.

When hæmorrhage takes place from the lungs, or stomach, during parturition, we ought to have recourse, in the first place,

to blood-letting, or such other means, as we would employ, were the patient not in labour. If the hæmorrhage continue violent, or be increased by the pains of parturition, we must consider whether artificial delivery, or a continuance of the natural process, shall be attended with least exertion and irritation, and, consequently, with least danger, and we must act accordingly. In general, these cases can seldom be trusted to nature, and prompt delivery is requisite, whenever it can be accomplished without much excitation. It is scarcely necessary to add, that a complication of labour, with other diseases than hæmorrhage, but which may be increased by it, to a dangerous or fatal degree, will equally justify interference. Of this complication, pleurisy affords an example. I may also observe, that if this disease occur in the course of pregnancy, and require bleeding, &c., to a great degree, the patient usually has premature labour.

ORDER THIRD.

Syncope may proceed from various causes, such as hæmorrhage, or rupture of the uterus; but these cases have been already, or will be considered. It may proceed from a delicate nervous constitution, from long continued labour, from particular states of the heart or stomach, from passions of the mind, and from an unhealthy state of the spinal cord, in which case, it is generally preceded, for some time, by a distressing feeling of sinking. Syncope, probably from this cause, has proved fatal, without any explanation being given on dissection. A simple paroxysm of fainting, unless it proceed from causes, which would otherwise incline us to deliver, such as tedious labour, flooding, &c., is not to be considered as a reason for delivering the woman. We are to employ the usual remedies, and particularly keep the person in a recumbent posture. Ammoniated tincture of valerian, or tincture of opium, are useful. But if the paroxysms be repeated, whatever their cause may be, we ought to deliver the woman, if the state of the os uteri will permit. We must be very careful to prevent hæmorrhage, after the expulsion of the child.

ORDER FOURTH.

Convulsions may occur, either during pregnancy or labour, and are of different kinds, requiring opposite treatment. One species is the consequence of great exhaustion, from excessive fatigue, tedious labour, or profuse hæmorrhage. This makes its attack without much warning, and generally alternates with deliquium, or great feeling of depression and debility; the muscles about the face and chest are chiefly affected, and the pulse is small, compressible, and frequent, the face pale, the eye

sunk, the extremities cold. The fits succeed each other pretty quickly, and very soon terminate in a fatal syncope. This species naturally requires, that we should, first of all, check the farther operation of the exciting cause, by restraining hæmorrhage, or preventing every kind of exertion, and then husband the strength which remains, or recruit it by cordials. Opiates are of great service. Delivery is usually necessary.

Hysterical convulsions, are more common during pregnancy than labour, and have already been noticed. I have only to say here, that the muscles of the trunk and extremities are affected to a greater degree, than those of the face; there is an appearance of globus, often considerable palpitation, and, occasionally, a kind of crowing, or screaming, during the fit. At the termination of it, there is, usually, wind discharged from the stomach, and, often, as the struggling is about to end, the bowels seem to be much inflated, and suddenly subside. Part of this, however, is a deception, for the spine is in such cases, frequently bent back, so as to render the abdomen apparently more prominent. In the interval, there is a tendency to laugh or cry, or sometimes a childish appearance. This kind of convulsion, is rare in the parturient state. If the face be flushed, or there be headach, and suffusion of the eyes, venesection should be premised; and if this be not sufficient, then, we give antispasmodics. If, on the other hand, there be no undue vascular action, or determination to the head, we may at once give antispasmodics, such as tincture of valerian, or asafœtida; a smart clyster is also of great service. If these means fail, and the labour be far advanced, it will be proper to employ the forceps, but in general, artificial delivery is not required.

The most frequent species of puerperal convulsions, however, is of the nature of eclampsia, or of tetanus, which occurs a hundred times, for once, that the others appear. Convulsions may affect the patient suddenly and severely. She rises to go to stool, and falls down convulsed; or, sitting in her chair, conversing with her attendants, her countenance suddenly alters, and she is seized with a fit; or, she has been lying in a sleep, and the nurse is all at once alarmed, by the shaking of the bed, and the strong agitation of her patient. Immediately, all is confusion and dismay, and the screams of the females, announce, that something very terrible has happened. Presently, the convulsion ends in a short stupor, from which the woman awakes, unconscious of having been ill; and thus, for a time, the apprehensions, of the attendants, are calmed. But, in a short time, the same scene is generally repeated; or, perhaps, although the convulsion have gone off, the stupor remains; and it is always more unfavourable, when the patient continues insensible, in the

interval of the fits. It is, however, not unusual (Dr Hamilton says it is invariably the case), for the fit to be preceded by some symptoms, which, to an attentive observer, indicate its approach. These may even exist to a degree, which cannot be neglected. They are, headach, which is sometimes dreadful; ringing in the ears; dazzling of the eyes, or appearance of substances floating before them, either opaque, or, more frequently, of a fiery brightness. Or, there may be more fixed and constant pain, felt in some part of the spine, and always confined to that, without any pain in the head. In other cases, the first indication, is violent pain in the stomach, with insupportable sickness, for, sometimes, the stomach is the first part which suffers from irritation of the origin of the nerves, and the patient may die before convulsions take place. The pulse usually is slow; the patient sometimes sighs deeply, or has violent rigors, which, in the second stage of labour, are always hazardous. There is great drowsiness during the pains. It is neither uncommon, nor dangerous, for the woman to be drowsy between the pains; but, here, even during them, she falls into a deep sleep. When the attack comes on, which very often, is soon after these preludes appear, the muscles are most violently convulsed; the whole frame shakes strongly; the head is jerked quickly and strongly backward, or obliquely to one side, by the extensor muscles, and the face is dreadfully distorted,* and often swollen. The tongue is much agitated, and is very apt to be greatly injured by the teeth; foam issues from the mouth, and convulsive inspiration, often draws this in, with a "hissing noise;" or she snores deeply, and cannot be roused during the fit. The skin usually becomes, during the convulsion, livid or purple. The pulse, during the whole of the disease, is often slow, but sometimes it does, at last, become frequent, small, and irregular. This attack, may end at once in fatal apoplexy, but generally the patient recovers, and is quite insensible of having been ill. There may be only one fit, and without any interference, I have known the disease go off, and no return take place. But in general, the attacks are repeated, and if they do not prove soon fatal, or be not averted by art, they recur with the regularity of labour pains, becoming more and more frequent as they continue; and if the patient have been sensible, in the interval of the first two or three convulsions, she soon becomes quite insensible, lying in a state of stupor like apoplexy, agitated, at intervals, with convulsions increasing in violence; she appears to have no labour pains, yet the os uteri is affected, and sometimes the child is expelled

* Mr Fynney gives a case, where the lower jaw was luxated during convulsions, which came on in the birth of a second child, or twin. *Med. Comment.* Vol. ix. p. 380.

during a fit; or, if the patient become sensible in the intervals, and feel a pain coming on, it appears to be speedily carried off, by a supervening convulsion. The fit may last only a few seconds, or may continue, with very little remission, for half an hour. In some instances the patient lies for hours insensible, after the child is born, and is afterwards long of recollecting her delivery.

Children, even when delivered naturally, are often stillborn, but the exact proportion of dead and living, setting aside cases of perforation, and even of turning, is not determined. Some make the living predominate over the dead, but all agree that the hazard to the child is great. I am inclined to think, that it is in proportion to the severity and duration of the convulsions.

Convulsions may occur in any period of labour, or before it have begun, or after the delivery of the child; and in this last case, are sometimes preceded by great sickness or oppression at the stomach. Dr Leake relates the case of a patient, who had ten or eleven of these fits; the abdomen was swelled and tense, and she vomited phlegm mixed with blood, which probably came from the tongue. She recovered by means of blood-letting and clysters.

Puerperal convulsions, are quite different from epilepsy, for they recur at no future time, except perhaps in a subsequent pregnancy. They take place in greater number, in a given time, than epilepsy does in general, and belong to the genus *Eclampsia* of Sauvages, "*artuum vel musculorum plurimorum, spasmus clonicus acutus, cum sensuum obscuratione.*" This differs from his definition of epilepsy, by the absence of the character "*periodicus;*" and on the same principle Vogel simply defines it "*epilepsia acuta.*" The principal difference, and one of a highly important nature in practice, is, that whilst the symptoms are the same in both diseases, they arise, in epilepsy, from some organic affection of the brain, or direct irritation of that organ; whilst, in eclampsia, they rather depend on some sympathetic and temporary cause—very often the uterine irritation, acting on the spinal cord, and thence on the brain. Sometimes the effect on the cord is the most prominent, and the patient may truly be said to have tetanus. Hence, eclampsia may be produced by worms, by costiveness, indigestion, &c.; and occasionally, not only by the parturient condition of the uterus, but, also, by other affections of the same organ, in the virgin state. I have seen distinct cases of eclampsia, where the fits were very severe, and repeated, and accompanied, in the interval, with coma, or delirium, caused altogether by menstrual irritation, attended with severe pain in the hypogastrium, and bearing-down sensation. In such cases, venesection and purgatives give relief,

and a blister on the head, perfects the cure. Fomentations, or the hot bath, are also useful, but opiates are not to be given, at least at first. To return from this digression, puerperal convulsions often recur, exactly, like labour pains, or are frequently accompanied or preceded by them; though, when the convulsion comes on, the feeling of pain is suspended, and often, but not always, the uterine contraction is stopped or diminished. The same observation applies to excessive rigors, which are indeed a species of convulsions, but are not attended with distortion of the face, nor insensibility. If the patient be in a state of stupor, she frequently has the countenance distorted at intervals, accompanied with some uterine action. They are never preceded by aura, and the patient usually recovers sensibility much sooner, and more completely during the intervals, than in epilepsy; at the same time, there have been instances, of the patient remaining in a state of stupor for two days. The organs of sense, particularly the ear, are often preternaturally sensible.

Convulsions, of the kind I am considering, evidently are connected with gestation or parturition; they occur at no other time, and are more frequent in a first labour. Some suppose that they are much more apt to attend a natural, than a preternatural, labour; but taking into account the frequency of the one kind of labour compared to that of the other, it is very doubtful if the opinion be correct. They arise, particularly, from uterine irritation, but also seem, frequently, to be connected with a neglected state of the bowels, a fact to which I wish to call the attention of practitioners. It is a general opinion, that pregnancy produces plethora, and I do not mean here to dispute the fact, but distinctly to assert, that we often confound the effects of excitement with those of fulness; for, in many instances, a powerful stimulus, will produce the same consequences, in a spare and bloodless, that a smaller one, would have done in a plethoric, habit. Is apoplexy confined entirely to the latter? There are, perhaps, few subjects more deserving of inquiry, than the effects of irritation, of the extremities of the nerves, supplying the abdominal viscera, on the basis of the encephalon and the spinal marrow.

There is nothing either more difficult, or more mysterious, in the etiology of puerperal convulsions, than of chorea, or stupor, or apoplexy, or insupportable feeling of fulness in the head, from stomachic or intestinal irritation, connected with costiveness, worms, bile, or unhealthy action of the alimentary canal. If practical observers know, that these causes, do produce often such effects, where is the ground of surprise, that uterine excitation, especially, when associated with irritation of the bowels, arising from long neglect, should produce tetanic, spasmodic, or

even apoplectic affections, during labour? The sympathetic irritation, is almost invariably accompanied, by an affection of the vascular system, productive of great determination to the head, either directly, or indirectly through the medium of the spinal nerves, which aggravates the evil, and becomes, indeed, the chief source of danger. I am inclined to think, that, in a majority of instances, the spinal cord is first affected, by the state of the uterine nerves, and immediately afterwards, the head suffers, as described in a future chapter, on spinal and cerebral disease. A strong predisposition, is given to this condition of the nervous system, by a bad state of the bowels, and, labour seems to bring the matter to a serious crisis.

It has been observed by most practitioners, that by far the greatest number of cases, occur in women in labour of their first child.

On inspection after death, we sometimes find turgescence of the vessels of the brain, or slight effusion of serum, but very often no mark of disease is to be discovered anywhere. Inflammation of the bowels seems to be an accidental complication.*

The first object, in practice, is to prevent the patient from injuring the tongue, by inserting a piece of cork or wood into the mouth; this occupies no time. Next, we bleed the patient, and must not spare the lancet. All our best practitioners are agreed in this, whatever their sentiments may be, with regard to the nature of the disease, or to other circumstances. We must bleed once and again, whether the convulsions occur during gestation or parturition.† There is more danger from taking too little blood, than from copious evacuation. Often, in a short time, several pounds of blood have been taken away with ultimate advantage. Blood-letting also tends to relax the os uteri. The quantity to be taken away, must depend on the severity, and obstinacy, of the symptoms. We never ought to take away more than is required for relief; nor, on the other hand, are we to stop prematurely. It is desirable to procure the discharge as speedily, and in as full a stream as possible; but it is not essential, that it be taken from the jugular vein, nor is that often safe or practicable. I have, when treating of the diseases of pregnancy, observed, that, in many cases, affections, arising evi-

* Dr Collins thinks that there is so strong a tendency to this inflammation, that he urges great attention to the least degree of pain, and uses tartar emetic, opium, leeches, calomel, &c., on the first appearance.

† La Motte mentions a case, 522, where a woman in the last five months of pregnancy, was bled eighty-six times. Sometimes 2 oz. would relieve her.—By modern practitioners, from 40 to 80 oz. have been taken with advantage, in a case of puerperal convulsions. Puzos insists on the necessity of copious blood-letting and speedy delivery. This practice is adopted by the most judicious of the present day.

dently, by sympathy, from a state of irritation of some of the abdominal viscera, might require venesection for their removal; or, if this were neglected, and the disease treated merely by purgatives, protracted illness, or immediate danger, might result. Nothing can illustrate this principle, better, than the present disease, which requires instant, and generally a copious loss of blood; the mere removal of the irritation, which excited the inordinate action of the nervous and sanguiferous systems, not being sufficient for the cure. Next, we administer a smart clyster, which, if given early in the precursory stage, is, of itself, sometimes sufficient, to arrest the progress of the disease. A smart dose of calomel, or solution of salts, may also be given with advantage, when the person can swallow, especially if the convulsions have occurred during pregnancy, with little tendency to labour. We must also attend to the bladder, that it be emptied, for its distention alone, has sometimes brought on convulsions.* When bleeding fails, or cannot be carried farther, nauseating doses of tartar emetic have been proposed, but the free use of this medicine being often attended with bad consequences, I have not tried it in this disease. I cannot speak of the benefits from personal experience.

One part of practice, then, and a most important and essential one, too, consists in depletion, by which the risk of fatal oppression of the brain, or extravasation of blood, within the skull, is diminished, and the convulsions mitigated. But this is not all; for the patient is suffering from a disease, connected with the state of the uterus, and this state is got rid of, by terminating the labour. Even, when convulsions take place, very early in labour, the os uteri is generally opened to a certain degree, and the detraction of blood, which has been resorted to, on the first attack of the disease, renders the os uteri, usually, lax and dilatable. In this case, although we have no very regular labour pains, yet, we must introduce the hand, and slowly dilate it, if that can be done easily, and without either using force, or producing excitation, marked by an aggravation of the disease, and deliver the child. We do not attempt to open a shut os uteri, or to enlarge it, if it have not already begun to dilate, and made such progress as to permit us to proceed without force. I may have been misunderstood in my advice, but I think it is very plain. Whilst I entirely agree with those, who are against forcibly opening the os uteri,† when it is firm, and perhaps but

* La Motte, 223, 224.—Leak relates a case where it produced *subvultus tendinum*, and excessive pain at the pubis. Vol. ii. p. 344.

† Dr Bland is rather against delivery, and for trusting to nature. Dr Gartshore, Jour. Vol. viii., says, more women have recovered of this, who were not delivered, than of those who were violently delivered.—Dr Denman concludes, that

little dilated, I also cordially concur with those, who advise the woman to be delivered, if the convulsions continue, as soon as we possibly can do it, without violence.* There is, I am convinced, no rule of practice more plain or beneficial,† when evacuations fail to check the convulsions. It not only removes an original cause, but also tends to put a stop, to that renewed aggravation of symptoms, which attends on every pain or effort, whether it be called parturient or convulsive. Delivery does not, indeed, always save the patient, or even prevent the recurrence of the fits, but it does not thence follow, that it ought not to be adopted. I look upon it as indispensable, if the convulsions be not checked by venesection. In no case, however, ought we to deliver, till we have freely detracted blood, as we otherwise might add to the excitement of the brain or spinal nerves. When the os uteri is rigid, the hip-bath and emollient vaginal injections have been recommended, but they are useless, as well as troublesome. The application of extract of belladonna, has been proposed for removing rigidity, but of this I have no experience, and believe that if venesection do not produce relaxation, nothing else can. Chaussier applies it to the os uteri by diluting the extract, and putting it, when of a soft consistence, into a small syringe, which is to be guided to the os uteri, and a little forced out there. In obstinate rigidity, the os uteri has been cut with advantage; but this is an example not to be followed, and I must say, no case requiring it, has ever come within my notice. The mode of delivery must depend on circumstances. If the head be high, and the waters not discharged, I should have no hesitation in delivering by turning. If, on the other hand, the head be low, and within reach of the forceps, there can be still less doubt, as to the practice. Indeed, those who condemn

women, in the beginning of labour, ought not to be delivered, ii. 381, and admits of it only when it can be done easily.—Baudelocque says, that we ought not to be in haste to deliver, and never to do it when nature seems to be disposed to do it herself. Dr Hull, *Obs. &c.* p. 245, says, that we should trust to the usual remedies, till the os uteri be easily dilatable, or be dilated, and then deliver. He informs me, that in every case which proved fatal, there was no dilatation of the os uteri. Gardien is disposed to limit the propriety of delivery, to those cases, where there is great sensibility of the os uteri, with pain at the external parts. *Traité*, Tom. ii. p. 424.

* Dr Osborn, p. 50, says, that no remedy can be used with any reasonable expectation of benefit, till delivery is completed; and that therefore it is our indispensable duty to effect it in the quickest possible manner.—Dr J. Hamilton, *Annals*, v. 318. et seq. says, that when convulsions occur during labour, delivery is to be accomplished as soon as possible.—Dr Leak, that when they seem to proceed from the uterus, speedy delivery is useful; but when from "any cause independent of the state of pregnancy," delivery would be hurtful, ii. 348.

† Even evacuating the liquor amnii has, M. Baudelocque admits, been of service. § 1118. In one case, the os uteri was hard and callous, it was divided, the child speedily born, and the woman immediately became calm. 1120.

turning, and consider it as greatly increasing the danger, do in general advocate delivery by the forceps, whenever that instrument is applicable.

The case where there is most room for demur, is that, in which the water is discharged, and the uterus contracted round the child, whose head is not yet within reach of the forceps, long or short. In such a case, we must palliate as long as we can, but if the disease continue, cautious turning will be the least of two evils. In certain degrees of contraction of the pelvis, we can conceive, that it may be necessary to use the perforator, when we should, had there been no convulsions, have given a longer trial to nature. But to justify this, the head must be high, the symptoms obstinate, and increasing, and the pelvis more or less contracted, and the effect of the pains, little, on the presentation; or, the child must, by the careful use of the stethoscope, be ascertained to be dead.

Internal remedies have been advised, such as opium, and musk, and camphor; but experience does not establish the utility of the last two, and the first is highly dangerous. It seldom suspends the fits, till it convert the disease, into fatal apoplexy. If in any case it be admissible, copious venesection must precede it, and the bowels must have been opened. In general it is to be strictly avoided, as the most fatal agent which can be employed, and is only admissible, when there is acute and obstinate pain, in the head or stomach, which has resisted the lancet, and the application of a sinapism to the part. Ergot has been tried, with the effect, we are told, of aggravating the disease. Blisters to the head can never be trusted to, for they are long of operating, and even the preparatory step of shaving the head is troublesome. If stupor remain after delivery, the head ought to be shaved, and a sinapism applied to it, which often contributes greatly to recovery. If it do not, then, a blister should be applied. Cutting the hair off, and bathing the head with cold water has been proposed, but is seldom of decided utility. The application of pounded ice is in my opinion hazardous.

The practice, then, which may be deduced from the view I entertain, of the nature and causes of puerperal convulsions, and which, independently of all theory, comes recommended by experience, is, first, to detract blood; second, to remove intestinal irritation by clysters, and afterwards by purgatives, which, although they may not immediately, yet will ultimately, produce beneficial effects; third, to get rid of the uterine action, by accomplishing delivery, when that can be done, without much irritation; fourth, to avoid every thing which can excite the nervous and vascular systems, such as cordials and opium.

If the fits have been only apprehended, but have not taken place, then, we may use remedies as preventives. The most beneficial treatment is, to empty the vessels and the bowels. When there are evident symptoms of disordered stomach, a gentle emetic has been advised, but I have never seen it administered myself, and am, from its effects on the head, not partial to its exhibition. When a violent pain in the stomach takes place, we should bleed, and, if it shall continue after that, give an opiate. I wish it to be carefully remembered, that when we have head-ach, or any other symptoms indicating a tendency to convulsions, the lancet is necessary. Blood-letting can seldom do harm, and it may do much good; it may be the only means of preserving life, and if this book serve, merely to impress that fact, on the mind of a single reader, I will not regret having written it. When one spot of the spine is very painful, and pressing on it produces spasms, it is desirable, if possible, to take blood from it by cupping, if venesection have not relieved it.

When symptoms of nervous irritation exist, without any determination to the head, or fulness of vessels, then, after bleeding, opiates may be of advantage,* but I have very great hesitation in employing them, I ought rather to say in sanctioning them, for I have seldom, if ever, used them myself, and, in the ordinary puerperal convulsions, should expect nothing but mischief from them. Camphor has been strongly recommended by Dr Hamilton, as the most powerful internal remedy which can be prescribed; but I cannot, from my own observation say much respecting its virtue during labour.

When convulsions have continued after delivery, or when the recovery was not complete, I have found camphor of service, and recommended it to be always tried, but would not trust to it alone. The head, as I have already said, ought to be shaved, and have a sinapism or blister applied. Forty drops of laudanum may be given in a clyster. Opiates at this time are much safer than before delivery, and are often of use if depletion have been free, previously, or during labour. We must keep up the strength, by sedulous endeavours to get the patient to swallow nourishment.

If convulsions take place, after the delivery of the child, for the first time, then, the placenta, if it have not come away, is immediately to be extracted, or coagula are to be removed. If the countenance and pulse justify it, a vein is to be opened, and

* Opiates have been strongly recommended by some practitioners, particularly Dr Bland. Journ. Vol. ii. p. 328, &c.—Dr Hamilton as strongly prohibits them. Annals of Med. Vol. v.—Petit says they kill both the mother and the child. Dr Collins uses them along with tartar emetic if the fit continue after delivery.

afterwards, the bowels purged. The case is very rare. We must not confound with it the convulsions which accompany, or follow, great uterine hæmorrhage.

If the practice be prompt and vigorous, the generality of patients recover from puerperal convulsions.

Those who have had convulsions during labour, ought, in a succeeding pregnancy, to pay the utmost attention to the bowels, avoid a regimen which induces plethora, and lose blood once or twice. When labour commences, a clyster should be given, and the patient bled, on the slightest feeling of uneasiness in the head.

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, 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 delivery can do no good to the mother, as it does in the case of convulsions. The child claims our attention in this disease. 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 Cæsarean operation should be performed, immediately after death, or, with a better chance, just before it, when the mother cannot suffer, being unconscious or insensible.

ORDER FIFTH.

The uterus may be lacerated during labour, under different circumstances, and from various causes. Any part of it may be torn, but generally the rupture takes place in the cervix, and the wound is transverse. It is more frequently in the posterior than the anterior part, but either may be torn. It is rare that it is confined to the side. Perpendicular rents are not common, and when they do occur, the hæmorrhage is generally not so great as in the transverse. The rent is usually complete, but in a few cases it has been confined to the peritoneal surface, whilst in others the peritoneum has remained entire, the tissue of the uterus alone being torn.* In either case, the sinking has been as great and rapid as in perfect laceration. Sometimes the uterus remains entire, and the vagina alone is torn, or the laceration is so near the vagina, that the child is delivered, through the rent, *per vaginam*.†

* In 9 out of 34 cases related by Dr Collins, the peritoneal coat remained entire, yet these sunk as speedily as the others.

† Dr Kennedy showed me in the Museum of the Lying-in Hospital at Dublin, a very fine preparation of this species of laceration.

Laceration may happen during any stage of labour, and even before the membranes burst,* but this is uncommon. It may take place when the head has fully entered the pelvis, or in the moment when the child is delivered.† It does not appear that the age of the patient has any material influence, and, although a greater number of ruptures take place in a first labour, yet, the risk is not very much less in a second, or a subsequent confinement.

The uterus may be ruptured, by attempts rashly made to turn the child;‡ or, after the water has been long evacuated, some projecting part of the child, may so affect a portion of the uterus, as to make it tear. A certain set of fibres, may also be suddenly, and spasmodically, contracted, and laceration may thus take place. In these cases, there is often very little warning, and the accident may happen, when we are just in expectation, of a happy termination of the labour. In a case detailed by Mr Douglas (p. 50), the head of the child was resting on the perinæum, when the lady, who had been subject to cramp, uttered a violent cry, and the head receded. The child was delivered, but the patient died. Mr Goldson's patient complained of cramp in the leg, in the intervals of the labour pains; and in the instant when the rupture happened, she exclaimed, "the cramp!" Dr Munro's patient (Works, p. 677) was sitting in a chair, when she suddenly screamed, and the uterus was lacerated; she was not delivered, but lived from Tuesday till Friday. If the os uteri be obliterated by previous disease, the cervix is apt to be torn. Morbid rigidity, of the os uteri, may also be a cause of laceration.§ It dilates very slowly, requires great exertion of the uterine fibres, and the patient suffers much pain. The uterus may at last be torn, even, although, the head have, partly, descended into the pelvis, and the pelvis be large. In this case, the liquor amnii has been discharged, before the rupture takes place. But a very frequent cause of this accident, is a disproportion between the size of the head, and the capacity of the pelvis, by which, a portion of the cervix uteri, is pinched between the head and the pelvis, and fixed, so, that the action of the

* Vide Mem. of Med. Soc. Vol. ii. p. 118.

† In a case which I saw, the placenta was retained by a spasmodic stricture though the child was expelled; every allowable attempt was made to extract it, but in vain. The uterus acted from the os uteri towards the rent, which was at the fundus. The woman died. The placenta was found still in utero. The intestines were inflamed. See also Crantz, de Utero Rupto, p. 22; and Dr Cathral's case in Med. Facts, Vol. viii. p. 146.

‡ A fatal case of this kind is related by Mr Dease.—One more fortunate in the issue, is inserted in Mem. of Med. Soc. Vol. iv. p. 263.—In Chambon's case, the patient recovered so far as to be able to nurse, but she ultimately sank. The fundus was found to have been rent.

§ Perfect's Cases, Vol. ii. p. 439.—Hamilton's Cases, p. 133.

uterus, is directed against this spot, rather than the os uteri.* The woman feels very severe pain, either in the back or at the pubis, which, during the action of the uterus, augments to an extraordinary degree, and then the part is torn. Another way, in which the cervix may be lacerated, is by the linea ilio-pectinea being so sharp,† that when the uterus is pressed against it, the parts are either cut through, or so much acted on,‡ that they are in a manner killed.§ Even without pressure, some part of the uterus, may be softened by disease, and rupture take place. Preternatural presentations, from the obstacle afforded to delivery, become also causes of rupture.|| There is a preparation in the Hunterian Museum, of a uterus, where there is a laceration of the cervix, and an implantation of the side of the placenta over the os uteri. There is no history of this singular case, but it is merely said, that there was reason to believe, that there had been considerable hæmorrhage.

Now, from this view we learn, that those women, are most liable to rupture of the uterus, who are very irritable, and subject to cramp; or who have the pelvis contracted, or its brim very sharp; or who have the os uteri very rigid, or any part of the womb indurated. Scholzius relates a case, where it was produced by scirrhus of the fundus; and Friedius, one, where it was owing to a carneo-cartilaginous state of the os uteri. Sometimes the uterus seems to be predisposed to this accident, by a fall or bruise. Reidlinus relates one instance of this. Behling, Steidle, and Perfect, furnish us each with another. Salmuthus considers a thinness of the uterus as a predisposing cause of rupture; and Dr Ross¶ relates a case where it seemed to have this effect, the womb not being above the eighth part of an inch thick, and tearing like paper.

The bladder, being connected to the cervix, is apt to be lacerated,** if the front, of the lower part, of the uterus be rup-

* It has been calculated, that in three-fourths of the cases of rupture, the child has been a male. The head of the male is a little larger than that of the female fœtus.

† In a case of this kind, the line was, on one side, as sharp as a fruit knife, and a cartilaginous knob projected from the symphysis. The bladder was torn.

‡ Duparque says, where this is the case, the bones should also be uncovered, or bare. This by no means follows.

§ Mr Scott of Norwich sent me a case which he published in the 11th Vol. of the Med. Chir. Trans. where the lower part of the uterus, including its mouth, came away. The patient was, after the laceration, delivered with the lever, and recovered.

|| In a case related by Dr Collins, the arm was protruded, and the child fixed, but there were all the symptoms of rupture. The thorax was opened, and the breech easily brought down with the crotchet. The laceration was in the cervix. The patient recovered. Dub. Med. Trans. Vol. i. p. 1.

¶ Annals of Med. Vol. iii. p. 277.

** M. Oliver relates the history of a woman, who, in a fifth pregnancy, had the

tured. It is attached to the uterus, at the full time, for nearly an inch and a half above the upper part of the lips of the os uteri. It descends on the vagina nearly two inches below that part. If the patient recover, she may have a fistula of the bladder. The rectum can only be torn, when the rent extends down the vagina behind. The cervix, is of a different structure, from the rest of the uterus. The vessels, particularly the veins, are very numerous above it, but not in it.

We are led to anticipate laceration, when the patient is restless, and complains of very severe local pain, subject to great exacerbation, and attended with a very acute or tearing sensation. The pains are violent and frequent, and usually do not produce a great effect on the os uteri, which is often very rigid. These symptoms are still more alarming, if the liquor amnii have been fully evacuated. The treatment to be followed must depend on the apparent cause; rigidity is to be overcome by venesection; spasmodic action, by an opiate clyster; change of structure of the os uteri may demand consideration how far incision may be proper; malposition of the child must be rectified; and, finally, when the pelvis is contracted, and there is any symptom, indicating the risk of laceration taking place, the forceps are instantly to be employed; or, when such symptoms exist, in any case, where the forceps are applicable, it would be criminal to delay. In more urgent cases, the use of the perforator is justifiable.

When this accident does happen, the woman feels something give way within her, and usually suffers, at that time, an increase of the pain, and sometimes becomes very sick or faintish. The presentation disappears more or less speedily, unless the head have fully entered the pelvis, or the uterus contract spasmodically on part of the child, as happened in Behling's patient.* For the uterus, can force the child, more easily, through the rent, than through the pelvis. The action of the uterus continues, more or less, till the child get out of it, and if the presentation have been fixed, and we deliver with instruments, the uterus is felt to assist, probably, as much as usual, in the expulsion. The labour pains go off as soon as the child passes through the rent into the abdomen; or, if the presentation be fixed in the pelvis, they become irregular, and then cease. The passage of the child, into the abdominal cavity, is, as soon as the body is

uterus very oblique, and in labour suffered much. She was delivered by the forceps, and died of peritoneal inflammation. On inspection, the uterus was found to be bilobed. The division which had contained the child, was, together with the bladder, lacerated. The other, which was supposed to have contained the former children, was three inches long and two broad. Each had an orifice opening into a common neck, and each had an ovarium.

* Haller's Disput. Tom. iii. p. 477.

expelled, through the rent, into the belly, attended with a sensation of strong motion in the belly, or, has even been, sometimes, productive of convulsions. The motion is not long felt, for the child dies speedily, chiefly, owing to the detachment of the placenta, or loss of its assistance. This may happen sooner, in one case than in another. The shape of the child can be felt, pretty distinctly, through the abdominal coverings.

The patient, after this accident, soon begins to vomit a dark coloured fluid, the countenance becomes ghastly, the pulse small and feeble, the breathing is oppressed, and frequently the patient cannot lie down. Sometimes, the intestine protrudes, through the wound in the uterus, and has even been strangulated in it. These symptoms do not all appear, in every case, nor come on, always, with the same rapidity. In Dr Ross's patient, although the child escaped, through a rent in the vagina, into the cavity of the abdomen, and, though the nature of the case was ascertained, yet no hæmorrhage, fainting, nor bad symptoms took place; and the child being delivered, the woman recovered. Effusion of blood into the abdomen accelerates death. The source of this is attributed rather to the vessels going to the placenta, and the exposure of the cells by detachment, than to the lacerated edge of the uterus. But both are concerned.

When the presentation does not recede, the nature of the case is still well ascertained by the symptoms; and the great depression, &c., fully warrant immediate delivery, whatever opinion may be formed as to their cause.*

If the patient be not speedily relieved, she becomes very restless, tosses in the bed, and vomits frequently; complains of a pain in the belly, which becomes swelled, the pulse is rapid, the extremities become cold, and the strength sinks. In every case that I have seen, the intestines were chiefly affected, being much inflamed. The interval which elapses, between the accident and death, is various; but whether the patient be delivered or not, she, notwithstanding the many recorded instances of recovery, generally dies within twenty-four hours, often in a much shorter time. Steidle, however, relates a case where the patient lived till the twelfth day; Dr Gartshore's patient lived till the twenty-sixth day; and in the Coll. Soc. Havn. Vol. ii. p. 326, there is a case of a woman, who, after being delivered, lingered for three months. In a patient of Dr J. Wilson's, recovery seemed to be going on for five or six days, when, after a fit of passion, she sunk in consequence of internal hæmorrhage. In protracted cases, abscesses have formed about the pelvis.

* Rupture was not suspected, till discovered on dissection, in a case where the child had been turned on account of deformed pelvis. Archives, ii. 77.

Different opinions have been held respecting the best mode of treatment. Some, have advised the performance of the Cæsarean operation, some, delivering *per vias naturales*, and others, leaving the case to nature. We have instances of all these methods being successful; but the delivery, by turning the child, or otherwise, has advantages over the other modes, and certainly ought, with scarcely any exception, to be resorted to.* When the os uteri is dilated, before the accident take place, as is usually the case, and the hand can, without much difficulty be introduced, it is to be passed through the os uteri, and the rent in the uterus, into the abdominal cavity, in search of the child's feet, which are to be brought down, and the case managed in the same way, as in presentation of the feet. Then, we extract the placenta, after which, we are to introduce the hand again, to ascertain that no part of the intestines have protruded, through the wound. This process is usually easy, when the rent is in the cervix uteri or the vagina. But, sometimes, the delivery is succeeded, by feeling of sinking, or by considerable hæmorrhage, under which, the patient must be supported.† When the rent is higher, there is sometimes great difficulty, owing to the contraction of the uterus, which may be affected spasmodically, or may have universally contracted, and the rent become very small. When attempts are, in such a case, made, to carry the hand along the cavity of the uterus, to the rent, the fibres may contract over the hand, and the contraction is felt sweeping toward the rent, so as to carry, as it were, the uterus off the hand. It would be both cruel and useless, to attempt delivery, in such a case.

If the head have entered the pelvis, and be within reach of the forceps, we must cautiously introduce the blades, taking great care, not to press up the head so as to make it recede. From this hazard, and from observing, that the child, in such cases, is generally dead, it has been advised, by good authority, to perforate the head. But if we have no other inducement to use the perforator, I should consider, that unless the head be high, the forceps would be as safe, in this respect. The child may live for hours, if the placenta be not detached, or the hæmorrhage great. (The stethoscope may aid our judgment.) If expelled into the abdomen, it invariably dies speedily.

When the os uteri is rigid, and very little dilated, before the accident happens, and cannot be opened, without extreme irritation, which is, indeed, rather a state which may be supposed,

* Rupture of the uterus during gestation, has already been considered, and the remarks here, do not apply to such cases.

† This took place in Mr Parkinson's patient, who recovered. Med. Gazette, vii. p. 173.

than actually met with; or, when the uterus is spasmodically and violently contracted, between the rent and the os uteri, which I know is apt to happen, if the fundus be lacerated, I consider forcible attempts to deliver, as adding to the danger. These cases are only rare, because the rupture is generally in the cervix, for, when the body or fundus is torn, the contraction is often strong; and, although there be, doubtless, instances of delivery being accomplished with facility, some hours after the rupture, yet, in most cases, such contraction soon takes place, as must altogether prevent it, or render it highly dangerous. It may also happen, that great deformity of the pelvis prevents delivery.* In such circumstances, we must either perform the Cæsarean operation, or leave the case to nature. If we have been called early, and before the abdominal viscera have been much irritated by the presence of the fœtus, we ought to extract the child by a small incision.† This is assuredly safer, than either leaving the child, or bringing it down, with or without perforation, through a contracted pelvis. At the same time, the period within which the child dies, is so very short, that I do not argue on the supposition of saving it.‡ If many hours, however, have elapsed, then, it may be said that such irritation is often, already, produced, as renders it very unlikely that the additional injury of the operation could be sustained. Still, the operation should be performed, as giving the best chance. On the other hand, if little irritation be yet excited, and the woman be tolerably well, there is room, it may be said, to hope, that a natural cure may be accomplished, as in extra-uterine pregnancy; and therefore, as the child cannot be saved now, it may be argued, that it is more prudent to trust to nature.§ Even in

* In Mr Macintyre's case, the os uteri was contracted, but yielded to the hand. The child was in the general cavity of the abdomen. It was turned, but the lever was used on the head, for two hours before it was extracted, yet, this patient recovered. *Med. Gazette*, vii. p. 9.

† Vide successful case by Thibault, in *Jour. de Med.* for May, 1768.—M. Baudelocque relates a case where the operation was twice performed on the same patient for the same cause. In *Essays Phys. and Lit.*, Vol. ii. p. 370, is a case, most incredible, where both the uterus and abdominal integuments were torn during labour. The child escaped, and the woman recovered. A case is related lately in one of the French Journals, where the Cæsarean operation was performed twelve hours after the rupture, with success.

‡ There is, however, a case, related by Frank, where gastrotomie was performed, and a living child extracted, by Cecconi, twelve hours, after the rupture had taken place. *Archives*, vii. 599.

§ *Astruc*. liv. v. chap. iv. quotes a case where the child remained in the abdomen for 25 years. 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 Société de Med.* Tom. i. p. 388. In Dr Bayle's case, the child was retained 20 years. *Phil. Trans.* No. 139, p. 997. In Mr Birbeck'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

this case, I advise to extract by a small incision, which I conceive to be less dangerous, than leaving the child. Lastly, when the pelvis is well formed, but there has been much time lost, it may be asked, shall we extract the child by the rent, or remove it by an incision? The practice must depend on the state of the uterus. If it be contracted, and very tender, the forcible introduction of the hand and extraction of the child, should be much more hazardous than the incision. I believe, however, that in most cases of ruptured uterus, delivery will be found to be practicable. The placenta has been expelled into the abdomen, when the child has been born.*

Another risk arises from the extravasation of blood into the abdomen, early exciting inflammation; and it has been proposed by M. Deneux and others to evacuate the blood by an aperture.

The cases which admit most easily of delivery, are those, where the rent is situated in the cervix uteri or vagina; and laceration of the vagina is less dangerous than the rupture of the uterus,† provided the bladder be not injured. I do not think

lived for many years, and after her death the rent was visible. *Phil. Trans.* Vol. xii. p. 696. In Dr Sym's 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. viii. p. 150. Bartholin also gives cases. Le Dran relates an instance where the uterus was ruptured on the 23d of April. On the 13th of May the placenta was expelled; on the 16th, a tumour appeared at the linea alba, which was opened, and a child extracted; the woman recovered. *Obs.* Tom. ii. ob. 92.

Fleury gives a case, where the fœtus, in some months, was partly expelled by the anus. *Recueil Périod.* Tom. iv. p. 268. Cornax had an instance, where for 4 years the belly was swelled, and painful, with discharge from the vagina; an abscess at last presented at the navel, and the fœtus was extracted. She recovered. Desbois' patient was cured in 4 months. *Duparque*, T. 11. p. 236. I might add to these cases.

* A child was delivered by the forceps, but the cord on being searched for, could not be found, nor the placenta felt. The patient's life was despaired of, but she got somewhat better. The belly partly swelled, and she thought that she was again pregnant. Purging came on, then a discharge of brown fœtid matter, with masses like placenta. The os uteri was felt slightly swelled. In front, and to the right side, was an opening in the vagina, leading to a large cavity. She died, but as there was no inspection, the rupture is not certainly proved.

† In a case communicated to Dr Hunter, the forceps were pushed through the cervix uteri, and the intervening portion between the laceration and the os uteri was afterwards cut. The labour was finished naturally, and the woman recovered. *Med. Jour.* Vol. viii. p. 368. Dr Douglas relates the successful case of Mrs Manning, in his *Observations*, p. 6. Dr A. Hamilton gives a fortunate case, where delivery saved the mother. *Outlines*, p. 384; and Dr J. Hamilton relates one in his *Cases*, p. 138, where the rent had contracted so much, as to give some difficulty to the delivery. The case is instructive. In the case of E. Dwyer, related by Dr Labat (*Dub. Trans.*), recovery took place, but, in the next pregnancy, the same accident occurred and proved fatal. In the 2d vol. of the *Trans. of the Coll. of Phys. in Dublin*, p. 15, Dr Frizel, gives the case of Bridget Fagan who had the uterus ruptured in consequence of the child presenting the arm. With great difficulty, and aided by the crotchet fixed on the foot of the child, he succeeded in turning and delivering it, when he found the uterus exten-

it necessary, to make any further remarks, on the laceration of the vagina, as distinct from that of the womb, except to say, that delivery may be practised, after a greater lapse of time, than when the uterus is torn ; for the vagina does not contract.

After delivery, the great risk proceeds from peritoneal inflammation, complicated with exhaustion, sometimes the symptoms of the one, sometimes of the other, predominating. Venesection, is only admissible in a few cases, and, in general we shall find the application of numerous leeches to the belly to be better. Fomentations, or warm poultices, if their weight can be borne, give much relief. The bowels are to be freely opened, which sometimes, at first, is very difficult to do ; after this opiates are useful. The strength should be supported, by mild nourishment,

sively ruptured at its cervix, and the intestines protruding. He replaced the bowels, and thinks he prevented a reprotrusion by making one edge of the rent overlap the other. She recovered. In the third vol. of the *Trans. of the Association, &c.*, is a case by Dr M'Keever, which he sent me, of a ruptured vagina, accompanied with a protrusion of a yard and a half of intestine. It could not be reduced, and sloughed off. The patient recovered. The stools were voided by the vagina, but after a time they came by the anus. In the 12th vol. of the *Med. Chir. Trans.* is a case by Mr Powel, where the cervix was lacerated, and, although during the extraction of the child, which was effected by turning and then perforating the head, the patient required to be supported by brandy, yet she recovered. M. Haimé gives a fatal case in the *Journ. Gen. for Dec. 1829*. Dr Hendrie's case of rupture of the right side of the neck of the uterus and part of the vagina, took place in consequence of an exostosis from the sacrum. The fundus was strongly contracted, but the body and neck relaxed. The child was extracted by the feet, and the patient recovered. *Rev. Med. iv. 288*. In Solera's patient, the os uteri was obliterated, and an incision required to be made in the vagina and uterus. After the head descended, the forceps were required. This is not, indeed, a case of rupture, but of wound. The patient recovered. *Archives, xviii. 107*. In Mr Gaitskill's case, there was no dilatation of the os uteri. When the surgeon was absent, the child was expelled by a rent in the rectum, the os uteri remaining hard. *Med. Rep. for March, 1823*. In the 13th vol. of *Med. Chir. Trans.*, Dr Smith relates a case of rupture of the vagina, in a premature labour, in the seventh month. He cut part of the indurated neck and extracted the child, which required to have the head opened. The mother recovered. Dr Birch has, in the same vol., two cases ; one recovered, the other died at the end of six weeks. There is a fatal case by Moreno in *Archives, xix. 301*. He considered it as extra-uterine.

M. Coffiniers gives a memoir on this subject, in the *Recueil Périod. Tom. vi.* in which he remarks, that laceration near the vulva is easily cured ; at the upper lateral part of the vagina it is dangerous ; and at the anterior and posterior part, near the bladder and rectum, it is generally mortal ; but in one case the woman recovered, although the hand could be introduced into the bladder. The woman had incontinence of urine afterwards. In his eighth case, the child lay transversely, and the vagina was torn and filled with clots ; but the peritonæum was still entire, and therefore the wound did not enter the abdomen. The uterus was supported with a napkin until the child was turned. Dangerous symptoms supervened, but the woman recovered. He gives fifteen cases, and of these six recovered. Several were produced by attempts to reduce the arm of the child. See also a memoir in *Archives, xv. 313*. Dr Birch takes a different view, and thinks that laceration at the sides and front, even interesting the bladder, is less dangerous than behind. *Med. Chir. Trans. xiii.*

and the patient kept very clean, and, in every respect, as comfortable as possible.

When, from precursory symptoms, we expect that laceration is about to take place, we must accelerate labour, generally by the use of instruments. This is more necessary if the patient have formerly had the uterus torn. Turning must be dangerous, in such circumstances, after the water has been evacuated, and before that, there can be seldom any indication of danger. It has been calculated that rupture takes place once in 940 cases.

ORDER SIXTH.

Suppression of urine may take place during labour, in consequence of the head of the child, being locked in the pelvis; or, from a kind of paralytic state of the bladder, produced by long retention of the urine; or, by a small stone, or quantity of lymph, obstructing the urethra. It produces tenderness, and great pain, in the hypogastric region, which is also swelled. The pain is constant, but is increased during every effort, of the abdominal muscles, to bear down, because, then, the bladder is pressed. It is injurious, in so far as it tends to impair the uterine action, and it is dangerous, on account of the risk, of the distended bladder being ruptured,* by the contraction of the abdominal muscles, or its giving way by a gangrenous rent. The bad symptoms consequent to this event, do not always come on instantaneously, and sometimes the bladder still retains a little urine. In a case related by Mr Hey, in the fourth volume of *Medical Observations and Inquiries*, they did not take place till the second day. The patient was thirsty, vomited, had a frequent desire to void the urine, which she did very suddenly, but not more than a tea-cupful at once. The pulse was quick, the belly swelled, and pressure gave her pain. She died about the eighth day, and the bladder was found to be ruptured at its upper part.

When the urine cannot be passed by the voluntary efforts of the woman, aided sometimes by pressing up the head of the child, the catheter must be introduced. The perforations of the instrument, however, ought to be large, as a slimy tough mucus in the urethra, sometimes fills, completely, those of the ordinary size. If the head should be so jammed in the pelvis, as to prevent the introduction of the catheter, which is rare, the woman must be delivered. I have never known such a case.

In some cases, although no water be made for a long time, yet no inconvenience is felt; and when the catheter is introduced

* A case is related by Mr Bedingfield, where the bladder seems to have burst, during a very easy labour of only two hours' duration. The patient died after peritoneal inflammation. *Lancet*, June, 1837. p. 371.

very little urine is evacuated. This depends upon a diminished secretion, and although, of itself, it cannot determine us to accelerate delivery, yet, should it be attended with other bad symptoms, in tedious labour, it may form an additional argument for interfering, as then the functions are becoming impaired, and effusion may take place into some of the cavities.

There are some other complications, which might perhaps be made the subject of distinct orders ; such as the existence of aneurism, hernia, &c., &c., but these may more properly be referred to the head of cases requiring the use of instrumental aid. It ought to be a general rule, and it is a very clear one, that whenever a disease exists, which may be much or dangerously aggravated, by a continuance of the efforts of labour, that process ought to be shortened, as much as possible.

BOOK III.

OF THE PUERPERAL STATE.

CHAP. I.

Of the Treatment after Delivery.

IMMEDIATELY after the placenta is expelled, the finger ought to be introduced into the vagina, to ascertain that the perinæum or recto-vaginal septum be not torn, and that the uterus be not inverted.

Then, if the patient be not much fatigued, she is to turn slowly on her back, and a broad bandage is to be slipped under her, which is to be spread evenly, and pinned so tightly round the abdomen,* as to give a feeling of agreeable support. This bandage is made of linen or cotton cloth; and it is usual to place a compress over the uterus, to assist contraction. In some, if not in many cases, this might be dispensed with, as we see in a state of nature; but, in civilized life, it is useful, if not absolutely necessary. For, the abdominal muscles do not contract, so as to afford a support to the parts within, and syncope, breathlessness, or other unpleasant effects, may be the consequence. The wet sheet is also to be pulled from below her, and an open flannel petticoat is to be put on; it has a broad topband, which is pinned like a second bandage over the first. A warm napkin is then to be applied to the vulva, and the patient laid in an easy posture, having just so many bedclothes as make her comfortable. If she desire it, she may now have a little panado or any other light nourishment, after which, we leave her to rest. But before retiring, it is proper to ascertain that the bandage be felt agreeably tight, that there be no considerable hæmorrhage, and that the afterpains be not coming on severely. It is also proper to mark the state of the pulse, and to leave strict directions with

* The abdomen from the time of the birth of the child, till this be applied, should be supported, or pressed on, especially over the uterus, by the expanded hand.

the nurse, that every exertion, and all stimulants be avoided. In most cases, but especially if the labour have been tedious, it is proper to remain for some time in the house, lest hæmorrhage occur.

Having thus simply stated what appears to be necessary, I must next say what ought to be avoided. It is customary with many nurses, to shift the patient completely, and, for this purpose, to raise her to an erect posture. Now this practice may not always be followed by bad consequences, but it is very reprehensible, for the patient is thus much fatigued, and if she sit up, even for a short time, hæmorrhage or syncope may be produced.

The pretext for this is to make the patient comfortable; and, indeed, if the clothes be wet with perspiration or discharge, there may be some inducement to shift them. But this ought to be done slowly, without raising her, and if she have been fatigued, not until she have rested for a little. Another bad practice, is the administration of stimulants. I do not deny, that these, in certain cases of exhaustion, are salutary; but I decidedly maintain, that, generally, they are both unnecessary and hurtful, tending to prevent sleep, to promote hæmorrhage, and excite fever and inflammation. A third practice, also injurious, is keeping the room warm with a fire, drawing the bedcurtains close, increasing the bedclothes, and giving every thing hot, to promote perspiration. This is apt to produce debility, and many hysterical affections, as well as a troublesome species of fever, which it is often difficult to remove. It also renders the patient very susceptible of cold, and a shivering fit is very readily excited. On the other hand, exposure to cold, or the application of cold, in any way, is to be avoided, being very apt to produce local inflammation. I have known too many cases, where fatal disease was produced, by the patient being allowed to feel cold during the night. Lastly, gossiping and noise of every kind, is hurtful, by preventing rest, occasioning headach or palpitation, as well as other bad symptoms.

At our next visit, which ought to be within twelve hours after delivery, we should inquire whether the patient have slept, the afterpains have been severe, or the discharge copious, and ascertain that the pulse be not frequent, for, it is, always, a suspicious circumstance, when the pulse continues quick. We should also particularly inquire if she have made water; and if she have not, but have a desire to do so, without the power, a sponge 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 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.

A stool should be procured, within twenty-four or thirty-six hours after delivery, either by means of a clyster or a gentle laxative. If the patient usually have the milk-fever, smartly, or the breasts be disposed to be painful and tense, a mild dose of some saline laxative, is better than a clyster. But if she be delicate, and have formerly had little milk, a clyster is to be preferred. If she be not to suckle the child, then, the laxative should be rather brisker, and may be repeated at the interval of two days.

After delivery, there is a discharge of sanguineous fluid from the uterus for some days, which then becomes greenish, and lastly pale, and decreases in quantity, disappearing altogether within a month, and often in a shorter time. This is called the lochial discharge. During this time, it is necessary that the vaginal orifice, and external parts, be daily washed with tepid milk and water.

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 even 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 breasts, before they have become distended. This may generally be done, twelve hours after delivery.

The diet of women in the puerperal state, ought to be light; and if they be not to give suck, liquids should be avoided, the food must be, as much as possible, of the dry kind, and thirst should be quenched, rather with ripe fruit, than with drink. If they be to nurse, the diet, for the first two days, should consist of tea, and cold toasted bread, for breakfast, arrow-root or weak chicken soup, for dinner, and panado for supper; toast water, or barley water, may be given for drink, but malt liquor should be avoided. Unless the patient be feeble, and at the same time have no fever, wine should not be allowed for some days; a little may then be added to the panado or sago, which is taken for supper; and a small glass diluted with water, may be taken after dinner. A bit of chicken may then be given for dinner, and in proportion as recovery goes on, the usual diet is to be returned to.

The time at which the patient should be allowed to rise, to have the bed made, must be regulated by her strength, and

other circumstances. It ought never to be earlier than the third day, and, in a day or two longer, she may be allowed to be partly dressed, and lie for an hour or two on a sofa; but even in the best recovery, and during summer, she ought not to leave her room, within ten or twelve days. She ought not to go out for an airing, in general, till the month be out. In cold weather, and when the patient is delicate, she must be longer confined. By rising too soon, and making exertion, a prolapsus uteri may be occasioned, and, still more frequently, the lochia are rendered profuse, and the strength impaired. If there be, or have formerly been, the smallest tendency to prolapsus, it is absolutely necessary to keep the patient, very much, for some time, in a recumbent posture, on a sofa, avoiding, however, that degree of heat which relaxes the system. It is also necessary, in this case, to stimulate the uterine lymphatics to absorption, by a mild purgative, once in the three or four days, to bathe the external parts with rosewater, having a third part of spirits added to it, and at the end of a fortnight begin a tonic, mixed with a mild diuretic.

CHAP. II.

Of Uterine Hæmorrhage.

IN natural labour, after the expulsion of the child, the uterus contracts so much, as to loosen the attachment of the placenta and membranes to its surface, and afterwards to expel them.* This process is always accompanied by the discharge of blood, but the quantity in general is small. If the uterine fibres, should not duly contract, after the delivery of the child, so as to diminish the diameter of the vessels, and at the same time accommodate the size of the womb, to the substance which still remains within it, then, provided the placenta and membranes be wholly, or in part, separated, the vessels which passed from the uterus, but particularly the venous apertures, shall be open and unsupported, and will pour out blood, with an impetuosity, proportioned to their size, and the force of the circulation. This flow, which is chiefly, if not entirely, venous, will continue, until syncope check it, a state, too often, only the prelude to death.

* When the uterus contracts properly after the delivery of the child, it will be felt, if the hand be applied on the abdomen, like a hard and solid mass; but when torpid, it is not so distinctly felt, for it is softer, being destitute of tonic contraction.

So long as the placenta and membranes adhere, we have no hæmorrhage, although the uterus be relaxed. But as soon as partial detachment takes place, the blood flows, and many of our worst cases, occur after the placenta is expelled. Contraction of the uterus, is a primary cause of the prevention of hæmorrhage, after the placenta is detached. We also find, that part of the deciduous portion of the arteries and veins, and of the decidua itself, is left for some time, attached to the parietes of the uterus, and is blended with coagulated blood. This forms a brown coating, or lining, which at first greatly assists in moderating the discharge.

The contraction of the uterus by acting on the vessels, tends to prevent hæmorrhage. But, whilst we assign the due value to this contraction, and hold its absence as a cause of hæmorrhage, still, we must attribute somewhat, to the state of the vessels themselves, as affected by the nerves of the uterus. If any circumstance, shall keep up an excitement, of the nerves of the uterus, the whole vascular system is also kept active, and should this be conjoined, with relaxation of great part of the fibres, as happens, particularly, when part is thrown into spasmodic action, the effect in producing hæmorrhage must be decided. In almost every, if not, absolutely, in every instance of flooding, either before or after the expulsion of the placenta, we find spasmodic contraction of the fibres of the cervix uteri, which seems sufficient to excite the vessels, perhaps also retard the return through certain veins. This spasm, if not the cause, is at least, generally the concomitant, of a relaxed state of the rest of the fibres, and these two opposite states, are both apt to be produced, if the labour have been tedious, or the child expelled suddenly, by a strong, but perhaps only momentary contraction. Even independent, however, of the state of muscular contraction, hæmorrhage may take place from that of the vessels, and sometimes has been prevented, in those liable to it from this cause, by deducting blood during labour, or in the end of pregnancy. But this seems useful, not so much, as Dr Gooch supposes, by lessening general plethora, or unusual arterial action, as by its local influence on the origin of the uterine nerves.

The inertness of the uterus, is sometimes so universal, that when the hand is introduced, it passes almost up to the stomach. But, generally, a circular band of fibres, contracts, spasmodically, about the upper part of the cervix uteri, enclosing the placenta above it, whilst the rest of the fibres become relaxed, or, the contraction may be higher, and merely the upper part of the placenta grasped by it, for there is no one part of the uterus exclusively affected. This has been called, though not very aptly, the hourglass uterus; and if I did not know the hazard of

establishing a general rule, I would say, that in almost every instance, this contraction takes place. I have, rarely, introduced the hand into the uterus, in a case of flooding, without meeting with it, whether the placenta had, or had not, been expelled. When it is not present in any degree, I suspect, that its absence is often owing to an almost moribund state of the womb.

This spasm of the uterus,* is accompanied with pain in the back, sometimes severe, great depression of strength, and a very feeble pulse, sickness, and paleness, as well as by uterine hæmorrhage, which is not the sole cause of the sinking and debility, for these often precede, even, internal hæmorrhage, though they are speedily increased by it, to an alarming degree. They depend greatly on the spasm, and, as I shall hereafter notice, sometimes arise, directly, from affection of the spinal nerves. If a patient feel sick or weak, or the pulse sink, or she become pale, soon after delivery, whether there be, or be not, hæmorrhage, we may be sure that this spasm has taken place, or that she has had formerly an affection of the spinal cord, which is now operating in a dangerous way, and that in either case, nothing but prompt measures can preserve life. This effect of spasm, in causing debility, independently of the actual quantity of blood lost, or altogether disproportionate to it, is analogous to the effect of spasm of the stomach.

Uterine hæmorrhage, usually, appears very soon after delivery, and very often before the placenta have come away; but it may not occur till some time after the placenta have been expelled. It is, however, rarely met with beyond half an hour after the expulsion; when it does occur, it is generally rapid and profuse, producing the usual effects of hæmorrhage on the system; and these effects, are greater and more speedy, than those, which follow from hæmorrhage before delivery, for the loss is instant and extensive, and the consequences, often aggravated by the combination of spasm. If there be little spasm, or no great effect produced by it, the first gush may not produce great debility, because it consists chiefly of blood, which formerly circulated in the uterus, and is not taken directly from the general system; and the separation of the secundines not being wholly effected at once, the loss at first is more slow. But, speedily, even when the separation is partial, the effect appears in all its

* Some have denied that the placenta was retained by spasm, but imagined that the cyst, in which it lay, was produced by the torpor of the part, whilst all the rest contracted; or from the uterus contracting round the placenta. Dr Douglas conceives that the spasm is always produced by mismanagement, particularly, irritating the vagina or pulling at the cord. For the peace of mind, of many attentive and careful practitioners, I am happy in differing from the opinion of the respectable writer. See Med. Chir. Trans. Vol. vi.

danger ; and it is not unusual for the woman, if not assisted, to die within ten minutes after the birth of the child.*

When the placenta is rashly extracted, immediately after the delivery of the child, we often find that the uterus does not contract properly, and the vessels pour out blood plentifully. This in part escapes by the vagina, but much of it remains in the cavity of the uterus, where it coagulates, and hinders the free discharge of the fluid by the vagina. But blood may, in this, and in other cases, be still poured out into the cavity of the womb, which becomes distended, and that, often, to a great size. Thus it appears, that after delivery, the hæmorrhage may be sometimes apparent, sometimes concealed. When it flows from the vagina, it is always discovered by the patient ; but when it is confined in the uterus, it is known only by its effects ; the pulse sinks, the countenance becomes pale, the strength departs, and a fainting fit precedes the fatal catastrophe.

Even when the placenta has not been rapidly extracted, hæmorrhage may be occasioned by rash exertion, or much motion.

The continued application of a great degree of heat, mental agitation, and the use of stimulants, may also contribute to the production of hæmorrhage.

A partial or complete inversion of the uterus, is another cause of hæmorrhage, and which can only be discovered by examination.

If flooding occur after delivery, the woman says there is surely an unusual discharge ; and, on examining, it is found to be really so ; but, at first, the pulse is pretty good, and the counte-

* The patient may die speedily after the birth of the child, in consequence of other causes, some of which it may not be improper to notice. Sudden death may proceed from an organic affection of the heart, such as ossification of the valves or arteries, dilatation of the cavities of the heart, or aneurism of the aorta. The effect of any sudden change in the system, in these cases, must be known to every practitioner. Whenever we suspect such disease, the most perfect rest must be observed after delivery. Should there be any inequality in the size of the two ventricles, the right being larger, for instance, than the left, then, any cause capable of hurrying the circulation, may make both sides contract to their utmost, the consequence of which is, that all the blood in the right side is thrown out, but it cannot be received into the left : rupture of the pulmonary vessels must take place, and I have known many instances where the patient was immediately suffocated. Speedy death may also arise from the brain becoming affected in a way similar to that which takes place in puerperal convulsions. In this case, the first symptom often is pain of the stomach, and the patient may die before any farther effect is produced. If a slight hæmorrhage accompany this state, the sinking effect is great, and from the combined causes, the patient may die, although there be little loss of blood. Great difficulty of breathing, and most alarming, if not fatal syncope may take place, from the mere emptying of the uterus, if an adequate support have not been given, as we also sometimes see after tapping for dropsy. In this case, even when due attention was paid to the application of a bandage, I have seen gasping and alarming weakness produced. The best remedy is an opiate, with a little warm wine or brandy. It is possible for air to enter the uterine sinuses, and produce speedy death.

nance is not much altered. In a minute, perhaps, the pulse sinks, the face becomes pale, the hands cold, the respiration is performed with a sigh, or, after lying quiet for a little, a long sigh is fetched, and the patient seems as if trying to awake from a slumber. She exclaims she is sick, and immediately vomits; she throws out her arms, turns off the bedclothes, and seems anxious for breath; she complains of cold, or perhaps is listless, and begs not to be disturbed; or lies in a state approaching to syncope, or gazes wildly around her, and is extremely restless, breathes with difficulty, and quickly expires. The danger of flooding is universally known, and the consternation excited by it is in many cases great. One exclaims the patient is dead, another she is dying, one is wringing her hands, another running for cordials, and it requires no small steadiness and composure, in the practitioner to prevent mischievous interference, or procure necessary aid.

From the view I have given, it is evident, that flooding is to be prevented, by preserving the muscular action of the uterus, and avoiding whatever can increase the force of the circulation. A powerful mean, of keeping up the action of the womb, consists in preventing it from emptying itself very suddenly. It frequently happens, when the child is instantaneously expelled, by a single contraction, being in a manner projected from the uterus, or when the body is speedily pulled out, whenever the head is born, that hæmorrhage takes place. Delivery, therefore, is not to be hurried, the steps of expulsion should be gradual; instead of pulling out the body of the child, we should rather retard the expulsion, when it is likely to take place rapidly. Those who estimate the dexterity and skill of an accoucheur, by the velocity with which he delivers the infant, ground their good opinion, upon a most dangerous and reprehensible conduct, and he who adopts this practice, must meet with many untoward accidents, and produce many calamities. On the other hand, severe and protracted labour, is no less apt to be followed by irregular contraction of the uterus, and hæmorrhage.

Another mean, of preserving and exciting the uterine action, is by supporting the abdomen, and making gentle pressure on it with the hand, immediately after delivery. I do not say that this practice is, in every instance, necessary, but it is so generally useful, that it never ought to be omitted. Indeed, Dr Clarke judiciously advises, that in the act of expulsion of the child, the hand should be placed on the fundus uteri, so as to follow it with a support, during, and after the contraction. The circulation is also to be moderated, by the free admission of cool air, by lessening the quantity of bedclothes, by a state of perfect rest, and by avoiding the exhibition of stimulants. If these

directions, which are few and simple, be attended to, we shall seldom meet with hæmorrhage, after the delivery of the child. Some women, no doubt, are peculiarly subject to this accident. They are generally of a lax fibre, easily fatigued and fluttered, and subject to hysterical affections.* When a woman is known to be subject to hæmorrhage, we should give her a full dose of laudanum, immediately after delivery, excite the action of the uterus by external pressure, or friction; and, on the first appearance of discharge, perhaps, in most of such cases, whenever the child is born, we ought to introduce the hand into the uterus. We are not to meddle with the placenta, or endeavour to extract it; our object is, by the presence and gentle pressure of the hand, to excite the contraction of the womb, and make it in due time expel the secundines. This gives little pain, and may be attended with most important consequences, to the future health or comfort of our patient. We are also enabled, at once, if we feel the uterus contracting spasmodically, to carry the fingers beyond that part, and gently dilate it. I need scarcely, I think, add, that in every case, more especially in those, where the labour has been tedious, or the woman has been subject to hæmorrhage, we ought not to leave the bedside, but should examine frequently, to ascertain that there be no unusual discharge.

The instant a woman is seized with hæmorrhage after delivery, we ought to take steps, for exciting the contraction of the uterus, upon which alone, we place our hopes of safety, for, it is a fatal error, to wait till dangerous symptoms appear. Some powerful means, are, at all times, within our reach; the introduction of the hand into the cavity of the uterus, external pressure, or friction, and the application, in extreme cases, of cold to the belly. These are aided, by the instant exhibition, of forty or fifty drops of laudanum.

The retention of the placenta, is not in general the cause of the hæmorrhage, but a joint effect, together with it, of the state of the uterus.† Our primary object, therefore, in introducing the hand, is not so much to extract the placenta, as to excite the uterus to brisker action. How improper and dangerous, then,

* During pregnancy, there is sometimes a scorbutic or hæmorrhagic diathesis induced, marked by vibices, spongy gums, bleeding from these or from the nose, or from a small wound, or after the extraction of a tooth. If this be not corrected by strengthening diet, the free use of fruit and vegetables, and attention to the bowels, uterine hæmorrhage of an obstinate description may take place after delivery. Dry diet and laxatives have been proposed, for those who were liable to hæmorrhage; but the most effectual preventive, is due regulation of the labour, and exciting the uterine contraction after delivery.

† Hæmorrhage is seldom from the detached part of the placenta, the rest adhering and receiving maternal blood, as may happen during gestation. It is often as great after the placenta has been expelled, as before that.

must it be, to thrust the hand into the uterus, grasp the placenta, and bring it instantly away; or to endeavour to deliver the placenta, by pulling forcibly at the umbilical cord. By the first practice, we are apt to injure the uterus, and certainly cannot rely upon it, for checking the hæmorrhage. By the second, we either tear the cord, or invert the uterus. Yet, although this be correct, I must not carry the rule too far. The placenta is retained, because the uterus does not act vigorously; but, in considerable torpor, I am inclined to think, that it may sometimes act injuriously, by preventing the uterus from collapsing, whilst it does not, on the other hand, make any stimulating pressure against its surface, as can be done by the hand. The mere removal of the placenta, after the womb has been, for a short time, excited by the introduction of the hand, allows the sides, of the now empty cavity, to fall together, and this of itself stimulates to contraction, as the discharge of the water does, during labour; at all events, we find the removal, attended, by at least, a temporary suspension of the hæmorrhage. But, in most instances, it is prudent, to reintroduce the hand, and retain it for a short time. Hence also, the manual abstraction of coagula, if hæmorrhage take place after the expulsion of the placenta, is of *signal benefit*, often of more advantage, than retaining the hand longer in the uterus.

When we introduce the hand, if the placenta be not yet expelled, we use the cord as a director, but do not pull it. It leads us to the stricture, which we find embracing it, whilst under that, we have a loose cavity, formed by the vagina, and under part of the uterus, often filled with coagula, amidst which, we find the flabby lips of the os uteri, which the practitioner must not mistake, for either clot, or placenta. The stricture is often such, as with difficulty to admit the finger. We cautiously pass it along the cord, within the contraction, and then a second finger, and perhaps a third, and gently dilate the stricture. We have two objects in doing this, the one, is to get at the placenta, which is above it, which we slowly detach and bring down. We use no force in separating the placenta, but rather press it toward the opening; often a great part of the placenta, is in the under division, and, the stricture does not grasp the cord, but a portion of the placenta, in which case, the removal is more easily effected, than in the former case. The other object, is to excite, by this dilatation, the general contraction of the uterus, which we aid, by gently moving the hand, in the under and free part of the womb. The placenta being freed, is to be brought away immediately, along with the coagula, and then, we reintroduce the hand, and aid the contraction by external pressure, &c. We do not dilate again the stricture, which we shall find still to exist,

unless the rest of the uterus be very flaccid, and then we do so as an excitation. We cannot expect the stricture to go off, all at once, but if the hæmorrhage cease, we find that it gradually goes off, particularly by the use of laudanum. We never can permanently remove it, by distention, and ought not to try it.

But I shall suppose, that the placenta has been already expelled, before the hæmorrhage comes on, and some of the most appalling cases are of this description, occurring even after the patient is bound up, and laid to rest. The same practice is to be followed, the hand is to be introduced, and pressure made externally, the lower part of the uterus emptied of clots, and the stricture somewhat dilated; the hand is then either to be retained, or reintroduced if it had been withdrawn, and moved gently in the slack part of the womb, to excite it if there be hæmorrhage still, or, any new clot is to be removed. It is a mistake to suppose, that the presence of coagula, will either close the mouths of the vessels, or stimulate the uterus to contract. This is best effected, by the removal of them, and by the pressure of the hand within and without. No remedy can be at all depended on, without the use of the hand, and the removal of coagula. This is so certainly the case, that, often, turning out the coagula, without touching the constriction above, stops the hæmorrhage, and even seems to relieve the spasm.

I now proceed to consider what farther assistance may be given. I have already advised, immediately on the attack, and as soon as possible after introducing the hand, for we lose no time in this respect, to give forty or fifty drops of laudanum. We then press firmly over the uterine region with the other hand, or the hand of an assistant, and move the abdominal parietes somewhat briskly, but not rudely, over the womb, and occasionally grasping that viscus gently. Friction, is intended to excite to contraction, whilst pressure is calculated also, though I fear, not effectually, to impede distention.

The contraction of the uterus, is sometimes powerfully assisted, by the application of cold. The quantity of clothes should be lessened, so far, as to prevent the surface being heated, and the circulation excited; but our principal expectation, is from cold as a topical application, which should be made, if the other means fail, but only in that case. Cloths dipped in cold water, should be laid, suddenly, upon the belly. In obstinate cases, it has been found useful, to project it, forcibly on it, with a syringe. It has been proposed to dip a sponge or a piece of cloth, in cold water, and carry it, in the hollow of the hand, into the uterus. Nay, ice itself has been introduced into the womb,* but we must

* Saxtorph uses injections of vinegar and cold water. Pasta has the hardihood to use alcohol and acids, to cauterize, as it were, the mouth of the uterine vessels.

not forget the possibility of inducing inflammation, by these measures, which can therefore only be justifiable in extreme cases. In general, when cold can be useful, its external application, by means of cloths, will be sufficient to save the patient. I feel confident in advising it, when requisite, and have never known any bad consequence result from it.

Ergot has been advised, and, in some cases, is said to have done good, but nothing equals the cautious use of the hand.

If the placenta be found detached, and loose, in the uterus, we move the hand gently, to excite the womb, and also use the other means already noticed, viz., pressure, friction, opiates, &c. Then, after a short effort made to excite the uterus, we withdraw the placenta and clots. We should lose little time, however, in this attempt with the hand, to stimulate the uterus, for, if it do not very quickly produce the effect, it is best, at once, to remove the placenta, and, the mere emptying of the uterus, will be found to have a good effect. The hand may then be re-introduced, and probably the uterine cavity will be found greatly diminished. Even in this case, which is considered as an instance of general flaccidity of the uterus, we may in general, by attention, discern a spasmodic contraction, above the cavity which receives the hand.

When it happens, that part of the placenta, adheres pretty firmly to the uterus, we are not to be rude in our attempts to separate it.* It is too much the practice, with some midwives, to trust more to their fingers, than to the contraction of the uterine fibres, the consequence of which is, that they tear the placenta and irritate the womb. Yet, it is certain, on the other hand, that gentle attempts to separate it, are sometimes necessary; but these should be so cautiously and deliberately made, as not to lacerate the placenta. The fingers should be very slowly and gently insinuated, betwixt the uterus and the placenta, so as to overcome the adhesion, which is seldom extensive. I have known the placenta retained, for four days, by an adhesion not larger than a shilling. This case proved fatal by loss of blood, which continued to take place, I understand, in variable quantity, during the whole time. No attempts were made to relieve the woman, until she was dying.

We can, in general, save the patient in flooding, if we be on which cannot fail to cause inflammation. Others introduce a sponge dipped in cold water, or a sow's bladder, which they afterwards blow up with air, to press on the uterine surface, or fill it with cold water, at the same time that they apply external pressure. Others use the cold bath itself. Le Roy rubs the abdomen with spirits, and Lapira praises the external application of a strong solution of carbonate of ammonia. Gardien supposes it may sometimes be so active as to require the lancet. Others plug the os uteri, and compress the abdomen. I do not think it necessary to comment on these proposals.

* One of the most perfect cases of identification, of the uterine and placental surfaces, is preserved in the Museum of the Lying-in-Hospital at Dublin.

the spot when it happens; but if much blood have been lost before we arrive, the strength may be irreparably sunk. In those cases where great weakness has been produced, we must not only endeavour to excite the uterine contraction, in order to prevent further injury, but we must also husband well the power which remains. As every exertion is dangerous, motion must be avoided, and upon no account is the patient to be shifted or disturbed for some time. By imprudent attempts to raise the patient, or, "to make her more comfortable," she has sometimes suddenly expired. But it is of consequence to have the whole belly, firmly supported with a bandage, if this can be applied without moving the patient much.

The state of the stomach is to be watched, preventing, as far as we can, the feeling of sinking, which is apt to take place in all floodings. Cordials, as for instance, undiluted wine, or brandy diluted or pure, should be given freely, for some time, to support the strength; but, after recovery begins to take place, and the pulse steadily to be felt, they should be omitted or decreased, for, if persisted in, to the same extent, fever or inflammation may be excited. Opiates, are of great service, in all cases of uterine hæmorrhage, after delivery. They are among the safest, and best cordials, we can employ, and must, in every instance, be exhibited. The dose ought to be proportioned to the urgency, varying from fifty to sixty drops. In some instances, when the debility was great, a hundred drops of the tincture, or when the stomach was very irritable, five grains of soft opium have been given at once, and afterwards three grains every three hours, till the patient was out of danger. But I do not consider such large doses of laudanum to be necessary, and as for the solid opium, it ought to be given in doses, only of a grain, to allay the irritability of the stomach, after the pressing danger is past, for, in no dose can it act instantly, or be depended on in urgency. Moderate doses of laudanum by the stomach, or in clysters, never prevent the contraction of the uterus, or produce afterwards any bad effect. Opiates supply, in so far, the place of wine, and are infinitely safer; at the same time, we must not neglect wine or brandy, as the one assists the other, and these last stimuli are more immediate in their effects, a property which is of essential importance. Aromatics have been given, such as tincture of canella, with good effect. Iced water has also been recommended, but of this I have no experience. When the patient has recruited a little, it will be proper to give small quantities of soup, properly seasoned, or such other nourishment as she can take.

We must be careful neither to give cordials nor nourishment, so frequently, as to load the stomach, which produces sickness and anxiety, until vomiting remedy our error. This last symp-

tom, when moderate, is not always unfavourable, for it sometimes excites more powerfully the contraction of the womb. The rising of the pulse, and relief of the patient after it, are to be ascribed, not so much to any direct power, which this operation has, of invigorating the system, as to the consequent removal of sickness and oppression. If these effects do not follow from vomiting, the case is very bad. Soft opium is the most effectual remedy against repeated vomiting. It must be given in the dose of from one to two grains.

When the hæmorrhage has produced complete syncope, the state of the patient is very alarming. Yet the danger is not the same in every case, for some women faint from slighter causes than others. La Motte, relates one case, where the patient fainted no less than twenty times, in the course of the night. In a faint, she is to be kept in a state of the most perfect rest, the face is to be smartly sprinkled with cold water, and, when she can swallow, a little wine or brandy, or spiritus ammoniæ aromaticus diluted with water, and having laudanum added to it, given to rouse the system. Afterwards, warm spiced wine may be given, in small quantity, and warm cloths applied to the feet. Friction on the region of the stomach, with some stimulating embrocation, as hartshorn and spirits, or the application of a sinapism, may be useful. I need not add, that the patient must, in these awful circumstances, be carefully watched; and that, if the expression be allowed, we must obstinately fight against death. It may appear to some, that stimulants, and other means to remove syncope, must renew the hæmorrhage, and that syncope, itself, is useful, by checking the circulation. But no man of observation, can suppose syncope to be safe, in hæmorrhage after delivery, or hesitate, by opium or brandy, or wine, to recall his patient to animation, or to prevent a renewal of the fainting fits.

The transfusion of blood, has been proposed, in this desperate case. But, partly from the difficulty of getting an apparatus when required, and partly from the little success attending the practice, it has seldom been resorted to, and is, already, I believe, looked on merely as a speculation. I question, whether injecting tepid water, into a vein, with due precaution, might not, by refilling the vessels, be as useful as transfusion. We must not forget, in considering the proposal, the risk of inflammation of the vein, should the patient survive.

It was, at one time, the practice, to prevent the patient from sleeping, or indulging that propensity to drowsiness, which often follows hæmorrhage. But we can surely, at short intervals, give whatever may be necessary to the patient, and ascertain the state of the discharge, without absolutely preventing sleep, or rather slumber, for the patient never sleeps profoundly. We

are to attend so far to the advice, as not to allow the slumber to interfere, with the administration of such cordials or nourishment, as may be requisite.

Sometimes a partial or irregular contraction of the uterine fibres takes place, and the person is tormented by grinding pains, accompanied by repeated hæmorrhage.*

The retention of a small portion of the placenta, which has firmly adhered to the uterus, is also a cause of hæmorrhage, and the discharge may be renewed for many days, until the portion be expelled.

It may also happen, that, from some agitation of mind, or morbid state of body, the uterus may not go regularly on, in its process of contraction, or restoration† to the unimpregnated state. In this case, the cavity may be filled with blood, which forms a coagulum, and is expelled with fluid discharge. The womb may remain, thus stationary, for a considerable time, and the coagula be successively expelled, with slight pains, and no small degree of hæmorrhage. These symptoms, very much resemble those, produced by the retention of part of the placenta, and cannot easily be, with certainty, distinguished from them. We have, however, less of the fœtid smell, and we never observe any shreds or portion of the placenta to be expelled, whilst the coagulum, if entire, has exactly the shape of the uterine cavity.

Lastly, we find, that if exertion have been used, before the uterus have been perfectly restored, there may be excited a draining of blood, which does not come, in general, very rapidly; but, from its constant continuance, amounts ultimately to a considerable quantity, and impairs the health and vigour of the woman. This has been called menorrhagia lochialis.

When the hæmorrhage proceeds from irregular action of the uterus, and is attended with grinding pain, a full dose of tincture of opium is of advantage, and seldom fails in relieving the patient. Laxatives are also proper.

If the placenta have been torn, and a portion of it remain attached to the uterus, the hæmorrhage is often very obstinate. Both clotted and fluid blood, will be discharged repeatedly. The clot has the shape of the uterus, and is expelled with fluid

* When the abdomen has been bandaged too tightly, the parts within are injured. The patient is restless and uneasy; the pulse is frequent; she complains of pain about the uterus, and numbness in the thighs. Sometimes the lochia are obstructed; sometimes, on the contrary, pretty copious hæmorrhage is produced. Relief is obtained by slackening the bandage; by giving an anodyne; and, if there be no hæmorrhage, by fomenting the belly.

† This, at first, is owing to muscular contraction; afterwards, absorption forms part of the process. But if these operations shall be interrupted, or injured, then the vessels, which are still large, not being duly supported, will be very apt to pour out blood.

blood like an abortion. An offensive smell, proceeds from the uterus, and, at last, the portion of placenta is expelled in a putrid state, after the lapse of many days, or even weeks; and this expulsion, is often attended with severe attacks of hæmorrhage. By examination, the os uteri will be found soft, open, and irregular.

If, by the introduction of the finger, we can feel any thing within the uterus, it should be cautiously extracted; but we are not to use force or much irritation, either in our examinations or attempts to extract, lest we inflame the womb. It is more advisable to plug the vagina, and even the os uteri, so as to confine the blood, and excite the uterine contraction. We may also inject a mild astringent fluid, for the same purpose, or throw a stream of water, moderately cool, into the uterus, from a large syringe, by way of washing out the portion of placenta, if it have become nearly detached, or, if the smell be very offensive, we may use a weak solution of chloride of lime. A gentle emetic sometimes promotes the expulsion. The bowels are to be kept open, and the strength supported by mild and nourishing diet; but we must take care, on the other hand, not to fill the vessels too fast. If febrile symptoms arise, the case is still more dangerous, as I will presently notice.

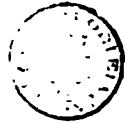
When the hæmorrhage proceeds from an interruption of the process of restoration, our principal resource, consists in exciting the contraction of the womb, by the use of clysters—by friction on the abdomen—by injecting cool mild astringent fluids into the womb—by the exhibition of a gentle emetic—and by clapping, if other means fail, a cloth, or sponge, wet with cold water, suddenly, upon the abdomen, when the womb is expelling the coagulum. We also check the hæmorrhage, and save blood, by the prompt application of the plug, and diminish the action of the vessels themselves, by allaying or removing every irritation, and avoiding the frequent use of stimulants, or attempts to fill the vessels too quickly. The feeling of sinking, sickness, tendency to syncope, &c., are to be obviated by the means already pointed out.

Lastly:—The menorrhagia lochialis, is to be cured by rest, cool air, the use of tincture of kino, sulphuric acid, or other tonics, bathing the pubis or back with cold water, and injecting an astringent fluid, three or four times a-day, into the vagina. Sometimes whenever the discharge stops, the patient complains much of stomachic affection. This is to be allayed by laxatives and aromatics, or rubefacients applied to the epigastrium. When it alternates with diarrhœa, confectio catechu is useful, along with some bitter tincture. If the pulse be frequent, the exhibition of digitalis, for a short time, may be of advantage. Pain in the back, generally attends this disease, and is sometimes so se-

vere, as even to affect the breathing. In this case, a warm plaster applied to the back is often of service; and, if the pulse be soft, an anodyne should be administered. In slight cases, the application of cloths dipped in cold vinegar, to the back, does good.

The distressing palpitations, beating in the head, and headach, with anomalous nervous affections, which often follow hæmorrhage, are best relieved by the regular and steady use of laxatives, which may be conjoined with asafœtida, or tonics, such as iron or quinine, according to circumstances. In a former part of this work, the student will find remarks on the effects of great hæmorrhage.

CHAP. III.



Of Inversion and Retroflexion of the Uterus.

INVERSION of the uterus, implies, that the inside is turned out, and down into the vagina. It may take place in different degrees, and has, accordingly, been divided into the simple depression; the incomplete inversion, when the fundus is merely engaged in the orifice; and the complete, when it protruded out of the vagina, and exactly resembles the uterus after delivery, only, the cervix turned upward. The vagina, is, in this case, sometimes partially drawn down, or also partly reversed or inverted, so that the tumour is of considerable length. We cannot, however, say, that the inversion is strictly complete, for, in most cases, the lips of the os uteri hang down, and the inversion terminates at the lower part of the cervix. The term, complete inversion, is therefore not quite correct.* When it is more partial, the tumour is retained altogether, or chiefly, within the vagina, and the fundus only protrudes, to a certain degree, through the os uteri, forming a firm substance, something like a child's head.† When the uterus is inverted, the patient feels great pain, generally accompanied with a bearing-down effort, by which a partial inversion, is sometimes rendered complete. The pain is obstinate and severe, she feels very weak, the countenance is pale, the pulse feeble, perhaps nearly imperceptible, a hæmorrhage, very generally, attends the accident, and often is most profuse. But it is worthy of notice, that, frequently, complete in-

* Some maintain that it is possible for the lips to be turned quite up.

† The late Dr White of Paisley describes it very well, as resembling a printer's ball. Med. Com. vol. xx. p. 147. Sometimes it does not pass through the os uteri. Denman, Vol. ii. p. 351.

Mangetus, lib. iv. p. 1010, relates a fatal case, where the tumour was taken for

version, is not accompanied with hæmorrhage,* whilst, a very partial inversion, may be attended with a fatal discharge. Although there be little hæmorrhage, the face is pale, and the pulse weak and rapid; a sensation of dragging at the stomach, or a feeling, as if the bowels were pulled out of the belly, may accompany inversion. Fainting and convulsions, are not unfrequent attendants, although the hæmorrhage have been trifling. Inversion may be suspected to exist, from the symptoms mentioned, and on examination, the womb shall be felt, more or less protruded, like a mass of flesh, whilst no hard uterus can be discovered in the hypogastrium.

Inversion, in a great majority of instances, depends upon the midwife endeavouring to extract the placenta, by pulling the cord. Sometimes the uterus is directly pulled down, and the placenta still adheres; in other cases, it is separated. It may also happen, if the child be allowed to be rapidly expelled, for, if the cord be short, or entangled about the child, the fundus may receive a sudden jerk, and become inverted. From the same cause, or sometimes, perhaps, from sudden pressure of part of the intestines, on the fundus uteri, occasioned by a strong contraction of the abdominal muscles, a part of the fundus becomes depressed like a cup, and encroaches on the uterine cavity. This generally rectifies itself, if let alone; but if the cord be pulled, or if there be any tendency in the uterine action, to go toward the fundus, as happens when that part is lacerated, and may in like manner occur in the present case, the depression is speedily converted into perfect inversion, which may thus take place, spontaneously, and without any fault of the attendant. Dr Merriman (*Synopsis*, p. 149), mentions an instance, where it took place, when the hand of the operator, was introduced for the purpose, of effecting the separation of the placenta. It is in this way, that we are to account for those cases, which have apparently, occurred many days after delivery, and where, either with or without hæmorrhage, the uterus has suddenly come down. It would appear, however, that this depression of the

the head of a second child. It was at first partially, and then completely, inverted with excruciating pain.

Mr Smith relates a case of inversion, where the accident was followed by syncope, subsultus, &c. The subsultus and frequent pulse continued for some days, with smart fever, and inability to move. *Med. and Phys. Jour.* Vol. vi. p. 503. In the same volume, Mr Primrose gives an instance where a great part of the uterus sloughed off, and the woman recovered.

* This was the case, in the instance related by Dr Hamilton. *Med. Com.* Vol. xvi. p. 315.—In the case by Mr Brown, the hæmorrhage was considerable. *Annals of Med.* Vol. ii. p. 277. I have seldom seen much hæmorrhage attend complete inversion.

† Chapman relates a case of inversion, where the midwife pulled forcibly at the uterus, and excited convulsions, fainting, and death. *Case 20*, p. 123.

fundus, ending at last in complete inversion, may take place some time after delivery. There is one case, of this kind, recorded, where, on account of hæmorrhage, the hand had been introduced, and the uterus was not found unusual in its figure. On the 12th day, inversion took place. Even in this instance, however, it is by no means certain, that there was no depression early; for the practitioner, might not have attended, minutely, to this circumstance, not expecting it. An incomplete inversion, may remain for life, and occasion incurable fluor albus and hæmorrhage. Some, however, speculate on a cure being effected by pregnancy, which doubtless would be the case, if that could take place.

It has been supposed possible, that inversion might take place in the virgin state, if the womb had been distended, by blood or other fluid.

Inversion may terminate in different ways. It may prove rapidly fatal by hæmorrhage; or it may excite fatal syncope, or convulsions; or it may operate more slowly, by inducing inflammation, or distention of the bladder; or, after severe pains and expulsive efforts, the patient may get the better of the immediate injury, the uterus may diminish to its natural size, by slow degrees, and give little inconvenience;* or it may discharge fœtid matter, and give rise to frequent debilitating hæmorrhage, with copious mucous discharge in the intervals; or hectic comes on, and the patient sinks in a miserable manner. It has also 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 (Mad. Bourchalatte) on the authority of the justly celebrated Baudelocque.† In this case the restoration took place, after a lapse of eight years. From examination of preparations, there appears to be nothing physically impossible, in forcing up the inverted portion, but whether it could be done with safety, is another question. Spontaneous reduction, must, at least, be exceedingly rare. The contraction of the os uteri, of itself, would be an obstacle to the return of the body and fundus.

If inversion be discovered early, the uterus may be replaced. If it have protruded out of the vagina, it is first of all to be returned within it; if it have not, we proceed directly to endeavour

* La Motte, 383, mentions a woman who had inversion for above thirty years. The late Dr Cleghorn, *Med. Commun.* ii. 226, relates a case where the uterus slowly returned to its natural size. This woman still menstruated and enjoyed tolerable health, after it had been of twenty years' standing. The womb was smooth, moist, and gave little pain. Menstruation also continued in Dr Hamilton's case, *Com.* xvi. p. 315.

† Gardien Traité, Tom. iii. p. 335.

to return it within the os uteri, by cautiously grasping the tumour in the hand, compressing, and pushing it upwards, within the os uteri. We thus turn in successively, portions of the uterus from the os uteri downward. If this fail, we may succeed by pressing up the most prominent part of the fundus, in the direction of the axis of the uterus, first making a slight depression, and then increasing that, so as gradually to undo the inversion, or re-invert the protruded womb. A piece of wood, with a round head, has, by some, been used in this way, but the fingers are safer. If we push, directly, without compressing the tumour, we sometimes bring on violent bearing-down pains. These are, occasionally, attended with increase, or renewal, of flooding, and in all cases, on pressing the uterus, small vessels spout, like arteries in an operation. If we succeed, we should carry the hand within the uterus, and keep it there for some time, to excite its contraction. If the placenta still adhere, we should not remove it, until we have reduced the uterus; after which, we excite the contraction of the womb, to make it throw it off.* In complete inversion, when there is less chance of hæmorrhage, it has been proposed to remove it before reduction. But I advise the contrary, unless it be found that the bulk of the placenta decidedly increases the difficulty.

It is sometimes long before the pulse come steadily to be felt.† Occasionally, after the reduction, when the patient is seeming to do well, she is seized with a fit and dies.‡ Or, she may remain long weak, and have swelled feet.§

If inversion have not been discovered early, it is more difficult, nay, sometimes impossible to reduce it, owing chiefly to contraction of the os uteri. Dr Denman says, that he has found it impossible to reduce it, even four hours after it took place, and in a chronic inversion, he never once succeeded. In such cases, it is not prudent, to make very violent efforts, to reduce the uterus, as these may excite inflammation, convulsions, &c. Nevertheless, I feel bound to state, that very painful manipulations have not always ended ill.|| Soon after becoming inverted, the uterus

* In a case related in *Memoirs of Med. Soc.* Vol. v. p. 202, the placenta was allowed to remain five days after reduction, but this is a hazardous practice.—Perfect, case 71, brought it away after four hours. Dr Merriman, in one instance, followed the advice of Puzos, to remove the placenta before reduction, but although he did it without detriment, yet, he acknowledges he would not follow the same course in future.

† Case Dr Duffield, in *Trans. of Coll. at Phil.* 176.

‡ Case by Dr Albers, *Annals of Med.* Vol. v. 390.

§ Mr White's Case, *Med. Comment.* Vol. xx. 247.

|| Dr Belcombe relates a case where, at the end of 12 weeks, the uterus was found to be very painful to the touch, and bled easily. Mr Brown reduced it, but the pain was "excruciating." The patient recovered. *Med. Gazette*, vii. p. 783.

is apt to swell and inflame. If this have happened, no attempt should be made to reduce, till, by bleeding, and rest, and mild fomentations, this state have been allayed. We must, in every instance, alleviate urgent symptoms, such as syncope, retention of urine, or inflammation, by suitable means. I may further observe, that when a patient, after delivery, complains of obstinate pain, or bearing-down, or suppression of urine, or is very weak, we should always examine per vaginam. If the uterus be inverted, we may feel the tumour, and we may find the hard womb, to be absent in the belly, or lower down than it should be. If this examination be neglected, the patient may be lost. I have known the first intimation given to the practitioner, to be his finding no uterus in the belly, when it was opened after death. Examination is of the utmost consequence.

When the uterus cannot be replaced, we should at least return it into the vagina. We must palliate symptoms, apply gentle astringent lotions, keep the patient easy and quiet, attend to the state of 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 385th case. A spring bandage is also useful. If inflammation come on, as is usually the case, we prescribe blood-letting, laxatives, &c. By these means, the uterus may contract to its natural size, and the woman menstruate as usual, but generally the health is delicate. Sometimes, the uterus becomes scirrhus, or gangrenous sloughs take place.* Mr Radford met with a case, where at a certain period, the uterus was found to be diminished to the size of a pear, and the os uteri was lightly girt about its neck. There was purulent discharge, which continued long, but in a subsequent examination, the tumour had disappeared, the upper part of the vagina forming a "complete cul de sac."†

If the uterus discharge fœtid matter, and hæmorrhage take place, the strength is apt to sink, and the patient dies hectic. Astringent applications, with attention to cleanliness, good diet, and the occasional use of opiates, may give relief; but if they do not, we are warranted, to prefer the trial of the extirpation of the uterus to certain death. This operation has been repeat-

* Schmucker's Surgical Essays, Art. xvii.—A case is given, Med. Journ. vi. 367, where appearance of gangrene, from strangulation, took place. The womb was scarified, and the swelling quickly disappeared. The patient recovered. Mr Radford relates a case, where it was reduced in a quarter of an hour, after several days had elapsed.

† Dublin Journ. xii. p. 12. This paper contains a good view of the disease. He considers the fundus and body of the uterus, to be in a state of excitement and action. The os uteri to be soft.

edly successful,* and is performed by applying a ligature high up, and cutting off the tumour below, or allowing it to drop off, like a polypus. But it must also be remembered, that in some

* The inverted uterus has been torn off with the crotchet, being mistaken for the child's head. *Jour. de Med.* Tom. xli. p. 40. A case of successful extirpation, is inserted in the same work for August, 1786. Wrisberg relates a case, where it was cut off by the midwife, who had inverted it. A successful case is given by Dr Clarke, in *Edin. Med. and Surg. Jour.* Vol. ii. p. 419. Another case, is mentioned in the *Recueil des Actes de la Societé de Lyon*. Another, by Mr Baxter, *Med. Phys. Journ.* Vol. xxv. and by Mr Chevalier, related in Dr Merriman's *Synopsis*, p. 286. Petit, of Dijon, says, a surgeon by mistake, applied the ligature and cured the woman. The surgeon's son denies that the cure was wrought by mistake. Osiander, relates a case where the midwife pulled down the uterus and placenta, and cut them both away. The patient recovered, and afterwards was exhibited during every course of lectures. The late Mr Hunter of Dumbarton gives a successful case, in *Annals of Med.* Vol. iv. p. 366. I particularly examined this woman, several years after the operation. She was delivered without any violence, after having been twenty-four hours in labour. In about an hour the placenta came away. She had considerable flooding and great weakness. She could not void her urine, which in two days was drawn off with the catheter, and this was frequently repeated. A fortnight after delivery, the womb, inverted, protruded from the vagina, with pains. It was replaced, but came down again. A fœtid discharge took place, and the woman was reduced to a state of great weakness. A ligature was applied, which, she says, gave her a good deal of pain, and the tumour was cut off. Her account differs in some respects from Mr Hunter's, probably owing to her speaking from memory alone, some years after the event; and she does not notice the previous extraction of any lumps from the uterus, which Mr Hunter mentions, for most likely she did not know of that. About two years ago, she had for a length of time, a discharge of thick white matter. At present (1809), the vagina is of the usual length; and at the top, a transverse aperture is felt, the posterior lip, or edge of which, is longer and more tendinous to the feel, than the anterior. It admits the tip of the finger, and feels softer than the os uteri, in a natural state. There is no cervix uteri. The mammae are firm, and of good size, and she has not lost the sexual desire. She is subject to dyspepsia. The preparation is in the possession of Dr Jeffray. The extirpated substance is fully the size of the fist, and contains the ovaria and tubes. Two cases of successful extirpation are related by Dr C. Johnson. They were both chronic. The fundus and tubes were removed, but not the ovaria. The preparations are described in Dr Houston's catalogue, p. 509, and the cases are given in *Dub. Hosp. Rep.* Vol. iii. pp. 479 and 483. I have noticed one of these cases in the chapter on menstruation.

Mr Newnham, in his *Treatise on Inversion*, p. 31, relates the case of Mrs Glasscock who had a ligature applied to the inverted uterus, but on account of pain, it was removed in some hours. As she was evidently losing ground, it was re-applied on the 18th of April. It produced much pain, which came at intervals, like that of labour. This was allayed by opiates, and the ligature gradually tightened. She was very irritable, and suffered much from spasmodic pain; but, on the 6th of May, the tumour dropped off, and she got quite well. As the finger could be passed within the os uteri, and around the tumour, the inversion was probably incomplete. The inverted uterus, when touched with the finger, appeared to be nearly insensible, and had never caused pain. The uterus has also been successfully extirpated, partly by the ligature, partly by the scissors, by Mr Wind-sore. *Med. Chir. Trans.* Vol. x. p. 358.

Bartholin relates a case, where the inverted womb was torn away, and found under the bed of the dead patient.—Blasius, a case, where the uterus was hard and scirrhus; it was tied, but on the third day the patient died. In the cavity of the portion were found the ovaria and ligaments. Goulard's patient died on the 18th day. *Mem. of Acad. de Sciences*, 1732.

cases, where the inverted uterus, has been either intentionally extirpated, or mistaken for a polypus,* death has followed. If much pain, follow the application of the ligature, not yielding to opiates,† the ligature ought to be removed, and means, if necessary, taken to allay inflammation.‡ We must further recollect, that, in what is called, a total inversion of the uterus, part of the bladder may possibly be drawn down within it, unless its attachment to the cervix give way. We ought, therefore, if the ligature is to be applied high, and soon after the production of the inversion, to ascertain the relation of the bladder to the tumour. I do not know of any instance, where the intestine descended into the inverted bag.

Inversion, when it has been of long duration, may be confounded with prolapsus, or polypus: from the first, it is distinguished by the shape, and by the absence of the os uteri; from the second, by attending to the history, and by careful examination. We must recollect that in every instance, the inversion is encircled by the os uteri§ like the polypus, but the lips cling to the tumour, or form a part of it, and nothing can be passed beyond them. In polypus we can generally carry a probe up within the uterus; at the same time it is to be observed, that the polypus may adhere to the cervix.|| A polypus is more

* In a case related in *Recueil des Actes de la Societé de Santé de Lyon*, the uterus was taken for a polypus, and the ligature applied. The mistake being discovered, it was instantly withdrawn, but the woman died in a few days.

† I have known death follow the application of a ligature on a supposed polypus, but which was ascertained to have been the uterus partially inverted. It was in this case not larger than in the unimpregnated state.

‡ Dr Gooch applied the ligature, on a uterus which had been inverted for between two and three years. The patient had much pain, but that was allayed by opiates. The ligature came away on the 14th day, and the patient did well. *An Account, &c.*, p. 268.

§ Dr Symonds applied the ligature, and subdued pain by opium. The uterus came away on the 15th day, but the patient died of inflammation, on the sixth day after that; there was pus in the abdomen. *Med. Gazette*, Vol. xiii. p. 242.

§ In the Hunterian Museum there is a preparation of inverted uterus, which might, during life, have been mistaken for polypus, if the relation of parts alone had been attended to. The vagina and uterus are both opened. The uterus is inverted from the cervix, but the lower part of that, and lips of the os uteri are in their natural position. Before being slit, then, the inverted portion must have been surrounded or embraced, by the os uteri, like a polypus. The uterus, though altered in shape, is not larger than usual, and the inverted portion may be about an inch and a half long. The tubes and ligaments are seen turning down into the inverted cavity, which is opened to show their termination, as usual, at the fundus. No part of the bladder is turned over, or drawn into the sac. Whether any part ever had, is doubtful, but at this stage we cannot expect the bladder to descend in any degree, both because the inversion takes place, not in the vagina, the lips of the os uteri being directed upward, but at the cervix uteri, the lips being directed downward, and also, because the repeated distention of the bladder must have raised it, had it ever, in a small degree, been drawn in. There is no history of the case.

|| In one case the os uteri adhered to the neck of the polypus, and gave rise to appearance of inverted uterus. *Mem. of Med. Soc.* Vol. v. p. 14.

moveable than the inverted portion of the uterus, especially, more capable of being rolled. It is quite insensible; scratching or irritating it, does not give pain. The uterus is also, at least in some instances, when long protruded, insensible. Dr Montgomery showed me a preparation of inverted uterus, which had, during life, been quite insensible to the application of the needle.

Retroflexion, or bending back of the fundus and body of the uterus, may take place after delivery, especially if the bladder have been much distended, and still continues to be so. I believe that the displacement is more likely to happen if the placenta be still retained, than if it have been expelled. The os uteri will be pressed forward and somewhat elevated, whilst a tumour is felt behind the vagina. Uterine hæmorrhage may be a consequence, but if not, the attention may be first directed to the case, by retention of urine, and bearing-down pains. The hand is to be introduced into the uterus, and the position rectified.*

CHAP. IV.

Of Afterpains.

Few women, proceed through the early part of the puerperal state, without feeling attacks of pain in the belly, which are called afterpains. These, are generally least severe, after a first labour. They proceed from the contraction of the uterus, in an irregular manner, excited by the presence of coagula, or other causes, and each severe pain, is generally followed by the expulsion of a clot. They come on, usually, very soon after delivery, and last for a day or two. They are often increased, when the woman first applies the child to the breast. They are distinguished from inflammation, of the uterus or peritonæum, by remitting or going off. The belly is not painful to the touch, the uterine discharge is not obstructed, the patient has no shivering nor vomiting, the milk is secreted, and the pulse is seldom frequent. When the pulse is frequent, then we must always be on our guard; for, if this be the case, before the accession of the milk-fever, the patient is not out of danger, and

* Velpeau says he has met with 15 cases, one of which proved fatal, from constipation. Mad. Boivin mentions a case following great distention of the bladder, during labour. It was so large as to give rise to the suspicion that another child was in the uterus. The catheter was used, and a large quantity of urine drawn off. The hand was then introduced into the uterus, and the fundus raised. Contraction took place, and both the placenta and the hand were excluded.

if any other bad symptom appear, we must be prompt in our practice. Afterpains may also be caused, by flatulence and costiveness, which we know by the usual symptoms; but a combination of this state, with uterine afterpains, is often attended with a frequency of the pulse, and may give rise to a fear, that inflammation is about to come on, but other symptoms are absent. Uterine afterpains, are relieved by opiates, friction, and fomentations, and these are the usual remedies; but if protracted, or very severe, the spasmodic action which causes them, is more readily and effectively removed, by a purgative, than by opium. If the pulse be frequent, this is indispensable. A severe, constant pain, in the hypogastric region, is sometimes produced, by an affection of the heart, and proves fatal, yet the uterus is found healthy.

Upon this subject, it may not be improper to mention, that a young practitioner may mistake spasmodic affections, or colic pains, for puerperal inflammation; for, in such cases, there is often retching, and sensibility of the muscles, which render pressure painful. But there is less heat of the skin, the tongue is moist, the pulse, though it may be frequent, is soft, the feet are often cold, the pain has great remissions, if it do not go off completely, there is little fulness of the belly, and the patient is troubled with flatulence. It requires laxatives, anti-spasmodics, anodyne clysters, and friction with camphorated spirits. The application of a warm linseed meal poultice, is very useful. If this fail, we may apply a cloth, wet with oil of turpentine, on the pained part. It is prudent to take some blood early. Blood drawn in this disease, after it has continued for some hours, even when the woman is not in childbed, is sisy; and it is always so, in the puerperal, as well as the pregnant state, although the woman be well.

It is necessary to attend, carefully, to the duration, and situation, of pain after delivery, and to the symptoms connected with it. For it may proceed from inflammation of the viscera; or, in some cases, it is felt near the groin, and may be the forerunner of swelled leg, or, about the hip, ending in a kind of rheumatic lameness; or, in consequence of the application of cold, pain, may be felt in some part of the recti or oblique muscles, which, if not removed by fomentations and leeches, may end in abscess, which frequently is long of bursting, and excites hectic fever. It ought to be opened with a lancet.

Rheumatism, affecting the muscles of the abdomen and pelvis, is accompanied with less fever, than puerperal inflammation, and wants the other symptoms. The pain is shifting, and aching, or gnawing, though sometimes it is pretty sharp, like a stitch. It is relieved by friction, with laudanum, by sinapisms, and by

mild diaphoretics, bark, and the usual treatment. When speaking of rheumatic pain, it may not be improper to mention, that chronic rheumatism, especially of the extremities, is very troublesome when it occurs after parturition. It requires the usual remedies. Cod-liver oil, in doses of half an ounce, three times a-day, has been much recommended. I have formerly noticed those pains in the limbs, which may succeed the use of the crotchet.

CHAP. V.

Of Hysteralgia.

By hysteralgia, I understand uterine pain, proceeding from spasm, and not from inflammation. This may occur soon after delivery, and is marked by severe pain, in the back and lower belly, frequent feeble pulse, sickness, and faintness. This is sometimes accompanied with discharge, or succeeded by expulsion of a coagulum. In other cases, although attended with severe bearing-down, we have no expulsion of coagulum, no retention of urine, no inversion of the uterus. It is mere pain and irritation, perhaps from some bad position of the uterus. The late Dr Baird of this city, supposed that it might always be relieved, by pressing the uterus from its situation, generally one of the sides of the belly. Hysteralgia requires a purgative clyster immediately, and afterwards an opiate; or, if it occur very early after delivery, we may reverse this practice, and give instantly an anodyne clyster, to be followed by a purgative medicine, if the stomach will bear it. Another modification of this, comes on later, but always within three or four days after delivery, and attacks in general very suddenly. Perhaps the patient has risen to have the bed made, becomes sick, or vomits, and is seized with violent pain in the lower part of the belly, or between the navel and the pubis. There is no shivering, at least it is not a common attendant, and the pulse becomes very rapid, being sometimes above a hundred and twenty, the skin is hot, the lochia usually obstructed, and the uterine region is somewhat painful on pressure. After some hours, the severity abates, and presently, by proper means, the health is restored.

As the lochial discharge is usually obstructed, this obstruction, has been considered, as the cause of the pain and other symptoms; but it is merely an effect, and sometimes does not exist. The cause appears to consist, in a deranged state of action in the uterus, which is productive of spasm of the uterine fibres, and

sometimes of the intestines. This is more apt to occur, after a severe or tedious, than after an easy labour, but it may occur in any case, especially if exposed to cold. The symptoms will vary a little, in severity and in appearance, according as the uterus alone is affected, or as spasm of the bowels, is combined with the uterine pain. It is distinguished from inflammation, by the sudden nature of the attack, the absence of shivering in general, the pain becoming speedily more severe, than it does at the same period of inflammation; and, frequently, it greatly remits, or goes almost entirely away, for a short time. This state, especially if it be neglected, may readily excite inflammation, which is marked by constant pain, more or less severe, according to the part affected, and an obstinate continuance of the fever.

The first thing to be done, is to administer a smart purgative clyster, to open the bowels. Then, the belly is to be fomented, and a warm poultice applied. If speedy relief be not obtained, we must take blood, and give an anodyne injection. We then give the saline julep freely, with the addition of a little antimonial wine, in order to excite a free perspiration. Purgatives are useful, and a cloth, soaked in oil of turpentine, must be applied to the pained part of the belly, if the poultice do not relieve. A combination of the soothing and depletory plans, often answers much better, than either of them singly. Opium is valuable.

CHAP. VI.

Of Retention of part of the Placenta.

If either the whole, or a considerable portion of the placenta, be left in utero for some time, the patient is exposed to great danger. Hæmorrhage is not the only risk, for, in many cases, severe headach, hysterical affections, sickness, nausea, prostration of strength, and fever, have taken place, and continued, until the placenta have been expelled, after which, the patient has begun to recover. On the other hand, it has, though more rarely, occurred, that the placenta, having been retained for a length of time, has been expelled, before these symptoms have become urgent;* but they have afterwards gradually increased, and carried off the patient.† Sometimes the symptoms run so

* Dr Schöller mentions a case, where after a premature labour, the placenta was retained for ten weeks. It was then expelled, hard and coated with fibrine. For. and Brit. Rev. July 1842, p. 230.

† In a case related by Mr Whyte, the secundines, after a clyster, came away in

high, or the portions of the placenta are so obstinately retained, that the patient sinks under the disease, as in ordinary cases of hectic, with frequent small pulse, burning heat of the hands and feet, profuse perspirations, and universal emaciation; or dies with symptoms similar to those of putrid fever; or is carried off suddenly by a convulsion, or by an attack of hæmorrhage.

These symptoms have a very indefinite duration, for the patient may die in a very few days; in other instances, they are protracted for two or three weeks.* Sometimes no hæmorrhage takes place, during the whole course of the disease, but occasionally, repeated hæmorrhages do occur, adding greatly to the debility of the patient. In several cases, inflammation has come on, and spread to the intestines. In some of these, the placenta has been afterwards expelled, in others extracted, but very few, in either case, have recovered. On inspecting the uterus, it has either been found black, as if it had been gangrenous, or in a state of high inflammation, or of suppuration, whilst the parts in the vicinity were in various stages and degrees of inflammation. It has been supposed, that the chief source of danger, arose from inflammation of the veins.

Now, when these symptoms have taken place, our object ought to be, to remove the cause, and support the patient, under the disease. I am aware, that some have attributed these symptoms, not to the placenta, but to concomitant circumstances, such as injury done with the hand, in endeavouring to take it away. But we find, that they take place when the whole of the placenta has been left, without any attempt having been made to remove it. They are produced when any substance is left to corrupt in utero.† They continue as long as it remains, and they usually cease when it is expelled. At the same time, it must not be denied, that the forcible extraction of the placenta, by the injury done, renders the effect, of retention of part of the membranes, or a bit of the placenta left, much more severe, and is apt to produce a degree of local inflammation, marked by more or less pain, or tenderness on pressure.

It may be proper to examine, with the finger introduced into the os uteri, whether any portion of the placenta can be felt and

a putrid state, on the fifth day. On the sixth, the patient was much oppressed, had fetid breath, &c.; on the twelfth an eruption appeared, and she died on the twenty-second.

* Dr Perfect relates a case, in which the secundines were retained till the eighth day, when the patient died. Her stomach rejected all food and medicine, she had weak, quick pulse, hiccup, and *subultus tendinum*. Vol. ii. p. 390.—In another case the placenta was retained till the thirteenth day, and the woman died on the twentieth, p. 381.

† Similar symptoms have been produced by the head of the child being left in utero. Perfect, Vol. ii. p. 80.

removed: but generally this cannot be freely done, for the uterus itself, as well as its mouth, is hard and contracted, and no violent, or painful attempt, with the hand or finger, ought to be made. But, when we can easily feel, and act upon a portion, we ought, slowly and gently, to endeavour to bring it out; and, if the whole of the placenta have been left, which is indeed rare, such attempts are still more necessary, and likely to succeed. The os uteri affords considerable resistance, to the introduction of the hand, in cases where the retention has subsisted for some days, but, by very slow and gentle efforts, such as are scarcely felt by the patient, it may be dilated; sometimes it yields very easily, or is not at all contracted. If, however, it be rigid and unyielding, a condition rarely conjoined with retention of the entire placenta, we must not use violence.

When a portion of the placenta is retained, and cannot, with facility, be removed, we may derive advantage, from injecting, frequently, warm water, or warm infusion of camomile flowers, or weak solution of chloride of lime. A strong decoction of oak bark has been proposed, to tan the retained substance. These injections may be made, by fixing a female catheter, to an elastic gum-bottle; or, a syringe, with a long pipe, may be employed.

It has been supposed that any retained portion of placenta might be absorbed; but this is doubtful, and certainly is not the usual mode of getting rid of it.

Sometimes natural, or artificial vomiting, assists the expulsion.

The patient, should be allowed the free use of fruit, and vegetable acids, and light mild diet should be given, in small quantity at a time. The bowels ought to be kept open, and opiates should, occasionally, be given, to allay irritation. Vomiting and nausea, may be checked or mitigated, when urgent, by effervescing draughts. Quinine has been given, but I cannot place much confidence in it. When there is fulness about the abdomen, and a tendency to inflammation, purgatives are of service. If the nervous system be much disturbed, the camphorated mixture may be given in its usual dose.

CHAP. VII.

Of Strangury.

AFTER severe labour, the neck of the bladder and urethra, are sometimes extremely sensible; and the whole of the vulva is tender, and of a deep red colour. This is productive of very distressing strangury, which is occasionally accompanied with a

considerable degree of fever. It is long of being removed, but yields, at last, to a course of gentle laxatives, opiates, and warm poultices. Anodyne clysters are of service. An inability to void the urine, requires the regular, and speedy, use of the catheter.

CHAP. VIII.

Of Pneumonia.

It is unnecessary to detail the symptoms, of inflammation of the lungs or pleura. It is sufficient to say, that this disease is not uncommon in the puerperal state; and if there be such a state of the lungs during pregnancy, as tends towards phthisis, that disease is exceedingly apt, to be rapidly induced, after delivery.

Pleurisy requires, on the first attack, copious blood-letting, laxatives, and blisters, which are never to be omitted. If the early stage have passed over, the use of the lancet is doubtful, and it is better to trust to the application of blisters. Laxatives are also not to be neglected.

CHAP. IX.

Of Spasmodic and Nervous Diseases.

PALPITATION, is not an uncommon disease after delivery. It usually attacks the patient suddenly, and often after a slight alarm. She feels a violent beating in the breast, and sometimes has a sense of suffocation; she has also a knocking within the head, with giddiness, and a feeling of heat in the face.

The pulse is extremely rapid during the fit, and the patient is impressed with a belief, that she is going to die. After the paroxysm, the mind is left timid, and the body languid. Sometimes, it is succeeded by a profuse perspiration; and, should the fits be frequently repeated, the temperature is variable, during the intervals, and the stomach is filled with gas. This is often a very obstinate, but it is not a dangerous disease, unless it proceed from uterine disease, marked by pain and swelling of the belly. It is to be relieved by giving, during the paroxysm, a liberal dose of ether and laudanum; and during the intervals, antispasmodics, laxatives, and tonics, are to be employed. As soon as possible, the patient should remove to the country.

be much flatulence, tincture of *asafoetida* and *hyoscyamus* are proper.

Cramp in the stomach, is very dangerous, when it occurs within three weeks after delivery. It requires the immediate exhibition of at least sixty, or eighty drops of laudanum, with a drachm of sulphuric ether, or two drachms of *spiritus ammoniæ aromaticus*, in a suitable quantity of water; a sinapism is also to be applied to the region of the stomach.

Pain in the region of the kidney, sometimes proves very troublesome, for two or three days after delivery. It comes in paroxysms, which are relieved by sinapisms, fomentations, clysters, purges, and opiates. If the pulse be affected, blood should be taken.

Those females, who have suffered, from that formidable disease of the spinal cord, described in the 5th chapter of the next book, are in great hazard after delivery. They often, within half an hour after the placenta has been expelled, or after a longer interval, feel great debility and sinking, with or without sickness, and, although, the discharge have not been more than usual, yet, they insist they are flooding, or going to faint, from loss of blood. The pulse is sometimes feeble, but often it is much stronger than the feelings of the patient, would lead one to expect. The hand placed on the abdomen, ascertains that the uterus is not distended with coagula, and that there is no concealed hæmorrhage. The cloths are not wetter than usual; there is no pain, indicating spasm of the uterus; and even if the hand be introduced, no spasmodic stricture of the uterus is discovered. The practice I have found best, is to give thirty drops of laudanum, and afterwards, small doses of wine or brandy, or aromatic spirit of hartshorn, or ammoniated tincture of valerian, till the deadly feeling of sinking be abated. But we should never carry the stimulant plan far, for we are apt to have too much excitement afterwards. On the other hand, if we give nothing, the patient may speedily die, and this I believe to be a cause of sudden death, after delivery, which can, in no other way, be accounted for. The previous disease is often obscure. If the patient do not recover, completely, from this state, we find, that, next day, or within three days at farthest, she complains of headach, and great noise in her head, as if hail were rattling on a cupola; her eyes are red, the skin hot, the pulse frequent, and she is extremely restless. These symptoms may abate, or may usher in, puerperal mania, but, if neglected, they are more likely to end in the patient continuing to complain of her head and neck, weight over the eyes, great pain in the arms and legs, then, painful sense of sleeping or numbness, then, complete paralysis; the pulse becomes slow, the breathing difficult, as if

from the pressure of a weight on the chest, and the patient, within a day or two expires, apparently, from the mere failure, of the functions of respiration and circulation. The mind remains clear till the very last. In some cases, she merely complains of giddiness, or confusion of the head, with very rapid pulse, then, the abdomen becomes tumid without pain, and, lastly, fatal stupor takes place.

The only useful practice, is to bleed freely, from the arm, the moment that the state of excitement appears, marked by heat of skin, and frequency of pulse, and beating in the head. Leeches applied to the head, may also be useful, after venesection, but cannot be trusted to, alone. The bowels are to be freely opened; and, if these means do not check or cure the disease, a blister should be applied to the nape of the neck, if the arms or breathing be much affected, or, to the back of the head, if the eyes, or fifth pair of nerves be more affected.

Sudden death, may also take place, from strong emotions of the mind, but instances of this are comparatively rare.

CHAP. X.

Of Ephemeral Fever or Weid, and Remittent Fever.

THE increased sensibility of the system, as well as the delicacy of particular organs, after delivery, render women, at that time, peculiarly liable to febrile affections. Some of these, seem to arise from the general susceptibility, of the whole nervous system, others, from local affection of the breasts, the bowels, or the uterus. The first of these symptomatic fevers, is, generally, pretty easily recognised, by the sensibility of the breast; the others, particularly, that connected with the state of the womb, are often more ambiguous, the local symptoms being, in many cases, insidious.

The ephemera, or weid, as it has been called, is a fever usually of short duration, the paroxysm being completed, generally, within twenty-four hours, and always within forty-eight hours, for, if it continue longer, it becomes a fever of a different description. It proceeds from great susceptibility of the nervous system, by which, slight exposure to cold, mental agitation, or some local cause, excite a universal disorder of the frame. It consists of a cold, a hot, and a sweating stage; but if care be not taken, the paroxysm is apt to return, and we have, either, a distinct intermitting fever established, or, sometimes, from the co-opera-

tion of additional causes, a continued, and very troublesome fever, is produced.

Disease may take place in two ways; by the application of causes, directly, to the part affected, and which act on the extremities of its nerves, or, by causes acting, immediately, on the origin of its nerves, and thus on their extremities. Hence, local inflammation may be produced in two ways; by direct application of causes to the part, or by the state of the origin of its nerves. An affection of the extremities of the nerves, may either excite, or render more inactive, their origin, according to circumstances: and either state, is apt to extend itself farther, to neighbouring portions of the brain, or medulla spinalis, and thus involve the origins of nerves, going in a different direction, and to distant organs, which then come to be disordered, and an extensive chain of evil, may thus be produced. An affection of the extremities of the uterine nerves, may thus influence, those going to the stomach or intestines, and *vice versa*, and slight disease in one of these organs, may induce fatal disease in the others. The affection of the origin, of a particular nerve, in consequence of irritation, or excitement of its extremity, may also react on that extremity, and increase the disease there. Further, as it is probable, that different portions, of the same trunks of nerves, and, assuredly, different individual nerves, have distinct destinations in an organ, as, for instance, producing sensation, secretion, muscular contraction, changes of the circulation, &c., we may have various modifications of disease produced, according to the nervous fibrillæ, principally affected. Another effect, of the excitement of the extremities, on their origins, is not the induction of marked disease, in any one distinct organ, but of general disorder of the system, in the form of fever. Applying this view, to the puerperal state, I would go on to say, that one of the simplest effects, is the ephemeral fever, arising, evidently, from excitement of those nerves, which influence the heart, and the secretion of heat. It may, doubtless, be produced by some causes, acting directly on the origin of those nerves, and which may, or may not, depend on the state of the uterus. But, in many instances, it is caused, by the condition of the extremities of the uterine nerves, in the same way as temporary fever, is caused, in children, by irritation of the stomachic or intestinal nerves. The wonder is not, that the uterus after delivery should have this effect, but, rather, that it should not always produce it. One single attack may be produced, or, when the effect on the spinal cord, or sympathetic nerve has been greater, the consequence is, a prolonged fever of the remittent kind, which may last, without any prominent local symptom being induced, though, doubtless, very apt to end, in more marked

disease, of some important part. But, sometimes, from causes we cannot always explain, whether from a difference in the original irritation, of the nervous extremities of the uterine system, for instance, or, from different integral parts of the nerves, being affected at their origins, we have superinduced, various and formidable local affections, inflammation of the abdominal cavity, as in peritonitis, or of the extremity, as in swelled leg, &c.

The production of a sudden sensation of cold, in any part of the system, is very apt to induce ephemera, and if the sensation have been long continued, the effect is likely to continue long. This disease, generally makes its attack, within a week after delivery, but, it may come on at any time, during lactation, or a complaint, essentially the same, may occur, in any female. It may be occasioned, by irregularities of diet, or irritation of the visceral nerves, arising, either from the state of the bowels, or some condition of the uterus or its appendages, not acute enough to produce pain, or any permanent local symptom, or, by causes acting directly, on the base of the brain, or medulla spinalis. No cause is more frequent, than the application of cold to the surface, so as to produce sensation. Some, when nursing, cannot touch any thing cold, without having an attack. Fatigue, exhaustion, passions of the mind, or want of rest, if not exciting causes, give a strong predisposition.

The attack, is sometimes directly ushered in, by a fit of palpitation, or is preceded by a frightful dream, from which, the patient awakes, in a shivering fit, with a rapid pulse; or the chill comes on, accompanied with pain in the back and head, after some slight alarm, or injudicious exposure to cold. When the cold stage, has continued for some time, the hot one commences, and this ends in a profuse perspiration, which either carries off the fever completely, or procures a great remission of the symptoms. The head is usually pained, often intensely, especially over the eyes, in the first two stages. The pulse is extremely rapid, until the third stage have continued for some time; it is also subject to very great irregularities, and is very changeable in its degree of frequency. The thirst is considerable, the tongue furred, the stomach generally filled with flatus, and the belly bound. The mind often is weakened, and the patient is much afraid of dying. In some instances, she is slightly delirious, in others, she has shifting pains in the abdomen. If the paroxysm be repeated, the secretion of milk is diminished.

The paroxysm continues for some hours, and then may completely go off, not to return again. But in other cases, it recurs daily, for a length of time, being always preceded by a cold fit, and often with a pain in the back; and sometimes the fit begins,

regularly, one or two hours sooner, every succeeding day. It is more favourable, when the fit postpones. In other cases, after one or two distinct paroxysms, the fever assumes a more continued form, or the exacerbations are not preceded by distinct chills. When this disease is not combined with any local injury, it is less dangerous than most fevers, occurring in childbed; but, if it recur very frequently, and be attended with much debility, the danger increases, in proportion to the continuance of the disease.

Delicate women, and those who have suffered much, in parturition, are chiefly affected with this disease, but all, are more or less liable to it, especially, if the bowels be neglected.

It is distinguished from symptomatic fever, arising from local inflammation, by the absence of the particular pain, and other specific symptoms, which attend these fevers, whilst, in them, the pulse is usually, at first, not so rapid, as in the ephemeral fever.

In the cold stage, we give small quantities of warm fluid, and apply a bladder, or flat case, filled with warm water, to the stomach, or, on the commencement of the chilness, a warm flannel to the back. Having hastened on the hot stage, we lessen, very cautiously, the number of the bedclothes, and give saline julep with diluents, to bring on the sweating stage. When this is done, we are careful not to encourage perspiration too much, which increases the weakness, or brings out a miliary eruption, and renders the disease more obstinate. On the other hand, if the perspiration be too soon checked, the fever continues, or recurs more severely; a gentle sweat may be kept up for five or six hours by tepid fluids. Then we refrain from them; and when the process is over, the patient is to be cautiously shifted, the clothes being previously warmed. After the fit, if the patient be exhausted, a little wine may be given. In the whole paroxysm, we must watch against the sudden application of cold, which, in the last two stages, renews the shivering. If there be any local pain, or where the pulse is very frequent and full, and there is no contra-indication, a little blood should be taken away. In the first case, it is necessary, in the second, it is, if the patient be strong, always safe, and often useful in preventing a repetition of the attack, especially, if the bowels be immediately opened. In all cases, it is necessary to give a purgative, as soon as the stomach will bear it, for it is essential that the bowels be freely opened. If the tongue be foul, and the patient very sick, or inclined to vomit, we may, with advantage, even during the cold stage, give some warm chamomile tea, or five grains of ipecacuanha, to excite gentle vomiting. This, under these circumstances, if the chilness continue, induces heat; if it have gone off, it causes

perspiration. In the act of vomiting, the patient must not be exposed to cold, and should take such a position, as shall not cause any muscle to be strained, in the effort.

When the fits recur, and no local cause can be detected, we may sometimes check them, by giving an opiate, with ether, just before the expected accession, and applying heat to the back and stomach, the moment the chillness is felt, or, we rub the whole back well, daily, with a stimulating embrocation, such as camphor dissolved in oil of rosemary. It is of great consequence, to keep the bowels open, by such medicine, as agrees best with the patient, for, the paroxysms often are repeated, or continued fever produced, from intestinal irritation alone. For a time no particular appearance may be observed, but soon, hard and offensive stools are obtained, and from that day, improvement begins. Tonic medicines, such as infusion of bark, sulphuric acid, or sulphate of quinine are afterwards useful; and, in some cases, valerian may be joined to these, with advantage. Sleep is to be procured by opiates, if they do not produce confusion of mind. During the whole time, the strength must be supported by suitable diet, with a little wine; and as soon as possible, the patient should be carried to the country. If the fits return often, it is generally necessary, to give up nursing. In very protracted cases, the disease has been mitigated, by sponging with cold water and vinegar, after the cold stage had gone quite off, and that, without regard to the presence, or absence, of perspiration. Any temporary chill, thus produced, is removed by a little warm wine and water. This is more especially useful, in the hectic form of the disease.

This fever, whether consisting only of one paroxysm, or of many, or becoming continued, is always dependent on a local cause, sometimes, the mere production of the sensation of cold, at a particular part, or, a deranged state of the bowels, &c. But, in many other cases, more troublesome, if not more serious, local disease, may be the cause. At first, this may be so very obscure, as to escape detection, but if the fever be prolonged, it becomes more manifest. Very often, the breast becomes inflamed, and nurses say, that the fever has gone to the breast, whereas, the affection of the breast, though for a time obscure, was the original cause of the fever. We ought, also carefully, to attend to the uterine region, for, often, this fever proceeds from slight inflammation of the ovarium, or round ligament, or of the uterus itself, or of its veins, or of the lining of the pelvis, or from retention of a bit of placenta. In prolonged cases, sometimes, the coxal nerves become very painful, or even paralysis of the extremities may take place. Very protracted cases will always, I believe, be found to be of the nature of hec-

tic, and dependent on a local disease, attended with suppuration, especially of the veins of the uterine system. Other cases, of shorter duration, are marked by pervigilium, and a tendency to puerperal delirium, or to serious affections of the brain, or may be considered, as the intestinal fever, soon to be noticed. A fatal termination, in acute cases, is usually preceded by coma, or vomiting of dark-coloured matter, which is most apt to take place, if the origin of the nerves have been affected.

Occasionally suppuration takes place within the pelvis, particularly, after the application of cold, or from allowing the fire in the apartment to go out. This is not always preceded by much pain, and often, in its course, is attended with little or none, till the progress have advanced far beyond any control. Even when the uterus has been implicated, so as to form adhesions to the sides of the pubis, as appears after death, there may be no pain felt, on pressing it from the vagina. The fever, in this case, is long continued, and of the hectic kind, and the disease, of the nature of lumbar abscess. The matter points, at last, about the groin or buttock, and must be let out. The treatment in such fevers must be varied, according to the nature of the local cause.

CHAP. XI.

Of the Milk Fever.

THE secretion of the milk is usually ushered in, with a slight degree of fever, or, at least, a frequency of the pulse. But, sometimes, it is attended with a smart febrile fit, preceded by shivering, and going off with a perspiration. This attack, if properly managed, seldom continues for twenty-four hours; and, during this time, the breasts are full, hard and painful, which distinguishes this, from more dangerous fevers. Sometimes, during the hot fit, there is a slight delirium. A smart purge, generally cures this disease, and is often used, in plethoric habits, on the third day after delivery, to prevent it. Mild diaphoretics during the hot stage are also proper. Applying the child, early, to the breast, is a mean of prevention.

CHAP. XII.

Of Miliary Fever.

THE miliary fever begins with chillness, sickness, languor, sometimes amounting to syncope, and frequency of pulse, with heat of the skin. There is, also, a sense of pricking or itching on the surface; and sometimes the extremities are numbed. The febrile symptoms, usually continue for some time, before the eruption appears, often, for four or six days. Previous to the eruption, the patient feels very much oppressed, and has a great weight about the chest; the spirits are low, and a sour-smelled perspiration takes place, in a profuse degree. The eyes are occasionally dull and watery, or inflamed, and the patient has ringing in the ears. The tongue is foul, and its edge red, as in scarlatina. Aphthæ, sometimes appear in the throat. The lochial discharge, is diminished or suppressed. Before the eruption is seen, the skin feels rough, like the cutis anserina. Presently, a number of small red points appear, like millet seeds, which are felt, with the finger, to be prominent. In a few hours, small vesicles form on their tops, containing a fluid, first straw-coloured, and then white or yellow. In two or three days, small scabs form, which fall off like scales. The vesicles are generally distinct, but sometimes they form clusters. They appear, first, about the forehead, neck, and breast, and then spread to the trunk and extremities, but very rarely affect the face. Different crops of vesicles may come out, in the same fever. Burserius, and others, divide the eruption into several varieties; but most writers, are satisfied with two, taken from the general appearance, the red and the white, and the first, is attended with a milder disease, than the second.

This disease is peculiarly apt to attack those, who are weakened by fatigue, evacuations, or other causes; and hence, we can easily explain, why women in childbed, should be subject to it.

Some, have considered the eruption, as altogether dependent on the perspiration. Others, consider it as, in many cases, idiopathic; and both, perhaps, at times are right. We can only consider the disease as idiopathic, when the eruption mitigates the symptoms, when the fever goes off, as the vesicles arrive at maturity, and there is no other puerperal disease present, acting as an exciting cause. It does not appear to be contagious, unless connected with a fever which is so of itself, such as typhus.

Miliary eruption, also occurs, during childbed, as a symptom connected with other puerperal diseases. It often accompanies

the milk fever, or the protracted weid, when the perspiration is injudiciously encouraged, and this is by far the most frequent form, under which the febris miliaris appears. It never alleviates the symptoms. It may also accompany fevers, connected with a morbid state of the peritonæum or brain, which generally prove fatal, death being preceded by vomiting of dark-coloured fluid. Women, much reduced, have also partial miliary eruptions, generally of the white kind, without fever, which require no particular treatment.

Whether the miliary fever be idiopathic, or symptomatic, the treatment is the same. We endeavour at first, to check or remove the fever, by means which I have pointed out in a former chapter.

When profuse perspiration, with or without eruption, takes place, we must cautiously abate it, by prudently lessening the quantity of bedclothes, or making the bedroom cooler. The rest of the treatment, consists, chiefly, in removing irritation from the intestines, by the use of laxatives, and supporting the strength by light nourishing diet, whilst we use tonics, such as sulphuric acid or bark. These tend, also, to abate the perspiration, which is scarcely ever to be encouraged. The linen should be frequently changed. When the eruption suddenly recedes, we have been advised to renew the perspiration, apply blisters, and give musk and cordials, especially when convulsions are threatened. This dangerous retrocession, however, I have not met with, and apprehend that it very rarely occurs.

CHAP. XIII.

Of Intestinal Fever.

WE shall, presently, have an opportunity of observing, that the state of the bowels, frequently produces, in children, a very troublesome species of fever, which, though proceeding from a cause, which has been some time in existence, may make its appearance suddenly. The same holds true, with regard to women in childbed, who, either from previous costiveness, during the end of gestation, or some error in diet, after delivery, are seized, within eight or nine days, generally earlier, with fever, which passes for weid; and most cases of what is called protracted weid, without any appearance of local disease, will be found to be fevers of this description.

After an attack of shivering and chillness, the patient becomes sick, oppressed at the stomach, and loathes food. The pulse is

frequent, and the skin, except at the feet, feels, from the very first, hot to the touch of another person, though the woman, herself, complain of being cold. Afterwards, she feels very hot, especially in the hands and feet;—she has no appetite—is thirsty—has a white slimy tongue—is sick—and occasionally vomits phlegm or bile, and is troubled with flatulence. The pulse is quick; she does not sleep, but rather slumbers, and is tormented with dreams and visions, and talks during her slumbers. Generally, she complains of throbbing, often of confusion, but seldom of continued pain in the head, though, for a short time, headach may be severe. She has no fixed pain, nor any tumour in the belly, but complains rather of stitches or griping. The bowels may either be costive or loose, but, in either case, the stools are fœtid and dark coloured, and, frequently, laxatives operate both early and powerfully. The lochial discharge is not necessarily obstructed, nor does the secretion of milk, in many instances, suffer for several days. The eye and the countenance are nearly natural. The belly, sometimes, in the course of the disease, becomes full and soft, as if the bowels were inflated, and this size, occasionally, continues during life. These symptoms may be complicated with others, proceeding from nervous irritation, such as palpitation, starting, &c., or, in the course of the disease, new ones, arising from injury of the function of the womb, may supervene, and are marked, first, by pain, and, afterwards, by tumefaction of the lower part of the belly, and pain in making water, or in passing the fœces. The duration of this fever, varies from a few days to a fortnight.*

On the first appearance of this fever, a very gentle emetic, of ipecacuanha, should be administered, and afterwards, when the operation is over, we determine to the surface, by giving the saline julep, with tepid drink. Then, in a few hours, we administer a dose of rhubarb and magnesia, to remove offensive matter from the bowels; or, if necessary, we give a suitable dose of castor oil, or calomel. After this, if there be considerable griping, or a tendency to much purging, we give an opiate clyster, and repeat this, every night, till the bowels are less irritable,

* Since the publication of this work, the fever I have called intestinal, has been described by Dr Granville, in his Report, p. 160. He notices that it is sometimes, when there is much inflation of the bowels, mistaken for puerperal fever; but the tumefaction, in the intestinal fever, precedes pain in the bowels, and the symptoms are decidedly relieved by purgatives.

More recently still, Dr M. Hall appears to have described this fever, under the name of "a serious puerperal affection," and enumerates the various complications which may take place, but which do not seem essential to the disorder, such as, vertigo, palpitation, feeling of sinking, &c., and divides the disease itself into two varieties; that which takes place acutely, and that which comes on more slowly: the former being preceded by more distinct shivering, and attended with more severe affections of the brain or abdominal viscera, than the latter.

taking care, if they become costive, or the stools fœtid, to interpose, occasionally, gentle laxatives. The great principle, indeed, on which we proceed, is the early, and prompt evacuation of the offensive matter, whether bilious, or feculent, from the bowels, and the prevention of re-accumulation, and this must be done by such doses as are required. The diet is to be very light, such as beef tea, calves' feet jelly, arrowroot, &c., and if there be no diarrhœa, ripe fruit may be given. Ginger wine and water, form an excellent drink, and, in a few days, such a quantity of Madeira wine may be given, as is found to impart a comfortable feeling, without inducing heat or restlessness. When the tongue becomes clean, small doses of colomba, or other bitters, will be useful. If there be much nervous irritation or palpitation, or tendency to delirium, the camphorated julep is proper.

CHAP. XIV.

General remarks, on Abdominal Inflammation, in the Puerperal State.

INFLAMMATION, within the abdominal cavity, has been divided, into that, resident in the serous membrane or peritoneum, and, that, affecting the substance of the viscera covered by that membrane. The first, has been subdivided, according to its seat, or the part covered or lined; hence, we have hysteritis, nephritis, enteritis, &c. Now, it is, no doubt, true, that we may have inflammation, confined to a small portion of the peritoneum, but it rarely goes to a great degree, without spreading from its original seat, and therefore, it is not usual, to find inflammation of the peritoneal surface of the uterus, prove fatal, without an extension of disease, to more or less of the rest of the membrane. Although, then, we give a particular name to the complaint, according to the spot where it seems to begin, we yet must be prepared soon to find inflammation extend. Still, this distinction is important, as inflammation, is not only more apt to spread, from one part or organ, than from another, but it is also, more immediately dangerous, when it originates in one viscus, than in another. We must also recollect, that inflammation, beginning in one part, or texture of an organ, may soon be communicated to others, or to the whole, that of the peritoneal coat, for instance, to the proper substance, or some of its constituents, and *vice versa*. In practice, then, we must expect complications beyond, what we meet with in nosology. When inflammation begins in the deeper texture of a part, it is more likely to be

longer confined, or limited, than when it begins in the serous covering, but when the latter comes to participate, it spreads faster. It also is apt to spread sooner, when it affects the veins or lymphatics, than when it is more resident in the proper tissue.

Pain, is not a criterion of the degree of inflammation, for the parts, in similar degrees, may differ much in their sensibility, and, no doubt, if the nerves be peculiarly involved, the sensation must be greater. It would further appear, that the nerves, under the peritoneum, whether covering the intestines, or lining the abdomen, may be rendered very sensitive, in consequence of inflammation in one part, although that be extremely limited. The patient may die before such inflammation have been so extensively produced, as to leave all the marks, after death. In other words, there may be a state, which, although it might ultimately, perhaps, have ended in inflammation, or even gangrene, had time been allowed, yet is not, correctly, to be considered as inflammation. The mere absence of redness, or injection of the capillaries, after death, is not a proof that inflammation had not existed during life, but, if, at the same time, there be no opacity of the membrane, no degree of infiltration, nor change of organization, or softening, I would not think it correct to say, that the part had been inflamed, although the intestines were distended. In most of such cases, however, we find, that, in various parts, there is some change of texture or appearance, although not an increase of redness, indicating, that morbidly increased action, had existed, by whatever name it is called. We also shall find that some particular spot, more or less extensive, does exhibit the ordinary marks of inflammation. That this condition, is of the nature of inflammation, is further confirmed, by the fact, that we usually find more or less serous effusion in the belly, with flakes of lymph, and this effusion is often too great, to come from the small spot, evidently inflamed, or, that is so situated, as not to be able to yield it. This exhausts as quickly, or more so than true inflammation.

There is, also, as a general attendant, on inflammation of the abdominal viscera, an inflation of the intestines, or tympanitic condition. This may depend on actual inflammation, of the coats of the intestines, but it may also arise, from mere loss of tone or contractility, of the muscular fibre. It is therefore an attendant on diseases, and, in abdominal inflammation, we find it often great, when the various marks of inflammation found after death are very limited. It may or may not, be attended with sensibility or pain, but in the acute disease, I am considering, it always is conjoined with frequent pulse, and very often with disturbance of the stomach. If the fever be moderate, and the swelling slow in its progress, it may be connected with inflam-

mation, confined to a small part, for instance, the ovarium, and the patient recovers, though, perhaps, afterwards, ovarian disease manifests itself. But if it occur early, and increase with frequent pulse, even although there be little pain, the patient generally dies. There is always some pain produced, by pressing on the lower part of the belly, and, before death, there is much distress, from the swelling and difficulty of breathing. This is particularly apt to take place, if the patient have been much exhausted during labour, and, perhaps, at last, delivered by the crotchet. We may have very little, or very limited, local inflammation, but most extensive inflation. In gunshot wounds, and other injuries, we may also have sinking, before inflammation can be fully established. Of a nature, somewhat, allied to this, is the state of a patient, who is subjected to the influence, of a deleterious atmospheric condition, or of contagion. The abdominal contents, are more predisposed to disease, after delivery, than at other times, and a cause will act then, which would not have acted formerly. If, in such circumstances, disease be produced, it may rapidly become very extensive, or, if the actual inflammation be very limited, the other effects may be rapidly produced, and the patient exhausted.

Effusion of serum, and of albumen, or exudation of fibrine, always attend, extensive peritoneal inflammation, but the extent of the one, is not always proportioned, to the degree of the other.

Distant parts, may be affected in conjunction, so as even to lead off the attention for a time, from the abdomen; for instance, the disease, may, at first, put on more the appearance of puerperal delirium.*

* M. Tonnellé, in his memoir on the puerperal fever, as it appeared in La Maternité in 1829, particularly in the month of January, states, that in 222 cases, which were inspected, inflammation of the peritoneum, combined with that of the uterus, occurred in 165; inflammation of the peritoneum, 28; of the uterus, 29. The substance and covering of the uterus, in 190 cases, exhibited simple metritis, 79; superficial softening, 29; deep softening, 20; inflammation of the ovarium, 58; do. with abscess, 4. Suppuration of the veins, occurred 90 times, viz., accompanied with suppuration of the uterus, 32 times; with softening, or putridity, 11; with metritis and softening combined, 5; with peritonitis, independent of all other change, 34; alone, or without any other affection, 8. Suppuration of the lymphatics, occurred 44 times, of which, 29, were complicated with that, of the veins; 13, with that, of the uterus; 6, with softening; 3, with simple peritonitis; 2, without any other change. The ovaria were inflamed, in 62 cases, with various complications, but the greatest number, with simple peritonitis.

In 222 inspections, there were found, combined with peritonitis, which might be considered the primary disease, various other affections, for instance, circumscribed pleurisy, 29; effusion of blood, or serum, into the chest, 14; softening of the stomach, 8; enteritis, 4; abscess of the liver, 3; abscess in muscles, 14; abscess in the articulations, 10; in the cellular substance of the pelvis, 6. Archives Generales, T. xxii. p. 482.

CHAP. XV.

Of Inflammation of the Uterus.

INFLAMMATION of the womb may appear under two forms, the slight and circumscribed, and the extensive or severe. This is a distinction which those who are not much conversant in practice, may not be disposed to admit; but it will, nevertheless, be useful to describe them separately.

The first, begins within the ninth day, very like the ephemeral fever, and is considered by the nurse, as a weid. The patient shivers, feels cold, is sick, and perhaps vomits. The pulse is frequent, but not hard nor sharp, the skin becomes warm, and between the cold, and the establishment of the hot, stage, the patient complains of a dull pain, in the lower part of the belly. It is not constant, and is apt to pass for afterpains. The lochial discharge continues, and the secretion of milk is not checked. The pain, at first, and, usually, during the whole course of the disease, is slight: it is generally felt, near the pubis, but it may also extend a little to one side or toward the groin. Sometimes, there is pain in the back, but frequently there is none, unless when the patient sits up. The pain in the belly very soon is not perceived when she lies still, but is felt when she turns, or when pretty considerable pressure is made with the hand, or, occasionally, one or two sharp pains dart through the uterine region. There is no hardness to be felt, and the belly is not tender, but becomes a little full; the lochial discharge gradually diminishes, but does not of necessity stop, and the milk sometimes continues plentiful. There is considerable thirst, no appetite, and the sleep is disturbed. The pulse, which at first is very frequent, falls in a day or two to 100, or varies from 98 to 108. The head is confused rather than painful; slight wandering pains may be felt in the belly or sides. The bowels are generally affected, being at first rather bound, afterwards loose or irregular, and the fæces, dark, slimy, or foetid. Sometimes there is a degree of strangury.* In the course of a fortnight, the pulse becomes slower, the appetite gradually returns, and these circumstances are preceded by, or accompanied with, a slight discharge of blood from the womb, or of purulent matter by the rectum, or from the vagina. Sometimes, the disease is much shorter in its course, being little more protracted than an ephemera, the symptoms yielding, completely,

* In some cases, the bladder is the part which seems to be most affected. There is pain in its situation, and the water cannot be voided, but there is no change in its colour, nor any increased secretion from the mucous coat of the bladder.

to the treatment; or, they may be removed, in so far, as that all fever and pain go off; but when the patient comes to rise, she feels a pressure, like prolapsus uteri, which continues for many days; or even weeks, so that she cannot stand, but has an instinctive desire to run to a seat. It is not easy to distinguish this state from prolapsus, except by examination. The uterus is felt in its proper altitude, but often the os uteri is turned a little to one side, and sometimes is tender to the touch, and the vagina is not lax, but may be rather rigid: pessaries give little or no relief. The complaint continues obstinate, preventing the patient from walking, though she be in tolerable health, until a little purulent matter, or still more frequently, a little blood, like the menses be discharged, and then she is almost instantly cured.

The treatment of this species of uterine inflammation consists in immediately taking away a moderate quantity of blood, exciting, early, a free and pretty copious perspiration, fomenting the belly, and opening the bowels fully with a purge, which operates mildly without griping. If the pain be more permanent, leeches may be necessary, and a poultice should be applied over the pained part, or a small blister, may be placed there.

The most serious, and extensive, inflammation of the uterus, may be excited in consequence of rude management, or other causes. The disease, usually, begins between the second and third day, after delivery, but it may take place at a later period, and sometimes even earlier. It is pointed out, by pain in the lower part of the belly, which gradually increases in violence, and continues without intermission, though it be subject to occasional aggravations, like very severe after-pains. These aggravations, at first, seem to proceed from contractions, or spasms, of the inflamed fibres. The uterine region, is very painful, when it is pressed, and it is a little swelled. There is, however, little general swelling of the abdomen with tension, unless, the peritoneum have become affected. But the parietes, are rather slack, and we can feel distinctly the uterus, through them, to be harder than usual, and it is very sensible, whilst pressure can be borne on other parts of the belly, if applied so as not to affect the uterus. There is also pain felt in the back, which shoots to one or both groins, accompanied with sensation of weight; and there is, usually, a difficulty in voiding the urine or a complete suppression, or distressing degree of strangury. The situation of the pain, will vary, according to the part of the uterus, first, and principally, affected. The internal parts, also, become, frequently, of a deep red colour, and the vagina and uterus, have their temperature increased. The red lochial discharge is very early suppressed; if renewed, it is sero-purulent, and the secre-

tion of milk, diminished or destroyed. Nearly, about the same time, that the local symptoms appear, the system becomes affected. The patient shivers, is sick, vomits bilious fluid, and often has headach. The pulse, very early, becomes frequent and somewhat hard, and the skin is felt to be hot. The tongue is first white and dry, and then red and fiery, the urine high coloured and turbid, and, if the bladder be affected, it may be retained. The vomiting, in some cases, continues, and the bowels are at first bound, but afterwards the stools are passed more frequently. If the peritoneum come to partake extensively of the disease, then we have early swelling, and tenderness of the abdomen, and the danger is greatly increased. Sometimes the internal or mucous membrane is chiefly affected, and, succeeding to pain, fever, and suppression of the lochia, we have a puriform discharge.

Hysteritis may follow on early abortion, as well as delivery, at the full time.

If the inflammation do not extend along the peritoneum, this disease is more easily cured, than other visceral inflammations, in the puerperal state. It may terminate, favourably, by a free perspiration, a diarrhoea, or a uterine bloody discharge, which last, is the most frequent and complete crisis. If the pain abate, the pulse come down, and the lochia and secretion of milk return, we consider the patient, as having the prospect, of a speedy cure. But, in many other cases, the disease is more obstinate, the fever continues, the pulse becomes more frequent, but is full for a day or two, after which, it becomes small, the tongue is redder, but dry, the pain does not abate, and, in some days, shiverings take place, and the pain becomes of the throbbing kind. The face is pale, unless when the cheeks have a hectic flush; the urine which was formerly high coloured, now, deposits a pink-coloured sediment, in great abundance. The nights, are spent without sleep, and the patient is wet with perspiration. After some time, matter is discharged from the vagina, or by the bladder or rectum, but oftenest from the rectum. The hectic symptoms continue for many weeks, and may at last prove fatal. Sometimes, the disease early proves fatal, the pulse increasing in frequency, the tongue becoming very red, and the strength sinking; but, even in this case, it will generally be found, that suppuration has taken place. No reliance is to be placed, on the abatement of pain, and the apparent improvement of the pulse, if the patient continue to vomit, and the tongue remain dry and fiery, or apthæ appear.

On inspection, we sometimes find the peritoneal coat alone inflamed, or, the inflammation is most marked, in the internal lining. This is often supposed to be mortified, when it is only covered with a dark coating, made up of blood and the remains

of the decidua. In this disease, the coating is often foetid, or mixed with pus. The substance of the uterus, is generally thickened, when it is inflamed, and the whole organ, is larger and less contracted, than it ought to be. The tissue is softened, and has more of a fibrous appearance. The vascularity is more or less increased, and the colour deeper in proportion as the substance has been more or less universally inflamed. The ovaria when inflamed, are much redder and fleshy looking in their tissue, and their peritoneal coat more vascular.*

Inflammation of the uterus, may arise, without any very perceptible predisposing, or exciting cause, but frequently it is distinctly attributable, to previous exertion during tedious labour, † or to rash manual interference, or hurried extraction of the placenta, or the application of cold in any way. It, as well as peritoneal inflammation, is also, peculiarly apt, to affect those, who have suffered from uterine hæmorrhage.

This disease calls for the early, and free, use of the lancet, which is the principal remedy; and the number of times, that we repeat the evacuation, must depend on the constitution of the patient, the effects produced, and the period of the disease. ‡ If three or four days have passed over, the pulse may be full and frequent; but this is an indication, that suppuration is going on, which will be ascertained by throbbing pain, &c. In this case, the lancet is hurtful. Leeches applied above the pubis, are useful immediately after venesection, and a warm poultice not only encourages the flow of blood, but relieves the pain. If it be not employed, fomentations should be used. Mild laxatives are also highly proper. A blister applied to the hypogastrium, is often highly beneficial, more especially, when the disease seems to be, in, what may be called, a hesitating state. Diaphoretics ought to be administered, such as the saline julep, with the addition of antimonial wine and laudanum. Calomel, combined with opium, has been given to such an extent as to affect the system. I expect most good from the latter, for whatever soothes and allays pain tends to lessen inflammation. Emollient clysters, or, sometimes, anodyne clysters, give relief. In the suppurative stage, we must keep the bowels open, give light nourishment, apply fomentations, and allay pain,

* Dr Campbell mentions two cases, in which the peritoneal nerves, and one, in which these, and the uterine nerves, were greatly enlarged.

† In Dr Riecke's report of the practice of midwifery, in Wurtemberg, it is stated, that, in forceps cases, dependent on contracted pelvis, and rigidity, one woman, died, out of twenty-eight. In cases of turning, under all circumstances, the mortality was greater, being at an average, one, in ten. When the crotchet was used, rather more than a third died. I think the mortality greater, than should be calculated on.

‡ The French writers erroneously do not consider the lancet as requisite, unless the symptoms be very acute, but trust rather to leeches, applied to the vulva. Gardien. Tom. iii. p. 447.

with anodynes. When the matter is discharged, a removal to the country, will be useful, and tonic medicines, should be given.

Sometimes, the round ligament suffers chiefly, and the patient complains of pain, and tenderness, at the groin, increased by pressure. The lower part of the belly, is, after a little, swelled and uneasy, or a diffused hard and fixed tumour is felt above Poupart's ligament. Fever attends this disease, and, sometimes, the stomach becomes irritable. It is often caused, by hasty extraction of the placenta. It requires the early use of laxatives; and, if the symptoms be violent, it is proper to take blood from the arm, and apply leeches to the groin, which should seldom be omitted. Afterwards, we employ fomentations and blisters. If neglected, the disease may end in suppuration, or in a painful swelling, at the ring of the oblique muscle, which lasts a long time. This is sometimes removed by issues, if not, it must be treated like lumbar abscess. Anodynes should be given, to allay irritation, and the strength must be supported, under the fever, which resembles hectic.

In some cases, the internal membrane of the uterus is chiefly affected. The pain is not constant, but the uterus is always tender when pressed, and the patient complains of paroxysms, like severe after-pains, with wandering pains, about the abdomen and thorax. The discharge is foetid, and sero-purulent. The skin is hot, and sometimes moist, the pulse is of moderate frequency, the sleep is disturbed, and the head pained. Sometimes, the bowels become inflated, and the breathing more or less oppressed.

The treatment consists, in taking, at first, a little blood, if the local symptoms, or fever, be considerable, opening the bowels, and applying warm fomentations, to the belly; afterwards, opiates are useful, alternated with laxatives. Great attention, must be paid, to remove the foetid discharge.

There is a peculiar kind of softening which has been partially described by Boer, Luroth, and Albert Danyau, under two forms; first, the superficial, which is almost always connected with some other form of inflammation, and Tonnellé observes, that its existence, has no sensible influence, over the train of symptoms. It is recognised by irregular, superficial, patches, of a reddish brown, or buff colour, and bad smell. The deep ramollissement, on the other hand, is a more distinct complaint, giving a malignant character to the disease, which runs its course very rapidly. It extends sometimes through the whole thickness of the parietes, and the tissue is red and almost gelatinous, or a brown, or even black, unorganized pulp. The inside of the womb is covered with foetid brown coloured or black tenacious stuff, or the putrescence may be confined to this surface, the rest of the substance being healthy, or it may altogether be confined to the cervix and

os uteri. It has been considered as a peculiar state, independent of gangrene, and little under the control of medicine. It may commence before labour, or appear almost immediately after delivery, or not for some days. It is chiefly to be distinguished from common inflammation by the early and rapid sinking. The speculum has been proposed to ascertain the state of the os uteri. Evacuations can only be admitted in the very earliest stage. Quinine and due nourishment are more generally indicated, and pledgets of lint, wet with camphorated or spirituous liquids, have been applied to the uterus within the vagina.

Uterine phlebitis has been known to occur, within six hours after delivery, but the most frequent time, is about the fourth day. More cases commence earlier than later. The symptoms, as may be expected, are much the same, at first, with those of hysteritis, with more or less of which it is combined. Almost always, the disease begins with chills, sometimes with great coldness, rigors, and chattering of the jaws. The pulse is frequent, and, headach, is a very usual attendant, particularly, pain in the forehead. Delirium early takes place, in many instances, and it is very rare, for the disease to run its course, without the occurrence of this symptom, at one stage or other; sometimes, it is the earliest, and most prominent affection, the pain in the belly being, in such cases, dull. In general, however, the pain, there, is acute, and when it is not, there is tenderness on pressure, or on examination by the vagina, which is hotter than usual. The uterus is felt, externally, to be hard, and larger than it ought to be, at the period, or at least, more distinct; and during the whole progress of the disease, it continues large. The belly is more or less swelled, either tense, or slack. Nausea, or even vomiting, are early symptoms, but sometimes, there is no disturbance whatever of the stomach. The skin soon becomes hot, the face flushed, and the eye troubled or reddish; the pulse continues frequent, but becomes throbbing, though compressible. The tongue is parched, and furred, there is much thirst, little or no sleep, the lochia generally, but not necessarily, or invariably, suppressed, the breasts are flaccid, and often the bowels loose.

After these symptoms have continued, for about four days, more or less, it is not unusual, for the patient, to seem to be getting better, but, in a few hours, or even after some days, the aspect changes, or, without any apparent amendment, the second stage commences. The face is pale, and the countenance collapsed, the eye sunk, sometimes red and rolling, or the conjunctiva shining, the tongue becomes dry, or, together with the throat, aphthous, the pulse frequent, and small, and feeble, the skin sallow, or even jaundiced: chills, or shiverings, reappear, sometimes regularly, like an intermittent fever. There is in-

creased delirium, or a listlessness to sensation, a discharge of foetid, purulent matter, from the vagina, with great, and increasing, prostration of strength. During one period, or other, of this stage, if not in the first, there is often pain felt in the chest, with more or less cough, or abscesses form in some of the extremities, under the skin, or in the substance of the muscles, or around the joints, particularly of the wrist and knee, or in the articulations of the pelvis. These, are sometimes formed, with little pain; in other cases, the pain is acute. I have known the arm more complained of, than the uterus. Erysipelas, on different parts of the body, sometimes appears, without inflammation of the subjacent veins. The pulse becomes irregular and very feeble, the stools are passed involuntarily, and, it is not uncommon, for the patient to be much distressed, with vomiting of green, or dark stuff. The diagnosis between this, and simple metritis, is not always easy. It is chiefly made, by the pain or abscesses, in the course of other parts, of the venous system, or around the joints, and, partly, by the rapid prostration, in the second stage, when pus is supposed to mix with the blood. When there is little abdominal pain, the disease has been taken for puerperal delirium, or prolonged intermittent fever.

This disease is variable in its duration. It has proved fatal, within twenty-four hours, and been protracted, for three weeks or more, but a very usual period, is, from six to eleven days; a few, have died so early, as the third day, after its invasion.

On inspection, the veins in the uterus, are found to be inflamed, and thickened to a greater or less extent, sometimes universally, sometimes only on one side, or, about the former site of the placenta, affecting only the ovarian veins, or, the inflammation, does not involve the uterine veins, but the hypogastric, &c. On making a section of the uterus, the veins, filled with pus, often resemble small abscesses. But, especially, in protracted cases, the inflammation of the veins is less marked than that of the uterus itself. The uterus itself, is generally larger, than it ought to be, at the period; its peritoneal coat sometimes quite healthy, at other times inflamed. The substance is thickened and softened, so, that, in some cases, the finger can easily be put into it, and it is generally darker in the colour. Some portion, especially, at or near the os uteri, may be almost in state of black putrilage, and the mucous coat, there, more or less destroyed. Very often, distant parts are affected, abscesses are found on the extremities, or pus in the liver, or spleen, which may be enlarged and very soft, or substance of the lungs, which may be hepatized, or in the joints. Although, there have been violent delirium, we often find no traces of disease, in the brain, or, only some turgescence, in the vessels of the pia mater. The inter-

tines are generally inflated, sometimes inflamed, and, then, we have both adhesion and effusion. We may also have more or less extensive inflammation, or suppuration, in the linings of the pelvis, or within the pubic articulation.

The treatment, as in hysteritis, consists in the early use of the lancet, but it is to be more cautiously employed, fomentations, or poultices, applied to the region of the uterus, mild purgatives, and diaphoretics. Leeches ought to be employed, when there is circumscribed pain, after the lancet has been early used. In the second stage, we can do nothing but support the strength, by light nourishment, cordials, and, if it agree with the stomach, quinine: opiates are useful. The discharge from the vagina, should be removed, by washing or syringing, with tepid water.*

Inflammation of the lymphatics, is rarely met with, by itself. The symptoms are nearly the same with those of phlebitis, and the treatment similar.

CHAP. XVI.

Of Peritoneal Inflammation.

THE peritoneal lining of the abdomen, or the covering of the intestines, may be inflamed alone, or, this disease, may be combined, with inflammation of the uterus.

Peritoneal inflammation, may be caused by violence, during delivery, or the application of cold, or the injudicious use of stimulants. Those who have suffered from uterine hæmorrhage, after delivery, are most liable to this disease, as well as to inflammation of the uterus. It may not come on, for three weeks after delivery, but it usually appears on the second day; and it may often be observed, that the pulse continues frequent, from the time of delivery. It is preceded, or attended, by, shivering and sickness, or vomiting, and is marked by pain in the belly, which sometimes is very universal, though, in other cases, it is, at first, confined to one spot. The abdomen, very soon, becomes swelled and tense, and the tension rapidly increases. The pulse is frequent, small, and sharp, the skin hot, the tongue either clean, or white and dry, the patient thirsty; she vomits frequently, and the milk and lochia, usually, are obstructed. These symptoms, often come on, very acutely, but it ought to be deeply

* For the general history, and particular cases, see the memoir by M. Dance, in the 18th and 19th vols. of *Archives Generales*, the memoir of M. Tonnellé, in *Archives*, xxii. 354. Dr Lee, in *Med. Chir. Trans.* Vol. xvi. p. 2. Duplay in *Journ. Comp.* xlii. 3, and 290.

impressed, on the mind of the student, that they may also approach insidiously. Wandering pain is felt in the belly, neither acute, nor altogether constant. It passes for afterpains, but it is attended with frequency of pulse, and some fulness of the belly, and a little sickness. But, whether the early symptoms, come on rapidly or slowly, they soon increase, the belly becomes as large, as before delivery, and is often so tender, that the weight of the bedclothes, can scarcely be endured; the patient also feels much pain, when she turns. The respiration becomes difficult, and, sometimes, a cough comes on, which aggravates the distress; or, it appears from the first, attended with pain in the side, as a prominent symptom. Sometimes, the patient has a great inclination to belch, which always gives pain. The bowels are either costive, or the patient purges bilious or dark coloured fæces. These symptoms are more or less acute, according to the extent, to which the peritoneum is affected. They are, at first, milder, and more protracted, in those cases, where the inflammation begins in the uterus; and, in such, the pain is often not very great, nor very extensive, for some time. If the disease be to prove fatal, the swelling and tension of the belly increase, so, that the abdomen becomes round and prominent, the vomiting continues, the pulse becomes very frequent and irregular, the fauces are aphthous, death is marked in the countenance, the extremities cold, and the pain usually ceases rather suddenly. The patient has unrefreshing slumber, and sometimes *delirium mite*, but she may also remain sensible till the last. The disease usually proves fatal, within three days, but may be protracted, for eight or ten days, or even longer. If the patient be to recover, the swelling does not proceed to a great degree, the pain gradually abates, the vomiting ceases, the pulse becomes fuller and slower, the breathing easier, so, that the patient can lie better down in bed, and she can turn more easily. Sometimes, this disease ends in suppuration, and the abscess points, and bursts, externally. Dr Gordon, in his treatise on puerperal fever, relates three cases of this kind. In one of these, the matter was discharged from the umbilicus, a month after the attack; in another, six weeks after delivery; and in the third, after two months, it came from the urethra. Similar cases have come under my own observation.

Upon dissection, the peritoneum is found in a state of high inflammation, but it is rare to find it mortified. The omentum is often inflamed. A considerable effusion of serous fluid, mixed with curdy substance, is found in the belly.

The patient is only to be saved by vigorous means, and great attention. If the pulse continue above a hundred in the minute, for twenty-four hours after delivery, there is reason to appre-

hend, that some serious mischief, is about to happen; and, therefore, unless the frequency depend, decidedly, on debility, produced by great hæmorrhage, &c., we ought to open the bowels freely, and give an anodyne-diaphoretic. We must carefully examine the belly, and, if it be full, or painful on pressure, or, if the patient be inclined to vomit, we ought instantly to open a vein, and use purgatives. One copious bleeding, on the very invasion of the disease, is more useful, than ten afterwards; and the delay of two hours, may be the loss of the patient, whose danger, even under the most active practice, is extreme. I know, that many are unwilling to bleed women, in the puerperal state; and the condition of the pulse, may seem, to young practitioners, to forbid it. But in cases of peritoneal inflammation, I must strongly urge the necessity of blood-letting, at a very early period; and the evacuation is to be repeated or not, according to its effects, and the constitution of the patient. If she have borne it ill, and not been relieved, when it was used first, I apprehend that the case, has not been simple peritoneal inflammation, but malignant puerperal fever. If she bear it well, and the pulse become slower and fuller, and the pain abate, we are encouraged, if necessary, to repeat it. I wish to impress on the mind of the student, in the most earnest manner, the fatal consequence of neglecting blood-letting, in this disease. How many women, fall a sacrifice, to the timidity or inattention of their attendant! The lancet is the anchor of hope: it may indeed be pushed too far; it may be used by young practitioners, in cases of spasm, mistaken for peritonitis; but, in that case, the error is safer than the contrary mistake. When I say this, however, I do not mean to urge the senseless, and extravagant, use of the lancet. A prudent practitioner will bleed early and oftener than once, if he be thereby, abating inflammation; but he will stop in time, and observe whether he be, really gaining advantage, by evacuation, or, on the contrary, sinking the patient, and *destroying that vigour*, which is necessary for an effort to recover. He will never bleed late in the disease, unless it be, to subdue an exacerbation, and when the effect of former depletion, leads him to hope for renewed benefit. Whilst some have been dilatory, and too timid, others, I fear, have sunk their patients, as effectually, by inordinate evacuation, as if they had left the inflammation quite uncontrolled. Of the two errors, this last is, I believe, the most dangerous. Great depletion is ruinous, in puerperal peritonitis, and is too frequently resorted to, when opium would have been safer, and more useful. After the lancet has been early used, many leeches, or the scarificator, should be immediately applied to the most painful part. The abdomen, should then be covered, by a warm poultice. A large

dose of opium, that is, three grains, is to be administered after the bleeding, and repeated, according to circumstances, in smaller doses. This is a most valuable medicine. The mere relief of pain is of essential importance, in the case of inflammation. The bowels are, at the very first, to be opened freely with calomel, or some other purgative, which we require to give in a large dose, particularly calomel, for ordinary doses do no good. Dr Armstrong, who is also a powerful advocate, for the use of opium, gives half a dram of calomel, and, afterwards, a purgative draught of senna and salts, to work it off, and I think the principle safe, provided, we regulate the dose of the medicine, by the constitution and habits of the patient. Calomel is useful, however, not merely as a purgative, but also as a mercurial. In an advanced state of the disease, after effusion has taken place, we must employ purges, rather than blood-letting, which would then be hurtful. Sinapisms and blisters have been advised, but are chiefly useful when the pain is circumscribed. Fomentations, or warm poultices, if the weight do not give pain, are more generally useful. Digitalis has been given, either to abate inflammation, or promote absorption, after effusion has taken place; but I have never, in one single instance found it useful. After effusion has begun, and debility is produced, cordials, of which wine is the best, should be given, and anodyne clysters are to be administered. There are one or two cases recorded, where the fluid had been, either, spontaneously, discharged by an opening, taking place in the intestine, or, artificially, by paracentesis, and with a good effect.

A modification of this disease, is not unfrequent, in which, the inflammatory affection, in so far as traces are left after death, is apparently limited, to a very small extent, as well as in degree. The pain seems to arise, more from high sensibility of the nerves, than, from actual inflammation of the parts, and it often shoots, in the direction, of some particular abdominal nerve, for instance, the ilio-pubal. There is, at first, either, circumscribed pain, or, wandering pain like gripes. The pulse is frequent, but not sharp. The skin hot. The belly, little swelled, and the pain felt, chiefly, on pressure, or in turning, or breathing deeply. The discharge usually continues. This disease, generally comes on, about the second or third day, and, if not checked, the pain increases greatly, the belly swells, and becomes tense, and the patient dies, with the usual symptoms of peritonitis. But, on inspection, the peritoneum is not found to be inflamed; often it is pale, or at most, rather more injected than usual. The bowels are inflated, and there is some serum in the abdomen. The uterus is contracted, and apparently healthy, but more minute examination, usually, discovers, some slight, or limited mark of

inflammation, in the veins, or cervix, or appendages. The state of the abdominal nerves, has not been particularly attended to. The diagnosis is difficult. There is seldom shivering or coldness, the pulse is soft, the pain, is early, more acute, than usually happens, in peritonitis; but, the chief practical mark, is, that venesection, although, it may give momentary mitigation, affords no permanent relief, and, if repeated, is as little beneficial. It is, however, in general, proper to take away some blood, at first, and it is found to be sily. The quantity ought never to be great. Then, we give an opiate, either by the stomach, or in form of clyster, and apply a large linseed meal poultice, to the abdomen; after this, if necessary, a saline clyster, or mild laxative is to be given. In some cases, I have found most benefit, from opiates, in others from poultices.* The feverishness lasts for some days. If there be continued local pain, leeches should be applied to the part.

Peritoneal inflammation, may take place, during pregnancy, and not prove fatal. After delivery the pulse continues quick, the face is flushed, the belly is swelled, and fluctuation is perceived. The patient dies of rapid hectic, and, on inspection, the intestines are found inflamed, and pushed aside, with much pus. If the disease be not checked, by bleeding, in the commencement, I believe nothing can do good, in the hectic stage. Paracentesis may be proposed, but its effects are not to be depended on.

Chronic, or slow inflammation of the peritoneum, is not very unfrequent, and may last for some weeks. It is attended with constant pain, in some part of the abdomen, but it is not unbearable; the belly is tender, the pulse frequent, the thirst urgent, and, often, the mind is affected as in hysteria, or, a train of hysterical symptoms supervenes, which may lead off the attention, from the seat of the disease. It requires, at first, bloodletting, and then, the frequent use of laxatives, with repeated blisters.

When upon this subject, it may not be improper to mention, that a young practitioner, may mistake spasmodic affections, or colic pains, for puerperal inflammation; for, in such cases, there is often retching, and sensibility of the muscles, which renders pressure painful. But, there is less heat of the skin, the tongue is moist, the pulse, though it may be frequent, is soft, the feet are often cold, the pain has great remissions, if it do not go off completely, there is little fulness of the belly, and the patient is troubled with flatulence. It requires laxatives, antispasmodics,

* Dr Gooch has detailed several cases of this disease, which in some instances, seemed to proceed from the griping operation of a brisk purgative, in others, from severe afterpains, more especially when the patient in her ordinary state was delicate and nervous. He is against bleeding, and advises Dover's powder, and poultices.

anodyne clysters, and friction with camphorated spirits. If these means, do not give speedy relief, then, we use the lancet. Blood, drawn in this disease, after it has continued for some hours, even when the woman is not in childbed, is sizy, and it is usually so, in the puerperal, as well as the pregnant state, although the woman be well.

Inflammation of the mucous coat of the intestines, is not an uncommon disease, during pregnancy, and is marked by dysenteric symptoms, and great emaciation, if it be protracted. After delivery, the purging generally increases, the stools are liquid, and often slimy, and usually without pain, at least, except, at the moment of discharge, which is perhaps very rapid. There is seldom pain on pressure, or, if there be, it seems rather at the epigastrium, from vomiting, than from any other cause. The pulse is frequent, the appetite lost, considerable thirst, occasional vomiting of bilious fluid, extreme emaciation, and œdematous extremities. In many cases, the inflammation seems to be concentrated, into spots, here and there, and the vicinity, is only in a state of irritation or excitement. In the early stage of the disease, bleeding may be necessary. Mild laxatives should be given, to remove acrid, or indurated, fæces, and the diet should be light. Afterwards, opiates must be exhibited, to allay the irritation, and the best form, is that of pills. In the more advanced stage, clysters, with laudanum, or suppositories of three or four grains of opium, must be given, and, in extreme cases, brandy is useful, in supporting the strength. I have not known astringents do good, neither have I derived so much advantage, from external irritation, as I expected, or as should induce me to subject the patient to it.

CHAP. XVII.

Of Malignant Puerperal Fever.

THERE can be no doubt, that, in particular seasons, a contagion has prevailed,* inducing fever, in the puerperal state, attended with the symptoms, of the preceding inflammatory diseases, varying, however, according as one or other of these, predominated, in the individual cases. In some instances, proving fatal, rather, from mere exhaustion, than from inflammation. In others, leav-

* It was very prevalent in Paris, in 1746; in Dublin, 1767; in Edinburgh, 1773; in London, 1787-88; in Glasgow, in 1819; again in Edinburgh, in 1821-22; and in Paris, 1829. The last time it was epidemic, in Glasgow, was in the summer of 1835.

ing marks of great inflammation, or of suppuration. It is not, therefore, to be expected, that, either, the *post mortem* examination, or the individual symptoms, during life, should be very different, from peritonitis, &c., the chief distinction, being, in the complication with a malignant influence, and, in the patient, being neither benefited by, nor bearing depletion, so well, as she should have done in the simple affection.

The description, therefore, in many of the essential points, must be much the same, as that of hysteritis, &c. It must, not only in different epidemic, but in different individuals, in the same season, vary much, accordingly, as one part shall be more affected than another.

Malignant puerperal fever, sometimes, begins in an insidious manner, without that shivering, which, usually, gives intimation, of the approach of a serious malady. But, generally, shivering is perceived, and varies considerably in degree, being either slight or pretty severe. The first symptoms, independent of the shivering, are frequency of pulse, oppression, nausea, or retching, pain in the head, particularly over the eye-brows. The night is passed with little sleep, much confusion, and, occasionally, some delirium. It must not, however, be unnoticed, that, in many instances, there is no headach, in any stage of the disease, nor any sickness, or vomiting, in the beginning. In some, the temper is, from the first, uncommonly irritable; in others, there is much timidity, or listlessness, or apathy. Hysterical symptoms, not unfrequently supervene; or, particular nerves become more sensible; or, organs of sense are affected, thus, some imagine they hear the performance of a piece of music. From the beginning of the attack, or very soon afterwards, pain is felt in the belly, at first slight, but it presently increases and, in some instances, the abdomen becomes so tender, that, even, the weight of the bedclothes, is productive of distress. A general fulness of the belly, precedes this, or at least accompanies it, from the first, and this usually increases, pretty rapidly, and may proceed so far, as to make the patient, nearly, as large, as she was before delivery, and in such cases, the breathing becomes very much oppressed; indeed, in every instance, the respiration is more or less affected, the free action of the abdominal muscles, which are concerned in that function, being productive of pain. The degree of pain, its seat, and period of accession, vary in different cases. In some, it evidently begins in the uterus, never going entirely off, yet, being subject to severe exacerbation, accompanied with sense of bearing-down. The uterine region is painful, particularly, toward one side. The os uteri, if examined, is not much more sensible than usual. There is, generally, pain in the back. In other cases, it is first felt, about

the lower ribs, on one side, and is accompanied by cough, the belly is tumid, and tender when pressed, but excepting then, or when the patient turns, she complains little of it. Sometimes, severe pain, like spasm, attacks the iliac region, and extends down the thigh, and toward the bladder and pubis. The face, is sometimes flushed, at first, or the cheeks are suffused, but the countenance, in general, is pale and ghastly, the eyes are without animation, and the lips, and angles of the eyes, are white. When the face is flushed, the cheeks are generally covered, with a broad patch, of deep red, whilst the brow, and other parts, are cadaverous, or covered with perspiration. The whole features, indicate anxiety, if not terror, and great debility. Vomiting, frequently, occurs at the very commencement, and, in that case, it is bilious. In the course of the disease, it sometimes 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 foetid. 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. But to proceed with the history. There is a great dejection of mind, languor, with general 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. The skin is not very hot, but is 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. From the irritability of the stomach and bowels, it is probable, that these organs, participate in the tender state; and, from the cough which is excited, the upper part of the larynx, seems also to be affected. It has already been mentioned, that, from the first, the pulse is very frequent, and is at that period, fuller than in simple peritoneal inflammation, but it soon becomes feeble. The thirst is not always great, at least, the patient often is careless about drink. The bowels are often, at first, bound, but, afterwards, especially about the third day, they usually become loose, and the stools are dark, foetid, and often frothy. This evacuation seems to give relief. It is, indeed, peculiarly deserving of remark, that often in this disease, either from spontaneous or artificial evacuation, or, sometimes, without any perceptible cause, there is a delusive calm, and the patient is supposed to be better; but in such cases, I cannot say, I ever remember to have found a corresponding improvement, in the pulse, and, therefore, I placed no reliance on the apparent relief. 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 reappearance of the lochia, if they had been entirely suppressed, which is not common, is not critical. The secretion of milk stops, and the patient inquires very seldom about the child. In some cases I have met with pleuritic symptoms. As the disease advances, the pulse becomes more frequent, and weaker, or tremulous. In bad cases, the swelling of the belly increases rapidly; but the pain does not always keep pace with the swelling, being sometimes least, when the swelling is greatest, and in the end, it generally goes entirely off. The breathing becomes laborious, in proportion as the belly enlarges. The strength sinks; the pulse, always frequent, becomes weak and tremulous; the throat and mouth become sloughy; perhaps, the stools are passed involuntarily; hiccup sometimes takes place; and the patient usually dies before the fifth day of the disease, but in some cases not until the fourteenth; in others so early as the second day. In some instances, death is preceded, by low delirium, or stupor. In others, the mind continues unimpaired, till within a few minutes of dissolution, and the patient is carried off, after a fit of a convulsive kind. Metastasis of pain or inflammation, sometimes suddenly takes place.

In many cases we may comprise the description in few words. The pulse is rapid. The bowels inflated, with, or without, pain, or tenderness on pressing. No sleep, or a kind of waking slumber, perhaps ultimately, with confusion of ideas, but often, the mind is quite correct. The patient frequently dies within forty-eight hours.

This fever, attacks, generally, on the second, or sometimes, on the third day, after delivery, but it has also occurred, so late, as after a week. The earlier it attacks, the greater is the danger, and few women recover, who have the belly much swelled.

On dissection, there is found in the abdomen, a considerable quantity of fluid, similar to that met with in peritonitis. The omentum and peritoneum, are inflamed, in a variable degree; sometimes considerably, sometimes very slightly, and gangrene is unusual. The swelling, is neither proportioned to the inflammation nor effusion, nor, in every instance dependent on these, but on the inflation of the bowels, which results from that relaxation of the muscular fibres of the bowels, which is so common, in the puerperal state, particularly, in puerperal disease. The uterus, although sometimes the first seat of the pain, and occasionally found considerably inflamed, yet, in general, is not more affected than the intestines. In some cases, the thoracic viscera are inflamed, as well as the intestines, or they may

be almost exclusively affected. In either case, sero-purulent effusion is found in the chest.

It is most frequent, and most fatal, in hospitals. In private practice, it is less malignant, though still very dangerous. It is sometimes epidemic, but I do not know that it has above twice, in my time, been a *very* prevailing epidemic in this city. In some instances, it was easy to trace the contagion, from one woman to another. I have known it not only produced, in healthy women, by their accoucheur having recently attended a case of puerperal fever; but, also, when he had merely inspected a patient, dying in consequence of ruptured uterus. In hospitals, it has, conspicuously, appeared as a contagious disease. There has been much dispute, whether the contagion were one, *sui generis*, or that of typhus, or erysipelas, or hospital gangrene; or if the disease depended on some noxious state of the atmosphere, conjoined with the absorption of putrid matter.* The disease appears to depend, on a species of inflammation of the peritoneum, conjoined with the operation, of some debilitating poison, more or less contagious. It is not connected, with the state of the labour, except in so far, as, that hæmorrhage seems to predispose to it; but when epidemic, it occurs after a rapid and easy, as well as after a more painful labour. It is also, I think, established, that not only different individuals may have, more or less violently, symptoms of inflammation, but, also, that particular epidemics, have the peritonitic state, more or less prominent and acute, and in some, there is much swelling, with little pain. I have formerly stated, that inflammation, and other local disease may take place, as well by causes acting on the origin of the nerves, as by those applied to the part itself. In this disease, I am inclined to attribute the effect, to the first mode, but have not, as yet, satisfied myself of the existence of increased vascularity, &c., of the spinal sheath.

We attempt the diagnosis, rather, perhaps, by our knowledge of the existence of an epidemic, than, at first, by any special symptom. We also find, that, very soon the symptoms of depression, are greater than should be expected, at the period, in simple inflammation, and venesection does less good, even, for a few minutes.

This disease is dangerous, in proportion to the malignancy of the cause, and the situation of the patient. All writers agree,

* When this fever is prevalent, women, after abortion, are liable to it as well, as those who have reached the full time. Unmarried women who attended the sick, have also died with many of its symptoms. Patients who miscarry during typhus fever, are in great danger of dying, and when they do so, there is almost invariably pain in the belly with tympanitic swelling, and, in most cases, inflammation and suppuration are found on inspection.

that in hospitals, it is peculiarly fatal, and that few recover from it. In private practice, the disease is milder, but still, it is most formidable.

With regard to the best mode of treatment, there has been a great difference of opinion,* which partly depends on giving

* Dr Denman, Vol. ii. p. 493, considers puerperal fever as contagious. He strongly advises early bleeding, giving an emetic or antimonial, so as to vomit, purge, or cause perspiration; and if this do good, he repeats the dose, and uses clysters, fomentations, leeches, and blisters. He gives an opiate at night, and a laxative in the morning; or, if there be great diarrhœa, he employs emollient clysters. The strength is to be supported, by spt. ether nit. or other cordials.

Dr Leake, Vol. ii., trusts much to bloodletting; if the patient be sick, he gives a gentle vomit; if not, laxatives, and then antimonials; applies blisters, and in the end, restrains purging with opiates, and prescribes bark.

Dr Gordon, p. 77, et seq., depends on early and copious bloodletting, taking at first, from 20 to 34 ounces, and purges, with calomel and jalap. He is regulated rather by the period of the disease, than the state of the pulse—bleeding, though it be feeble.

Dr Butter, purges and bleeds, only, where there is well marked inflammation, and is satisfied, often, with taking only three ounces of blood, at a time, when there is an exacerbation.

Dr Manning very rarely bleeds, but trusts to emetics and purges, and employs Dr Denman's antimonial, which is two grains of tartar emetic, mixed with ℥ij. of crabs' eyes and the dose is from three to ten grains.

Dr Walsh forbids venesection, and advises emetics, followed by opiates, and cordials.

Dr Hulm trusts to clysters, purges, and diaphoretics, and does not bleed unless there be pain in the hypogastrium, accompanied with violent stitches, and a resisting pulse. Even then he bleeds sparingly.

M. Doucet advises repeated emetics, followed by oily potions, and bark, combined with camphor.

Mr Whyte is against bloodletting. He gives, at first, a gentle emetic, followed by a laxative and diaphoretics. Then, he gives bark, with vitriolic acid, and supports the strength.

Dr Joseph Clark trusts chiefly to saline purges, and fomentations.

Dr John Clarke, in his excellent Essays, forbids venesection, and advises bark as freely as the stomach will bear it. Opium is also to be given, together with a moderate quantity of wine along with sago. If there be much purging, the bark is to be omitted, till some rhubarb be given, or a vomit, if there be little pain in the belly.

Dr Kirkland bleeds only if the patient have had little uterine discharge, and the pulse indicate it. He employs laxatives, and, in the end, bark and camphor. He believes it to be caused frequently by the absorption of putrid blood lodging in the womb.

Dr Hull considers this disease as simple peritoneal inflammation, which may affect three classes, the robust, the feeble, and those who are in an intermediate state. In the first he bleeds and purges, in the second he begins with emetics and ends with bark, and in the third he bleeds with great caution.

Dr Hamilton advises puerperal to be treated as putrid fever.

Guinot, Allan, and others, recommend carbonate of potash, in doses of ten or fifteen grains.

M. Vigarous, joins with those, who consider this as not a fever, *sui generis*, but one varying according to circumstances. It frequently begins, he says, before delivery, but becomes formed, about the third day after it. He has five different species. 1st, The gastrobilious, proceeding from accumulation of bile during pregnancy. The essential symptom of this species is intense pain in the hypogastrium. He advises, first, ipecacuanha, which he trusts to, chiefly, and then, clysters,

the name of puerperal fever, to different disorders. I am sorry that I find it much easier to say, what remedies have failed, than what have done good. I have stated, that in peritoneal inflammation, bloodletting is a principal remedy; but in this disease,

laxatives, and saline julep. 2d, The putrid bilious. This is occasioned by bleeding, or neglecting evacuations in the former species; or, even without improper treatment, the fever may, from the first, be so violent, that bilious matter is absorbed. It is marked by great debility, small or intermitting pulse, tumour of the hypogastrium, with sharp pain and putrid symptoms, aphtha, vomiting, fœtid stools, &c. He advises vomits, laxatives, and bark in great doses, with mineral acids, and clysters containing camphor. 3d, The pituitous fever, attended with vomiting of pituita. The surface is pale, the pulse has not the force, nor frequency, it has in the former species, the heat in general not increased, anxiety, weight, and vertigo, rather than pain of head, often miliarly spots, and the usual symptoms of pain in the belly, and subsidence of pain in the breasts. He gives vomits, and afterwards three or four grains of ipecacuanha, every three hours. If he use purgatives, he conjoins them with tonics. 4th, With phlogistic affection, or inflammation of the womb, attended with great weight about the pelvis, swelling, pain, and hardness in the lower belly, suppression of evacuations, sharp, frequent, pulse, acute fever, and the countenance not so sunk as in the putrid disease. He advises venesection, leeches, and low diet. The same remedies, with blisters, are to be used, if pleuritic symptoms occur. 5th, Sporadic fever, proceeding from cold, passions of the mind, &c. Puerperal fever, he considers as apt to terminate, in milky deposits in the brain, chest, legs, &c.

Dr Armstrong considers this fever as decidedly inflammatory, and trusts to the early use of the lancet, followed by a large dose of calomel, from one scruple to half a dram, with the subsequent assistance of infusion of senna with salts. Later, he seemed, from meeting with other constitutions, to trust more to bleeding, followed by the use of full doses of opium.

Dr Brennan has published a pamphlet, recommending in place of bloodletting, the free use of oil of turpentine, internally, and the external application to the belly of a cloth soaked in it.

Mr Hey is decided as to the inflammatory nature of the disease, and trusts entirely to the early and free use of the lancet, and the administration of jalap and calomel, with other cathartics, so as to maintain a purging, for two or three days, or longer, if necessary.

Hufeland applies cold poultices to the abdomen.

Gardien admits six species. 1st, Puerperal fever, complicated with la fièvre angiotonique, or synocha, marked by the ardent symptoms of that fever. It is more strictly inflammatory, but is the least frequent species. It is to be treated by strict antiphlogistic regimen. Venesection is only allowable in the most robust and plethoric. A dozen of leeches applied to the vulva or anus, are safer. Lactation is the best remedy and the surest preventive. 2d, With la fièvre adénomeningée, or mucous fever. This is met with often, and is more slow and insidious: the mouth is slimy, and the abdominal pain is obtuse. It is to be treated with bitters and tonics. 3d, With la fièvre meningo-gastrique, or bilious state, marked by yellow tinge, epigastric pain, nausea, bad taste, &c. In this case, the violent abdominal pain is not always from inflammation. It is to be treated by emetics or purgatives, according as the stomach or bowels seem most affected. 4th, With la fièvre adynamique, or putrid fever. This is the most fatal, but most rare species, and is marked by great weakness, small pulse, dry mouth, paleness, and fœtid diarrhœa. The pain is less acute, and the swelling is from gas. We should neither use the lancet, nor active tonics, such as bark, but rather a kind of negative plan, giving lemonade and cream of tartar, or perhaps camphor. 5th, With la fièvre ataxique, or nervous symptoms, as hiccup, convulsions, &c. 6th, With other local phlegmasiæ, as of the brain, lungs, &c.

Dr Campbell and Dr Macintosh, have both published on puerperal fever, and

it must be employed with great caution. If resorted to at all, it ought not to be pushed far, but the exact extent to which we may prudently go, must depend on the nature of the epidemic, and the constitution of the patient, as well as the special symptoms of her particular case. I am fully aware, from experience,

look on it as inflammatory, non-contagious, and to be cured only by active depletion. Their treatment consists in bleeding freely from the arm; fomenting the abdomen, and applying to it, and the pudendum, from 60 to 100 leeches, conjoining also, the use of purges, such as calomel, with antimony and clysters.

Dr Douglas, in the 8th Vol. of Dublin Hospital Reports, divides the disease into three species, the synochal, gastrobilious, and epidemical or contagious. In the first he advises venesection freely, purges, &c. In the second, venesection more moderately, and calomel in the dose of ten grains, with castor oil. In the third, the same dose of calomel, with opium and a clyster. Then, from two to four dozen of leeches to the abdomen, and pure oil of turpentine to be exhibited in the dose of three drams.

In the Edinburgh Journal for July, 1824, is an account of the report made on the disease, as it appeared at Vienna, and an abstract of the opinions of Boër. There appeared marks of vascularity or turgescence in all the cavities, and, in most instances, peritoneal inflammation existed. The uterus was little contracted, its substance flabby and tender, and its internal surface gangrenous—a condition, in every case, most strongly prevalent at the os uteri. It was considered not to be contagious. The treatment consisted, chiefly, in venesection, the application of leeches, clysters, blisters, and then diffusible stimuli, but seldom with good effect.

The disease was, in the year 1819, epidemic in this city and more especially in the suburbs, particularly toward the east. I made particular inquiry into the treatment, and fear it has not been so successful as the attendants could have wished, although the utmost care and promptitude were exercised. In a few instances, the lancet was neglected, and the tonic plan used, but without effect. The universal opinion, I found, to be in favour of the lancet, at the same time, that its too general failure was fully admitted. Dr J. Watson informed me, that in most of the cases he met with, the disease seemed to begin as hysteritis, and spread to the peritoneum. Copious bleeding, blistering, and large doses of opium, were the remedies used by him, and only in one case did he think turpentine of service.

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. "After copious bleeding, large doses of calomel were useful in the epidemic which prevailed lately at Kilsyth, but none recovered there, nor in the country around, without bleeding." He at first tried the tonic plan, but with universal failure, whereas he says that a third part recovered, by the other, if used early and boldly in constitutions previously sound.

Dr Cusac has three species, one which bears bleeding, another, which does not bear even leeches, a third which does, but will not bear the lancet.

M. Dance considers it as phlebitis, and treats it accordingly. M. Tonnellé 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. He employs leeches, ipecacuanha, mercurial friction, and poultices of linseed, injections into the uterus and quinine.

M. Nonat, admits also the inflammation of the veins. M. Velpeau seems to think that lesion of the symphysis pubis precedes phlebitis.

Dr Lee considers it as decidedly inflammatory; but when the deep tissue of the uterus, the veins or absorbents are affected, he says leeches are, in general, better than the lancet.

M. Dubois, when I visited La Maternité, informed me, that whilst he adapted

of the good effects which sometimes follow from bleeding, early, in typhus or contagious fever; and therefore, I have no prejudice against that remedy, in this contagious disease. I have, on the contrary, used it freely myself, and have known it done so by others; and to this free trial I have been led, by the respectable testimony to its advantage, as well, as the fatal issue of the disease, under other treatment. I am, however, from observation, convinced, that if this remedy be useful, it is in the very early stage. If the disease have gained any progress, I never have found it useful. Like other remedies, particularly purging, it has been followed by an apparent relief, but the pulse did not come down, nor was the patient cured. My conviction, therefore is, and, if an opinion given in an elementary work, is to influence the conduct of those who read it, I cannot state it without a feeling of awful responsibility, that the lancet is only admissible, in the very commencement of the disease, and even then rarely. If decided benefit be not derived then, we ought not to repeat the evacuation. It is my duty to say, and I do it, considering the opposite sentiments of good judges, with a sense of deference, that I have never known any patient recover, who had been largely and repeatedly bled, and that my successful cases, have been amongst those, who either were not bled at all, or bled early, not above once, and that not abundantly. At the same time, I am willing to admit, that much must depend, on the constitution of the patient, as well as the peculiarity of the epidemic, and particular circumstances. If bleeding be indicated, let us bleed early, and be guided by its effects.

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 many cases, is safer, and more to be depended on, even from the first.

On the appearance of the disease, it will be proper, whether we bleed, or apply leeches, immediately, to give a dose of some

his practice to the condition of the individual case, he, in general, preferred leeches to venesection.

Dr Collins has seen the disease commence even before delivery; but the largest proportion began on the first, and next to that, on the second day. The greatest number died from the second to the fourth, but especially on the third day. He advises the application of three or four dozen of leeches, the warm bath, and four grains of calomel, with as much ipecacuanha, every 2d, 3d, or 4th hour. Three or four hundred grains have been given. Opium he also often conjoins. He seldom employs venesection.

Dr Ferguson considers puerperal fever as arising from a vitiated state of the fluids, which may produce inflammation, varying according to the strength and qualities of the agent. If it attack the peritoneum, we have the inflammatory species. If directed to the liver, we have the gastroenteric form. Essays, &c. Dr Locock considers this vitiated state of the blood as secondary, and that the nervous system is the main instrument in producing it. Library of Med. Vol. i. See also Dr Rigby's account in his lectures.

purgative medicine, such as shall freely evacuate the bowels without irritating; as, for instance, a full dose of calomel, or a moderate quantity of castor oil, infusion of senna, or solution of sulphate of magnesia. As soon as the operation is effected, an opiate, should be given, either alone or combined with calomel. Opiates, after purgatives, have the effect of abating irritation and pain, and of restraining immoderate diarrhœa, should that come on. Diarrhœa should not be allowed to continue long, and is always to be restrained, unless, it evidently give relief, and the fœces be very fœtid. In this case, calomel and diluents should be employed. If there be tenesmus, anodyne clysters should be given, after the use of the calomel. In all cases, we are to attend much to the bowels, using gentle purgatives and clysters, where there is no diarrhœa; milder doses, alternated with opiate clysters, where there is. Vomiting is to be restrained by solid opium, and by an opium plaster applied to the region of the stomach; sometimes saline draughts are of service. Nausea has been supposed to indicate the necessity of an emetic; but if no relief be obtained from natural vomiting, which most practitioners admit, I do not see, that artificial vomiting can be useful, nor does experience support the practice. Anodyne, or rubefacient embrocations, sometimes abate the pain in the abdomen, but if the weight of a warm poultice can be borne, it is in general more useful. The repeated application of blisters, has been extolled by some, but I am quite inclined to concur with Dr Clarke, in thinking that they rather excite an injurious irritation. Cloths, wet with oil of turpentine, applied to the belly, produce less constitutional irritation, and are at least as effectual, if not more so, in relieving the internal pain. When the patient is sleepless or confused, I have known benefit derived from shaving the head, and if that, and bathing it with cold water, did no good, applying a blister. The strength should be supported, by light nourishment, and, ultimately, by a moderate proportion of wine, or other cordials, along with quinine. Digitalis and other diuretics have been given, to carry off the effused fluid, but they have no effect. Some, have drawn off the fluid by paracentesis. Emetics and antimonials, I am afraid, do more harm in general than good. Mercury has been commended by some, but is seldom if ever useful. It will be easily seen that my description and treatment, applies to what is called, by others, the adynamic form of puerperal fever.

CHAP. XVIII.

Of Swelled Leg.

THE swelling of the inferior extremity, in puerperal women, is usually preceded, by marks of uterine irritation, and a tender state, of the parts within the pelvis, not unfrequently, by symptoms of inflammation, higher in the abdominal cavity, and even in the diaphragm. In many cases, this affection, seems to be secondary, that is, follows some decided disease, within the pelvis, possibly of weeks' duration. In others, it appears without previous complaint. About a fortnight after delivery, sometimes so early as the sixth day, or even so late as the sixth week, the patient complains of pain in the lower belly, increased by pressure, and occasionally has pain and difficulty in making water. The uterine region is somewhat swelled, the pulse is frequent, the skin hot, the thirst increased, and these symptoms are often preceded by shivering. Stiffness and pain are now felt, in one of the groins, near the passage of the round ligament, or the exit of the tendon of the psoas muscle, or, in some cases, about the origin of the sartorius and rectus muscles. The pain is attended with swelling, both of which may proceed gradually down the limb; but, more frequently, pain is felt, suddenly, in the inside of the calf of the leg, or at the knee, near the insertion of the sartorius muscle, and is most acute in the course of that muscle; it also darts down to the heel, or along the distribution of the nervus saphenus, on the leg. There is generally, a thickening and hardness of the coats of the vena saphena, and exquisite tenderness on pressing these. Sometimes, there is no uneasiness in the belly, and the first symptom, is sudden pain, in the calf of the leg. Within twenty-four hours after the pain is felt, the limb swells, and becomes tense; it is hot, but not red; it is rather pale, and somewhat shining. The swelling sometimes proceeds from the groin downwards; but in most cases, it is first perceptible about the calf of the leg, and proceeds upwards. It generally is followed by an abatement, but not a cessation of the pain. Along with the pain, there is a powerless condition of the limb. The inability to move it, does not depend, altogether, on the pain, but, also, on a want of command over the muscles. The pulse at first, perhaps only 80, soon becomes very frequent, being often 140 in the minute, and generally is small and feeble, but sharp; the tongue is white and moist, the countenance has a pale chlorotic appearance, the thirst is considerable, the appetite is lost; the bowels are either bound,

and the stools clay-coloured, or they are loose, and the stools very fœtid or bilious. The urine is muddy; the lochial discharge sometimes stops, or becomes fœtid, in other cases it is not at all affected. The nights are spent without sleep, and the patient perspires profusely. All the parts within the pelvis are tender, and the os uteri is open, but not more painful, when touched, than the sides of the vagina, or the internal muscles.

The period at which the swelling reaches the acme, is various, but often it is accomplished in twenty-four or forty-eight hours. It seldom makes the limb above double its usual size. Generally in ten days, sometimes in even two or three, the febrile symptoms, swelling, &c., abate; but they may be more protracted, and they rarely disappear entirely, till after a fortnight, perhaps much longer. When they go off, the patient is left feeble, and the limb stiff, weak, and often, for a time, powerless. In the course of the cure, we frequently feel hard bumps in different parts of the limb, especially on its back and inside. These seem to be depositions, around the coats, of the superficial veins. At the top of the thigh, the inguinal glands are often felt swelled, even at the beginning of the complaint; but, in some cases, I have found them not at all affected.

If the skin be punctured, no serum is effused, at least, not in the same way as in anasarca, and the swelling is not increased in a depending posture.

Not unfrequently, the patient is attacked with inflammation of some part connected with the abdominal cavity, as, for instance, the diaphragm or diaphragmatic pleura, and when we hope that this disease is subdued, by bleeding and blistering, we have the mortification of finding a new train of symptoms, those peculiar to the swelled leg, appear.

Sometimes, the disease begins, like rheumatism, affecting the back and hip joint. Then, the upper part of the thigh becomes painful and swelled, and, next, the calf of the leg suffers; sometimes, the limb at first feels colder than the other. Occasionally, the disease is very mild, and attended with little swelling. This is more apt to be the case, when it is late of occurring, and is vigorously attacked at first.

In some cases, the patient has been sensible of the pain which expelled the child, rushing violently down the leg. After a short time it has abated, but about the usual period, this disease has appeared.

In several instances, suppuration has taken place: mortification has also happened. Amputation has been required, on account of the sequelæ.

If the disease run its usual course, it is always a length of time, before the patient recover, for the swelling does not go

soon entirely away, and the strength is long of returning. In some instances, the limb remains permanently swelled and feeble.

After one leg has been affected, and even before the complaint have 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 come 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. The affection of the arm was preceded by pain, feeling of weight, and swelling of the lateral part of the thorax and back. In this case, the lady, after severe uterine hæmorrhage, had a smart attack of hysteritis, which required, but yielded completely to, the usual depleting plan. In a day or two afterwards, this disease took place. Others, notice this swelling of the upper extremities.

This is not, generally, a fatal disease, but it is tedious, and often accompanied with hectic symptoms. Death, however, may be caused by suppuration or gangrene; or by exhaustion, proceeding from the violence of the constitutional disease; or by exertion made by the patient, which has sometimes proved suddenly fatal. Or, after the leg appears to be getting better, daily shivering, with vomiting, pain in other parts, and rapid pulse, with delirium, precede death. On dissection, the limb is found to be infiltrated with thin fibrine, sometimes, there are many small abscesses, between the muscles, or a large abscess in the thigh. The veins, either the femoral or saphena, are inflamed, and contain pus, which is also met with, perhaps, in the absorbents. Within the pelvis, we sometimes find an abscess, or the glands, there, and at the groin, are swelled, or the articulations are inflamed and loosened, or there are marks of peritonitis, or often inflammation of the veins, particularly of the uterus, but frequently that viscus is, itself, quite healthy. Inflammation also is, in many cases, found to have existed in the thorax.

The production of this disease, does not seem to depend on the circumstances of the labour, for it appears both after easy and difficult deliveries. Those who give suck, and those who do not, the strong and the weak, are affected by it. But if it be late of occurring, it is generally in those, who have suffered from mammary abscess. It has succeeded an abortion, or suppression of urine, or cancer of the uterus, and a slight degree of it, has followed abdominal pain, attendant on menstruation, and been repeated for one or two periods. It is not peculiar to the female.

It has been considered by some as merely a sequel of one or

other form of puerperal fever, but it is a distinct and primary disease, although it may sometimes be preceded by another.

We cannot always detect any apparent exciting cause, but, when we can, it is generally cold, standing, for instance, on a cold or damp floor. I am inclined to consider the cause, to be an irritated, or inflamed state of the parts, within the pelvis, which sometimes produces, merely, stiffness and swelling at the passage of the round ligament, sometimes, an irritation of the nerves which pass to the leg. The same effect, is also very apt to follow, from inflammation of the diaphragm, particularly, when it extends along its crura and downwards. Puzos and Levret, consider this disease as proceeding from a depôt of milk: Dr Hunter denied this, but gave no particular opinion, as to the nature of the complaint. Mr Whyte considered it, as dependent on obstruction, and rupture of the lymphatics, Mr Trye, on swelling of the glands, and inflammation of the absorbents, and Dr Hull, on an inflammatory affection, producing, suddenly, a considerable effusion of lymph, into the cellular substance. Others look on it, as what they call, diffuse subcutaneous inflammation. Dr Davis is of opinion, that the chief cause is inflammation of one or more of the large veins, within the pelvis, which obstructs the return of blood. Dr Caspar, on the other hand, found the veins healthy, but the orifice of the uterus, and the vagina, in an inflamed state. M. Velpeau, and Dr Lee, consider it as dependent on inflammation, of the veins of the limb, connected with uterine phlebitis. The former refers it also to inflammation of the pelvic articulations. That the veins are more or less inflamed, seems to be established, but it does not follow, that this is the only cause. The hypogastric veins have been inflamed, without any swelling of the limb. Swelling, from inflammation of veins, is generally redder than that, of phlegmatia dolens, and, both in uterine phlebitis, and other varieties of the disease, distant abscesses are apt to form. I consider that the nerves are implicated, as much as the veins, and, that whilst both may contribute, we shall find in different cases, one or other predominate.

If any part of the skin, of the leg for instance, be pricked with a rough substance, so as to irritate considerably the nervous fibrillæ, we often find that the whole leg swells, becomes tense and painful. It is glossy, firm, and elastic, as if a fluid were contained below the fascia, although none exist there. At first, the swelling is so firm, that it receives, with difficulty, the impression of the finger, but, presently, it pits more readily, and, finally, the effused fluid is absorbed, and the limb returns, though perhaps very slowly, to a state of health. This is a peculiar modification of inflammation, probably connected with, if not

dependent on, injury of a nervous filament, and it is extended over a great portion, of subcutaneous substance. It rarely suppurates. This must be familiar to surgeons, and, accoucheurs may, at once, recognise, a strong resemblance to phlegmatia dolens, which seems to be a similar kind of inflammation, dependent, however, more frequently, on irritation of the trunk, or origins of the nerves, than of their extremities. It will be difficult to prove, that cases of this disease, in the puerperal state, ever arise without previous inflammation, or, at least, much irritation of some part within, or about, the abdomen; and this, on the principle alluded to, in the chapter on ephemeral and remittent fever, may cause general fever, and remote local effects, varying according to circumstances. The local disease produced, is undoubtedly inflammatory, but so modified, as, more rarely, to terminate in suppuration, than, speedily, to produce a secretion, into the cells of coagulable lymph. The state of the nerves also produces, early, a powerless condition of the limb, independent of the inability to move it from pain.

The treatment naturally divides itself, into that of the limb, and that of the constitution.

Our first object, is to check the disease, within the pelvis. For this purpose, leeches ought to be applied, in greater or less numbers, to the groin, and we should immediately open the bowels with a purgative. A small blister should then be applied to the groin, and afterwards cloths, wet with tepid solution of acetate of lead, or with warm water, to the limb. These means may prevent the swelling, or render it milder. If the disease have, already, taken place in the limbs, leeches should be applied to the most painful spots, and afterwards tepid fomentations, or gentle friction, with warm oil, anodyne balsam, or camphorated oil. The bowels should still be kept regular, but the patient is not to be purged. Opiates are useful, to allay irritation. When the acute symptoms are over, we endeavour to remove the swelling, and restore the tone of the part, by friction with camphorated spirits, and the use of the flesh brush, and a roller applied round the limb. The liberal use of solution of cream of tartar, is also, in many cases, of service. If the disease threaten to be lingering, small blisters may be applied to the groin, and different parts of the limb. If much weakness of the limb remain, the cold bath is proper, or a bath of warm sea-water, if the former disagree.

Besides these means, we must also employ remedies, for abating the fever, and constitutional affection. We never derive advantage from venesection, in this disease, when it has been established, although we may have occasion to use it, freely, for that, which sometimes precedes it. In the disease itself, it not

only is useless, but even detrimental, sinking the strength, and retarding the recovery. At first, we may use saline draughts, but these are not to be often repeated, and must not be given, so as to procure much perspiration. In a short time, they should be exchanged for quinine, sulphuric acid, and opiates, which tend to diminish the irritability. In the last stage, we give a moderate quantity of wine. When the pain shifts, like rheumatism, bark, and small doses of calomel are useful. In every stage, the bowels should be kept regular. If the uterine discharge be foetid, it is proper to inject tepid water, or infusion of camomile flowers, into the vagina. I cannot agree with those, who, in the very outset of the disease, give wine liberally, as there certainly does, at that time, exist an inflammatory tendency. The diet should be, from the first, light, and in the progress, both light and nutritious. Exposure to cold, during the first stage of recovery, may cause a relapse.

If the knee, or any other joint, become affected, leeches and small blisters are useful.

CHAP. XIX.

Of Paralysis.

SOME women, after delivery, lose, for a time, the power of the inferior extremities, although they may have had a very easy labour. This paralysis, may exist in different degrees, and in some cases, the muscles are painful. Sometimes it is attended with retention of urine. It is not accompanied with any cephalic symptoms. In general, the disease wears off in a few weeks. Friction, the shower-bath, tonics, and gentle exercise on crutches, are the means of cure. The bowels are also to be kept open.

After a severe or instrumental delivery, the woman may complain of excessive pain, about the loins and back, attended with lameness, or even palsy. This is sometimes a very tedious complaint, but usually it is at last removed. A roller firmly applied, and anodyne embrocations, relieve the pain; at a more advanced period, sea-bathing is proper.

Hemiplegia, may attack women in the puerperal state, as well as at other times. It proceeds from the same cause, and requires the same treatment as usual. If death take place, blood is found extravasated in the brain.

CHAP. XX.

Of Puerperal Mania and Phrenitis.

THE diseases to be noticed in this chapter, may be divided, 1st, into that, which is the most distinct form, of puerperal insanity. The mental aberration is the prominent symptom, and the bodily affection, is secondary, in degree. It is rarely fatal, and though it may continue for months, yet, it almost never becomes permanent. I have known it go off, in twenty-four hours. Depression of spirits, or melancholy, is a modification of this.

2d, The mind is much less affected, than the body. There is, at least, congestion of the vessels in the head.

3d, The chief seat of the disease, is in the spinal cord, or its vessels.

4th, The brain, or its coverings, are distinctly inflamed.

5th, The state of the mind, is connected with an affection of the uterus, particularly, inflammation of the veins.

All the last four, are dangerous, and usually fatal, if not arrested at the commencement.

Most women, in the puerperal state, are more excitable, and more easily affected, both in body and mind, than at other times, and some, even, become delirious. The period, at which this mental disease appears, is various, but is seldom, if ever, sooner than the third day, often, not for a fortnight, and, in some cases, not for several weeks after delivery. It usually appears rather suddenly, the patient awakening, perhaps, terrified from a slumber; or, it seems to be excited by some casual alarm. She is sometimes extremely voluble, talking incessantly, and generally about one object, supposing, for example, that her child is killed, or stolen; or, although naturally of a religious disposition, she may utter volleys of oaths, with great rapidity. In other cases, she is less talkative but is anxious to rise and go abroad. It is not, indeed, possible to describe, the different varieties of incoherence, but there is oftener a tendency to raving, than melancholy. She always recognises surrounding objects, and either answers any question put to her, or becomes more exasperated by it. She can, by dint of perseverance, or by proper management, be, for a time, interrupted in her madness, or rendered obedient. In some instances, she reasons, for a little, pretty correctly on her insane idea. The eye has a troubled appearance, the pulse, when there is much nervous irritation, or bodily exertion, is frequent, but it is not, in general, permanently so, though it is liable to accelerations; the skin is frequently, at first, hot, the

tongue white; the secretion of milk is often, but not always, diminished; and the bowels are costive, unless the patient have previously been affected with diarrhœa. The face is rather pale, and the expression is that of trepidation, combined with imbecility. There is seldom permanent headach, often, neither pain nor giddiness; but these symptoms are sometimes produced, pretty severely, by attempts to go to stool, if accompanied by tenesmus, or by efforts to void urine in strangury.

In the form, I have just described, and which by some has been called the adynamic, the mental affection is either almost coeval with the bodily disorder, or, perhaps, may be the first circumstance, which calls the attention, to the state of the patient, and there is no permanent or distinct fever.

In this form, we open the bowels with a purgative, and preserve them, afterwards, right, by suitable laxatives. We keep the surface gently moist, by means of saline julep, and, presently, allay irritation, with liberal doses of camphor. Bloodletting is generally condemned, and is hurtful, rather, than useful. It is now admitted, that hæmorrhage, not unfrequently, is an exciting cause of this disease. Blisters, have by some, for whose opinion I have much regard, been considered as useless, or detrimental; but I am confident I have seen them do good, after they had discharged freely. When they do good, they induce sleep. Opium, is a very doubtful remedy; it oftener makes the patient restless, than procures sleep, but in the wane of the disease, it does, in some cases, agree with the patient, and is then productive of great benefit. A good, although I will not say the only good form, is Battley's liquor opii. Dover's powder, is also a useful preparation, if there be not much perspiration. Solution of tartar emetic is used, in the early stage, in the Dublin Hospital. When there is much debility, quinine, and cordials in small quantity are useful. It is a good sign, when these diminish the frequency of the pulse. There is sometimes considerable difficulty in keeping the patient in bed, and making her take either food or medicine. It is, therefore, in such instances, of great advantage, to have early recourse, to the muff, which not only commands the patient, but tends to make her exercise self-control. The strength is to be supported, by mild nourishment, and, if necessary, even by cordials. In the whole course of the disease, the greatest attention must be paid to procure, and preserve, proper alvine evacuation. This is of essential importance. Often, the patient voids both urine and fæces, without telling, not from being unable to retain them, but from inattention, or perversity. The mind is not, at first, the subject of management, but in the progress of the complaint, it may, by prudent efforts, be aided in convalescence, by cheerful conversation, light

is a feeling of unusual muscular weakness, the pulse very little quicker than it ought to be. Then, rather rapidly, the symptoms become more marked, the pulse becomes very frequent, the skin hot, the face flushed, the hearing acute, the eyes suffused, and sensible to light, the eyelids heavy. There is a sense of tightness in the throat, or suffocation; the feeling of muscular weakness, is converted into a degree of paralytic debility; the head is acknowledged to be pained, but sometimes only a very indistinct, and varying account, can be got of the sensation. There is thirst, the bowels are costive, and the secretion of milk goes on. There is often no apparent mental derangement, only, the patient is generally dull or still, though sometimes irritable, but in some cases decided insanity takes place. If the disease be not attacked vigorously, the paralytic symptoms increase; the pulse becomes very slow, and, in many instances, even death might follow. I look on this disease, as dependent, on that particular state of excitement, in some part of the spinal cord, which I have described, in different parts of this work. By instant venesection, to a considerable extent, all the febrile symptoms subside, the skin becomes cooler, the flushing goes off, the pulse falls from perhaps 130, to 80 or lower, and the patient says that she can now open her eyes freely, and feels relieved from weight in her head, which she remembers to have had, although, before bleeding, she perhaps would not admit its existence. In a few cases, by free purging, and blistering the head, she is restored at once to health. But more frequently, the recovery is partial. She complains still of muscular weakness, sometimes of her head, and often of extreme acuteness of hearing, or sensibility to light, and the mind is affected, in so far, that she doubts the identity of her child, or becomes suspicious of her friends, or impressed with the idea of approaching evil, or indifferent about every thing. The appetite is generally keen. This state, by attention to the bowels, regulation of the mind, change of scene, or inducement to moderate, but renewed exertion, goes off, although sometimes not for many months.

Fourth, inflammation of the brain is a rare occurrence, for the spinal affection, which I have just described, is often mistaken for it. It may be caused, by determination of blood to the head or preternatural irritability of the sensorium, or, it may occur, in consequence of a constitutional tendency to mania. It generally appears, within the third day, after parturition, but it may also take place later. The pulse usually continues frequent, from the time of delivery. The patient does not sleep soundly, and indeed is watchful. In many cases, she early complains of pain, or throbbing within the head, or in the throat, or ears; then, of confusion, hears acutely, dislikes the light, and speaks

in a hurried manner, and often is unusually interested about some trifle. There is at first little delirium, but only a kind of confusion of thought, and when delirium is decided, it differs from that, in the first species, in not being connected chiefly with one object, but varying much. She is also often able to describe her feelings, and, in some instances, there is little pain in the head. The bodily sensations, here, are the first symptoms, whereas in mania, the mind is more apt to be affected before, or, at least, as early as, the corporeal feelings are noticed. It is more difficult to distinguish phrenitis, from the sympathetic effects, produced on the brain, by inflammation, or high excitement of the spinal cord, or its coverings. But this is the less to be regretted, as, at first, the practice, in both, is the same, namely, early and free venesection. Afterwards, the state of particular nerves, or the sensibility of one, or more, portions of the spine, to pressure, may assist the diagnosis, and direct where to apply blisters or issues. If the disease be not speedily arrested, we find, that soon, all at once, furious delirium comes on; she talks rapidly, and vociferously, the eyes move rapidly, are wild, and sparkling, and very sensible to the light. This state may continue, with little interruption, till symptoms of compression appear, or there may be a short interval of reason, but, presently, the furor returns, and alternates perhaps with sullenness. The case is, in these respects, modified according to the inflammation; for, sometimes it comes on rapidly, and to a great extent, at other times, it proceeds more slowly. The lochia are not suppressed, nor are the bowels bound, but the secretion of milk ceases. In three or four days, she becomes paralytic in one side, and then sinks into a low, comatose state; the extremities become cold, the breathing laborious, and sometimes convulsions precede death. This disease, requires the prompt, and early use of the antiphlogistic treatment, general and local blood-letting, the use of purgatives, and the application of a blister to the scalp. The inflammatory symptoms being subdued, the delirium abates, or goes off, by the use of remedies formerly pointed out.

Fifth, In some instances, the delirium is connected with the state of the uterus, particularly of its veins, which are inflamed. There is fever, accompanied with delirium, which is the prominent symptom, so, that the primary cause is overlooked, till the belly become tympanitic, and presently, after this, the patient falls into stupor. At the first, we may ascertain, that there is more or less tenderness, on pressing on the hypogastrium. I will not say, that we ought not, in any such case, to use the lancet, but, in general, we derive more advantage from leeches, applied to the lower belly, followed by poultices, and mild purges,

at the same time, that we apply a small sinapism, or blister, to the nape of the neck.

At page 381, I have noticed the feeling of sinking or sickness produced sometimes by the dilatation of the os uteri, on touching it with the finger. Dr Montgomery describes a species of delirium, which occurs at the same period, but goes off when the labour is more advanced. It does not seem to require any treatment.

CHAP. XXI.

Of Bronchocele.

SWELLING of the thyroid gland takes place, so much more frequently after parturition, than under other circumstances, that it may with propriety be noticed here. It appears within a few days after delivery, and is often attributed to exposure to cold. In other cases, the woman feels, during labour, as if something had given way about the throat. It may remain long in an indolent and stationary state, being productive either of no material inconvenience, or only of a slight difficulty of swallowing. In other instances, it augments in size, and becomes dangerous from its pressure on the neighbouring parts; or it inflames, forms a large abscess, and bursts. Enlargement of the left lobe, is more dangerous than that of the right.

Various remedies have been employed, such as burned sponge, calomel, muriate of lime, &c., but these have seldom much effect. The immediate application of leeches, followed next day by the use of cold water, to the part, repeated blisters, and long continued friction, are useful. The tincture of iodine, and friction with a mixture of iodine and lard, have been lately extolled, and the evidence in favour of the utility of the plan, is such, as certainly to demand for it, a full and a fair trial. I have more confidence in the internal, than external, use of iodine. If the tumour threaten to enlarge, which it often does, after every succeeding pregnancy, or even independent of gestation, it has been proposed to extirpate the tumour, or to tie the arteries going to it; but I have never known this to be necessary. If there be a tendency to suppuration, it ought to be encouraged, and treated on general principles.

CHAP. XXII.

Of Diarrhœa.

If the patient have been costive before delivery, large masses of fæces, may come down afterwards, producing violent pain in the belly, piles, tenesmus, or uterine hæmorrhage; or, the same cause, may excite diarrhœa with the passage of scybalæ. Both states require the use of gentle laxatives. Diarrhœa may also occur, without previous costiveness; the stools are then fœtid or bilious. In this case, the diet is to be strictly regulated; gentle laxatives are to be first given, to evacuate the offensive matter, and then opiates are to be immediately resorted to. If neglected, great weakness, uterine hæmorrhage, or other serious consequences, may be produced. When it is accompanied with bilious vomiting, and cramps or spasms, opiates are the principal remedy, and these must, if vomited, be given in the form of clysters, or suppositories. I have already noticed, that dangerous form of this disease, which depends on chronic inflammation, of the mucous coat of the bowels.

CHAP. XXIII.

Of Inflammation of the Mamma, and Excoriation of the Nipples.

THE gland of the breast, is enclosed between two layers of fascia, one going over its surface, and rising up along the nipple, another below it, between it and the pectoral muscle. These adhere intimately to the gland, and at its margins meet, and can, on the axillary side, be traced up, till they form, or are lost in, the fascia, both deep and superficial, of the axilla. There, between the two layers, as well as deeper, we find lymphatic glands. From the skin or corium, there descend numerous septa, of dense cellular substance, to be lost in, or identified with, the fascia covering the gland. These, form cells or chambers, of various sizes, filled with fat. Some of these are quite shut up, and may be as large as a walnut, others open into the neighbouring cells or compartments. These anatomical facts are of importance, in explaining the propagation of disease from the breast.

The gland, itself, varies at different ages, and under different circumstances. If we examine a breast after delivery, we find it to be a circular cake, sometimes, more than an inch thick at the centre, but becoming thinner as we approach the circum-

dependent on, injury of a nervous filament, and it is extended over a great portion, of subcutaneous substance. It rarely suppurates. This must be familiar to surgeons, and, accoucheurs may, at once, recognise, a strong resemblance to phlegmatia dolens, which seems to be a similar kind of inflammation, dependent, however, more frequently, on irritation of the trunk, or origins of the nerves, than of their extremities. It will be difficult to prove, that cases of this disease, in the puerperal state, ever arise without previous inflammation, or, at least, much irritation of some part within, or about, the abdomen; and this, on the principle alluded to, in the chapter on ephemeral and remittent fever, may cause general fever, and remote local effects, varying according to circumstances. The local disease produced, is undoubtedly inflammatory, but so modified, as, more rarely, to terminate in suppuration, than, speedily, to produce a secretion, into the cells of coagulable lymph. The state of the nerves also produces, early, a powerless condition of the limb, independent of the inability to move it from pain.

The treatment naturally divides itself, into that of the limb, and that of the constitution.

Our first object, is to check the disease, within the pelvis. For this purpose, leeches ought to be applied, in greater or less numbers, to the groin, and we should immediately open the bowels with a purgative. A small blister should then be applied to the groin, and afterwards cloths, wet with tepid solution of acetate of lead, or with warm water, to the limb. These means may prevent the swelling, or render it milder. If the disease have, already, taken place in the limbs, leeches should be applied to the most painful spots, and afterwards tepid fomentations, or gentle friction, with warm oil, anodyne balsam, or camphorated oil. The bowels should still be kept regular, but the patient is not to be purged. Opiates are useful, to allay irritation. When the acute symptoms are over, we endeavour to remove the swelling, and restore the tone of the part, by friction with camphorated spirits, and the use of the flesh brush, and a roller applied round the limb. The liberal use of solution of cream of tartar, is also, in many cases, of service. If the disease threaten to be lingering, small blisters may be applied to the groin, and different parts of the limb. If much weakness of the limb remain, the cold bath is proper, or a bath of warm sea-water, if the former disagree.

Besides these means, we must also employ remedies, for abating the fever, and constitutional affection. We never derive advantage from venesection, in this disease, when it has been established, although we may have occasion to use it, freely, for that, which sometimes precedes it. In the disease itself, it not

only is useless, but even detrimental, sinking the strength, and retarding the recovery. At first, we may use saline draughts, but these are not to be often repeated, and must not be given, so as to procure much perspiration. In a short time, they should be exchanged for quinine, sulphuric acid, and opiates, which tend to diminish the irritability. In the last stage, we give a moderate quantity of wine. When the pain shifts, like rheumatism, bark, and small doses of calomel are useful. In every stage, the bowels should be kept regular. If the uterine discharge be foetid, it is proper to inject tepid water, or infusion of camomile flowers, into the vagina. I cannot agree with those, who, in the very outset of the disease, give wine liberally, as there certainly does, at that time, exist an inflammatory tendency. The diet should be, from the first, light, and in the progress, both light and nutritious. Exposure to cold, during the first stage of recovery, may cause a relapse.

If the knee, or any other joint, become affected, leeches and small blisters are useful.

CHAP. XIX.

Of Paralysis.

SOME women, after delivery, lose, for a time, the power of the inferior extremities, although they may have had a very easy labour. This paralysis, may exist in different degrees, and in some cases, the muscles are painful. Sometimes it is attended with retention of urine. It is not accompanied with any cephalic symptoms. In general, the disease wears off in a few weeks. Friction, the shower-bath, tonics, and gentle exercise on crutches, are the means of cure. The bowels are also to be kept open.

After a severe or instrumental delivery, the woman may complain of excessive pain, about the loins and back, attended with lameness, or even palsy. This is sometimes a very tedious complaint, but usually it is at last removed. A roller firmly applied, and anodyne embrocations, relieve the pain; at a more advanced period, sea-bathing is proper.

Hemiplegia, may attack women in the puerperal state, as well as at other times. It proceeds from the same cause, and requires the same treatment as usual. If death take place, blood is found extravasated in the brain.

ed, by those acini, which have suffered. Matter presently forms, and spreads under the fascia with much destruction; and when, at last, after long suffering, the abscess gives way, much pus is discharged, with pieces of slough, chiefly, consisting of portions of fascia. Usually, there is a considerable degree of fever, attending the complaint, and the pain is often severe, especially, when the breast is extensively affected.

It is a very difficult thing, to prevent this inflammation, from ending in suppuration. It is to be attempted, however, by purgatives, and the application of a tepid poultice, of bread and milk, or cloths moistened with tepid water. Cold solution of acetate of lead, alone, or preceded by leeches, has been recommended, but I have long been obliged to abandon this practice, from the little success which attended it. If it be ever useful, it is only in slight cases, where it is adopted early, and the disease is, chiefly in the cellular substance, near the surface. If there be only a little diffused fulness, with some degree of pain, gentle friction with warm oil is useful. If the breast be distended with milk, it will be proper to have a little taken away, occasionally, provided this can be done easily, and without increasing the pain. Our object in doing so, is to diminish the tension, and prevent farther irritation, from accumulation in the vessels. The breast is also to be carefully supported, and, indeed, the patient will be easiest in bed. The internal exhibition of tartar emetic has been recommended; but I cannot, from experience, speak of its utility.

When the pain becomes throbbing, a warm bread and milk poultice, is proper, to assist the suppurating process. After the induration has abated, and matter is formed, it ought to be freely let out, by an opening of sufficient size, provided, there be no appearance, of the abscess bursting soon, of its own accord. This, is never the case, where the fascia is strong, and if we delay long, we not only protract the suffering of the patient, but add greatly to the destruction of the breast. If the puncture be followed, by a troublesome oozing of blood, from the wound, dry lint and compression must be used. In one instance, I knew the hæmorrhage prove fatal. After the abscess bursts, or is opened, there is, for some time, a discharge of purulent matter, which frequently is mixed with milk;* then, the surrounding hardness gradually abates. The poultice may be continued for several days, as it promotes the absorption of the indurated substance; but if it fret the surface, and encourage a kind of phagedenic erosion, it is to be exchanged, for mild dressings. A little fine lint, is to be applied on the aper-

* A duct has been distended, and the milk accumulated, so as to form a considerable collection, within the breast, like an abscess.

ture, but not so firmly as to confine the matter, and over this a cloth spread with spermaceti ointment: great attention is to be paid to the evacuation of the matter, and the prevention of sinuses. Fungus, at the orifice of the sinuses, requires escharotics.

In some instances, the milk soon returns, and the patient can nurse with the breast which was affected, but more frequently it does not, and the child is brought up on one breast. It may even be requisite, if the fever and pain be great, and the secretion of milk much injured, to give up nursing altogether.

It sometimes happens, if the constitution be scrofulous, the mind much harassed, or the treatment not, at first, vigilant, that a very protracted, and even fatal disease, may result. The patient has repeated, and almost daily shivering fits, followed by heat and perspiration, and accompanied with induration, or sinuses, in the breast. She loses her appetite, or is constantly sick. Suppuration slowly forms, and perhaps the abscess bursts, after which, the symptoms abate, but are soon renewed, and resist all internal and general remedies. On inspecting the breast, at some point distant from the original opening, a degree of œdema may be discovered, a never-failing sign, of the existence of deep-seated matter there, and, by pressure, fluctuation may be ascertained. This may become distinct, very rapidly, and therefore the breast should be examined, carefully, at least once a-day. Poultices bring forward the abscess, but too slowly to save the strength, and therefore, the new abscess, and every sinus, which may have already formed, or existed, must be, at one and the same time, freely and completely laid open; and, so soon, as a new part suppurates, the same operation is to be performed. If this be neglected, numerous sinuses form, slowly discharging foetid matter, and both breasts are often thus affected. There are daily shiverings, sick fits, and vomiting of bile, or absolute loathing at food, diarrhœa, and either perspiration, or a dry, scaly, or leprous state of the skin, and, sometimes, the internal glands, seem to participate in the disease, as those of the mesentery, or the uterus is affected, and matter is discharged from the vagina. The pulse is frequent, and becomes gradually feebler, till, after a protracted suffering of some months, the patient sinks. It is observable, that often in those cases, which seem to depend on a constitutional cause, and when there is great debility, the sinuses heal rapidly, after being laid open, but a new part, instantly, begins to suppurate. Internal remedies cannot be depended on here, for they cannot be retained. If they can be taken, they are those of a tonic nature that we would employ, with opiates to abate diarrhœa, and procure sleep.

The diet must be as nourishing as possible, and a liberal allow-

ance of that kind of wine, which agrees best with the stomach, must be given. Our prognosis, indeed, will be more or less favourable, according to the nourishment which can be taken. The main security, however, of the patient, rests on an early stop being, if possible, put to the disease, by opening the abscesses or sinuses freely, and before the constitution have been injured, or undermined, by repeated paroxysms of fever. If, however, the sinuses be deep or numerous, it will, in the first instance, be proper to try the effect of enlarging the most dependent aperture. It ought to be impressed on the mind of every practitioner, and every patient, that unremitting attention should be paid, early, to the state of the breast, and no deep-seated collection of matter, ever be allowed to remain unopened; for we do not know where the mischief, if permitted to continue, may end. This is urgently necessary, in proportion to the severity of the constitutional symptoms.

There are indolent cases, where sinuses form, and give little or no trouble, except by the dressing or attention they require. Timid patients will not submit to have these opened; but the cure is hastened, if that be agreed to. In the former state, it was, from the affection of the general health, and the state of the patient, imperative. In this indolent state, where the patient is in pretty good health, and walking about, it is proper, but nevertheless, more optional. Superficial sinuses should be laid open. Those which are very deep, should either have a counter opening made, or a seton introduced, but this is seldom necessary. Induration, with sinuses, yields to laying the sinuses open, and then employing gentle friction. This evil holds true, often, with regard to simple induration, occurring after an operation for cancer. In the case under consideration, I have never known bad effects, but quite the contrary, follow from free incisions, even into the substance of the breast.

Sometimes, although the abscess heal readily, and have been small, an induration remains, which either may continue long indolent, and cause apprehension respecting the consequences, or it may occasion a relapse. It is to be removed by gentle friction with camphorated spirits three times a-day, and the application, in the intervals, of cloths wet with camphorated spirits of wine, with the addition of a tenth part of acetum lythargyri, or a bread and milk, or cicuta, poultice, may be applied. In more obstinate cases, mercurial friction, or a gentle course of mercury, may be tried, but I cannot speak with any confidence of the effect. The bowels should always be kept open.

After an abscess heals, it is not uncommon, for the breast to swell a little, at night, from weakness, and the same cause renders a relapse easy. It is therefore proper, to invigorate the

system, and defend the breast, for some weeks, more carefully than usual, from cold. When a relapse takes place, especially if the patient be not nursing, the tumour is sometimes pretty deep or indolent, is for a long time hard to the feel, and gradually extends more through the breast, forming a pretty large substance, not unlike a scirrhus or scrofulous gland. But, during this time, suppuration is slowly going on, though there may be little pain. At last, a more active change takes place, the pain increases, becomes throbbing, the skin grows red, and, finally, the abscess bursts. This state, requires the application of warm poultices, and hot fomentations.

Excoriation of the nipple, is a very frequent affection, and often excites that disease, we have just been considering. The sore may be extensive, but superficial, or, it may be more circumscribed, but so deep as almost to divide the nipple. When the child sucks, the pain is severe, and sometimes a considerable quantity of blood flows from the part. In some instances, an apthous state of the child's mouth excites this affection, in others, excoriation of the nipple affects the child. A variety of remedies have been employed. Spirituous, saline, and astringent lotions, have been used, previous to delivery, with a view of rendering the parts more insensible: they have not always that effect, but they ought to be tried. When excoriation takes place, six grains of sulphate of zinc, dissolved in four ounces of rose water, form a very useful wash, which should be applied frequently. Solutions of sulphate of alumine, acetate of lead, sulphate of copper, nitrate of silver, &c., in such strength, as just to smart a little, are also occasionally of service; and it is observable, that no application continues long to do good. Frequent changes, therefore, are necessary. The nipple should always be bathed, with milk and water, or solution of borax, before applying the child. When chops take place, dressing the part with lint, spread with spermaceti ointment, is sometimes of use. A combination of white wax, with fresh butter or melted marrow, with, or without vegetable additions, form popular applications. Stimulating ointments, such as ung. hyd. nit. diluted with axunge, are sometimes of service; or the parts may be touched with burned alum, or nitrate of silver, or dusted with some mild, dry, powder.

It is often useful, to apply a tin case over the nipple, to defend it, or broad rings of lead or ivory. It is also proper, to make the child suck through a cow's teat, or an artificial nipple, that the irritation of its tongue or mouth may be avoided. This often is of great service, although, it do not always succeed; and some children cannot suck through it, but this sometimes happens, from it not being so applied, as to prevent the child drawing in air. The artificial nipple, is preferable to the cow's

teat. The assistance of a nurse, to suckle the child, through the night, is useful. But although the nipples ought to be saved as much as possible, yet, if we keep the child too long off, or permit the breast to become much distended, inflammation is apt to take place. When all these means fail, it is necessary to take off the child, as a perseverance in nursing, exhausts the strength, and may excite fever. The part then heals rapidly.

Veneral ulcerations of the nipple or areola, accompanied with swelled glands in the axilla, and a diseased state of the child's mouth, require a course of mercury.

It may be proper, before concluding this chapter, to add some remarks, on causes, disqualifying a woman from nursing. If the nipple be very flat, and cannot, by suction, be drawn out, so that the child can get hold of it, the woman cannot nurse. A glass pipe, however, frequently used, sometimes remedies this defect, or the artificial nipple can be used. A deficiency of retentive power, so that the milk runs constantly out, is another disqualification, and it is not easy to find a remedy. When the milk disagrees with the child, having some bad quality, we are also under the necessity of employing another nurse. If the mother be very delicate or be consumptive, or affected with obstinate melancholy, or have her eyes much inflamed, or the sight injured by nursing, or if the secretion be very sparing, she must give up nursing. Some delicate women, suffer so much from nursing, that chlorotic or phthisical symptoms are induced. In this case, we must take off the child. Opiates are useful, at bedtime, to procure sleep, and the bowels are to be kept open. Many women, after delivery, are subject to disorders of the alimentary canal, especially diarrhoea, and worms. These impair the health, and diminish the secretion of milk. They are to be treated with the usual remedies. Anasarca, jaundice, erysipelas, &c., may also occur in the puerperal state, and prevent nursing. The ordinary methods of cure are to be employed.

When a woman weans a child, or, from the first, does not suckle it, it is usual to give one or two doses, of some purgative salt, by way of lessening the secretion of milk. The secretion is also checked, by keeping off the child; but if the breasts be very much distended, so much must be taken away, occasionally, by suction, or milking the breast, or applying a warm glass bell, as relieves the feeling of tension or pain. If this be neglected, inflammation may be excited.

Some women feel, after lying in, a considerable weakness, or sensation of want about the belly, which is frequently increased by nursing. It is often produced, by taking off the bandage, too soon, from the abdomen, which should not be done for a month at least, and is relieved, by the application of a broad firm

band, round the belly. When there is constant aching in the back, and failure of the appetite, nursing must be abandoned.

Pain in the side, or in the abdomen, which is sometimes produced by nursing, is often relieved by friction, warm plasters, and an invigorating plan. General weakness requires tonics, which must be varied.

CHAP. XXIV.

Of Tympanites.

IN consequence of affection of the menstrual action, or after confinement, especially, if the patient be exposed to cold, the bowels become inflated, and the belly is slowly distended, without pain. This may also happen during nursing, or towards the cessation of the menses, giving rise, in either case, to an idea that the woman is pregnant. This complaint is not productive of bad health, but, occasionally, is accompanied by acidity and dyspeptic symptoms, and it is moreover very unseemly. The enlargement is always increased, about the menstrual period, if menstruation continue. It arises from a relaxation, of the muscular fibres of the intestines, and may, not only, appear as a peculiar disease itself, but, also, accompany many puerperal affections, particularly of the febrile kind, although, there be no well marked inflammation of the bowels. Nevertheless, it is, in many cases, connected with some degree of inflammation, which also lays the foundation of future ovarian disease.

It is best prevented, by keeping the bowels in a regular and active state, paying attention to the application of an abdominal binder, after confinement, and avoiding exposure to cold, and other exciting causes of disease.

After it has taken place, it is exceedingly difficult to accomplish a cure. Brisk purgatives, the regular use of aperients, so as to excite a uniform but not powerful action, carminatives, squills, turpentine, mercury, Harrowgate water, stimulating embrocations, regular compression, tonics, and sea-bathing, have all been tried, but upon none of them, can I place any great reliance. This disease is very apt to be succeeded by ovarian dropsy, or, rather, to be attendant on the early stage of that disease.

Acute tympanites, accompanied with fever, is a more formidable disease, and has been already noticed, when treating of inflammatory affection.

CHAP. XXV.

Of the signs that a Woman has been recently delivered.

WE discover that a woman has been recently delivered, by finding that the external parts are relaxed, and redder, or of a darker colour than usual. There is a sanguineous or lochial discharge, generally of a peculiar smell. The uterus is enlarged, and has neither the shape of the gravid nor unimpregnated uterus; the cervix is indistinct, and the os uteri is either nearly circular, or its lips are thick, soft, and projecting, whilst the mouth will admit two or more fingers. The abdomen is prominent, and the integuments relaxed, wrinkled, and covered with light-coloured broken streaks. A median dark streak has been described, but it is not to be depended on. The breasts are enlarged, and contain milk. It is possible for this secretion to take place, independently of pregnancy, but not with the appearances just described. The areola are puffy, more or less dark, and exhibit the character existing during gestation.

By examination per vaginam, within a fortnight or three weeks after delivery, the uterus may still be felt larger than usual, its lips softer, and capable of admitting the point of the finger without much difficulty. The milk, at this period, will not have left the breasts, which are firm, and have a dark areola round the nipple. A question here occurs, May not all these appearances take place, merely, from hydatids? I reply, that although hydatids may produce, to a certain degree, the same effects with gestation, because they generally spring from conception, yet, it is very rare, for the belly to be enlarged, so much, as in the end of pregnancy, and when the mass is expelled, as it is soft, the perinæum cannot be injured. If then it can, in a criminal case, be proved, that the woman had the belly greatly enlarged, and if afterwards, she be found with the breasts containing milk, the uterus large, and its mouth soft and open, and part of the perinæum or the fourchette torn, there can be no doubt that she has born a child. Other circumstances may also concur, in confirming the opinion of the practitioner; as, for, instance, if the patient give an absurd account, of the way in which her bulk suddenly left her, ascribing to it a perspiration, which never in a single night can carry off the great size of the abdomen, in the end of a supposed pregnancy.

Very contradictory accounts, have been given by anatomists, of the appearance and size of the uterus, when inspected at different periods, after delivery. If the woman die of hæmorrhage,

or from any cause, destroying her, soon after delivery, the uterus is found like a large flattened pouch, from nine, to twelve inches long, about seven broad, and three thick. The cavity contains coagula, or a bloody fluid, and its surface is covered, with remains of the decidua. Often, the marks of the attachment of the placenta, are very visible. This part is of a dark colour, so that the uterus is thought, by those who are not aware of the circumstance, to be gangrenous. The surface being cleaned, by scraping it, the paler substance of the womb is seen. Everywhere, it is lined with a tenacious, dark-coloured coat, formed by the remains of the deciduous vessels, mixed with coagulated blood. This, at first, aids in checking hæmorrhage. If water be injected into the veins, it runs out, freely, by large orifices, on this surface. The vessels are both large and numerous. The Fallopian tubes, round ligaments, and surface of the ovaria, are so vascular, that they have a purple colour. The spot where the ovum escaped, is more vascular, than the rest of the ovarian surface. This state of the uterine appendages, continues, until the womb have returned, to its unimpregnated state.

Three days after delivery the fundus uteri is nearly a hand's-breadth above the pubis. The parietes are about an inch thick, their substance whitish, and internal surface covered with adherent clot. The uterus is fully seven inches long, about five broad, and two thick. Its mouth, or opening, is above one long.

A week after delivery, the womb is about six inches long, and sunk into the pelvis, so, that its fundus, is scarcely higher than the brim. In a day or two more, it has lost an inch. The inner surface, is covered with a thick coat, of black bloody substance, which may be scraped off, when we find a thin layer of lymph in immediate contact with the uterus. The muscularity is distinct, and the orbicular direction, of the fibres round the orifice of the tubes, very evident. The peritoneal surface is pale pink, the substance whitish and fibrous, and the thickness variable, being sometimes not more, than in the unimpregnated state; in other cases, nearly double. The cervix is generally darker than the body, and its rugæ are distinct. The intestines have generally, though not always, assumed the same order as usual, for, the distended colon is sometimes more prominent than the rest.

At the end of a fortnight, the uterus is hid in the pelvis, is from four, to five, inches long, and about three and a quarter broad. The peritoneal coat is pale.

It is three weeks, at least, before the uterus be felt, per vaginam, to resemble its unimpregnated size, but the os uteri rarely, if ever, closes to the same degree, as in the virgin state. It is later before it have, in all respects, returned to the former state; seldom in less than two months. At six weeks the length is

about three inches, the cavity longer than natural, and the inner surface has partly a fibrinous, partly a bloody appearance. The Fallopian tube preserves its greater vascularity, for a very considerable time, I cannot say how long, after delivery; and passions of the mind, or other causes, may produce a rupture of the tube, and fatal hæmorrhage, although no new impregnation have taken place. Such rupture during lactation, is not always referrible to an extra-uterine conception.

A corpus luteum is invariably found in one of the ovaria, and can at once be detected by its prominence, colour, vascularity, and slight scar. It cannot be mistaken for anything else. It is less than at an earlier period of gestation, but still it is about half an inch long, but not so broad, nor so deep in the substance of the ovarium. Its appearance is described, p. 57. Its future removal has no concern in our examination at this period.

We know that a woman has had a recent miscarriage, by the state of the breasts, the sanguineous discharge from the vagina, the size of the uterus, and the softness and dilatation of its mouth. If she die, the womb is found enlarged, its inner surface covered, either, with the decidua and coagulated blood, or the maternal portion of the placenta. The vessels are enlarged, the tubes and ligaments very vascular; the ovarium contains a distinct and large corpus luteum. The peritoneal coat over that is very vascular, or blood is effused there, or even into the calyx.

The appearances during life, or after death, which occur from a miscarriage, may also arise from the expulsion of hydatids, for these, usually, are produced by the destruction of an ovum.

BOOK IV.
OF THE MANAGEMENT AND DISEASES OF
CHILDREN.

CHAP. I.

Of the Management of Children.

SECTION FIRST.

WHEN a child is born, the first thing to be done, is to ascertain if it breathe, or be alive. If it cry, or breathe vigorously, then, it may be safely separated from the mother.* This is done, by tying the navel-string about half an inch from the navel; another ligature is applied two inches nearer the placenta, and the cord is divided between these, with a pair of scissors. In some countries, the division is made with a sharp flint; in others, by means of fire. The necessity of applying a ligature, has been denied by different speculators; but it has sometimes been found, that when the ligature had become slack, a considerable quantity of blood was lost, and even fatal hæmorrhage has taken place.

When a child does not breathe, soon after it is born, it is not always easy to say whether it be alive, for we have, at this time, no criterion of death, except putrefaction; and, therefore, it behoves us always, unless this mark be present, to use means for preserving the child, by which some have been saved, after being laid past as dead. Children may be born, apparently dead, in consequence of the head having remained long in the pelvis, or having been squeezed, in a deformed pelvis; or owing to the cord having been compressed, either, during the process of

* Dr Denman, from observing that some children, after they had begun to breathe, had respiration checked, and died after the cord was tied, advises, that the ligature should never be applied till the pulsation cease. But when the child is vigorous and cries lustily, there is no occasion for delaying so long; nor have I ever known any bad effect result from this practice. It has been supposed, that as long as pulsation continued, the function of respiration was imperfect; but it is not so: the pulsation depends more on the continuance of the vitality or action of the placenta, than on the state of the lungs.

turning and delivering a child, or, from its having descended before the presenting part of the child, or, being so situated during labour, as to be compressed by the uterus, especially during tedious labour. Some children die, owing to the head being born, covered with the membranes, some time before the body. This is the consequence of inattention, for if the membranes be removed from the face, there is no risk of the child. In whatever mode children are stillborn, the effect is referrible, either to compression on the cord, first suspending and then destroying animation, or, to pressure on the brain, or, to a state of insensibility and feebleness, preventing the action of respiration, from taking place after birth.

Pulsation may continue, for some time, without apparent respiration, and when it stops, may, for a time, be renewed by inflating the lungs. The child all the time may be in a state of mere vegetation, never exhibiting any movement, or mark of vitality, beyond that of pulsation, and soon dies. Children born rapidly, are born sometimes in this state, and, in this case, are seldom made to breathe.

In determining on our treatment, of stillborn children, our first object ought to be, to ascertain if the circulation, be still going on in the cord.

If the pulsation have stopped, no good can accrue, from allowing the child, to remain connected to the mother. The cord is directly to be divided, and means used, as shall immediately be mentioned, for the production of respiration.

If pulsation continue regular and steadily, the child is not in danger from want of respiration, for the foetal mode of living is continuing. The cause of stillness, then, is most likely, a kind of syncope, or torpor, which prevents the action of respiration, from being established; or it may be from compressed brain. In both cases, the skin is purple, from the blood not having been arterialized, and we have no mark of distinction till respiration begin. It is very common, in the first case, for the child to be still for a minute or more; then it makes a slight sob, and breathes low, with a sound of fluid, (liquor amnii?) in the trachea; and then, of a sudden, respiration becomes perfect. In the second case, respiration, after it begins, continues long oppressed, and may perhaps stop, the child dying in a short time.

When the cord pulsates, at the time of birth, we are never to be rash in dividing it. It is of importance to keep up the foetal circulation, till the new mode of acting, can be established, and we ought not completely to divide the cord, in such cases, till pulsation stop; because, if respiration should flag, we have the placenta as an auxiliary, if the connexion still exist, and, the pulmonary action being suspended, the foetal mode will continue,

and support life, till respiration become vigorous ; for the two modes of changing the blood, are not incompatible. Pulsation will, no doubt, at length stop, either from the heart of the child stopping, or the placenta being detached from the uterus, and its function being lost ; but as long as pulsation continues, and the child does not breathe perfectly and regularly, no ligature should be applied. If, however, respiration do not begin, we are to open, with a lancet or scissors, one of the umbilical arteries, from which blood spouts in a small stream ; and, in a short time thereafter, breathing commences. If it should not, some method must be adopted for exciting animation, such as wrapping the child in warm flannel, whilst it is still in bed ; friction, especially over the thorax, with the hand, or strong spirits ; applying spirits to the nostrils with a feather ; or giving a gentle concussion to the body, as for instance, by slapping the back.

But the most effectual remedy, is inflating the lungs, by applying the mouth, directly, to the child's mouth, at the same time that the nostrils are held, and the cartilages of the larynx pressed gently back, to obstruct the œsophagus. If the head be slightly bent back, we can also readily introduce into the glottis, from the mouth, a tube which is somewhat curved, like the old catheters. It can be inserted, without much difficulty, although a quarter of an inch in diameter, but it is better to be less, and it ought to be obtuse at the point. It may be six inches long. The distance from the gum, of the lower jaw, to the front of the cervical vertebræ, is $1\frac{1}{2}$ inch ; the epiglottis, is not a quarter high, above the tongue, and the rima, is a quarter below the margin, of the arytenoid cartilage. We ought, in either case, to blow, with great gentleness, at the same time, that we press up, a little, the margin of the thorax. It is, however, chiefly, by the descent of the diaphragm, that we can get the lung expanded, but this is only partial. Such force as could raise the rib, must, assuredly, rupture the bronchii or lungs. I cannot, too strongly, enforce the necessity of gentleness. The attempt at inflation, is to be alternated, with pressure on the thorax and abdomen, to force the air out again. If, by this time, the pulsation have stopped in the cord, and the child do not recover, the cord is to be divided, for connexion with the placenta is useless, after the circulation stops. The cord is not to be tied, but only a loose ligature put round it ; then, it is to be divided, and the child removed to the fire, or its body immersed in warm water, and the artificial respiration sedulously continued. An injection is also to be administered. Could a stream of electricity be employed, there is ground for thinking, that it might be beneficial. Should the child, by these means, or after a longer time begin to breathe, a little blood will most probably issue from the cord, and the quan-

tity will increase. If this seem to assist the breathing, and make the child more active, it is to be permitted to proceed, to the extent of two or three tea-spoonfuls; but if it do not, manifestly, produce a good effect soon, it is to be stopped with a ligature, that it may not throw the child back into a state of inaction. Even when it is of service, it must be kept within bounds, otherwise dangerous debility will be the consequence.* It will be chiefly useful, when the breathing does commence freely, but is slow and oppressed, with stupor, indicating affection of the brain. By perseverance, we sometimes find that the heart beats, and the child breathes once or twice, but does not continue to do so. In these cases, it is probable that the spinal cord has been stretched or injured, or that the brain is affected. Sometimes visceral injury causes death. I have seen fatal effusion of blood from lesion of the spleen.

If the shape of the head be much altered, it has been proposed, whilst other means are employing, to attempt slowly and gently, to press it into a more natural shape, but of the good effect of this I have great doubt. In footling cases, it has been supposed, that extension of the spine was a cause of death, and this may be correct, if force be employed to extract the head.

It often is desirable to know, whether a child have been alive, and destroyed afterwards; but the signs are not without ambiguity. If the lungs be quite solid, and sink in water, the child certainly has not breathed; and although respiration, may, from the first, be prevented by the midwife, it cannot by the mother. There are, doubtless, instances, where the child has breathed, and lived some hours, and yet the lungs have sunk. But, in this case, they are not uniformly solid. Some portion has received air, whilst the rest has the ante-natal appearance.† If the head be much mis-shapen, there is additional ground for believing the child to have been stillborn, and if clothes have been made for the infant, it is to be presumed, that the mother intended to have preserved it. When, on the other hand, the child has a healthy look, when the lungs swim in water, and the air-cells contain some air, giving, when an incision is made, a frothy appearance, to the mucus, squeezed out of them, there is no doubt that the child has breathed. But we cannot from these circumstances

* It is occasionally of service, in weakly performed respiration, to give some gentle cordials or stimulants.

† Dr Joerg thinks that too rapid, as well as difficult delivery, affects the respiration of the child. If not stillborn, the intervals between the inspirations are long, the child is blue, and when he cries, the voice is weak. If death take place early, perhaps only one-tenth of the lung may be found to have received air. If, on the other hand, the child live for some weeks, the lungs are found hepatized, or inflamed, with small collections of pus. The foramen ovale is open, and the vessels of the brain gorged. Dublin Journ. v. 36.

say, that it has been intentionally deprived of life. Some corroborating facts must be necessary to fix this point, such as the birth having been concealed, and no preparation made for preserving the infant; the cord being untied, by which it has been allowed to bleed to death, which, I believe, must always happen if a ligature be not applied; or its being cut longer or shorter than would have been done by a midwife, marks of violence on the child, with the total want of all exculpatory evidence. On this subject, however, I must observe, that it is clearly established, that one or more of the bones of the cranium, may be crushed or fractured, during natural labour, and also, that even the longitudinal sinus may be lacerated.

If the child have not breathed, the lungs, though soft, contain no air. When cut into, they have rather a solid appearance, no air can be squeezed from the cut surface, which is like soft liver or spleen, and, externally, of a liver-brown colour, rather darker within. The right lung, is pretty thick, and comes forward, to the side of the pericardium. The left, is smaller and thinner, particularly at its margin, which is laid flat on the pericardium, fully an inch and a quarter of which, is exposed. If respiration have been established, they are lighter in colour, redder, and when cut, air can be squeezed from the surface, which has, also, a somewhat acinated aspect. They cause the diaphragm to descend lower, and cover, in a greater degree, the heart. Respiration expands the lungs gradually, and it has been maintained, that not only one portion of lung, becomes filled with air, before the rest, but the right lung, expands or fills with air, before the left, and that the right bronchus, is a fourth larger, than the left. The time required, for the complete expansion of the air cells, is various, and differs in individuals. Palletta says, it is at least a week, before all the air cells, of both lungs be filled. Dr Brent thinks we may determine the question by this, that the foramen ovale, if the child have not breathed, is exactly at the fossa ovalis, but it is turned to the right, as soon as it has respired.* This is rather a doubtful test. Some say that the liver becomes less in weight, immediately after birth.

If the child, have the cord soft and spongy, and the stomach contain, only, a little mucus, or bloody fluid, and a great part of the colon, contain meconium: if the body have lost its firmness,

* He says, that the duct immediately becomes contracted at the aorta, so that, instead of being cylindrical, it is conical. Then, from being universally contracted, it becomes again cylindrical, and at the end of a week is not larger than a crowquill. The foramen ovale is sometimes closed the first day, but frequently not for several days. Its position on the valve is changed, at first it is in the centre, but as soon as respiration commences, it is on the right side, and proceeds from below upward toward the left side, revolving as it were round the right edge of the valve. Such is his opinion.

and the cuticle peel off, leaving the skin below, purple or blackish, and the head be flat and flaccid, whilst the cellular texture, is infiltrated with red serum, and the viscera have a deep red colour, there is evidence, that the child has died in utero. We also often find, effusion of bloody serum, in the thorax, which is not met with, if the child have been born alive, at least, not till putrefaction have begun. When the cord is shrivelled, and its attachment, surrounded with a circle, bearing marks of inflammation, the child must have been born alive, and lived, for some time, before this inflammation could take place. We must, however, be careful, not to confound redness of the skin, exhibited after the cuticle has peeled off, for inflammation. When the child has lived for some time, the great gut is nearly free from meconium, and if he have not been starved, there may be remains of aliment, found in the stomach. If he have a full eye, be stiff, and the skin of natural colour, he has died very recently. We cannot depend on the conclusion, drawn from the skin being free, from the white spermaceti coating, it usually is covered with, at birth, for, some children have little or none of it. The umbilical arteries, the veins, the ductus arteriosus, and foramen ovale, are closed, in the order enumerated, and, generally, within ten days. On examining a child, after the cord has fallen off, and the umbilicus has healed, we find that the umbilical arteries and veins are closed or obliterated, *just* at the navel. The foramen ovale and ductus arteriosus are still pervious. The latter seems to close by the formation of a septum, and coagulation on both sides of that. This is pretty distinct on the fourth day.*

* Devergie, Tom. i. p. 520, gives the following resumé of his examinations:—

1st Day. The cord begins to shrivel, but is intimately connected to the umbilical ring by its membranes—foramen ovale and all the vessels open.

2d Day. Complete shrivelling of the cord. Foramen ovale open, except 4 times out of 22; partly shut in 3 cases. Ductus arteriosus beginning to close. Umbilical arteries obliterated to a greater or less extent. Umbilical vein and ductus venosus free.

3d Day. Cord dry. Foramen ovale sometimes shut. Ductus arteriosus sometimes obliterated; 2 in 22 cases. Umbilical arteries very often obliterated. Vein and ductus venosus open.

4th Day. Cord beginning to separate. Foramen ovale open in 17 out of 22. Ductus arteriosus partly obliterated in 7, perfectly in 3. Umbilical arteries sometimes still pervious near the iliacs. Vein and ductus venosus considerably contracted.

5th Day. Cord generally separated. Foramen ovale open in 13 out of 20. Ductus arteriosus open in one half. Umbilical arteries, vein, and ductus venosus, obliterated. Vein, however, sometimes open.

8th Day. Cord always separated, and cicatrization begun. Foramen open 5 times in 20. Ductus arteriosus completely obliterated in one half. The other vessels closed.

From ninth to eleventh day, cicatrization often complete, but frequently there is a mucous exudation till the complete obliteration of the vessels. It continues

Physicians are much divided in opinion, as to the importance to be attached, to the circumstance, of the lungs, with the heart connected, swimming or sinking in cold water.—Dr Hunter, amongst other objections, states, that the child may, when the head alone has been born, breathe, but may die before the body be delivered. M. Marc, on the other hand, contends that the thorax, being compressed within the pelvis, cannot expand, and the air can only enter the trachea, without inflating the lungs. In this, I think him so far wrong, for air may, partially, enter the lungs, but I do not believe that they can be so filled as to resemble lungs, where respiration has been established. Again, it has been stated, that although the child were born dead, yet, artificial attempts having been made, to inflate the lungs, they will swim, even, if the child have never breathed. But, in reply to this, it is urged, that, although, air may be forced into the lungs, yet, it is more partially, than in respiration, and the blood-vessels will be found empty, or with very little blood, compared to the rest of the sanguiferous system. The lung cannot be so fully inflated, by artificial, as by natural respiration, for we have not the aid of the elevation of the ribs, and descent of the diaphragm to amplify the thorax. If the diaphragm be pushed down, by the expansion of the lung, it is very probable, that so much force has been employed, as to rupture some of the cells in the lungs, which is easily done. Putrefaction, it is also argued, will make the lungs swim, although the child have never breathed. But Camper, Marc, and other excellent observers, agree that the lungs putrefy, later, in the stillborn child, than most other parts of the body, and maintain, that this process does not, even in summer, take place within the thorax, in less than six days, and in winter, in less than as many weeks. It is also a mistake to suppose, that a putrid lung, must, necessarily, be emphysematous. I have kept the lung till putrid, and found it still to sink, and no air disengaged in its substance. It is more likely to be extricated under the pleura. On the whole, I am inclined to place very considerable reliance on this test, and am happy to find that my opinion is confirmed by M. Foderé, who observes, “*La supernation du cœur, avec les poumons, est une preuve, que la respiration a été tres prononcée.*” If the lungs have been fully inflated, by respiration, they require,

till the twenty-fifth day, so that the cutaneous cicatrix does not form till later. Epidermis coming off the trunk, and to the fold of the articulations.

20th to 28th Day. Detachment of all the epidermis.

30th to 35th Day. Complete throwing off of the epidermis, except of the hands and feet, which does not take place till the 40th day.

The same volume contains a circumstantial account of the state of the *fœtus* at different periods of intra-uterine life, which may be useful in questions of jurisprudence.

when the heart has been detached, to have a weight, equal to from two to four ounces, affixed to them, to cause their fully sinking.

The sinking of the lungs, and heart, and thymus gland, taken in conjunction, with the appearance of the lung, of the stillborn child, just described, will decide that the child has not breathed. If we inflate the lungs of such a child, they instantly assume a beautiful vermilion colour, and when emptied as much as possible of air, by pressure, they still are different in colour; but the circumstance at present to be noticed is, that even if only the left lung, be allowed to remain, it will make both the heart, and thymus gland swim.

Ploucquet, from considering that the lungs, in the fœtus, contain much less blood, than after respiration, concludes, that it will be possible to determine, whether the child have respired, by comparing the weight of the lungs, with that of the rest of the body, by means of an accurate balance. The blood flowing into the lungs, by respiration, doubles their former weight. Thus, before respiration, the weight of the lungs to that of the body, is found to be as one to seventy, whilst after respiration, it is, as two to seventy. Others, as Haartmann, give a different proportion, making it as one to fifty-nine, before, and one to forty-eight, after respiration. Dr Guy found the average in males, to be as one to fifty-three; in females, as one to sixty-three. Lecieux, again, states, from a multitude of experiments, that there is no constant relation. The lungs of a full grown fœtus, before respiration, are found to weigh, nearly, eight hundred grains. The absolute, as well as the relative weight of the lungs, has also been attended to. Dr Guy found the weight to vary from 340 to 1661 grains, but the average to be 874. He, too justly, observes, that "the static lung-tests are utterly useless for all practical purposes."*

SECTION SECOND.

After the child is separated from the placenta, it is to be

* There are some very good papers on infanticide by Mr Hutcheson, in the *Med. and Phys. Journ.* No. 254, et seq. See also *La Médecine Légale* of Capuron, and a very useful view of the subject in the *Edin. Med. Journ.* Vol. xix. p. 449, and the *Leçons* of M. Orfila. One of the fullest accounts is to be found in *Med. Légale* par Devergie, Tom. i. p. 484, et seq. See also two papers on the static lung-test, by Dr Guy, in the *Edin. Med. Journ.* Vol. lvi. p. 46, and Vol. lvii. p. 1. He remarks that the weight increases with increasing respiration, but is little affected by imperfect respiration. It is less when respiration has continued more than one hour, and less than twelve, than when it has lasted less than one hour. The weight of the lung is increased on the first establishment of respiration, as the efforts cause engorgement, which passes off as it is more completely established. The weight therefore diminishes when it is continued from 1 to 12 hours, and is again increased if the child have lived more than twelve hours, and less than one day.

wrapped up in a piece of soft flannel, called a receiver, and given to the nurse. Next, the soft white substance, which generally covers the skin, is to be gently and delicately removed, by ablution with tepid water, and the use of a sponge, and sometimes of a little soap. It is not necessary to remove every part of this, nor make such attempts as will fret the skin; but, in every instance, and especially if there be reason to suspect, that the mother has had gonorrhœa, or chancre, the surface should be washed. It is also customary, with many nurses, to bathe the body, or at least the head, with spirits, a practice which can serve no useful purpose, but may be attended with mischief. The child being dried, it is usual to wrap a bit of soft rag, round the remains of the navel string, and retain this, by means of a bandage, brought round the belly. It is alleged, that this is necessary, to prevent umbilical hernia; but hernia does not take place, because the child is not bandaged, but because the umbilicus is unusually wide; and in those countries where no compress is used, hernia is not a frequent complaint. A tight bandage produces pain, difficulty of breathing, and other deleterious effects. The only purpose, to be served by a bandage, is to retain the rag, which is, for the sake of cleanliness, applied round the cord.

It was at one time, the practice to wrap the child, very tightly, round the whole body, and to stretch both the arms and legs, whilst the head was secured by tapes, passing from the cap to the body. A more easy method is now adopted, and it seems to be agreed upon, that the more simple and loose the dress is, the more comfortable will the child be. Nurses are peculiarly afraid of the head being cold, and therefore are apt to keep it too warm. In summer, one cotton cap, I believe is sufficient to preserve the heat, but in winter, an under cap may be added, but neither of these, ought to be secured by pins. Soft tapes are preferable, for this, and every other part, of a child's dress. The rest of the clothing, consists of a short shift, and a wrapper of fine flannel, which is better for a week or two, than the separate pieces of dress, employed by many, and which add to the time and trouble of shifting the child. All children cry when shifted and dressed; therefore the shorter and simpler that the process can be made, the better. Last of all, a cloth is to be applied, to receive the *fæces* or urine, and this is to be removed the moment it is soiled. By attention, a child may very early be taught, to give indication when he wishes to void urine or *fæces*, and can then be held over a pot or basin. It is proper to encourage the child, to use these at regular intervals. Children, should have their bottom and thighs, washed and wiped dry, always after soiling themselves. The whole body ought

likewise to be regularly washed, morning and evening, with a sponge and water, at first rather tepid, but soon brought to be cold, at least of the temperature that cold water has in summer. But although this be a general practice, yet, some children do not agree with it, being languid, cold, and pale, after being washed, and these ought to have the water warmed a little. Plunging the child into cold water is, in this country, for some weeks too violent a shock, but about the third month, it will be proper to do so daily.

The temperature in which children are kept, should be such, as neither to increase nor diminish, the natural heat of the surface. The child in utero, is placed in a temperature of about 96 or 98 degrees: but its power of generating heat, is probably much less than after birth. The heat of the room, and the quantity of bedclothes, should be nearly such, as would be agreeable to a healthy adult. Depressing heat, is to be avoided, on the one hand, and exposure to cold, on the other. The apartment should be well ventilated, but the infant ought not to be exposed to the open air, for nearly a month in winter, as it is apt to produce convulsions, or catarrh, with fever, or bowel complaints.

SECTION THIRD.

It is customary to give some food, before the child be applied to the breast, and very frequently medicine also, such as salt, magnesia, or manna, to purge off the meconium. The absolute necessity, of either of these practices, may perhaps be questioned, especially, if the mother be able to suckle at the usual time. A little milk and water is at all events sufficient; and with respect to laxatives, I believe that they are seldom necessary. If, however, the meconium do not come freely away, and the child have no stool, in twelve or sixteen hours, or seems to be oppressed, or troubled with pain, a little manna may be given, with much advantage; but generally the milk which is first secreted, called colostrum, is sufficiently powerful. When the bowels begin to act, and the bile is plentifully secreted, it is usual for the child, in consequence of absorption of bile, or perhaps of meconium, to have a yellow tinge, on the skin, which is called the gum. This is sometimes attended with a drowsy state. If it require any medicine at all, it is a gentle laxative.

All children are intended to be brought up on the breast, and they ought to be applied early, generally betwixt twelve and twenty-four hours after birth. Some mothers, however, cannot, and others will not, suckle* their children, but employ another

* Van Helmot, and after him, Browzet, and others, have advised, that children should not be brought up on the breast, but fed on asses' and goats' milk, or a panado, made of bread, boiled in small beer, and sweetened with honey.

nurse,* or bring the child up on the spoon. If the latter mode is to be adopted, it is necessary to determine the proper diet, and the best mode of giving it.

It is evident that the diet, which will be most suitable, for an infant, is that, which most nearly resembles the mother's milk. It is not sufficient that we merely give it milk, it must be milk similar to that of the human female. It is certain, that the lacteal secretion, of each species, is best fitted for the young, of that species; and we know that there is a great diversity, both in the flavour, and proportion, of the component parts, of different milk. Yet, in many cases, the milk of one animal, will agree with the young of a very different species. Thus, a leveret has been suckled by a cat. Milk consists of cream, curd, and whey; and the whey, the greatest portion of which is water, is the only part that becomes sour. The quantity of cream is greatest in ewe's milk, next, in that of woman, the goat, the cow; and then, the ass and the mare. The proportion of whey, is greater in the milk of mares, and women, than of the cow, or the sheep. With regard to the caseous part, it is greatest in the milk of sheep, the goat, the cow, the ass, the mare, in the order in which they stand, and it is little, in that of women. Sugar, again, is most abundant, in the milk of the mare and woman, and less so, in that of the goat, the sheep, and the cow. Women's milk, contains more cream, than cow's milk, yet, no butter can be made from it. It contains much whey, and yet it

* 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 be not too thick, and have a good taste. With regard to the quantity, we cannot judge at first, for the milk may be kept up, 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 in some time, or become bad; the quantity of curd increases. It is farther of great advantage, to attend to the moral conduct of the nurse, for those who get drunk, or are dissipated, may do the child much mischief.

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.

scarcely ever becomes sour, by exposure to air, and does not pass either to the vinous or putrefactive fermentations. Acids do not coagulate human milk.

From these remarks it follows, that if a child be not suckled, the best food will be milk, resembling that of women, and the nearest is asses'; but as this cannot always be procured, we must change that of cows, so as to diminish the proportion of curd, and increase that of sugar and cream, which is done by adding an equal quantity of water, a sixth part of fresh cream, or less, if it be rich, and a little sugar. Some, dilute the milk with water gruel, barley water, or very thin arrowroot; or a little water may be mixed with it, and so small a quantity of salt, as shall not give it a taste. It may then be sweetened with a little sugar. This is to be mixed, just as it is required, for, by standing, it acquires bad properties. It is not to be given with the spoon, but the child is to suck it, of a proper heat, out of a pot, which is made for the purpose, and which has a piece of soft cloth, tied over the perforated mouth, or artificial nipple. Panado, made with crumbs of bread, is not proper; and meat, made with unbaked flour, is still worse. In the third month, we may, besides the milk-mixture, give, occasionally, a little weak beef-tea, or a small quantity of spoon-meat, such as panado, made with the crust of fine bread, care being taken to break down the lumps completely, and a little salt which is better than sugar. This is to be mixed with milk. Arrowroot, calves'-feet jelly, &c., are also very proper; and as the child advances in life, eggs, in the form of light custard, &c., are allowable. Some have proposed a panado, made with the flour of wheat malt. By attention, a child may be taught to eat at pretty regular hours,* especially, after he is a few months old; and great care should be taken, that he do not eat too much at a time. If the child be not suckled, we ascertain that the artificial diet is agreeing with him, if he be lively, and the bowels be correct. But when it does not suit, as is too often the case, he is either dull or heavy, or cries much, and, often the bowels are either bound, or too loose; and in both states the stools are foetid, and have a bad appearance. If this condition of the bowels, cannot be corrected by medicines, the child, in all probability, shall be lost, if a nurse be not procured; convulsions, or diarrhœa, may carry him off.

When a child is brought up on the breast, there is no occasion, if the supply be abundant, to give him any other nourishment, for three or four months. After this time, however, it will be

* It is also of advantage, that when a child is brought up on the breast, he be not applied at all hours, indiscriminately; and no child should be allowed to suck, whilst the nurse is asleep, as he is apt to surfeit himself.

proper to give a little food, of the kinds mentioned above, and the proportion ought to be gradually increased, as we proceed to the time of weaning, by which, the organs of digestion, are enabled, to accommodate themselves, better to the change of diet, which then takes place. With regard to the age, at which a child should be weaned, it is not possible to give any absolute rule. In general, the longer it is delayed, if we do not go beyond a year, the better does the child thrive, provided the milk be good. When a child is nursed beyond a year, and receives little other food, or, when the milk becomes earlier altered, he is apt to be injured. At all times, delicate, should be nursed longer, than robust children; and, if possible, weaning should not be made to interfere, with the development of teeth, nor be attempted, in the prospect of, or soon after, the cure of, any debilitating disease. If the mother's health permit, children may be suckled from nine to twelve months. After the child is weaned, the diet must be carefully attended to, and should consist of plain soup, bread and milk, light pudding, arrowroot, &c. As soon as teeth, sufficient to masticate, appear, a little animal food, may be given, once a-day.

The dress of children, as they grow up, must be regulated, in some respect, by the custom of the country, and the season of the year. It ought always to be easy and warm. Mr Locke advises, that a child should wear thin shoes, and get wet feet, that he may become hardy; but experience proves, that the children of the poor, who are exposed to many privations and hardships, are not improved thereby. Cleanliness is essential to health, and the whole surface should be washed once a-day at least, and the hair daily combed, and brushed, which may prevent scald-head. The exercise should be proportioned to the age. Infants sleep much, and can take no exercise, if we except that given by their nurse; but when they are about two months old, they may be placed on the carpet, and encouraged to creep. When they are able to walk, they should be allowed to run about freely; and it will be of great advantage, where circumstances permit, that the first years of life, be spent in the country.

It is very difficult from the imperfection of tables, to ascertain the comparative mortality at different ages.

In the year, 1840, there were 3054 children *registered*; viz., 1610 males, 1444 females. There were 1600 children, under one year, buried, the females preponderating. There were 1311 from one to two years; 1120 from two to five; and 613 from five to ten. In the year 1836, there were 188 under one month; of these the males greatly preponderated; afterwards, till at least a year, it was the reverse. The greatest number of deaths,

rectum; otherwise, we might, by introducing the little finger into the anus, or into the incision, supposed previously to be made, in that region, feel the end of the bougie, and cut the part. Death does not always follow, from refraining from an operation. In the *Revue Med.* for Dec., 1823, there is an account of a man, then alive, and aged 70, who had both the anus and urethra imperforate. He voided the excrement by vomiting. Generally, the child dies about the fourth, but sometimes so late as the ninth day.

Imperforated urethra is rare, for generally the canal opens, in supposed cases of imperforation, about midway between the scrotum and glans penis. There is no occasion to do anything instantly; and even at a more advanced age, the operation of perforating the glans seldom succeeds. It is only possible that it can do so, if the urethra open near the extremity. Retention of urine, not dependent on malformation, is readily removed, by introducing a probe into the bladder. Deviations in the structure of the vagina, and hymen, have already been considered. At page 70, I have described that enlargement of the clitoris, which may make the female resemble the male. More frequently, the scrotum is cleft, so as to resemble labia, and the urethra terminates at the bottom of this smooth sulcus, whilst the penis is small and imperforated. The presence of testicles in the supposed labia, and other marks, may settle the sex. I have, however, known such boys brought up, for years, as girls.

Imperforated meatus auditorius is very rare, and can seldom be remedied, except there be, merely, a membrane stretched across the canal. Adhesion of the eyelid, is often complicated with a defect in the eyeball itself; but when this is not the case, an operation will be advisable.

I lately saw a child, where the nasal duct, surrounded by common integuments, hung down on the cheek, and slowly discharged tears from its extremity.

Children, but especially abortions, sometimes have an extremity wanting or amputated. This is well described by Dr Simpson and Dr Montgomery, the latter of whom has some fine specimens preserved. He attributes the removal to the formation of a band of fibrine acting like a ligature round the limb.

SECTION THIRD.

Sometimes the umbilicus is peculiarly large, and hernia, covered by polished integument, takes place soon after birth, but still more frequently, betwixt the second and fourth months. Two modes of treatment may be adopted. The first is compression, carefully maintained, which should be always tried. This, in some instances, produces a radical cure, the umbilical

opening contracting, which it never does in adults. The second mode is, reducing the intestine, and tying the sac, with a single, or double ligature. It has also been proposed, to open the sac, and close the umbilical aperture by pins or stitches; but this has no advantage over the double ligature. In a case of umbilical hernia, where urine was discharged by the unobliterated urachus, compression was successfully employed by Schmidt.

In some cases, a very great portion of the intestines, is found protruded at birth, into the sheath of the cord. This may be complicated with an imperfect, or transparent state, of part of the abdominal parietes; but whether it be or not, the child generally dies within forty-eight hours. The abdomen is too small, to receive back the intestine quickly; and even although it could be reduced, the child, if we may judge from experience, has no great probability of existing. In one case, Mr Hey found the tumour burst during labour.

Other species of hernia, are to be treated on general principles. The bowels are to be kept open, and violent exertion avoided. The propriety of endeavouring to retain the bowel with a bandage, must depend on our being able to do it effectually; for, if the bowel protrude, it is pinched by the pad. This produces pain and local inflammation, and not unfrequently convulsions.

SECTION FOURTH.

Spina bifida, is an imperfection of the vertebral canal, if not also of the spinal marrow. The bone is deficient, the posterior part being wanting; a tumour is formed, externally, which contains a fluid, and is covered by skin, sometimes like the rest of the integuments, but generally thinner, polished, and of a reddish or purple colour. It is seldom, at birth, larger than a small chestnut; but if the child live, it increases, perhaps to the size of the fist. It contains fluid, either pellucid or coloured, so that it is soft and fluctuating, or elastic, according to the degree of tension. The medulla, rarely goes on entire, along the sac. It terminates above it, or often is only expanded, or spread, as a lining over the sac, or dilated membranes of the cord, which are thicker, and more vascular than usual. When it does so, filaments are given off, as if from the surface of the sac, which form the great nerves of the ischiatic plexus; for, although the tumour may exist anywhere, from the neck downwards, yet, it usually is situated in the lumbar region. The tumour is formed by water in the spinal sheath, on which account, it has been called hydro-rachis. If the quantity of fluid be small, it can, without any bad consequence, by pressure, be forced from the tumour into the spine. The lower extremities may, or may not, in this mal-

formation, be paralytic, or the urine and fæces retained, or passed involuntarily; and the difference is not, always, dependent, on the integrity, or imperfection of the cord. In some instances, the sac is open, at the time of birth. This is a fatal disease, and death is generally preceded by inflammation, or sloughing of the sac, or more slowly is caused by hydrocephalus.

Two modes of treatment have been proposed, the palliative and the radical; but the last is founded on the idea, that the disease is confined to the seat of the tumour, whereas, there is a combination of more extensive effusion, with malformation of the cord. The first, consists in endeavouring, by pressure, to get the fluid to retire within the vertebral sheath, if it be not so great, as to produce compression of the parts, and then a compress or truss is applied. Or, if the tumour be larger than to permit of this, then, a hollow compress, made from a mould, taken in plaster of Paris, may be applied, at least in the first instance. This plan is only palliative, that is to say, does not remove the imperfection, but it may preserve life. Sir Astley Cooper expected much from this, when there was no ulceration on the surface of the sac. The disease, however, may be pronounced fatal. The second, exposes the patient to great danger, from constitutional irritation. It consists in repeatedly puncturing the tumour, with a needle, and drawing off the water. At last, adhesion of the sides of the sac is produced, and the opening from the spine is closed, the skin hanging shrivelled over it, or becoming puckered at the part.* Puncturing the tumour, with a lancet, and tying a ligature round the empty bag, is almost invariably fatal. The palliative plan is the best.

When the head enlarges, the sutures or fontanelles become tense and elastic, as if fluid were exterior to the brain. This is a deception, for in general, it is in the ventricles. Puncturing can therefore do no good.

SECTION FIFTH.

Marks and blemishes are very frequent, and may be placed on any part of the body. They are of two kinds: First, simple discoloured patches, generally of a red colour, and not elevated. These are not dangerous, but rarely admit of cure, for if we destroy them with caustic, the cicatrix is almost as bad as the original blemish. Second, elevated discoloured marks, which are of a purple or red colour, and very vascular. These are apt to increase, and at last bursting, great hæmorrhages may take place. They may be seated on the face, or in the lip, eyelid, &c., or on the spine, resembling spina bifida, but are more solid

* Vide case by Sir A. Cooper, in Med. Chir. Trans. Vol. ii. p. 324.

or spongy, and the bone is not deficient. These ought to be extirpated as soon as they begin in the smallest degree to increase, and even if situated on the gums, or within the mouth, however small they be, they ought to be removed. When on the palate, and extending to the velum or tonsils, the case is most hazardous. *Nævi* may also, safely, and with little trouble, be removed by ligature, a small needle being previously passed across, fairly below the base, so as to ensure the proper application of the thread. Small marks have occasionally been removed, by raising the skin with a blister, and then applying mild escharotics, or by means of caustic. But in almost every instance, extirpation is better. The application of cold, or pressure, can seldom be depended on, neither can we trust to tying the main artery of the part.

SECTION SIXTH.

Children, may especially after tedious labour, be born with a circumscribed swelling on the head. 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 treatment, or, by applying cloths dipped in brandy, the effused fluid is soon absorbed. This, which is called *hæmatocele*, is generally on the parietal bone. *Encephalocèle*, as *Naegelé* remarks, is oftenest at the posterior fontanelle or occiput.

SECTION SEVENTH.

Distortions of the feet are not uncommon. They are called *vari*, when the foot is turned inwards; *valgi*, when outwards. These, and similar deviations, are to be cured by pressure, and extension, by proper bandages adapted to the nature of the case. They must operate constantly, but gradually, and ought to be applied as early as possible. It is a bad case, indeed, which cannot thus be benefited, if not quite cured, by a good mechanic.* *Dieffenbach* proposes to keep the foot in a proper position, in a mould of plaster of Paris. At a more advanced age, the *tendo-Achilles* has been cut, and the extending apparatus immediately applied.† It is evident, however, from the description given of the state of the muscles, that the mere division of the *tendo-Achilles*, in many, and bad, cases cannot be sufficient.

In the common clubfoot in the adult, the *os calcis*, *astragalus*, and *navicularis*, are chiefly affected. The first is always more or less bent down, and very much turned forward and inward, and

* For the anatomy of the club-foot, vide *Scarpa*. For other deformations, see also *Lafond, Recherches, &c.*

† See a paper by Mr *Whipple* in the *Med. Gazette*, No. 509.

the articulation with the astragalus is altered. The cuboid and cuneiform bones are so turned, that the person rests on the outer margin of the foot. The gastrocnemius muscle is shortened and thin, and all the muscles whose tendons pass behind the inner ankle are shortened, as well as those at the inner margin, and, sometimes, the sole of the foot. In infancy the alteration of the bones and the shortening of the muscles are less.

Congenital dislocation, particularly of the hip-joint, seems to depend on malformation of the socket. Dupuytren says, he has seen twenty cases.

SECTION EIGHTH.

When the frenum linguæ is too short, or attached far forward, the child can neither suck well, nor speak distinctly. It is very rare in its occurrence. I have not seen two children, where it was really necessary, to perform any operation; for, in all the rest, the child sucked the finger, or a good nipple, very readily. The operation consists, in dividing, to a sufficient extent, the frenum, with a pair of blunt-pointed scissors. If the artery be imprudently cut, the hæmorrhage is to be checked by compression or cautery. The ranular vein is in more danger.

SECTION NINTH.

Imperfection, or malformation of the heart, is a very frequent occurrence; or the foetal structure, may continue long after birth. If the imperfection be great, the symptoms come on, almost immediately after birth; but if slight, or consisting, merely in a continuation of the foetal structure, they may not come on, till the child begin to walk, or get teeth, or even later. The child is dark-coloured, or the skin has a dirty appearance, the nails and lips are livid, the breathing is more or less difficult, and he is subject to attacks of asthma, or a kind of suffocating cough, like that in peripneumonia, or hooping-cough; and whenever this attacks an infant, I augur very ill. I have no remedy to propose. Comparative ease may be obtained, by keeping the child as quiet as possible, avoiding a loaded stomach, or costive state of the bowels. For an account of the different kinds of malformation, I refer to my brother's excellent Work on the Diseases of the Heart.

SECTION TENTH.

Children have sometimes a swelling of the breasts after birth. This is chiefly owing to secretion of a milky fluid, and much injury is often done, by attempting to squeeze it out. Gentle friction, with warm oil, is of service; but if inflammation come on, from rude treatment, a tepid poultice must be employed.

Hydrocele, generally goes off, by applying compresses dipt in solution of muriate of ammonia. A puncture is rarely necessary. Phymosis, requires astringent lotions.

Prolapsus ani, is to be cured, by keeping the bowels easy, using the cold bath, and returning the gut whenever it protrudes. The child should also be prevented from remaining long at stool. If the prolapsus prove obstinate, injecting a little decoction of oak bark may be proper.

Serous discharge from the navel, sometimes takes place, after the separation of the cord; and, in general, it will be found to arise from a small fungus, not larger than a cherry-stone. This is removed by a little powdered alum, or, if that fail, by a little red precipitate, or by a ligature.

Excoriation of the navel is different; for there is no fungus, but rather inflammation and superficial festering. It is to be removed, by opening the bowels, keeping the part very clean, and bathing it occasionally with Port wine; after which it is to be dressed with cerussa ointment. If neglected, or the bowels be not attended to, swelling, of the nature of furunculus, may take place, or the inflammation may become erysipelatous, and end in gangrene. If this be threatened, gentle laxatives, a good nurse, and mild dressings, poultices, or the application of cloths wet with weak solution of chloride of lime, if there be much smell, constitute the practice.

Sometimes, a day or two after the cord separates, or at the time of separation, hæmorrhage takes place from the navel. This may yield very readily to compression, or astringents; but, nevertheless, may also prove obstinate and fatal. The actual cautery has been proposed, or nitrate of silver, or cutting at the navel and applying a ligature at the end of the vein, which is supposed to bleed oftener than the arteries. I know, from experience, that no compress can, at all times, be depended on, except the point of the finger, and that cannot well, be steadily applied, for hours or days in succession: yet, in obstinate cases, I know no safer nor better plan, the assistant being relieved, at proper intervals, for some time, both night and day. I give this opinion, from finding other means, apparently more powerful, fail. Strong astringents, or escharotics, caustic applied so as to form an eschar, a ligature carried by means of a needle, round the umbilical aperture, and tied tightly, the twisted suture, made by crossing two needles, and working the whole navel over, tightly with thread, have all failed, and appeared, by propagating inflammation to the peritoneum, to hasten death.

It has been proposed to apply a bit of cloth, wet with solution of caoutchouc in ether, over the navel, applying the same, frequently, with a pencil, till a firm coating, or plaster were made

to cover the part. If it should be necessary to tie the vessel, the umbilical vein is exposed, by cutting directly upward from the navel, so as to divide the skin and aponeurosis, taking care not to open the peritoneum. In ascending, it inclines a little to the right. If the finger be placed in the wound, a rope may be felt, consisting of the vessel, which is rendered tense, and more distinct, by pulling the remains of the cord, or the navel. It is to be laid hold of, with forceps, and a ligature cautiously put round it. The margins of both lobes of the liver, are often so low, as a line drawn across the navel, but the top of the cleft between them is higher, so that there is from $\frac{3}{4}$ of an inch, to an inch of the vein, between the navel and its entrance into the cleft. The incision may correspond more to the left, than the right margin of the vessel. The arteries, should they bleed, are exposed, by cutting directly down from the umbilicus. They go up on each side of the ligament of the urachus. At half an inch below the navel, they are, if not in contact, not more than a quarter of an inch separate. At the brim of the pelvis there is about $\frac{3}{4}$ distance between their internal margins.

Discharges of blood, but much more frequently of mucus, or muco-purulent matter from the vagina, occur in infancy, but still oftener in childhood, and sometimes are very protracted; they are not, however, hazardous. The bowels are to be kept regular, by the administration of rhubarb and magnesia, and sometimes small doses of calomel. Tincture of steel is also useful in childhood. The cold bath should be employed. The discharge is carefully to be removed, by frequent ablution; and, if these means fail, some mild astringent solution, is to be injected frequently into the vagina.

Incontinence of urine, during the night, often depends on a bad habit, and is to be treated accordingly. It sometimes depends on a sensitive condition, of the neck of the bladder. Lallemand, recommends aromatic baths, with the addition of a glass of spirits. When it continues long, the cold bath is proper, but I have known it, in spite of every thing, remain, even in adult age.

Scalds and burns, are best cured, by applying, instantly, cloths wet with cold water or vinegar. This is the proper practice, whatever part is injured; but when the face or neck are scalded or burned, it is of the utmost importance to prevent a mark, and nothing does so, more effectually, than the instant application, for a short time, of vinegar, alone, or if it give pain, diluted. This, if the injury be slight, prevents the part from blistering, or only a slight vesication takes place. The part, should then be covered, with dry cotton wool, and, indeed, without the previous use of vinegar, it is a good application. It is to be allowed

to remain on the part, till it come off as a mask, entire or in part, unless the discharge be such as to wet it, in which case, it must be daily renewed, taking away only the wettest portions, and replacing these with dry wool. In scalds and superficial burns, on other parts, cotton is also a good application. It sometimes succeeds well, when the cutis, itself, is considerably disorganized, but it is not so certain, as in more superficial cases; still we may use it. The old remedy, of linseed oil and lime water, often, is useful, or, the parts may be covered with a cloth dipped in a liniment, composed by adding to melted lard, as much of a mixture, of equal parts of rose water and acet. lyth. as it can incorporate with, or, we dress with cerussa ointment, or anoint the spot with this, and then make it dry with cerussa or chalk. The part is to be washed, at least, once a-day, to remove any irritating matter which might fret it. A weak solution, of chloride of lime, forms a good wash.

If vesications have formed, they are to be opened with a very small puncture, to let out the fluid, and then cotton is to be laid on; or, if the liniment be used, and it give much pain, it may be diluted with oil.

In more extensive and severe burns, if the surface be nearly torrefied, it may be wet with oil of turpentine, applied with a soft brush, or dressed with ung. resinosum, mixed with a fourth part of oil of turpentine; but in all cases where the cutis is not disorganized, this would be too severe, and the best application, is cold water for a time, if it do not produce shivering or depression, or increase pain. We must be much guided in our application, by the sensation produced. Whatever permanently increases pain, or produces coldness or sickness, is pernicious; and, on the other hand, that treatment, in which the individual does find most comfort, is the best. Two patients, apparently in the same circumstances, may, therefore, by an attentive man, be treated oppositely. Sometimes, tepid water gives most relief. After a short time, the old formula of equal parts of lime water and linseed oil, is often useful. Afterwards, simple ointment thickened with chalk may be used, and in some time longer, the sore may be covered with powdered chalk, which is to be continued till it heal. It represses fungus, and forms an artificial scab. Cotton, applied after suppuration has taken place, sometimes agrees very well with the sore. In all cases, pain is to be allayed by opiates, and the bowels are to be kept open. Stupor is very apt to follow a severe burn, and if it be not relieved, by a blister to the head, and purgatives or clysters, it soon proves fatal. Inflammation of internal organs, is also apt to succeed a burn or scald. Infants are easily sunk by burns. When boiling water, tea, &c., are swallowed, severe inflammation of the parts

is produced, and the larynx or trachea may participate. Local applications can scarcely be made, and the practice is very limited. We must lessen local inflammation, and support the strength. It has also been proposed to perform bronchotomy.

Blisters, are sometimes as serious, in infancy, as scalds, and ought never to be large, nor kept long on. If the child be very weak, or irritable, there is danger of the sore becoming, first, covered with thick fibrine, then, it assumes a honeycomb appearance, and much foetid matter is discharged, or, from the first, it becomes sloughy, and either a buff or a black eschar is formed. Usually the surrounding skin is erythematic, and the sore is apt to spread along this as well as to go deep. The scalp bears blisters best.

In general, a poultice is the pleasantest application, at first, then, we dress with simple ointment, thickened with prepared chalk, or cerussa, and bathe with weak solution of chloride of lime, to destroy the smell. When there is much discharge, sometimes dressing with dry cotton, or with dry chalk is of use. Pain is to be allayed by opiates, the bowels kept regular, and above all, the strength supported by nourishment. We also give quinine and cordials.

Earach, is a very frequent, and painful disease of children. It is discovered, if the child be old enough, by his complaining of his ear; but if he be too young to do this, it may be suspected, by his being seized with a sudden and severe fit of crying, as if he had colic, and, like it, the pain seems to remit occasionally. He does not, however, spur with his feet, nor is the belly hard, but he is restless with his head, and complains if his ear be touched. In some time he falls asleep, and next day, perhaps, his cap is stained with matter. Nothing gives so much relief as heat. Warm oil, or a warm poultice, is to be early applied, or the outside of the ear is to be rubbed with warm laudanum. If a foetid discharge, succeed this disease, and the child be deaf, the ear is to be daily washed out, with milk and water, by means of a syringe. Small blisters may be applied behind the ear, or back of the head, and the constitution is to be invigorated. The bowels, in particular, are to be kept regular. Many children have occasional discharges of matter from their ears, upon catching cold, without much pain, and at that time they are deaf. But by keeping the ear warm, and by scrupulous attention to cleanliness, the discharge stops, and the hearing returns.

SECTION ELEVENTH.

The mucous secretion of the nostril, is sometimes exceedingly foetid, so that it is disagreeable to come near the child. The mucus dries, and comes away in thin pieces. Astringent injec-

tions, stimulating liniments, and a variety of local applications, as well as internal remedies, such as tonics, mercury, &c., have been tried. These have not always, however, a good effect. At the age of puberty, the foetor sometimes spontaneously ceases.

Foetid discharge from the ears, generally, is accompanied with a destruction of the membrana tympani, and a caries of the small bones. It is usually attended with deafness, and is very obstinate. Great attention is to be paid to cleanliness, and to the state of the constitution. If there be marks of internal inflammation, a leech should be applied behind the ear, or a small blister to the back of the head. The danger arises, from propagation of the disease, to the inside of the head.

SECTION TWELFTH.

Infants are subject to inflammation of the eye, which is of the kind, called purulent ophthalmia. This, begins about the end of the second, or beginning of the third, day. The eyelids seem, first, glued together, then, thick pus is discharged. The inside of the eyelids, is found to be very red, but speedily they swell so much that they cannot be easily opened. If separated, the lining is found to be highly inflamed, and the whole eye, more or less, covered by the pus. When the child cries, the eyelids are turned out. Both are generally affected. If neglected, the cornea, in about a week, becomes dim, and in a day or two, pus is formed in its substance, to a greater or less extent. Then, it bursts, and the eye, within a month, perhaps earlier, is lost. The cause is sometimes obscure, but, frequently, it is, evidently, owing to the application, during birth, of leucorrhœal matter.

The treatment consists, in washing away, perhaps every six hours, the matter with tepid water, by means either of a soft sponge, or a small syringe.* Besides this, we put, once, perhaps twice a-day, into the eye, by a soft brush, a drop, of a solution of four grains of nitrate of silver, in one ounce of distilled water. Other metallic solutions have been used, as those of sulphate of zinc or of copper, muriate of mercury, &c. The eyelashes are, also, to be anointed, every night, with precipitate ointment, or golden ointment, greatly diluted. We ought seldom to omit, the application of a small blister, to the back of the head, and should keep open, by savin ointment, a part of it, as large as a penny-piece. The bowels are to be carefully attended to. If the in-

* Dr M'Kensie, (page 363) recommends as a lotion, a solution of one grain of muriate of mercury, in eight ounces of water. Dr Kennedy introduces into the eye a solution of nitrate of silver, varying, in strength, from five grains to half a dram to the ounce of water. But he seems to trust still more to gently removing the matter, frequently, with a sponge wet with tepid water.

inflammation be high, a leech has been applied to the root of the nose; but it is better to scarify the inside of the eyelid. It is usual to give small doses, also, of calomel, if the disease be protracted; and, in that case, the vinum opii has also been used with benefit.

SECTION THIRTEENTH.

Children are sometimes affected, with spongoid disease of the eye. The pupil is first observed to be dilated, and immovable; whilst, from within, the light is reflected, as if from a brazen speculum. This symptom, however, it must be admitted, may attend non-malignant disease of the choroid coat. Presently, this reflecting substance, enlarging, comes nearer the pupil, and is seen to be vascular. It presses forward the iris, which is changed in its colour. The cornea and sclerotica inflame. The whole eyeball becomes painful, fixed, irregular on its surface, and at last some part gives way. From this a bloody looking fungus protrudes. The bones become carious. The disease either spreads to the brain, causing coma, or the patient sinks exhausted. If any thing can save the patient, it must be a very early operation; but in every instance that I have seen, even those where the eye was removed before fungus occurred, there has been a relapse.

Melanosis begins with dimness of vision, which presently is lost. The pupil becomes opaque, and the eyeball enlarges, with circumscribed protrusion of some part of the cornea or sclerotica, from which, ultimately, issues a solid fungus. This is invariably fatal, and is generally complicated with a similar disease in the abdomen or thorax. When the tumour is cut, it is found to be, in a great measure, made up of black or dark brown thick pulp, or in some places of portions like coagulated blood, or fluid like ink. The optic nerve always, perhaps, at its medullary part is black, whilst the neurilema is white.

SECTION FOURTEENTH.

Scrofula, is dependent on a peculiarity of constitution, derived at conception. This is often marked, by a very fine skin, light hair, large blue eyes, with dull sclerotica, and delicate complexion. Others have the skin darker, or of a rough dirty appearance, the hair is dark, the upper lip tumid, and the countenance sallow, and sometimes swelled. When the scrofulous constitution is not strongly marked, the person may pass through life, without any inconvenience. But when it exists in force, different parts of the body are apt, without any evident cause, to have their action deranged; their structure is changed, and then inflammation slowly takes place. The glands are most frequently affected,

but the joints or viscera may also suffer. I do not think it necessary to describe these changes, especially, as I have, elsewhere, entered pretty fully, into this subject. I shall merely state, what ought to be done, as a preventive, or as a cure. In the first view, we advise whatever can strengthen the system, and preserve the different parts, vigorous, and in health; such as the cold, or when that produces languor or chilness, the warm bath, daily, gentle friction, over the whole surface, for half an hour every evening, regular exercise in the open air, great attention to cleanliness, an open state of the bowels, and good nourishing diet, with, or without, a small proportion of wine, as circumstances may demand. Animal food is much recommended, more so, perhaps, than necessary. Seabathing is useful. When the glands are swelled, it has been proposed to rub the tumour with an ointment containing iodine; but I have seldom seen it do good. When suppuration is taking place, we ought not to be rash in applying a poultice, as it does not, materially, accelerate the process, and is apt to make the skin tender. The abscess, should be very early opened, by a very small aperture; but if the skin be already thin, and universally red, it is better to let it open itself. In the first case, however, we are apt to have a depressed regular scar; in the second, an irregular, and generally a larger, but often a flatter cicatrix. When a sore is formed, gentle stimulants are proper. The constitution is to be treated, in the way, already mentioned. Muriate of lime, or of barytes, cicuta, bark, and a great variety of medicines, have been advised, but I do not know that any one can be depended on. Iodine seems to be, in some cases, really useful, and it also improves the digestion. Other medicines are chiefly useful, to obviate existing symptoms, such as costiveness, &c.

Diseases of the joints and spine, are to be managed chiefly by issues, and such treatment as improves the health.

SECTION FIFTEENTH.

The disease called rickets, is characterized by flabby muscles, relaxed skin, sallow or bloated countenance, debility, listlessness, and softening of the bones, so, that the long bones become, more or less, curved, and their extremities apparently enlarged. The ankles and wrists swell first, then the back changes its shape, and the breast protrudes. The bones of the pelvis, approach more nearly together, the sacrum coming forward. The head is increased in size, and the belly becomes large and hard. The appetite and digestion are impaired, the bowels are bound, or fœtid stools are passed. The pulse is weak and frequent. The teeth are late of appearing, and are not good. The mind is often prematurely advanced. This disease may prove fatal, by

ending in water of the head, convulsions, or hectic fever; but it often is cured, spontaneously, or with assistance. It usually attacks betwixt the sixth month, and the second year, but it has been known to affect even the foetus in utero. It is to be treated, by a course of laxatives, to bring the bowels into a proper state, the cold bath, regular exercise, nourishing diet, general friction over the body, chalybeate medicines, and warm clothing.

CHAP. III.

Of Dentition.

THE formation of the teeth, is begun long before the foetus leave the uterus. It is carried on slowly, and is not completed till several months after birth. The parts concerned in this process, are the jaw, the gum, and the soft rudiments of the tooth itself. The jaw, at first, has only a channel running along its surface; but this, afterwards, is divided by transverse septa, into separate cells, which are the origins of the alveolar processes. In each of these is lodged a membranous bag, containing a soft pulp. The bag consists of two laminæ, both of which, especially the outer one, are vascular. This sac, adheres firmly to the gum, so that if it be pulled away from the jaw, the sac comes with it: the pulp is also vascular, and assumes nearly the size and shape, which the body of the tooth is to have, when ossification has commenced. The tooth consists of two parts, bony matter, and cortex striatus, or crystallized enamel, covering the bone. The bone is formed on the pulp, which gradually ossifies; and in the eighth or ninth month, of the foetal life, all the pulps have begun to ossify, and at birth, the shell is considerably advanced. Soon after this process begins, the inner surface of the sac, deposits a soft earthy substance, which crystallizes and forms enamel. When ossification is advanced, so far, as to form the shell of the body of the tooth, the lower part becomes contracted, so as to form the neck; and as the shell thickens, the pulp, though diminished in quantity, protrudes through the neck, forming a kind of stalk or mould for the fang. If the tooth be to have two fangs, then a septum is stretched across the cavity of the neck, and the pulp protrudes in two divisions. As ossification advances on the root, the body rises in the socket, and the sac rises with it; but in proportion as the enamel is crystallized, the sac becomes less vascular and thinner, and at last is absorbed; and when the tooth has acquired its proper height, the whole membrane is destroyed. Thus it appears, that the sac is not stretched, and

burst by distention, but is absorbed, and being fixed to the neck of the tooth, and not to the jaw, it rises with the tooth.

There are only twenty teeth, evolved in infancy, ten in each jaw, and these are not permanent. They are shed, to give place to others, more durable and more numerous, as the jaws are longer in the adult. The permanent teeth, begin to be formed, even, before birth. Like the fang of the tooth, they are set off, from the body of the temporary tooth. A small process or sac is sent off backwards. This is lodged at the back part of the socket, where a little niche is first formed, for its reception, and then a distinct socket. Hence, the temporary, and permanent teeth, are connected together, and this connexion remains for a considerable time. In the fœtus, there are, besides the temporary teeth, the rudiments of the first two permanent grinders, therefore, there are twelve sacs in each jaw. The sac of the anterior permanent grinder, sends, when the jaw lengthens, a process backwards, to form the next grinder; and it again, in course of time, sends off the third grinder.

Generally, teeth cut the gum, about the sixth or eighth month after birth. The two middle incisors, of the lower jaw first appear, and, in about a month, those of the upper jaw come through. Then, the two lateral incisors, of the lower jaw, and, next, those of the upper one, appear. About the twelfth or fourteenth month, the anterior grinders of the lower, and, soon, those of the upper jaw, cut the gum. Between the sixteenth and twentieth months, the cuspidati appear; and from that period, to the thirtieth month, the posterior grinders come through; so, that the child, when about two years and a half old, usually, has all the first set of teeth. These continue till the sixth or seventh year; and as the permanent teeth are in progress, all this time, we find, besides the twenty teeth, which are visible, twenty-eight below the gums. At this time, the first two permanent grinders, appear at the back part of the jaw, and the middle incisors of the lower jaw loosen and drop out; and, by degrees, all the milk teeth give place to others, which are larger, stronger, and better adapted to the increased size of the jaws. In this curious process, which strongly displays the wisdom of God, we are early taught the perishable nature of our frame. But it is also a pleasing reflection, that dissolution is succeeded by a state of greater perfection.

Many children cut their teeth, with great ease and regularity, but some suffer considerably. It is usual for the child, to have some irritation of the mouth, during dentition. The gums are hot and itchy, and somewhat swelled, or full, over the tooth, and the anterior edge, is not sharp as formerly, but is rounded, and the investing membrane unfolded. The secretion of saliva is in-

creased: and the stomach and bowels, sometimes are rendered irritable. Partly, from this cause producing gripes, and, partly, from pain darting through the gum, the child is seized with frequent and sudden fits of crying. The symptoms seldom continue urgent, above ten days at a time. If the child be very irritable, and the tooth advance fast, or several teeth come forward, at the same time, very unpleasant effects may be produced, such as severe bowel complaint, or fever, or spasmodic cough, or convulsions; or the skin is affected, an eruption appearing on different parts, which is a much more trifling effect, than any of the former, or the gums ulcerate, or sometimes the tongue and mouth become aphthous. The urine is often scanty, but, on the other hand, it may be too abundant; and this superabundant discharge, is productive of debility. Costiveness adds to the danger of dentition. When the first grinders, and cuspidati are cutting, and come forward quickly, there is great irritation, for there are then eight teeth making pressure on the gums. It is probable, one cause of the danger of dentition, arises from the direct effect produced, on the third branch of the fifth pair of nerves, which, arising from the base of the encephalon, not far from the origin of the eighth pair, affects that, in a powerful degree. This subject will be better understood, by the explanation given in Chap. V. of this part of the work.

In every case of troublesome dentition, we have three indications to attend to: First to allay local irritation: second, to alleviate urgent or symptomatic complaints; third, to support the strength.

The *first* is accomplished, most effectually, by dividing the gum, with a lancet, completely down to the tooth, if it be considerably advanced. Even when it is not so far advanced, as to be near the surface, the division of the gum, gives temporary relief. Gum-sticks act, somewhat in the same fugacious manner; by enabling the child to press, or rub the gum a little, he obtains a short relief. All children, instinctively thrust their fingers into the mouth, and this may be permitted; nor is there any risk of a bad habit being induced. This is as useful as the gum-stick, and safer; for a hard gum-stick is apt to be thrust into the eye, or the gum may be bruised by it. A crust of bread is often used, but part of it may break off, and choke the child. An ivory ring is safer.

Second, We allay general irritation, or fretfulness, by keeping the bowels open, and having the child out, frequently, in the cool air. The cold bath, every morning, is also useful, when it does not positively disagree, and, at night, the child, if hot, may be sponged with cold water. If this do not prove effectual, we may rub the spine and belly, with a little laudanum, which acts

as an opiate, without inducing the injurious effects on the stomach, which the internal exhibition too often causes. Fever, if high, is to be abated, by the use of the tepid bath, morning and evening; the bowels are to be kept open. If the child be plethoric and drowsy, besides giving a smart purge, either one or two leeches, ought to be applied to the forehead; and, if the determination to the head continue, the scalp should be shaved, and a small blister laid upon the occiput. Diarrhœa, if considerable and detrimental, is to be abated by those means, which will hereafter be pointed out, and, especially, if it be severe, by mild opiate clysters; at the same time that we, if the stools be very bad, give small doses of calomel or blue pill at proper intervals, to bring the bowels into a better state. The greatest number of children who die during dentition, perish in consequence of obstinate or neglected diarrhœa. Sickness, loathing at food, and ill-smelled breath, require a gentle emetic. Spasmodic and convulsive affections, require the warm bath and purgatives. It ought not to be forgotten, that as the irritation of the third branch, of the fifth pair, causes more or less excitement, of the base of the encephalon, we should, if the symptoms be acute, detract blood, and apply a blister to the back of the head, nor are we to be rash in healing that blister. Opiates are not to be given, without much circumspection. They are always hurtful, when there is much vascular excitement, but they are useful, when this is absent, and there is, at the same time, great irritation of the nervous system, or pain of the bowels. They ought, in general, to be combined either with oil of anise, or asafoetida, or with both. It is not easy to describe the different symptoms, which occur during dentition, or may be connected with it; but one general rule must be laid down, namely, to treat them, as we would do in any other circumstance, with the additional practice of cutting the gum. Delicate and slender children, suffer chiefly from bowel complaints, and spasmodic affections; stout or plethoric children, are more apt to suffer, from acute fever, with determination to the head.

Third, We support the strength, directly, by the breast milk, arrow-root, beef tea, or, if necessary, by clysters of veal soup, or calves'-feet jelly; and indirectly by restraining immoderate evacuations. If the child have been recently weaned, it is often of service to apply him again to the breast.

CHAP. IV.

Of Cutaneous Diseases.

NATURALISTS writers, unfortunately, do not agree in giving, uniformly, the same name to the same disease. I have, however, endeavoured to bestow facility, so far as I am able, the symptoms characterizing the eruptions which I describe, by whatever name they may be called,* and also to point out the mode of treatment commonly employed.

* I adopt the terms of Dr Wilson, but think his arrangement free from many objections, but because it is now best known. If any of my readers have leisure and opportunity to form a more correct division, I would suggest the practical utility of describing, as part of their improvement, an arrangement of these mixed diseases, where there is a resemblance in character to two different genera; and the nomenclature, in this case, might be similar to that of the chemist, calling the composition. For the structure of the skin, I refer to a paper by Brovart and Krieger, de Vaxisme, in the 24 vol. of *Annales des Sciences Naturelles*, 24 vol. p. 167, et seq. They divide the structure into, 1st. The derme, a dense firm vascular layer, forming the frame for all the rest. The blood vessels are fixed chiefly at its surface, especially its internal, forming there a rete or sort of erectum. 2d. The apparen nerveuse or papille, which are little mammilla, containing the nervous system, covered, like a hood, by the epidermis. 3d. The apparen chromatogene, which is fixed in all the thickness of the derme. It consists of glandular or secretory sacs, surrounded by numerous capillaries, and ending each in a spiral excretory duct, which passes between the papille, and furnishes the sweat. 4th. The appareil d'inhalation, vessels occupying the former ducts, in a reversed course. They are part of the absorbent system. 5th. Appareil blennogene composed of little reddish vascular glands, situated at the deepest part, and open in the substance of the derme. Each sends off an excretory duct to open at the surface, where the mucous fluid they secrete, is thrown out to form epidermis. The apparen chromatogene, or a vascular and glandular substance of a spongy and areolar texture, situated at the external surface of the derme. From this, ducts go off which pour out a colouring matter, which, mixing with the mucous matter, forms the epidermis or corneous substance. This is made up of imbricated scales, formed by the cromatogene, on a fine cellular bed, formed by the blennogene. The substance at first fluid, moulds itself, layer by layer, round the papille, enveloping and protecting the sudoriferous canals. The colour of the negro then depends on the scales formed by the cromatogene. It is, in its transition from the fluid to the solid form, that the secretion has been considered as a particular tissue, for the rete mucosum has no existence as a distinct substance. The free edge of the scale is coloured black or white. The pedicle and the bed into which it is fixed are always white. The epidermis then is an organised texture, and from its transparency, the parts below, when filled with blood, seem red. In the humid and squamose dartre there is a more abundant secretion of this matter, which retains its fluidity and mucous appearance, or, condensing, forms scales or crusts. The sudoriferous canals may, in certain diseases, be enlarged or eroded, or the glandular organs in the derme much indurated.

Mekel, Tom. i. p. 473, gives a particular description of the skin, though different from this, especially with regard to the rete. We have also in different parts of the body little culi-de-sacs, called sebaceous glands, which yield a peculiar excretion. These may be diseased.

SECTION FIRST.

The first eruption, which I shall mention, is well known, under the name of red gum, and is described very accurately by Dr Willan, as his first variety of strophulus, a papulous eruption. The strophulus intertinctus, or red gum, consists of a number of acuminated elevations of the skin, of a vivid red colour, not, in general, confluent, and sometimes, even, pretty distant from each other. The papulæ are surrounded with a red base. This redness, is often the most evident part of the eruption, in very young infants, and the disease then resembles measles. It covers a great part of the trunk, and keeps almost entirely off the face. In the centre of the spot, we may observe, a very minute elevation, or papula, with a clear top. There is no fever, nor has the child catarrhal symptoms. The eruption comes out irregularly, and is either more durable, more fugacious, or more partial, than the measles. On the feet, the papulæ are still more distinct. The papulæ of strophulus, are often intermixed with small red specks, not elevated above the surface. They are hard, and contain no fluid, or only a very small quantity under the cuticle, at the apex, giving it a glistening appearance; but they seldom discharge any fluid, and scarcely ever form pus. These specks appear, generally, on the face, and superior extremities, but sometimes spread, universally, over the body. On the back part of the hand, the papulæ occasionally contain a little yellow serum, but this is presently absorbed, and the cuticle is thrown off, like a slight scurf. This variety of strophulus, generally appears during the first ten weeks* of life, and is not productive of any inconvenience. It seems to be connected with the state of the stomach and bowels: and any uneasiness the child may suffer, during the continuance of the eruption, or previous to its appearance, seems referrible to this source. The particular connexion, existing betwixt the chylopoetic viscera, and the surface, I do not pretend here to explain or investigate. I hold the fact to be established, and from no circumstances more decidedly than these, viz., that, in adults, certain kinds of food do, with individuals, invariably produce an eruption on the surface; and that, in children, where all the system is much more irritable, trifling irritation of the bowels, is followed by cutaneous eruption, whilst the sudden disappearance of the eruption, on the other hand, is succeeded generally by sickness and visceral disorder. I am inclined to attribute, to a cause within the abdomen, all those eruptions, which are not produced, by the direct applica-

* Sometimes a few spots of this kind may be observed on the forehead of children, at the time of birth.

tion, of irritations to the surface.* The affection, at present under consideration, requires no particular remedies. It is sufficient to avoid the application of cold, which might suddenly repel the eruption, and filth or other irritation, which might increase it, or superinduce another affection. Should the stomach or bowels be affected, or the child be oppressed, a very gentle laxative, may be occasionally administered; or, should the bowels be too open, and the child flabby, a little tincture of myrrh, or myrrh with lime water, may be given, and, if necessary, an opiate. If the eruption be repelled, and the child thereafter be disordered, the warm bath, with a gentle laxative, will be proper.

SECTION SECOND.

The next variety, is the *strophulus albidus*, which is an eruption consisting of minute whitish specks, hard, and a little elevated; sometimes, but not always, surrounded by a very slight and narrow border of redness. No fluid is contained in the papulæ, which appear chiefly on the face, neck, and breast. This generally is met with, after the period, at which children are subject to red gum; it remains rather longer, but requires no peculiarity of treatment. Sometimes children, at a more advanced period, have this kind of eruption, on the neck, which is exposed to the sun, in warm weather. It has sometimes been mistaken for the itch.

SECTION THIRD.

The *strophulus confertus*, is a very frequent affection, during dentition, but seldom appears before that period, though it may occur after it. It consists of papulæ, often set extremely close together, forming patches, varying from the size of a sixpence to a dollar. Such, at least, is the appearance on the face and arms, to which parts it is often confined, especially to the former. But it sometimes appears on the trunk, and there the papulæ are larger, flatter, and surrounded with more inflammation, than those on the face or arms, looking at a distance like measles. This eruption not only varies a little, according as it appears on the trunk or extremities, but also according to the age of the child. For after the seventh month, we find, especially on the arms, the papulæ pretty large; and either red, with scarcely any appearance of lymph at the top, or of a light yellow colour, but the base surrounded with a halo or inflamed rim. These

* Dr Underwood is inclined to think, that when children are subject to repeated eruptions, the milk does not agree with the stomach, and ought to be changed. I am very much disposed to adopt his opinion.—See also Turner on the Diseases of the Skin, p. 69.

papulæ may, on some parts, be distinct from each other, whilst elsewhere they form clusters so close, that the redness surrounding one, communicates with that of another, forming altogether a large inflamed ground-work. In some cases, the red patch is the prominent feature; it may be as large as a dollar, with innumerable little dots within it, like pin heads, with clear or watery-looking tops, or larger red hard papulæ. This eruption is sometimes preceded by sickness, and, in certain circumstances, has been mistaken for measles; but it is attended with little or no fever, and has none of the catarrhal symptoms met with in measles. By not attending to the characters of the two diseases, they may be confounded; and not unfrequently, when young children take measles, the *strophulus confertus* appears on the arms, previous to the proper eruption, or even along with it. Dr Underwood says, this eruption does not dry off like measles; but as Dr Willan remarks, it often does terminate, with a slight exfoliation of the cuticle. A variety of this disease, appears like red patches, on different parts of the body, particularly on the arm, and often coming out in succession. They are as large as a split pea, and a very little raised toward the centre. By near examination, several small papulæ may be discovered, which are something like vesicular points. In three or four days, the patches become yellowish or brown, and covered with small scurf. This is denominated by Dr Willan, *strophulus volaticus*, and is said not to be very common, but I think it is frequently met with. It is seldom necessary to give any medicine for this complaint. If, however, it be troublesome, it is usual to prescribe gentle laxatives, and testaceous powders. Some, advise emetics, and the use of the bark; but neither, I believe, are in general necessary.

SECTION FOURTH.

Strophulus candidus, consists of papulæ, having a smooth, shining surface, which appears of a paler colour, than the rest of the skin, and the base is not surrounded by any inflammation. It is described by Dr Underwood, as resembling itch, but is neither red nor itchy. It generally either attends dentition, or succeeds some acute disease of children, and is considered as rather a favourable symptom. It is most frequently met with, on the trunk of the body, the arms, or forehead. In a few days the papulæ die away. No particular treatment is necessary.

SECTION FIFTH.

A different eruption, from any of the foregoing, is the lichen, a term, restricted by Dr Willan, in his elaborate work, to a papulous eruption, chiefly affecting adults. It may, however,

appear also in children; and I have seen it succeed some of their febrile diseases, as for instance, measles. It consists of numerous distinct papulæ, some of which, are pale at the top, but very slightly red at the base; these are generally small like pin heads. Others, are larger and flatter, and more inflamed, but have always, at first, a clear apex, and do not end in ulceration, but die away in slight scurf. Sometimes on the body, there are small shining or silvery-looking patches, from exfoliation of the cuticle; or the skin may peel off more extensively, as if it had been blistered. They often resemble the papulæ of strophulus, but seldom form in clusters, and have not, in general, any diffused redness connecting one papula to another. There is, however, sometimes about the joints or forearm, a considerable degree of red efflorescence, covered with scurf. This eruption may be produced by exposure to heat, and by drinking cold water when heated, and other less obvious causes. It is frequent in warm weather, and a species of this, is known under the name of prickly heat. It is preceded, often by febrile symptoms, and the eruption itself, may last for more than a fortnight, but in a few cases it goes off in a day or two. These papulæ, at different stages, bear a resemblance to two very dissimilar diseases, the itch and the measles; but it is not pustular like the itch, neither does it ulcerate; it is not very itchy, and if scratched, so as to take off the top, it does not yield matter, but a little bloody scab is formed. It differs from the measles, in being papulous, and having on the spots, before they form slight scurf, a clear-looking top; it in general lasts longer than the measles, and is not attended with catarrh. Further, it is sometimes accompanied, with a broad scurfy efflorescence, about the elbow joint, or other flexures. A suitable dose of calomel is the best remedy, or should the patient be oppressed, an emetic and saline mixture may be given. When there is no febrile affection, it will be sufficient to keep the surface clean, by means of the tepid bath. A variety of this, named lichen urticatus, by Dr Bateman, resembles the bites of bugs, and appears in irregular wheals, which are very itchy. This ends in small elevated papulæ, and the whole body may be successively covered with these papulæ. The itching is intolerable at night. It seems to be relieved by small doses of sulphur, and, if the child be weak, by tonics and chalybeates. No external application is useful, if we, perhaps, except tepid oil.

SECTION SIXTH.

Intertrigo, is a kind of erythematic affection, of those parts of the body where the skin, forms folds or sinuosities, as, for instance, the joints of fat children. It also is very common, about

the nates, and inside of the thighs, in consequence of the urine fretting these parts. The inflamed surface, ought to be washed, occasionally, with tepid milk and water, and the child should never be allowed to remain wet, but ought to be bathed, and gently dried, after making water, when the thighs are affected. Afterwards, the parts are to be dusted with some cool powder, such as tutty, white lead, levigated flowers of zinc, &c. It is not usual for intertrigo to end in gangrene or suppuration, but sometimes the form of the disease changes, and the cellular substance inflames; either of these terminations may then take place, and will require the usual treatment.

SECTION SEVENTH.

During dentition, or in consequence of affections of the bowels, different anomalous eruptions may appear, which are not distinctly referrible to any well defined species. Sometimes, we find upon the arm, one, two, or three inflamed portions of the skin, something like small-pox, but rather larger, with a small acuminate speck of lymph, beneath the cuticle at the apex, or sometimes the top is flattened and shrivelled. Occasionally, a greater number of pustules appear on the body, pretty large, hard, and inflamed round the base, with a white top. This kind of eruption is not attended with fever, and is neither painful nor itchy; it goes off in a few days without any medicine.

Infants who are supplied with deficient nourishment, or bad milk, are subject to troublesome and successive crops of ecthymata, or inflamed pustules, which slowly suppurate, burst, and form brown scabs, which presently fall off. They affect every part of the body, and sometimes are combined with one or two pustules, so large and hard, that they may be called boils. The colour is dependent on the constitution, the exhausted, having the pustules lurid or purple; the stronger, having them of a more arterial colour. This eruption, named ecthymata infantile, requires a more nutritive diet, or a new nurse, with all the usual means, for invigorating the system, amongst which, I particularly mention, attention to the bowels, and removal to the country. If necessary, the pustules may be defended, with a little mild salve. Young people, after much exertion, or from gross feeding, are sometimes affected with an eruption of similar pustules. Laxatives, with vegetable tonics, cure this. Ripe fruits, particularly gooseberries, are proper.

Another kind of eruption, attacks children above two years of age, suddenly covering, the greater part of the body. It consists of red elevated spots, at first sight, something like a kind of pock. The spots are distinct, and most numerous on the thighs and legs. They are of a dark red colour, pretty flat, with a smooth

flatted vesicular-looking top, which does not burst, nor discharge matter, but gradually dries and desquamates. The eruption is scarcely painful or itchy, and is not attended with fever. It may continue for four or five weeks, and is sometimes combined with lichen, or other cutaneous diseases. The bowels should be kept open, and some, advise antimonial wine to be given, with a little tincture of cantharides, but the utility of the last is doubtful.

There is a small and very itchy pustule, which begins with a black spot on the skin, and contains a sebaceous fluid, which can be squeezed out, in a worm-like shape; such pustules are not uncommon in youth, and have been called crinones. They are cured by applying ung. hyd. nit. and washing with almond emulsion, containing a little muriate of mercury, or with soap and water.

Boils, have been divided into the furunculus, or acute boil, and the phyma, which is more tedious. They are hard, usually flat, with an extended base, and of a purple colour. They are sometimes solitary, and very large, but occasionally they are scattered, in considerable numbers, over the body. They generally proceed from a bad state of health, and, in place of requiring, as some suppose, an abstemious diet, they demand more nourishment, but it must be easily digested, and the bowels should be attended to. A bread and milk poultice, is to be applied to the boil, until the top open, which it does by a kind of sloughing. Scarcely any matter comes out, but a kind of ash-coloured, or yellow core, is gradually thrown out, after which the part heals. Resinous ointment, is the best application, during this process. Those large indolent boils, or small abscesses, which succeed small-pox, or other debilitating diseases, require hot poultices, and then, when they burst, or are opened, and the pus they contain evacuated, stimulating dressings, with moderate pressure, are proper. Good diet, and even wine, may be required.

SECTION EIGHTH.

Authors describe some other eruptive diseases, which may be noticed here with propriety: one of these, called pompholyx, consists of a number of vesications of different sizes, appearing on the belly, ribs, and thighs, and containing a sharp lymph; they may appear during teething, or in bowel complaints, and continue for several days. These vesications are not uncommon in very warm weather; and I think boys are most subject to them, especially about the ankles, if they do not wear stockings. Lory, considers this disease, as a kind of erysipelatous affection, produced by the heat of the sun. It requires no medicine, but the lymph ought to be let out, by a small puncture.

A similar appearance, generally attended with fever, and some-

times with aphthæ, is more serious. The vesicles, at first small, presently, become pretty large and oval, and their contents turbid. They appear soon after birth, generally in emaciated infants, affect both the trunk and extremities, are surrounded with a livid inflamed halo, and, when broken, are succeeded by spreading ulceration. Notwithstanding bark and cordials, the fever and irritation generally prove fatal, in about a week; and only those children are saved, who are previously possessed of a tolerable degree of strength. This may be mistaken for syphilis. Some, have considered it as pompholyx, under a different modification; others, as a distinct disease, under the name of pemphigus.

SECTION NINTH.

Senertus describes, under the name of sudamina, an eruption like millet seed, fretting the skin, and affecting children about the neck, arms, &c. Plenck defines it in the following terms: *Sunt vesiculæ, granis milii magnitudine et similes, subito, absque febre, erumpentes.* The child should be bathed occasionally in tepid water. This eruption often takes place in hot weather. A similar eruption, attended with fever, is also met with, which I find very well described by Dr Willan, in his reports on the disease of London, under the name of acute miliaris. It does not affect infants, but children old enough to take active amusement. It begins with a febrile attack, attended with headach and pain in the back. The tongue is of a dark red colour at the edges, with the papillæ prominent, as in scarlatina: the rest of the tongue is covered with white fur. The pulse is small and frequent. Presently, the patient complains of heat and pricking at the surface, is sick at stomach, and perspires freely through the night. At a period, varying from the third to the sixth day of the fever, an eruption appears, of small pustules like millet seeds. These are of a red colour, but contain at the top, a white lymph, and are either diffused over the body, or collected in patches on different parts, especially the back and breast; they may alternately appear and disappear, and though the same pustule does not continue long, it may be speedily replaced. They may sometimes be combined with small red efflorescences, and generally vesicles appear, on the tongue and fauces, ending in aphthous ulceration. The complaint often terminates in about ten days, but it may be prolonged even to twenty. It is frequently the consequence of being overheated, or drinking cold water in that state. It requires, first of all, an emetic, and then a purgative. During the course of the disease, the patient should be kept moderately cool, and use acidulated drinks freely.

SECTION TENTH.

Itchy eruptions, are frequently met with on children, but these are not always the true itch, nor the consequence of infection. The prurigo mitis, described and delineated very accurately by Dr Willan, is a disease often met with in spring. It appears without any previous indisposition, and consists of soft, smooth, elevations of the skin, or papulæ, differing in colour, very little from the surrounding integuments. When they do become red, it is in consequence of friction. If the top be rubbed off, a clear lymph oozes out, which forms a thin scab, of a dark, or almost black colour. The eruption is itchy, especially on going to bed, and, if scratched, it may become pustular and contagious, which it is not in its early stage. At first, it may be removed, by washing frequently with tepid water, and a little soap, or lemon juice; but, if neglected, it requires the application of sulphur, especially in the form of bath.

A variety of this disease, consists of minute red acuminate papulæ, with a very small vesicle at the top, terminating not in suppuration, but yielding, when scratched, only a little clear serum. Sulphureous preparations give relief, and time, with attention to cleanliness, confirms the cure. Sometimes, very little itching attends this eruption, and it disappears by using the tepid bath.

SECTION ELEVENTH.

The scabies,* or true itch, is contagious, and consists of small pustules, which have a hard hot base, with a watery-looking top. They are attended with an intolerable desire to scratch: in consequence of which, the tops are rubbed off the pustules, and scabs come to be formed, partly by blood, and partly by a kind of matter, furnished by the little ulcers. But if the pustules be not disturbed, but removed by proper applications, they end in a slight desquamation of the cuticle, "*quæ vix furfur aliquod ostendat.*" The itch first appears betwixt the fingers, on the wrists and hams, but, if neglected, it may spread over the whole trunk and extremities, and, in consequence of the continual irritation, impairs the health, nay, some children die in consequence of it. In neglected cases, the inflammation surrounding one pustule, spreads to another, and the part becomes universally red, with pustules or scabs, according to circumstances, scattered over it. This is often the case, on the back of the hand, and

* Children, in consequence of handling mangy dogs or kittens, are sometimes affected with an obstinate itchy eruption, which is not scabies, but may be cured by the remedies used for the itch.

forepart of the feet. Sometimes small boils, and phymata, appear in the course of the disease, on the thighs or body, or about the face. The itch has not always the same appearance, being, in some cases, more vesicular, or more pustular, than in others. Four different varieties have, accordingly, been admitted by Dr Willan:—1st, The scabies papuliformis, where the eruption looks like papulæ, but really consists of small pointed vesicles, which are very itchy; when these break, they are succeeded by scabs. This variety is apt to be confounded with lichen, or prurigo, when there has been much scratching, but these are more distinctly papular. 2d, The scabies lymphatica, or eruption of vesicles of considerable size, without inflamed base, but extremely itchy. These may heal by scabbing, but often suppurate, and form small ulcerated blotches, and, in the same part, we have all the intermediate steps, from vesicle to small open ulcer. The disease, with which this, is most apt to be confounded, is eczema. 3d, Scabies purulenta, or eruption of distinct prominent pustules, about the size of a split pea, filled with yellow matter, and having a slightly inflamed base. These ulcerate in a day or two, and become then more painful. They are not unlike small-pox, but are very itchy. The scabs are thin and hard, of a yellow colour, or inclining to brown. They are surrounded by a diffused redness of the skin, which often has a puckered appearance, as if drawn towards the scab. These pustules, are most frequently situated, between the thumb and forefinger, or about the wrist. 4th, Scabies cachectica, combines the character of the former varieties, which it exhibits, at the same time, in different portions of the skin. It originates in cachectic children, without infection.

The cure may generally be accomplished, by frequent ablution, and rubbing the parts affected with sulphur-vivum ointment,* which, in obstinate cases, may be rendered more effectual, by the addition of powdered hellebore, or sulphate of zinc, or sal-ammoniac. Rosenstein says, that the hands are very soon cleared, by washing them with a strong decoction of juniper-berries; and, that, when the eruption is great, as for instance, on the feet, he has applied cabbage leaves with advantage. They cause, at first, a great discharge, but the parts heal afterwards. Sulphureous baths are also useful.

Sometimes, the friction excites an eruption, different from itch, and kept up by the remedies intended to cure it. M. Bardin remarks respecting this, that it consists of small round pus-

* Dr Joseph Clarke considers it as dangerous to use sulphur ointment with infants, lest the eruption be suddenly repelled: and advises rather to boil a piece of stick brimstone in water, in order to make a bath.

tules, "qui se remplissent, quelquefois, de serosité, et dont la cicatrice laisse, le plus souvent, une tache d'un rouge brun; le prurit qu'elle occasionne, est aussi moins fort, que celui de la gale." In inveterate cases, the use of Harrowgate water is of great benefit, or a sulphur vapour bath has been used. In order to avoid the smell of sulphur, other applications* have been employed, such as sulphuric acid, or nitrous acid, combined with hog's lard, ointment of nitrated mercury, camphorated ointment, hellebore, or corrosive sublimate, mixed with hog's lard, &c. These often fail, and even when they do remove the eruption, the cure is said frequently not to be permanent. Ointment containing white precipitate, is sometimes useful, particularly, in the pustular variety. Itch may be combined with other diseases, such as herpes, syphilis, &c., in which cases, it is more obstinate than usual, and may sometimes require the use of mercury.

SECTION TWELFTH.

Herpes, is a vesicular disease of short duration. It consists of irregular clusters of small vesicles, which arise in close approximation to each other, from an inflamed surface, and the inflammation surrounds also the base of the cluster, to a small breadth. The vesicles, which appear rapidly, contain a pellucid fluid, that presently becomes turbid, oozes gently from the opening or declining vesicle, and forms a yellowish, or brownish scab on the part. In some instances, however, the vesicle ends in ulceration, and the discharge is copious and thin. If the scab be prematurely forced off, the surface below is found raw and glossy. In slight cases, the sensation is that of heat or itching, but, when more extensive or severe, the neighbouring parts are pained, and the eruption itself is preceded by some degree of fever.

A great number of affections, have been comprehended under this name, many of them of very opposite characters, and even our most correct nosologists, who have excluded those which are not vesicular, have admitted, as species, mere varieties of the complaint. The first species, for example, of Alibert, is the herpes furfuraceus, or dartre furfuracée, which is a scaly, and not a vesicular disease, and his other species are also very doubtful in their nature. The subdivisions, again, of Willan and Bate-man, are often founded on mere situation, or arrangement of vesicles. The herpes phlyctænodes, the first species of Willan, and the sixth of Alibert, is, perhaps, the only one to be admitted,

* M. Becu advises the following lotion: Take of tobacco leaves two pounds, sal-ammoniac one ounce, ammonia two ounces, water three Paris pints. Infuse for two hours. The use of this requires caution.

all the rest being varieties. This, when well marked, is preceded by slight febrile irritation, for about three days. Then, irregular clusters of vesicles appear, which become opaque in the course of a day. By the fourth day, the surrounding inflammation becomes less, and the areola fades, whilst the vesicles themselves begin to scab, and continue in this state, till the end of the week, or sometimes a day or two longer, when the scabs fall, and leave the surface below red. The size of the vesicles varies. When small, they are called miliary, and, in this case, the clusters often spread over a considerable part of the body: and, as they do not appear, all at the same time, the disease may last altogether a fortnight. When the vesicles are larger, their clusters are not in general numerous, and sometimes are solitary. Within a day or two, after the appearance of the vesicles, the slight general indisposition goes off.

A slight degree of this complaint, is common about the lips, or chin, or side of the nose, and is called by Dr Willan, herpes labialis. It is not, in general, attended with indisposition, but popularly, is attributed to cold, which is then said to strike out. In some cases, however, there is a degree of fever, and successive crops come out, round the mouth, accompanied with swelling, hardness, and sensation of heat in the lips.* In such cases, the fauces may be affected with a similar vesication.

Another variety, has vesicles, arranged in the form of a ring, the central portion being only very slightly inflamed. As the vesicles break and scab, and the scabs fall off, this central portion throws off the cuticle, in form of fine exfoliations, like bran. The size of the ring, also often increases, by the successive formation of concentric circles of vesicles. Successive circles of this kind, appear on different parts, particularly on the face, and upper extremities, so that the disorder is prolonged for, perhaps, three weeks. This is most frequently met with in children who are also subject to the last variety, the herpes labialis. It forms one kind of ring-worm, of which there are different varieties. It is named by Dr Willan, herpes circinatus, and is supposed to be infectious; but I believe that every variety of herpes may be inoculated. The herpes circinatus of Alibert is a furfuraceous disease.

Another variety, also met with in youth, but not often in infancy, is popularly named the shingles, or by Dr Willan, herpes zoster, and by Alibert, herpes zonæformis. It is preceded, for two or three days, by febrile symptoms, accompanied with shoot-

* Under this name Alibert describes an eruption, to which young girls, near puberty, are subject, and which he makes a variety of his pustular herpes. At a little distance it looks like measles, but is smaller and pustular.

ing pain about the stomach, or lower part of the chest, and smarting sensation in the skin. This sensation is perceived chiefly about the trunk, and is soon attended with an eruption of irregular patches, of a red colour, a little distant from each other, and on which small vesicles soon arise. These run the usual course of herpes. Successive clusters appear, so disposed, as ultimately to encircle nearly the part where they are situated, travelling, for instance, like a zone round the waist, but seldom completing the circle. Alibert has selected, as a specimen of this, in his superb plates, the disease passing round the thigh. I do not consider it as necessary here to describe any other varieties.*

With regard to the causes of herpes, we are much in the dark. It sometimes appears to follow exposure to cold, or to be consequent to violent exertion; but, perhaps, it most frequently is connected, with some particular condition, of the abdominal viscera.

The treatment of this disease is very simple, consisting in the administration of gentle purgatives, restricting the patient from indigestible diet, and from the use of stimulants. Nothing can, with much advantage, at first be applied to the vesicles, unless it be with a view to prevent their abrasion. If any thing more active be employed, it should only be some weak astringent wash, such as solution of sulphate of zinc in rose water. When crusts are formed, the application of a little unguent. hyd. nit. appears to accelerate their fall, to heal sooner the surface below, and to abate heat and itching. When there is much glutinous discharge, either this, or some other milder ointment is useful, to prevent the linen from adhering to the part. The application of nitrate of silver has been useful, or weak sulphureous baths.

* There are two diseases which are apt to affect females, even when young, but which I have never seen in infancy. They are of the mixed character, and cannot strictly be included here. The herpes orbicularis of Alibert appears often on the cheek, as a very superficial excoriation, ending in broad, thin scabs or scales. The part is red, and a little itchy, and the scabs are generally thickest at the circumference. It is a very obstinate disease, and lasts for years. The herpes crustaceus of Alibert appears like a crust of dried honey on an erysipelatous ground. It arises from a raw surface, with thickened margins of a purple colour. There is often swelling, and induration of the neighbouring cellular matter, and the crust itself is elevated. On the cheek it forms a thick, yellowish crust; on the wing of the nose it is still thicker, so that this has been called stalactiform herpes. These diseases are often connected with a scrofulous habit, and after remaining long stationary, sometimes end in corroding ulceration, caries, and fatal exhaustion, or hectic. Mercury may do no harm, but never does good, except in a few cases, where very small doses of muriate of mercury have altered the habit. Sarsaparilla, with arsenic, is more useful, and aperient waters, containing sulphur, are also employed. Iodine may be given. Hemlock has not maintained its reputation. Only mild local applications should be prescribed.

SECTION THIRTEENTH.

Impetigo, is a term differently applied by writers, and, hence, uncertain in its meaning. Some, confine it to a pustular, and others, extend it to a vesicular, or herpetic eruption. It appears in clusters of small pustules, which are rather flat, filled with yellow matter, somewhat irregular in their shape, and inflamed at their margin. These are set pretty close to each other, and the whole group, seems a very little higher, than the surrounding skin. They are itchy, and pungent, and soon break, discharging much ichor. The surface has a raw, glossy appearance. Then, the part becomes covered with scabs, of a greenish yellow colour, and after some weeks, the surface below healing, they fall off, and discover it to be red and scabrous, and easily fretted, so that the discharge and scabbing may be again renewed. The healing process, generally begins in the centre of the patch, and occasionally, as it heals, concentric and enlarging circles of pustules, successively appear as in ring-worm, and this variety has been called impetiginous ring-worm. The pustules are often mixed with distinct vesicles, filled with transparent fluid, which presently becomes dark, or even bloody, and then crusts form, which are rough, of a yellow colour, inclining to brown. There is a good deal of surrounding redness, and radiation of the skin. The vesicles are generally, in this case, the chief portion of the eruption, and are more distant, or scattered, than the pustules. This variety, is oftenest met with, on the hand, and about the knuckles and fingers. This bears a resemblance to the scabies purulenta, but the pustules are smaller, and more clustered, and it is not infectious: the discharge is greater, and the skin rougher and redder. This variety is more frequent with children, whilst they are seldom affected with the other kinds. It has been divided into the impetigo figurata, and sparsa; the former, however, differing only from the latter, in the pustules being clustered, whereas, in the sparsa, they are scattered distantly, and especially over the inferior extremities. Other varieties have been enumerated, but do not fall to be noticed here, as they rarely occur in childhood, such as the erysipelatous, beginning like rose, and then in place of blisters forming, an eruption of psudaceous pustules appears; the scabida, where the whole limb becomes cased in a crust; the rodens, which is a malignant and spreading sore. The best internal remedy is sulphur: if that fail, mild diaphoretics and sarsaparilla may be given. Topical stimulants do harm; mild applications, such as sulphur ointment, or cerussa ointment, are better. In very irritable cases, ablution with tepid water, or very weak solution of acetate of lead, or sulphate of zinc, and smearing the parts with cream, or fresh oil, is more

useful. In the scabby state, sulphureous waters, as a lotion, and also taken internally, are useful. When cured, the cold bath prevents a relapse.

SECTION FOURTEENTH.

Children are sometimes affected with ichthyosis, a disease, in which, the skin becomes dry, and covered with scales, resembling in their distribution, and sometimes in their appearance, those of a fish. The disease may come on at any period of life; it may even be connate, but this is very rare. It is proper to employ the warm bath, and during its use, to pick off the scales. Their regeneration, is to be prevented, by gentle friction, and repeated bathing. Sarsaparilla, and mild laxatives, are the internal remedies. Sometimes children have this disease conjoined with boils.

SECTION FIFTEENTH.

Lepa (from the Greek word signifying rough), is a very common disease amongst children, and is vulgarly known, under the name of scurvy spots; others, commonly, call it ring-worm, herpes farinosus, or dartre furfuracée. It is distinguished from other scaly eruptions, by the nearly circular shape of the patches. There are two species, the vulgaris and alphoides, which differ from each other, chiefly in the latter being smaller and more distinctly circular. Neither become moist, or form scabs or crusts. The species to which young people are subject, is the lepra alphoides. This appears, in the form of small patches, of nearly a circular form, seldom exceeding half an inch, but more frequently less. The spots, which generally come out quickly, are first red, but, soon, become covered with small shining scales. The margin, is a little elevated, and usually somewhat inflamed. These patches, are generally confined to the extremities, particularly, the inferior, but they may also appear on the trunk. They rarely become confluent. The causes of this obstinate disease are obscure. The treatment which I have found most useful, consists in the use of tonic laxatives, and the administration of arsenic. A dram of the common solution, may be added to four ounces of water, and of this mixture a tea-spoonful may be given, in a glass of water, three times a-day, to a child three years old. It should always be given after eating, and not when the stomach is empty. If it produce sickness or griping, the quantity is to be diminished, after suspending it altogether for a short time. If it produce no such effect, the dose may be gradually increased, to double the quantity prescribed, watching, however, the state of the stomach. It requires sometimes to be continued for several weeks, before a

salutary effect be produced. Sometimes a very gentle course of mercury is useful, especially of the muriate, in minute doses. If there be great irritation and tenderness of the skin, venesection has been useful, and in children who have been rather too well fed, the regimen must be strict. As topical applications, diluted citrine ointment, and ablution morning and evening with soap and water, are proper. The tepid bath is also proper, and presently, with advantage, we substitute the soda bath, or sometimes the sulphureous, as described in speaking of psoriasis.

SECTION SIXTEENTH.

The scaly tetter,* dry itch, or psoriasis of Dr Willan, consists of red rough spots, which are very soon covered with a laminated scale, sometimes as thick as paper, but generally thin, and very like a bit of the dried scale of a herring. They are irregular in their shape and size, occasionally, not larger than a coriander seed; sometimes, as large as the nail of the little finger, resembling a dried fish scale pasted on the skin; and frequently they are interspersed, with shining silvery-looking portions of the surface, or the patches become confluent, so that a considerable extent of surface may be covered without inter-limitation. These scales, are formed by the exudation of a whitish matter, which is very glutinous, and, as Sylvius observes, stiffens the linen, when it happens to exude in sufficient quantity. In adults, some portions of the surface, yield so much fluid, that the parts are quite moist, and scales do not form. Different species have been enumerated by Dr Willan, which, however, may rather be viewed as varieties. I do not mean to notice all these here, as it does not consist with the object of this work. 1st, *Psoriasis guttata*, or *dartre orbiculaire* of Alibert, is not uncommon in children, and often spreads rapidly over the whole body, and even the face. It is occasionally preceded by slight constitutional disturbance. The eruption consists of small distinct scaly patches, of an irregular shape, resembling lepra in appearance, but differing from it, in wanting the elevated border, inflamed margin, distinct circular or oval shape, and, in the surface below, being more fretted and irritable. It forms a link between the next species and lepra. 2d, *Psoriasis diffusa*, forming large irregular patches, which sometimes become confluent, and possess the general character of the disease. A more severe variety, is termed *inveterata*, and others are named from their situation. Different complications and modifications appear in children, forming, perhaps, the most frequent cutaneous disease we meet with.

* Tetter has been derived from *dartre*, but it comes from the Saxon word, signifying scurf or scab.

The spots on children, generally begin like papulæ, of small size, and are sometimes vesicular at the top. These end, sometimes, in scurf, oftener, in thin scales, as has been described. On the back of the hand, the vesicles, when they do form, are sometimes pretty large; whilst in the palm of the hand, the eruption is rather pustular, and ends in broad thin rough scabs, of a yellow colour. In the early stage, it is sometimes combined with strophulus. The parts are itchy, but when they are scratched, matter does not come out, by the removal of the scales, but a little blood flows. This eruption often begins on the face or neck, and spreads to the body and extremities. It is very obstinate, and sometimes destroys the nails. When it has continued for some time, the skin, especially about the hands and feet, is found to be universally red, with dark coloured scales interspersed. The skin looks as if it had been scalded, and partly covered with thin scabs, or scales, in different degrees of adhesion; and, in some cases, the whole of the extremities, and even the body itself, or the head become red, partially excoriated, and covered partly with scales and scurf, and partly with scabs, which are yellow, and pretty thickly set, often loose, and easily detached. Sometimes, on different parts of the body, particularly on the arms or legs, there are many soft red indolent bumps, more especially if the child, have been seized with this disease, soon after the small-pox or chicken-pox. The appearance on the head, is nearly the same as in pityriasis, but in general it wants the white scurf. It is rare not to find the head affected in this disease.

Excoriation, sometimes also takes place about the anus, with a slightly elevated state of the surface; in consequence of which, and the disease of the skin taking place soon after birth, I have been consulted respecting children given out to nurse, who were apprehended to have syphilis. Dr Willan remarks the syphilitic appearance of this disease, but observes, that all other marks are absent. The syphilitic form of this disease, is supposed to be marked by hoarseness, the patches of a livid colour, with a slighter degree of scaliness, and the margin sometimes higher than the centre. I know, however, that these marks are not infallible. I have seen syphilitic-looking excoriations about the lips and mouth, and extensive ulceration around the anus, and excoriation about the labia, groin, &c., where no effect was produced on the nurse, and where there was every moral certainty that neither of the parents had ever been even exposed to infection. In one case which proved fatal, mercury was of temporary benefit.

It is not, like the itch, very contagious, nor is it easy to say what occasions it; but we know, that inattention to cleanliness

is favourable to its production. It is, in every plan of treatment, necessary to administer laxatives, if the bowels be not quite correct; and, if the alimentary secretions be morbid, they ought to be frequently combined with mercury. A mild mercurial course of solution of blue pill, so as to give two grains every night to a child, or from five to twenty drops (according to the age) of liq. oxymur. hyd. in water, alone, or with the same quantity of antimonial wine, every night. Some mild diaphoretic may also be given through the day, such as acetate of ammonia.

If these means fail, solution of arsenic should be tried, or sulphur may be given internally, or tincture of iodine. Much may be done by diet. If the child be not weaned, it may be necessary to change the nurse. If older, the food should be light, and if the child be robust, should not be too nourishing. If there be much irritation and extensive disease, leeches at an early period are useful. At a more advanced age venesection is proper, and indeed, some cases never yield till this be resorted to. It has been too much neglected, from being originally proposed on a false theory.

With regard to local applications, the best, when there is much tenderness, is the tepid bath, and the frequent use of butter-milk, or emulsion of almonds, as a lotion. When there is less tenderness, the worst parts may be anointed with diluted citrine ointment, or, if not extensive, with a salve made by rubbing a drachm of calomel, with a drachm and a half of prussic acid, and two ounces of lard. This does not keep long, and therefore should be prepared in a small quantity at a time. When the skin is not raw and tender, we ought also to use every night, or every second night, instead of tepid water, a bath made by dissolving an ounce of carbonate of soda in a pailful of tepid water, or proportioning the strength of the solution, to the state of the skin. Sulphur may next be used if this fail. Half an ounce of sulphuret of potash may be dissolved in a quantity of tepid water, sufficient to receive the child, and to this may be added a drachm of diluted sulphuric acid. These ingredients can be increased, if the skin be not tender. Through the day, if salves be not employed, the parts may be bathed twice or thrice, with a lotion made by dissolving two grains of corrosive sublimate, or a scruple of sulphate of zinc, in eight ounces of emulsion of almonds.

SECTION SEVENTEENTH.

The pityriasis, is a disease known, commonly, under the name of the dandriff. It consists of a dry, scurfy, and scaly eruption on the head, amongst the hairs. Near the forehead, the skin is covered with a thick, white scurf, which can be re-

moved, in a powdery form; farther back, larger scales are formed. This is cured, by cutting and shaving the hair, and brushing the head, daily, with a hard brush, washing it with soap and water, and applying ung. hyd. nit. If neglected, ulcers may form, and the disease be converted into one next to be described. Pityriasis is sometimes infectious. A variety of it appears like small red marks on the scalp. The circumference extends, and continues red, whilst the centre becomes pale and scaly. It is accompanied with falling off of the hair.

This disease is not confined to the head, but affects other parts. That variety, named pityriasis rubra, by Dr Willan, is of frequent occurrence at all ages, although said to be most apt to appear at advanced age. It begins with a redness of variable size, and indefinite shape. It may be small, or extensively diffused; the colour becomes deeper, and the surface rough; then, it puts on a mealy appearance, from commencing exfoliation of the cuticle. As this advances, the part is, in a great measure, covered with small branny scales, which, as they, in different spots, fall off, discover the skin red below. Repeated exfoliation may then take place, and when the surface is extensive, the patient's bed is often found covered with small scales. The affected parts are itchy, and sometimes feel stiff. The skin is dry, and no perspiration can be, in general, naturally, or artificially, produced.

There is a great analogy between all scaly diseases, and often the same person exhibits, in different parts, different species. In some the disorder has more the appearance of psoriasis, and in others, there are distinct patches, of the nature of lepra. Sometimes, it is not very easy to say, whether the disorder belongs, most, to one species, or to another. It is this pityriasis, and its modifications, which are most frequently misnamed herpes farinosus; an appellation also given to modifications of psoriasis, and, indeed, to every superficial scaly disease.

The treatment consists in regulating the bowels, avoiding a saline or irritating diet, in the frequent use of the tepid bath, gentle friction with ung. hyd. nit., or ointment, containing finely powdered cocculus indicus; the exhibition of some diaphoretics, such as decoction of sarsaparilla, with a little antimonial wine, arsenic, sulphureous waters, internally and externally.

SECTION EIGHTEENTH.

Porrigo, or tinea, is a collection of aches, or pustules, containing a yellowish-coloured fluid, something like honey, and ending sometimes in the production of a raw and secreting surface, but oftener in the formation of scabs, which are generally white or yellow, but sometimes darker, from an admixture of

blood. The pustules begin on the face or head, and have their chief seat, sometimes in the one, sometimes in the other of these parts, or, occasionally, both are pretty equally affected. The pustules, there, are pretty large, and have a red margin. They are not in general painful, but are itchy, especially at night. The matter* discharged is often abundant, and sometimes so irritating, that the absorbent glands, about the lower jaw or neck, swell, and suppurate. Glands in distant parts of the body, or in the mesentery, are sometimes, in unhealthy subjects, enlarged, as a concomitant symptom. Over the body, there are also many pustules, which are smaller than those on the head. They have a red base, and lymphatic top, and are itchy. Presently, the straw-coloured fluid they contain exudes, and forms flat ragged crusts, of a bloody, or dirty-brown colour. The proportion is, however, not always the same, between cuticular redness and incrustation; for often, especially about the back of the neck, the whole surface is of a dark-red colour, with only small, loose scabs, scattered pretty thickly over it. In other instances, it is intermixed, in various parts, with furfureous patches, and with papulous eruption, like prurigo. When the scabs fall off, the skin below is left red, but no scar remains, unless in very bad cases, where deep ulceration has taken place. Very extensive excoriation, yielding much secretion, and having an alarming appearance, leaves no permanent mark, or cicatrix. This disease is infectious, and is generally, if not always, dependent on a scrofulous constitution.

This disease, has been divided into many species, but no arrangement, that I have seen, is free from objection; and I have no wish to add to the number, but will describe what I have met with, under the names employed by Dr Willan.

Neither the names, nor the descriptions, of different writers agree, and many seem to form distinct species of cases, which, from description, appear to have no dissimilitude. Alibert and Gallot say, that nine-tenths of cases are, *tinea favosa*, most of the other tenth, *tinea granulata*, and that the remainder consists of rarer species, including the *tinea muciflua*, which is a mere variety of Dr Willan's *porrigo favosa*.

1st. *Porrigo larvalis*, so named, on account of the crusts covering the face, like a mask. It is also known under the name of *crusta lactea*, or milk blotch, *ignis sylvestris*, or *voluticus*. The *tinea muciflua*, of Alibert, may be considered as synonymous, both with this, and with the last species of Willan, the *porrigo favosa*, which is a mere variety, differing in nothing, except in the pustules being a little larger. It usually begins

* An analysis of this has been published, but it throws little light on the treatment.

on the brow and cheeks, by an eruption of clusters of small achores, from an inflamed or red surface; or of larger, and rather sparser, mellicerous-looking pustules, called *favia*, and in that case, constituting the *porrigo favosa* of Willan. The pustules spread on the face, and amongst the hair, over a great part perhaps of the scalp, or, they may be more confined round the margin of the scalp, and about the ears. Numerous pustules, are also often scattered over the body and extremities, but these are seldom so large, as those on the head. The pustules, which are itchy, soon break, and the viscid fluid they contain, hardens into a crust, sometimes thin, sometimes pretty thick, but generally yellowish, if not tinged with blood. When the scabs are rubbed off, or drop, the surface below is red or purple, but not chopped, and many places, are found covered, still, with little fragments of crust. In other cases, the discharge is so profuse, that time is not allowed for scabbing, but the whole surface, except the upper margin, or one or two small patches of crust, is raw and excoriated, and the discharge falls in large drops. In a few instances, where there is greater irritation, or the part has been deeply and hastily scratched, little cup-like ulcers form; and, except in such spots, no cicatrix is ever left by this disease. Even in these cases, the health does not suffer, further, than from want of rest, and fretting from the itchiness. When the urine acquires a peculiar smell, like that of cats, the disease is supposed to be on the wane. This eruption, if it do not depend on, is at least very prevalent in, scrofulous habits. It has been attributed to the richness of the milk, but it is just as frequent in those who are sparingly fed. It seems to be more connected with indigestion, or bad state of the bowels, and also is often associated with, if not excited by, the irritation of teething.

In the treatment of the milder varieties, of this complaint, it is sufficient to give, regularly, some gentle laxative, as rhubarb and magnesia, interposing, occasionally, gentle doses of calomel; or, different preparations of sulphur, may be given for the same purpose. The diet is to be attended to, and if the child be plethoric, barley-meal, as being less nourishing than some other grains, may be given as food; a decoction of the *viola tricolor*, has been advised by Strack and Stoll, but I do not know that any internal medicine is useful, farther than as required for the bowels. Soda or potash, in such doses as keep the bowels open, are useful. As for bark and other tonics, it is difficult to get them administered, and I have seen little cause to have confidence in them. The same may be said of *cicuta*. Iodine is one of the best internal medicines. If the patient be robust, and of sufficient age, venesection is useful, if there be much inflammation. If younger, leeches may be applied to the scalp. It

has been proposed to open an issue elsewhere, but this is not of much use.

Local applications in slight cases are not demanded; but when they are, on account of the number of the crusts, and the itching, preparations of sulphur and mercury are proper. The sulphur ointment, or sulphur with oil of bays, or charcoal ointment,* alone, or with the addition of a little soda, or ung. hyd. nit. or cocculus indicus ointment, may be applied three times a-day; and the red portions, which are not defended by crusts, may be washed with lime-water, or water in which quicklime and sulphur have been boiled, or a very weak solution of muriate of mercury, or solution of acetate of lead, in the proportion of three grains to an ounce of water. Lint wet with this, and covered with oiled silk, has been found useful. When there are few scabs, but much excoriation, and, indeed, wherever there is an irritable surface, mild applications must be employed along with laxatives. The salve I have found most useful in such states, is ung. cerussæ, or lard with washed chalk, whilst the parts may be also bathed with a weak solution of sulphate of zinc, in emulsion of almonds.

2d. *Porrigo furfurans*, is more frequently met with in women than in children. It is confined to the scalp, and the pustules are small, contain little fluid, and soon form thin scales, so that the disease very much resembles pityriasis, but differs from it, in its origin, and, also, in the occasional re-appearance of the pustules with moisture. The hair becomes thinner and more brittle. The treatment consists in shaving the head, and removing the scabs or scales by ablution with a sponge, and soap and water. Then, if the skin be tender or irritable, cerussa ointment may be applied, or lard mixed with a fourth part of its weight of cocculus indicus, or of charcoal. If less tender, some stimulating application may be made, as, for instance, ung. hyd. nit., or decoction of hellebore, which has been recommended by Dr Heberden.

3d. *Porrigo lupinosa*, or the *tinea granulata*, and *tinea favosa*

* Powdered charcoal, mixed with as much lard as makes it into a salve or paste, has at least the effect of destroying the bad smell. Some use it, in the proportion of only a fifth part of charcoal, and Alibert prefers that made of pitcoal. Others mix it with sulphur; both Capuron and Gardien join in testimony to its advantage; but I fear I must say of it, as of other applications, that it cannot be certainly depended on. An opposite prescription, namely, a salve made with manganese, instead of charcoal has been advised, but I am less disposed to trust to it. Rayer applies the following ointment:—℞ *Cretæ ppt.* ℥i.; *subcarb. potas.* ℥ij.; *pulv. carb.* ℥i.; *axunge, q. s.* Brett strongly recommends a salve made with from 24 to 36 gr. of iodide of sulphur to an ounce of lard. A lotion is used by some, consisting of sulphuret of potash, dissolved in water, with the addition of iodine. Dr Crampton trusts less to local applications, than purgatives, and such remedies as improve the health. *Trans. of Irish Col. of Phys. Vol. vi.*

of Alibert, is a tedious and obstinate form of the disease. It is chiefly confined to the scalp, but occasionally small patches appear on the extremities. On the head, many separate clusters of aches form, and produce crusts or scabs, about the size of a sixpence. These are more elevated at the margin, than the centre, which is depressed and powdery in its appearance. The colour is dirty white, unless when tinged with blood, and the appearance like dried mortar. The smell has been compared to rancid butter. These patches are not confluent, but the intervening skin is furfuraceous, or scabby, and if neglected, almost an entire incrustation may cover the head. It is named from a supposed resemblance to the seeds of lupines.

It is necessary to have the hair removed, which it has been proposed to effect, in this, and all the other species of the disease, by applying a pitch plaster to the scalp, and then forcibly tearing it off, that it might pull out the hair. This barbarous practice is now abandoned. Depilatories, as quicklime, have also been proposed; but it is always practicable, by softening the scabs, and repeated clipping and shaving, to get the hair removed. Both for this purpose, and also to expose the diseased surface, it is necessary to apply saponaceous lotions, poultices, and mild ointment, to soften and loosen the scabs; afterwards, the surface is to be frequently anointed, with an ointment consisting of oil of bays, sulphur vivum, and camphor, or axunge with hyd. precip. alb., or ung. hyd. nit., or ointment containing hellebore. Dr Underwood recommends the lotio saponacea, or decoction of tobacco, but this is dangerous, if the skin be abraded. Mr Barlow advises the following lotion:—℞. Kali sulph. ʒij. ; sap. alb. ʒjss. ; aq. calcis ʒviijss. ; spt. vini ʒij. M. —An oiled cap has been advised in porrigo, to retain the applications, and keep the parts warm, but I question if it be of utility.

4th. *Porrigo scutulata*, or ring-worm of the scalp, seldom occurs before the age of three or four years; but when it does take place, often continues, not only for many months, but in varying degrees, for years. It begins with distinct clusters, of very small, itchy, yellow aches, which break and form thin scabs, covering the original patch, which is somewhat of a circular shape. The base of each little achore is red. The clusters are thickest at the margin, and the pustules fewest towards the centre, where the scabs are thinnest, and drop off first. When the scabs or scurfs fall off, the skin is found to be red and shining, and very speedily, red pustules appear, with a more extended margin, whilst the centre becomes first a little redder, and then more scurfy. The hair, at the affected part, becomes lighter in colour, and more woolly, thinner, and pre-

sently, at the central parts, falls quite off. Many of these rings, form over the scalp, so that we have at last, at different parts, numerous patches which are bald, or thinly covered with hair, and exhibiting the disease in all its steps; some bare and shining, sprinkled with scurf; others, with the exterior circle of yellow aches, and inflamed margins; others, in a state of crust or scab, and, so long, as the surface retains any unnatural appearance, we may be sure that the disease is still to return. Similar appearances are observed on other parts of the body, or there may be modifications of herpes or lepra.

This disease may appear without any evident cause, but, most frequently, it occurs from infection, by using the same comb, or towel, or cap, with one who has already the disease.

In this, as in the other species, it is necessary to keep the head shaved; but this is to be done with as little irritation as possible. Various applications have been proposed, but when there is much tenderness, we must begin with the mildest, or perhaps be satisfied with frequent ablution, or the use of very weak solution of muriate of mercury in emulsion of almonds, or with solution of chloride of lime, or cerussa ointment, or charcoal ointment. When there is little inflammation or tenderness, and we have the dry scurfy, or scaly state, most prominent, we must use more stimulating applications, and these are always necessary, sooner or later. They must be varied, according to their effects, and so must their strength. The mildest, perhaps, is the manganese ointment, already noticed in a note. More acrid, are prepared from muriate of mercury, acetate of copper, cantharides, tobacco, capsicum, hellebore, arsenic, gunpowder, nitrous acid, alum, &c. Dr Hamilton strongly advises the ointment of Banyer,* alone, or diluted with lard. Some have employed pyroligneous, or diluted muriatic, or sulphuric acid, or strong solution of common salt. All of these, or other stimulating applications, have succeeded; but not unless prudently employed, the strength never being greater than the part could bear. In too many other cases, as Capuron observes, when speaking of irritants, after having more or less, "martyrisée la tête," they have failed. The disease at last wears itself out.

SECTION NINETEENTH.

The bloody scabs, which are formed on different parts of the head, especially, in the hollow near the neck, in consequence of vermin, are cured by combing and washing the hair daily, and rubbing some mercurial preparation on the scabs, whilst an oint-

* ℞ Cerus. lbsa.; Litharg. aur. ℥ij.; Alum. ust.; Mer. sublim. cor. ana. ʒjss.; Axungiae lbij.; Terebinth. Venet. lbsa. M. fiat ung. ad scabiem.

ment, composed of oil of bays and stavesacre, should be rubbed over the scalp, among the hair, or the powder of stavesacre, may be dusted in, among the hair.

SECTION TWENTIETH.

Children and adults, are occasionally affected with baldness, without any of the foregoing complaints being evident. Celsus, terms this, area, which consists of two varieties, the alopecia, where the baldness occupys irregular portions of the scalp; and ophiasis, where it spreads from the occiput, round the head, in a serpentine direction. Usually, the patches are nearly circular, and the skin is quite bare, shining, and smooth, whilst the neighbourhood has the ordinary appearance of the scalp, and the hair is healthy. This has been considered as a species of porrigo, by Dr Willan, and is called porrigo decalvans, but there is no proof, that it is either necessarily, or frequently, preceded by the formation of achores. The patches increase in size and number, and at last, perhaps, the whole head, with the exception of one or two tufts, is bare. Then, without any evident cause, the skin assumes a more natural look, and hair grows. The treatment consists in having the head shaved, once a-week, and rubbing the surface, twice or thrice, daily, with some stimulating substance, such as olive oil, with as much nitrous or muriatic acid, as makes it gently pungent, but not acrid. Strong camphorated embrocation, or spirits and oil of turpentine, may be used, or some other essential oils, or tincture of cantharides, or blisters, or solution of nitrate of silver so strong as to irritate a little. Dr Beauchamp recommends, if the part be red, the application of leeches. If it be not, he uses as a lotion a solution of tartar emetic, in the proportion of five grains or more to the ounce.

SECTION TWENTY-FIRST.

Purpura, or petechiæ sine febre, is a disease not uncommon with children, particularly those who live in confined houses, or are fed on poor or improper diet. It consists of an eruption of small purple spots, which are circular, not at all elevated, seldom larger than the diameter of a coriander seed, more frequently of the size of the head of a pin. They are scattered over the whole body, and even over the hairy scalp. They come out suddenly, without any fever or apparent indisposition, and go off slowly. They are not, in general, attended with foul tongue, spongy gums, or foetid breath; and the fæces do not become unnatural, but they sometimes are so, before the disease takes place, and the belly may be very tumid, but these are not essential symptoms. By good diet, the use of acids, and removal to the country, together with moderate exercise, in the open air,

this disease is easily removed; or sometimes it goes off without any particular change being made, in the mode of treatment. I have never seen this disease affect children, till after they were weaned. This eruption, is sometimes intermixed, with hard papulæ, forming a disease described, separately, under the name of lichen lividus, by Dr Willan. These continue for a considerable time, and end by slight exfoliation of the cuticle, but afterwards may be succeeded by a new crop. No peculiarity of treatment is required. A worse species of this disease, affects children as well as adults, and attacks more slowly. For a considerable time, before the spots appear, the patient is languid, and feels uneasy at the stomach. Then, red spots, larger than in the former species, appear on the extremities, especially the legs, which are painful before the eruption comes out. The body is next affected, and the spots very soon become livid; sometimes vibices are also observed on the skin. This disease, is attended with frequent and daily hæmorrhage, from the nose, mouth, alimentary canal, or vagina, and sometimes even from the toes. This species occasionally proves fatal, but is often cured by the use of quinine, wine, acids, good diet, and country air. It is, however, frequently, very tedious. In worse cases, and in feeble children, the disease often begins with livid blotches on the scalp, which presently have the skin abraded; and then we may find some of them moist, and discharging blood or bloody matter; others dry, but without any scab or a cuticle; others covered with a thin black crust. Gangrenous sores form behind the ears; and the gums, especially near the symphysis of the jaws, become foul, and covered with a brown lymph. An eruption of petechiæ then suddenly appears, and the child generally dies. If he recover, it is more by cordials and nourishment, than by medicine.

SECTION TWENTY-SECOND.

Erysipelas* sometimes affects children, and even infants very soon after birth.† This disease appears to have been noticed by Avicenna, under the name of undimiam, or humid erysipelas, and afterwards, at different times, by other writers, but was first accurately described by Drs Underwood, Garthshore, and Broomfield. Dr Underwood conceives, that it rarely makes its attack, after the child is two months old, oftener a few days

* Erysipelas is attended with fever, and the part affected is red and hot, with soft, diffused swelling. The redness disappears when pressure is made with the finger, but immediately returns when that is removed. There is a tendency to the formation of vesicles, which bursting, form either scabs or troublesome ulcers.

† Dr Underwood says, he once saw a child born of healthy parents, with sub-livid inflammatory patches, and ichorous vesications, about the belly and thighs; but by the use of bark, and especially the mother's milk, it recovered.

after birth. Dr Broomfield, however, saw it in a child much older, and I have met with the same circumstance. It makes its attack in general quickly, and the worst kind, begins about the pubis, and spreads along the belly, and down the thighs. There is not a great swelling, but the parts become hard, purple, and often end in mortification; so that the organs of generation drop off. This kind, very frequently proves fatal, the peritoneum and intestines partaking of the disease. It is a variety, of the erysipelas gangrænosum of Dr Willan. A milder kind, which I have met with much oftener, begins about the hands and feet, or not unfrequently the neck or face; and it is worthy of observation, that this frequently ends in suppuration; and on the neck especially, a very large collection of matter may be found.

In the milder kind, the redness is more bright, and the heat greater, than in that, which tends to gangrene; but if there be much tumefaction, or hardness, of the subjacent cellular substance, it is difficult to prevent the formation of pus. The treatment consists in giving a purgative, attending afterwards carefully to the state of the bowels, and keeping the child cool. The improvement of the constitution, and particularly of the action of the chylopoetic organs is of more consequence than the local treatment. The heat of the part, is to be abated by the application of cool water, which is better and safer than any more medicated lotions. The part is not to be made cold, nor are we to have it constantly moistened with cold water, which might either produce a dangerous metastasis, or great local debility, ending in mortification. All that I propose is, the moderation of the heat by sponging, or bathing more or less frequently, according to circumstances. The usual remedy is flour, which does no good, unless as a medium for the frequent application of cold. The prejudice against wetting the skin is quite unfounded. But should the surface be already tolerably cool, and the action rather tending to the weakened form, we must refrain from cooling it farther, and rather apply dry cotton wool. It is only in the case of robust children, and high inflammation, that we can venture on making an incision, as in adults. The loss of blood, and consequences of the wound, may be worse than the disease. Light scarifications are safer than a deep incision, but even these are not generally admissible. If suppuration take place, a bread and milk poultice, is to be applied, and the matter should be early let out, and the parts gently supported with a proper roller, applied over mild dressings, in order to prevent the formation of sinuses. If these take place, they must be opened. The strength is to be preserved by means of a good nurse, and giving cordials, as, for instance, white wine whey.

In the worst kind, or that which tends to mortification, the colour is, from the first, or, at least, very soon becomes, darker or purple; there is less heat, nay, sometimes the skin, speedily, feels colder than natural; the subjacent cellular substance is first pretty hard, and then becomes more flaccid, without fluctuation, and the most prominent points become livid or blue. The constitutional debility, and the advancement toward mortification, and spreading of that state, keep pace with each other. It is evident, that the local treatment, applicable to the former species, would be hurtful here, unless in those few cases, where this is preceded by more distinct symptoms, of increased arterial action, than is usual, such as heat. In general, the best application, from first to last, is camphorated spirit of wine, which was long ago recommended, by the late intelligent Dr Garthshore. But if this smart, or give pain, it does harm, and, in that case, a mild application must be substituted, such as a weak solution of sulphate of zinc, or dry cotton. If sloughs form, and the child still survive, a bread and milk poultice will be proper, and the parts may be bathed, with weak solution of chloride of lime, to destroy the smell, or a poultice made with that and bread, may be applied, which also tends to detach the slough sooner. Ammonia, given early, in doses of from four to six grains, every three hours, has been of service; but I have derived more advantage from calomel, in such doses, as to act on the bowels, than from any other medicine. Green, fœtid stools are generally brought away. Quinine, in doses of half a grain, twice or three times a-day, has also been given, but the precise degree of advantage, derived from this medicine, in infantile diseases, is not yet fully ascertained. Still, when it can be easily given, and agrees with the stomach and bowels, or, when it can be administered and retained, as a clyster, I am disposed to advise it, and would employ it. I need not add, that the greatest care must be taken, to support the strength, by suitable nourishment, and cordials prudently exhibited. The best of these, is wine whey; opiates are only useful, when there is much irritation, or a diarrhoea. It is an error to give them, indiscriminately, as part of the cordial plan, for they are of no service except in these two views. Mineral acids are rarely, if ever, proper for infants.

Erythema, according to nosologists, differs from erysipelas, in not being attended with the same diffused swelling, nor having the same tendency to form vesications; neither is it preceded, or accompanied, by any regular fever, though the system may be occasionally disordered, during its appearance. In some cases, the inflamed part seems at first to be rough, as if covered with innumerable papulæ, but this appearance presently goes off. The treatment is nearly the same as in erysipelas. Sometimes

small, irregular, erythematic patches, accompanied with cedematous swelling, appear about the joints, eyelids, or different parts of children,* with fretfulness or feverishness. They, in general, require only to be kept clean, by being bathed with tepid milk and water, and dusted with some cool, absorbent powder, or bathed with vinegar. Calomel is of service, alone, or with other laxatives, and strict attention to the diet, &c.

After the cow-pox, erythematic patches sometimes appear, not only on the arm, where the inoculation was performed, but even on more distant parts. This is most apt to take place after the vesicle has arrived at the height, or is on the decline. The inflammation sometimes ends, if not in gangrene, at least in a livid state of the parts, with fatal debility. Spirituous applications are soon necessary. When the part becomes livid, the strength must be carefully supported, and the bowels opened. In the commencement of this affection, saturnine lotions are proper, and often remove the disease. Calomel is useful. Dr Willan describes this as a species of roseola.

There is a species of erythema, erythema nodosum of Dr Willan, in which the patches are raised, toward the centre. This elevation takes place gradually. In a few days, hard and painful tumours are formed, which threaten to suppurate, but they presently subside, soften, and end in desquamation. These are most frequent on the shins, but they may affect any part of the body. Laxatives are proper.

SECTION TWENTY-THIRD.

Excoriations, frequently take place, behind the ears, especially during dentition. The skin, under the lap of the ear, is covered with small pustulés, and the inflammation extends from one to another. Sometimes, a kind of erythematic inflammation takes place, without pustules, and ends in vesications, which discharge thin matter. This complaint is not generally dangerous, but it is sometimes troublesome, and causes swelling, of the lymphatic glands, about the jaw and neck. Occasionally, however, the parts become first livid, and then gangrenous; and in such cases the child generally sinks, even although the sloughs begin to separate. In mild cases of sore ears, it is seldom necessary to do more, than wash the surface, frequently, with milk and water. If the part be very itchy, it may be bathed with rose water, containing a little tincture of opium, or with weak solution of sulphate of zinc; but astringent lotions, or such applications as tend to heal the surface speedily, if it have been long abraded or dis-

* The erythematic patches produced by the bites of bugs, &c., in those whose skin is delicate, are distinguished by having a small mark or speck in the middle.

charging much, are, unless purges be frequently given, justly esteemed dangerous, and apt to excite disease within the cranium, especially in those, who are predisposed to convulsions, or hydrocephalus.

If other applications be necessary, the citrine ointment, much diluted, or liniments containing acetate of lead, calx of zinc, juice of scrofularia, sulphur, charcoal, cerussa, &c., have been employed. The last of these, is often the best. The discharge acting on the lead produces a black colour.

When the parts become livid, or threaten to mortify, camphorated spirit of wine, should be applied with a small brush, and the part dressed with mild salve; afterwards, when slough has formed, the fermenting poultice, or solution of chloride of lime is to be used. The strength must be carefully supported. The bowels should be kept regular.

SECTION TWENTY-FOURTH.

The gums, about the time of dentition, or sometimes when the first set of teeth are shedding, become spongy and ulcerated, discharging a quantity of thin, foetid matter. This, at first, may generally be stopped, by applying a mixture of muriatic acid and honey, in such proportions, as to taste pretty sour; or the parts may be frequently washed, with equal parts of lime-water and tincture of myrrh, or with a solution of sulphate of zinc, or of chloride of lime.

If neglected, the ulceration becomes either fungous, and is called scorbutic;* or sometimes of the kind which resembles sloughing phagedena, that is, a foul, foetid, spreading sore, destroying the gums, and, in some cases, the jaw-bone and cheek; so that, if the child survive, no teeth are afterwards formed, in that part of the jaw. Occasionally, from the very first, this disease assumes a malignant form, beginning with some degree of inflammation of the gum, generally where the incisors should appear. The part is not swelled, but bright, and of a pale red colour, and this extends along the gums a considerable way. This soon festers, forming a line along the gum, marked by a white or brownish slough; whilst, exterior to this, the surface is inflamed, and this inflamed part next festers; so that inflammation precedes festering, till the mouth and cheeks be affected, and a large foetid sore formed, which soon injures the bones. This disease has been called the canker. It is attended with considerable discharge of saliva, and the breath is very foetid. Good diet, the use of orange juice, and sulphate of quinine, with

* In this case, some have recommended stimulants and astringent lotions, others compression. M. Berthe advises the part to be cut off; and Capdeville proposes actual cantery. Solution of common salt has also been recommended.

great attention to cleanliness, at the same time that we use solution of chloride of lime, as an occasional wash to destroy the smell, are the most likely means of cure.

In some families, many of the children, are subject to a spongy, and ulcerated state of the gums, which thus expose the teeth down to the jaw, or these become loose. The gums bleed, and sometimes hæmorrhage takes place from the nose, and there are livid spots on the skin. This is best remedied by removal to the country, the free use of ripe fruit, or weak lemonade or orangeade, sulphate of quinine in half-grain doses, laxatives, and nourishing diet. Solution of borax, is one of the best local applications.

SECTION TWENTY-FIFTH.

Another corroding disease begins, in the cheek itself, or the lip. It commences with some degree of swelling, which is hard, and firm, and shining. It generally begins in the cheek, which becomes larger than the other, and the upper lip becomes rigid, swollen, and glossy. On some part of the tumefied skin, generally on the cheek, we observe presently a livid spot, which excoriates and spreads, both laterally and downwards. Being generally seated near the mouth, it soon reaches the gums; and even the tongue partakes of this disease, which is of horrible aspect. We often find, a great part of the upper or under lip destroyed, perhaps only a flap, or portion, of the prolabium left, all the rest being eaten away. The gums are foul, the teeth loose, the tongue thickened, partly destroyed, and lying so close on other diseased parts, that we cannot say what is tongue or what gum, except by the child moving the tongue; and the mouth, itself, is filled with saliva. The sore is foul, shows no granulations, but appears covered with a rough, irregular, coat of brown lymph. The surrounding parts are somewhat swelled: near the ulcer, they are hard and red; farther out on the cheek, they are paler, and have more of an œdematous look. These local appearances are accompanied with emaciation and fever, and the child is either restless, or lies moaning in a drowsy state. This disease often proves fatal; sometimes, indeed, the parts cicatrize, or the patient recovers, after an exfoliation of part of the jaw-bone. The sore, is best managed, with stimulants, such as solution of chloride of lime or of nitrate of silver, camphorated spirit of wine, tincture of opium, &c., but sometimes it is necessary to give these up, for a linseed meal, bread and milk, or a carrot, or a fermenting poultice, for whatever gives pain, particularly prolonged pain, is hurtful. The bowels are to be kept open, the strength supported by milk, soups, and wine; and ripe fruit given, if it do not purge. Before ulceration take place, the best application is camphorated spirit of wine, provided it do

not give pain, or, if the part be swollen and hard but not red, we employ slight friction, with camphorated liniment. A course of gentle laxatives is useful.

Another disease, destroying the parts, is called noma, which differs from the former, in destroying rather by gangrene than ulceration. It attacks chiefly the cheeks, and labia pudendi of children, and begins with a livid spot, without pain, heat, or swelling, or with very little; and is not preceded by fever. It ends in gangrene, which destroys the part, and the patient often dies in a few days. It is to be treated, at first, with weak saturnine applications; afterwards, when sloughing takes place, the nitric acid may be applied to one spot, with a bit of lint or small brush, taking care that it do not spread beyond it; then we use solution of chloride of lime, or a fermenting poultice, whilst opium and wine are given internally, with or without quinine, according as the stomach will bear. The bowels must also be excited to action.

Some children, more especially those of a scrofulous habit, suffer much from a fretting and inflammation, which often, at the same time affect the nostrils, upper lip, and labia pudendi. The *mons veneris* and labia, are tumefied, red, and very itchy. They sometimes are covered with minute blisters, or little scabs, or yield serous discharge. The internal parts furnish muco-purulent matter, and there is pain in voiding the urine. The child is pale, the bowels in bad order, the pulse frequent, the appetite bad, and the sleep disturbed.

I have never found any thing so useful, as the application of white lead ointment, or simple ointment, mixed with prepared chalk, and bathing the parts frequently with weak solution of sulphate of zinc, having a small proportion of vinegar added to it. The bowels require also to be carefully attended to.

A very formidable affection, I have occasionally found to succeed measles or scarlatina, but it may likewise occur, without any preceding disease, of a formed or specific kind, and is decidedly infectious. The labia usually are affected, and sometimes the disease is confined to one side. The exterior surface becomes slightly erysipelatous, and little vesications form, which, in the mildest cases, shrink, and end in small scurf. In worse degrees, the inflammation is greater, and the vesications end in livid sores or sloughs. The inside of the labia, is of a deep red colour, one or both nymphæ swell, but the *præputium clitoridis* is chiefly affected, and speedily swells much. Exudation of yellow, or buff-coloured lymph takes place, followed almost immediately by death of more or less of the parts, which form an ash-coloured slough, and when this comes off, the parts below, are in a suppurating fiery state, without granulations. If the

exterior surface participate, the sloughs are black. The whole of one labium may be destroyed, or part of both, but the destruction is often comparatively greater in the nymphæ, and particularly the præputium clitoridis. At first, there is a copious muco-purulent, and then, a sanious or bloody discharge, very fœtid. From the very commencement, there are languor, paleness, and debility, greater or less, according to the severity of the disease. In some, the pulse is not very frequent, nor is there much heat of skin, the tongue is moist, and the appetite is not lost, nor is the pulse much accelerated. In others, the tongue is dry, the skin cold, or of a sharp heat, the pulse frequent, and the eye heavy, and there is no appetite, but rather nausea and thirst. As the disease advances, the debility increases, and the child soon dies. It is a very fatal disorder. It is sometimes conjoined, with the affection of the cheek, already described. It requires the use of mild laxatives, sedulous attention to nourishment, and the judicious exhibition of wine, and laudanum to allay irritation. We may also give the sulphate of quinine. The parts must be kept very clean, bathed frequently with weak solution of acetate of lead, and dressed with salves, containing oxyde of lead, or of zinc. When sloughs form, the best wash, is a weak solution of chloride of lime, which always for the time destroys the smell.

A bread and milk poultice, is often the most useful application, or, if the sloughs be deep and extensive, a poultice, made of solution of chloride of lime, and bread, is beneficial. The actual cautery has been employed on the Continent, but seldom in this country. A variety of this disease, differing in no essential symptom, is attended with a fever *sui generis*.*

SECTION TWENTY-SIXTH.

Aphthæ are small white specks, or exudations of coagulated animal mucus, appearing on the tongue, inside of the cheeks, and the fauces. This disease appears under two forms. The

* Mr Wood describes a very severe variety of this disease, affecting the external parts. It is preceded by febrile symptoms, but, soon, there is pain in making water, and the parts are found to be inflamed and dark-coloured. In a few hours afterwards, vesication appears, which ends in ulceration, and the surface becomes excessively tender. The fever increases, and along with it the debility. The ulceration spreads, and becomes deep and foul, but mortification rarely occurs. It is a fatal disease, but by the use of bark, cordials and laxatives, with tepid saturnine poultices, and afterwards dressing with mild salves, several recovered after the end of perhaps three weeks. Purulent discharge from the vagina, is apt to remain for some time, and contributes to keep up the debility. *Med. Chir. Trans.* Vol. vii. p. 84. A similar disease is described by Dr Hall, in the *Edin. Journal* for Oct., 1819. M. Cevoule maintains that it is almost always the consequence of a solitary ulceration on the inside of the mouth, or labia, and is not preceded by fever, the constitutional symptoms being merely symptomatic.

mild, in which the eruption on the mouth is slight, and the symptoms comparatively trifling; and the severe, in which the local disease is extensive, and the constitution greatly affected. In the first, or milder form, a few scattered spots appear on the mouth, as if little bits of curd, were sticking to the surface of the tongue, or within the lips. These, in a short time become yellowish, and then fall off, but may be renewed for three or four times. They leave the parts below, of a red or pink colour. The child, in this complaint, is generally somewhat fretful, the mouth is warmer than usual, and the bowels rather more open, and sometimes griped, which has been attributed to an acid state of the saliva. The stools are altered in their appearance, being green, or containing undigested milk, or of an offensive smell. There is no fever or general indisposition, except what may proceed merely from irritation of the bowels. It is most frequent, within the first month, but may occur later.

In the severe, or worst form of this disease, a fever* even of a contagious nature, precedes, or attends, the aphthæ; and the child is sometimes drowsy and oppressed for some hours, or even a day or two, before the spots appear, and occasionally is affected with spasms. The fever and oppression, are sometimes mitigated, on the appearance of the aphthæ. The eruption is pretty copious in the mouth, and may become confluent, so that almost the whole surface, is covered with curdy-looking matter. The stomach and the bowels, are very much disordered, and the child vomits and purges. The stools are generally green, sour-smelled, and sometimes acrid, so that the anus is excoriated. The aphthæ may not be confined to the mouth, but may descend along the trachea, producing cough, and great difficulty of breathing; but much oftener, they go along the œsophagus, to the stomach, which becomes very sensible, is painful to the touch, and the child vomits speedily after sucking. The mouth is likewise tender, so that the child sucks with pain, and, if the crusts become hard, with difficulty, the tongue being rigid. After a short time, the aphthæ change their colour, and begin to fall off, but they may be renewed, and the abdominal symptoms may increase, so that the child is exhausted, and dies.

There are two sources of danger, in bad cases of aphthæ: the

* Dr Underwood is of opinion, that fever very rarely attends aphthæ, appearing as an original disease. Foreign writers have divided this form of the disease into four stages: 1st. What they call the incubation, or invasion, of the aphthæ, marked by fever, restlessness, sickness, burning heat of the epigastrium, hoarseness, and hot tender state of the mouth. 2d. The pullulation or eruption. The membrane of the mouth becomes red, the aphthæ appear, and spread, with cough, difficult deglutition, diarrhœa, &c. 3d. The symptoms increase. 4th. The aphthæ change into crusts, and fall off in fragments. They deny that the eruption is ever attended with mitigation of the constitutional affection.

first, proceeds from the disorder of the alimentary canal, which always attends the disease; and the second, arises from the particular state of the system, connected with the local disease, as in malignant sore throat, and many other diseases. It behoves us, then, in forming our judgment, to attend to the sensibility of the stomach and bowels, and pay attention to the egesta. Frequent vomiting, repeated thin stools, with griping, and a tender state of the abdomen, with or without tumour, are very unfavourable; drowsiness, oppressed breathing, moaning, spasms, and great languor, with frequent pulse, are likewise dangerous symptoms. With regard to the local disease, we find, that if the spots be few and distinct, and become a little yellow, and then in three or four days fall off, leaving the part below, clean and moist, we may expect that the eruption will not be renewed, or will become still more mild. But if the aphthæ turn brown or black,* which last is not a common colour, the prospect is not so good, and is worse in proportion to the rapidity with which they change. The longer that the aphthæ adhere, the more apt are they to become brown; and the case is worse, than when one crop succeeds another more speedily. If the succeeding crop be more sparing than the former, we augur well, and *vice versa*. When the aphthæ fall off, we expect their renewal, if the parts below be parched and look foul. If, however, in this state, the eruption do not take place, and the oppression, weakness, and drowsiness continue, the danger of the case is increased; and, in such circumstances, it has been observed, if the eruption afterwards appear, the child is relieved. It is also unfavourable, if a new eruption come out before the former one be thrown off. When the aphthæ fall off, the mouth becomes very tender, so that the mildest fluids sometimes give pain. Occasionally a salivation takes place, and the inside of the cheek bleeds. Dr Armstrong remarks, that he has seen the tongue covered with a crust of aphthæ, and the cheeks and gums full of angry pustules, and little fungous excrescences.

Now, with regard to the cause, we find that this disease is produced, by derangement of the stomach and bowels, excited by improper diet, exposure to cold, &c., and sometimes slight attacks, are occasioned, by giving spoon-meat too warm. The tongue and mouth, sympathize very much, with the state of the alimentary canal, in every period of life; but in early infancy, the changes produced, in the membrane lining the mouth, by derangement of the function of digestion, are great and sudden. Whenever the diet is deficient, or improper, or the action of the stomach is deranged, aphthæ are produced, especially during

* Sometimes mortification takes place, and even the palate bones have been known to suffer.

the first month; afterwards, at least, when the infant is considerably older, the tongue merely becomes foul or furred, when the digestion is injured. It is rather with the stomach, than the bowels, that the mouth at first sympathizes; but the bowels also are generally affected, either, from a propagation of diseased action from the stomach to them, or, from the operation of causes directly on them, as well as on the stomach. Hence, the stools are generally bad, when the mouth is apthous, and hence, a change of diet, or medicines, which stimulate and invigorate the whole tract of the canal, remove the affection of the mouth. If a child be brought up on the spoon, or the milk be bad, one of the most early indications of injury, is the appearance of apthæ, or white exudations on the tongue. Some particular states of the atmosphere, would seem either to excite this disease, or predispose to it, for it is most frequent in damp situations, and in spring and autumn; and Van Swieten tells us, that it is peculiarly prevalent in Holland. It would appear also, to be produced by sucking an excoriated nipple; and, on the other hand, an apthous mouth, may infect the nurse. It has been said by Dr Moss, that a healthy child, sucking a breast immediately after a diseased child, receives the infection; and I believe it to be the case.

In the treatment of apthæ, the cause is often overlooked, and local applications are expected to remove the disease. The first object, however, is to remove the cause, which most frequently, is resident in the stomach and bowels. For this purpose, strict attention ought to be paid to the ingesta, for many nurses, instead of bringing the child up, at first, entirely, or almost entirely, on the breast, give spoon-meat, and that in too great quantity, and not unfrequently combined with anodyne, to keep the child quiet. Emetics have been strongly recommended by Arneman, and others, in this disease. A little of the vinum ipecacuanhæ may be employed, which is preferable to antimony. This may be given early in the disease, if it require interference with active medicines, or do not yield to mild laxatives; but if relief be not soon obtained, it should not be repeated, and, on the whole, I am not very partial to the use of emetics, and decidedly object to antimony. Gentle laxatives are highly proper, such as manna, or a little magnesia alone, or with a small proportion of rhubarb, and an aromatic. Small doses of calomel, may also be given with advantage. The remedy I chiefly recommend is a laxative, such as rhubarb, magnesia, or calomel, given so as to evacuate all offensive matter, and excite the action of the whole canal. The operation is to be gentle, but must perhaps be repeated for some days. Emollient clysters, made pretty large, and without stimulating ingredients, are like-

wise useful. Milk or soup may also be injected, to support the strength, when the child does not suck, or take food by the mouth. If, however, the child have a purging, then we must proceed, according to the directions, which will be given, respecting diarrhoea.

Local applications have been always employed, and, in slight cases, are trusted to by the nurse, without any internal medicine. The most common remedy is borax, in the form of a saturated solution in water, or mixed with honey or syrup; or a little of the powder may be put into the mouth, and it seems to have a better effect, than could be expected, from its sensible properties. It cannot, however, be expected to remove the aphthæ, until they be about to separate, when it ought to be employed, and may prevent a renewal. Until this period, white of egg, beat up with cold water, should be used in its place. Van Swieten recommends syrup of turnips. Applications which force off the aphthæ, prematurely, do harm to the part, and seem to produce a renewal of the exudation.

In the worst species, we must very early give a gentle laxative, or a mild emetic, if the child be much oppressed; and afterwards, the bowels must be regulated, and medicine given according to the appearance of the fæces, and the state of sensibility. Nourishment is to be given carefully, or if the child cannot suck, clysters of milk, or weak soup, must be administered twice a-day. Where the debility is considerable, the strength must be supported by cordials, such as white-wine posset. Quinine, in the dose of half a grain, three times a-day, has been recommended, when the debility is great, and especially when the mouth has a sloughy gangrenous appearance, or tendency thereto. If it cannot be taken, or retained, it may be given in the form of clyster. Small doses of calomel, with opiates, are useful. A weak solution of the sulphate of zinc, or water acidulated with muriatic acid, have been proposed as lotions, and may occasionally be of service; but it is highly improper to wash the mouth, roughly, with a cloth dipped in these, or any other lotions.

SECTION TWENTY-SEVENTH.

Aphthæ sometimes appear on the tonsils of children, and adults, with or without fever; and from an apprehension of the existence of a malignant sore throat, give much alarm. There is, however, very little inflammation, and no lividity of the parts; the fever is very moderate, the strength not impaired, and the aphthæ do not spread, but, becoming brown, presently fall off. This is cured by acid gargles and laxatives. Another kind of sore throat, is attended with the usual symptoms of inflammation,

accompanied with an exudation of tough yellow mucus. It yields readily to the same treatment.

SECTION TWENTY-EIGHTH.

A malignant, and highly infectious, species of aphthæ, is one of the most formidable diseases, to which children are liable. It constitutes what has been called, by some, the putrid sore throat. It attacks in different forms, and is always an insidious disease. In some, it begins with heat of the skin, and smart fever, and the cheeks, if not flushed, are at least not pallid. The child complains a little of the throat, which is found to be of a dark-red colour, and patches of lymphatic exudation appear on the tonsils. At the same time, we find one or more glands under, or behind, the angle of the jaw, more or less swelled and painful. The tongue is covered with a brown, or yellowish coat. The eye is dull, perhaps watery; there is little appetite, not much thirst, seldom much headach; and, on the whole, the child suffers little. Within three or four days, the fever abates, and the pulse becomes nearly of natural frequency, but other symptoms increase. The throat becomes darker in colour, and the sloughs browner, and when any part separates, some blood is discharged. The nostrils discharge ichor, and become excoriated, or bleeding takes place from them, and the inside of the eyelid, or even the adnata of the eye itself. The cheeks swell and become glossy, and the skin over the nose tumid, then red, and lastly, livid. Dark, pitchy stools are voided, either from blood swallowed, or discharged from the intestines themselves. Bilious, and sometimes feculent vomiting takes place. Petechiæ appear, the pulse, without becoming more frequent, becomes weaker, and at last imperceptible; but, for some hours, the power of moving, and perfect consciousness remain.

In other cases, the child becomes first of all, and rather suddenly, sick, listless, and cold; his pulse is quick and feeble; his eye heavy, and his countenance pale. The throat is seldom complained of, but if inspected, is of a deep red colour, and ash-coloured exudations, are visible on the tonsils. Even at this time, the breath has a bad smell. Soon, the skin becomes hot, and, perhaps, for a short time, the cheeks are flushed, but they soon become either pale or livid, and the heat is never ardent. The pulse is extremely frequent, and very feeble. The throat is covered with a slough, and filled with viscid phlegm. The tongue is brown, or dry and livid. The nostrils discharge acrid ichor. There are increased force of the breath, hoarse cough, and stridulous breathing as in croup, the disease descending to the glottis or larynx*, and few, if any, recover, who are thus seized,

* It has been considered identical with croup by Dr Bretonneau, who names

for it runs the same course as croup; there are the same hoarse cough, the same sonorous breathing, the same fits of suffocation. These symptoms increase, the stools are dark and offensive, the breath putrid, the sloughs spread, the pulse becomes fluttering, and, often, within forty-eight hours, sometimes in twenty-four, the child dies. Death, however, rather takes place thus speedily, from the intensity of the laryngeal affection, than from the mere debility, consequent to the operation of the infectious virus. A variety of this complaint, seems to be described by Dr Hamilton, where the peculiarity is extreme slowness of breathing. This I have not met with. Various remedies have been tried. Emetics, purgatives, the early application of leeches to the throat, blisters, and calomel, have all failed. Some of them have perhaps aggravated, none of them have relieved the symptoms, and blisters have only added a painful and foul sore, to a deadly disease; nor do I know any plan which can be depended on, with the least confidence, after the croupy symptoms have decidedly appeared. If these have not taken place, or be only slightly threatened, the practice I have found most useful, consists in the administration of gentle purgatives, and the instant use of sulphate of quinine by the mouth, with such nourishment and cordials, as the child can swallow or retain; or bark may be given in nutritive clysters: as auxiliaries, we may endeavour to have the throat and mouth cleaned, by washing with diluted solution of chloride of lime, attend to ventilation, and shifting the bed linen, and give ripe fruit. Rubbing the part over with nitrate of silver has, in some instances, seemed to do good, and to the best of my knowledge, was first prescribed, a number of years ago, by Dr James Watson, of this city, at the suggestion of Mr Macarthur. Dr Bretonneau, afterwards, advised muriatic acid, or powdered alum. I must, however, say, that no dependence can be placed, on either application, and most of the recoveries take place, rather from the arrestment of the disease, in its progress down within the glottis, by some unknown circumstance, than by the power of medicine. In the variety described by Dr Hamilton, he says, the superacetate of lead was useful, in the dose of half a grain every three hours. In desperate cases, would tracheotomy be of any avail? It has been tried here with success, in a case, apparently, of this nature, and Dr Bretonneau relates a successful instance. But I cannot urge it, and expect little from it.

SECTION TWENTY-NINTH.

About the time of dentition, the tongue, gums, and inside of it diphtherite. But the true croup begins in the larynx, and not in the tonsils.

the lips, are sometimes spotted over, with superficial excoriations. They are seldom larger than a coriander seed, of an irregular shape, and covered with yellow or brownish mucus, adhering so firmly, and being so thin, as to resemble the solid base of the sore itself. They are tender, and generally accompanied with salivation. They are cured by being touched with *alumen ustum*, or lightly with a pencil, dipped in weak solution of nitrate of silver. Borax also, or tincture of myrrh, seems to do good. But perhaps these would always heal, easily, if left to follow their own course.

SECTION THIRTIETH.

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 nipple 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. I do not pretend to explain, here, the theory of syphilis, but content myself with relating a well established fact.

In such cases, it is very common for the mother to miscarry, or have a premature labour, without any evident cause; and when this takes place, the child is found to have the epidermis wrinkled or peeled off, as if it had been macerated, and sometimes deeper ulcerations are discovered. The liquor amnii is turbid and fœtid. We are not, however, to suppose, in every instance, where these appearances are met with, that the child is syphilitic; for any cause, producing the death of the fœtus, a considerable time antecedent to its expulsion, will produce nearly the same appearance. The diagnosis, then, must depend much upon the repetition of the premature labour, the circumstances attending it, the history of the parents, and the distinct appearance of ulceration. In such cases, the parent, originally affected, ought to undergo a mercurial course; and if the other parent have any suspicious symptoms, mercury should be administered to both. Sometimes, the disease seems to wear itself out, without any remedies being employed; and the children born in future are healthy. But it often happens, that the child, though it have received the venereal disease in utero, and probably possessed it, as a peculiarity of constitution, from the time of conception, is born alive, and has even no apparent disease on the skin, or in the mouth. Frequently, indeed, it is born before the time, and perhaps it has been preceded by one or two dead children. It may be clean and healthy, and continue so, for even a month

or two, but oftener it is feeble, and rather emaciated; and sometimes it has at the time of birth, or soon afterwards acquires, a wrinkled countenance, having the appearance of old age in miniature; so very remarkably, that no one who has ever seen such a child, can possibly forget the look of the *petit vieillard*. In such a case, the child has scarcely any hair upon the head, but may have pretty long hairs on the body; it cries in a low murmuring tone, and appears so weak, that it cannot suck for a minute at a time. But whether the child be apparently healthy or emaciated, at the time of birth, other symptoms presently appear;* and of these, the most frequent and earliest, is generally an inflammation of the eyes, accompanied with ulceration of the tarsi, and purulent discharge. This appears a few days after birth. The eye presently, if neglected, becomes ulcerated, and the cornea opaque. Copper-coloured blotches, ending in ulceration, appear on the surface; or numerous, livid, flat, suppurating pustules cover the surface; or many clusters of livid papulæ appear, which presently have the top depressed, and then end in ulceration. These papulæ, are sometimes attended by an eruption of pale, shining, pimples on the face, which enlarge, become red, and often run together. Children have sometimes an eruption of leprous or scaly spots, which I have formerly described, and which resemble syphilis. The syphilitic blotches are of a darker colour, are more apt to end in ulceration than in scurf, or to form crusts or scabs, and seldom disappear, without the use of mercury; or if they do, they soon return, and become worse by continuance, and, presently, are combined with additional symptoms of the disease.

The genitals and anus† become ulcerated, and sometimes excrescences sprout out, from these parts. Foul sores, having

* M. Mahon, from his observations in l'Hospice de Vaugirard, says, that the symptoms appear as follows, the most frequent being put first. Ophthalmy; purulent spots; ulcerations; tumours; chancres on the mouth; and aphthæ; livid, ulcerating, and scabbing pustules; chancres on the genitals, and about the anus; excrescences; peeling off of the nails of the feet and hands.

† Children may have ulceration about the anus, genitals, and groins, succeeding intertrigo, owing to neglect of cleanliness, without any venereal affection. But the absence of other symptoms, particularly of sore throat, or ulcer of the mouth, and the amendment experienced by the use of lotions, and keeping the parts dry and clean, will enable the practitioner to form a diagnosis, and the aspect of the sores will assist him. This fretting of the parts, and even some degree of excrescence, may attend psoriasis, and the leprous spots of children formerly described; and in this case, especially, if the child belong to a poor person, the disease is too often decided to be syphilis. There is, however, perhaps no individual symptom, which can decidedly characterize syphilis in children; and the diagnosis must be formed by the combination of symptoms; and often by the progress of the disease. Many children are rashly put upon a course of mercury, who do not require it; perhaps, because the practitioner thinks it a point of honour, to determine the nature of the disease, at the first glance.

retorted edges, and a centre, pale, and like lard, cover the inside of the mouth; and chancrous ulceration takes place on the lips, especially, about the angle of the mouth. These sores and chops, are often surrounded, pretty extensively, with a whiteness of the surface, as if the part had been scalded, or recently rubbed with lunar caustic, and, perhaps, from this circumstance, these sores have been called, though improperly, *aphthæ*. They may, however, be combined with *aphthæ*. In some cases, the white and dusky patches, cover the whole palate and inside of the cheeks, whilst the gums are ulcerated, or even nearly gangrenous. The ulceration of the gums has always a very angry look. The nostrils become stuffed, and discharge purulent matter. On the face and hands, we see obstinate sores, covered with pus, others with crusts, whilst the intervening skin is sallow. The child early becomes hoarse, and the glands of the neck, with those below the jaw, are often swelled. Children, like adults, have in general the surface affected, and then the tonsils and mouth; but sometimes the one follows the other quickly. They seldom live long enough to have the bones diseased. They are always in great danger, and those who are much diseased never recover. Mahon, with great justice, ranks among incurable symptoms, the old decrepit visage, great destruction of the globe of the eye, chancres on the middle of the lip, spreading to the frænum, and extensive ulceration of the mouth. It must be remembered, that syphilis, not only may appear, under its own peculiar characters, but may also exist, under the form of some of the eruptions, common to children; such as *crusta lactea*, *lepra*, *psoriasis*, &c. These are known to be venereal, by their being of a more livid colour than usual; they tend slowly to ulceration, and when the scab or crust, with which they are furnished, comes off, a foul honey-comb like ulceration is observed below. But the best diagnostic is, that they are soon attended with other symptoms, such as hoarseness, ulceration of the mouth and throat, &c. We must make up our judgment slowly, and with deliberation. I have seen a child entirely covered with *psoriasis*, have excoriation in the mouth, hoarseness, and pustules on different parts, and yet from the healthy condition both of the parents, and hired nurse, it was doubtful if the disease were syphilitic; and in another case, still more resembling syphilis, it decidedly was not, unless we can suppose that the disease had skipped over at least one generation. I admit, however, that gonorrhœa may produce these symptoms in the offspring. Diseases, infectious, are not always to be considered, on that account, syphilitic, as we see in *molluscum contagiosum*. *Ecthyma cachecticum* is also sometimes mistaken for syphilis.

When a child is infected during delivery, the disease appears

more promptly on the surface, in the form of ulcers; and the usual train of symptoms follow, the mouth and genitals becoming presently affected. The disease generally appears within a fortnight after delivery, sometimes so early as on the fourth day.

If the child receive the infection from the nurse, we discover ulcers on her nipples, and the disease appears on the child's mouth, before the surface of the body be affected.

It has been proposed to cure this disease, by giving mercury to the nurse alone, but this mode is now abandoned, mercury being given directly to the child; and it ought to be remembered, that this medicine produces less violent effects on the bowels in children, than in adults, and scarcely ever excites a salivation. But if given too long or too liberally, it may kill the child by its excitation, or may excite convulsions. Calomel is very often employed, and with great benefit, a quarter or half a grain being given three times a-day. Others advise frictions, which are equally useful. Fifteen grains of mercurial ointment, are rubbed on the thighs, alternately, once in two days, until the mouth be found hot, when it is intermitted or continued, according to the state of the system, and the effect on the disease; it must be used till the disease be removed. It has been remarked, that children apparently cured, when on the breast, have had a relapse after being weaned. If the child be griped, a gentle purge, and then an opiate, will give relief. Some have used the ung. acid. nitros., in place of the mercurial ointment, but it is not to be trusted to. It is, however, useful as an auxiliary, when applied to the affected part of the surface. It often happens, that after all appearances are removed, the disease returns some weeks or months afterwards. It is, therefore, necessary to continue the medicine, for some time, after an apparent cure.

Sometimes, in consequence of the use of mercury, a peculiar eruption, called the *eczema mercuriale*, takes place. This generally begins on the lower extremities, and spreads to the body. It consists of very small vesicles, which at first are like papulæ. Each vesicle may, with a glass, be seen to be surrounded with redness; and, if they be not disturbed, they acquire the size of pins' heads; then their contents become opaque. They are attended with heat and itching, and a general tumefaction of the part affected. Presently, even if not scratched, the vesicles burst, discharging thin acrid fluid, which stiffens the linen, and sometimes excoriates the part. When the discharge ceases, the cuticle becomes of a pale, brown colour, and then blacker; and, separating in pretty large flakes, leaves the skin below, of a bright red colour. After this, the skin comes off, in scales or scurfs, perhaps two or three times. The disease ceases of itself, sometimes within ten days; often, however, it is protracted

longer. Those parts, which are first affected, are first cured. Relief may be obtained, by applying saturnine lotions, or weak saturnine ointment.

SECTION THIRTY-FIRST.

The disease termed skin-bound, is not distinctly mentioned till 1718, when a case was published by Usembozius; since then, many accounts have appeared. It may be divided into the acute and chronic, the last being chiefly met with in private practice. The acute species, generally appears soon after birth, and proves fatal in the course of a few days. The earliest good description of this disease, is given by Dr Underwood, and by M. Andry, as it appeared in the hospitals of London and Paris. In London, the children were seized at no regular period; but it was observed, that, whenever the disease appeared, several children were attacked, within a short time, and especially those, in the last stage of bowel complaints, in which the stools were of a clayey consistence, and of which the induration of the skin, appeared to be only a sequel. The skin was of a yellowish white colour, like wax, and it felt hard and resisting to the touch, but not œdematous. It was so fixed, to the subjacent flesh, that it would not slide, nor could it be pinched up. This state was found to extend over the body, but the skin was peculiarly rigid, about the face and extremities. The child was always cold, did not cry, but made a moaning noise, and had constantly the appearance of dying immediately. In the French hospitals, the disease differed, in being more frequently attended with spasm, or tetanus, and always with erysipelas, especially about the pubis, which, though purple, was very cold. These erysipelatous parts, rarely suppurated, but sometimes mortified. The legs were œdematous, and the children died on the third or fourth day, or at farthest, on the seventh day from birth. This disease differs, then, principally from that observed in this country, in being combined with erysipelas and tetanus, which are by no means essential symptoms; and perhaps the erysipelas of children, has sometimes been mistaken, for the disease called skin-bound.

In private practice, the disease appears under a more chronic, though not less dangerous form. The children affected are generally delicate; and in such cases, as I have seen, the skin, from birth, was not so pliable as it generally is, being most rigid about the mouth, which had more of the orbicular shape than usual. The skin gradually becomes tight, hard, and shining, and of a colour, a little inclined to yellow. In some cases, the whole skin is thus affected; in others, chiefly that about the jaws, neck, and joints. The scalp is often bald and shining, and the veins of the head peculiarly large and distinct. In some in-

stances, parts of the skin are rough and slightly leprous. The appetite at first, is not greatly impaired, and the bowels are sometimes uniformly regular. Presently, the child becomes dull and listless, and moans, and gradually sinks, or is carried off by fits. The complaint lasts for several weeks. In some cases, the disease is less severe, the appearance of the child being healthy, and the thickening and rigidity of the skin, confined to the joints of the extremities,* or the disease may be confined nearly to one extremity. I have met with this circumscribed form, the whole groin, leg, and thigh, for instance, being swelled and purplish, and the muscles hard; the belly also discoloured, or red and mottled, as if numerous small veins were disposed over it, or as if there were a kind of ecchymosis, the child being, in other respects, pretty well. In such a case, the tepid bath and mild laxatives have been useful. It may be said this is merely a modification of erysipelas. Dissection throws no light on the nature of this disease, there being found only a deficiency of oil, in the cellular substance, with induration, or infiltration of thin albuminous fluid, tinged with bile. Instead of this, Palletta, occasionally, found fluid blood, in the cellular substance, and the muscles, giving the skin a livid colour. The veins, along the cerebellum, pons Varolii and medulla oblongata, were gorged with blood. The lungs had black blood in their substance, or sometimes air. In general, all the veins were fuller than usual of black blood. The liver was often of a brown red colour, so as to appear almost entirely composed of dark blood, at other times, it was swelled, tense, and as if inflamed, and then the intestines seemed to participate.† Camper says, there is always, or at least very frequently, a little hard tubercle found in the cheek, under the malar bone; but this can have no connexion with the production of the disease. Sometimes more children, than one, in the same family have been affected; and in such cases, they have been always of the same sex.

A variety of remedies have been made use of, such as mercury, laxatives, aromatic baths, and emollient frictions. Gardien advises vinegar, having gum ammoniac dissolved in it, to be poured on hot bricks, and the vapour applied to the indurated part. When there is stupor, or determination to the head or lungs, a

* Adults are sometimes seized with this disease. A very remarkable case of this kind is recorded in the 48th Vol. of the Phil. Trans.—The subject of it was a girl, aged 17 years. She had excessive tension and hardness of the skin, all over the body, so that she could hardly move. The skin felt like a dry hide or piece of wood, but she had some sensation when pressed with a nail or pin. It was cold and dry, the pulse was deep and obscure, but the digestion good. It began in the neck, then affected the face and forehead, and at last she could scarcely open her mouth.

† Archives, Tom. v. 105.

blister applied on the indurated part has been proposed, but I have no evidence of its utility; others, have, as a remedy for the induration, advised blisters to be applied to distant parts, with a view of producing counter-irritation. Palletta, found most benefit, from the application of leeches to the extremities, and the use of the warm bath. A gentle course of calomel has appeared to do good, when the affection was confined to the extremities. Decoction of sarsaparilla, with the frequent use of the warm bath, decoction of mezereon, and a variety of diaphoretics may be tried; and in cases where more children than one, in the same family, have been affected with the chronic species of this disease, it may be worth while to try the effects of mercury, and sarsaparilla, on the parents.

SECTION THIRTY-SECOND:

The small-pox, begin with a febrile attack, which commences generally about mid-day. It is marked by chillness, listlessness, pain in the back and loins, drowsiness, vomiting, pain in the region of the stomach, which is increased by pressure, starting, and coldness of the extremities. As the fever advances, the pulse becomes more frequent, the skin hotter, the face flushed, the eyes tender, and the thirst considerable. The child starts, grinds his teeth, or has one or more eclamptic fits, or sometimes complains of severe cramp in the legs, or lies in a kind of comatose state. On the evening of the third, or morning of the fourth day, an eruption appears on the face, and then on the neck, from which it spreads to the body. In mild cases, the eruption is completed, by the evening of the fourth, but sometimes not till the fifth day, or even later, if the pustules be very numerous; and then the fever declines or goes off altogether. The eruption consists, at first, of small, hard, red pustules, of a fiery appearance. On the second day, the top is clear, and a very small vesicle, is observed to be forming. On the face, we frequently find patches like measles, but containing many minute vesicles. Next day, if the eruption is to be copious, the number of pustules is farther increased, especially on the face, where we often find more patches. These patches, and the succeeding confluent vesicles, seldom appear in the inoculated small-pox, or in the natural small-pox, when very distinct. They are numerous, in proportion to the tendency, to the confluent form, of the disease. The pustules on the body, are more raised and rounder, though in some places they are flatter, and more extended. The base is surrounded with an inflamed rim; and presently, if the eruption be copious, this inflammation spreads from one pustule to another, so that all the surface appears to be red. The cuticle of the vesicle, at this time, is somewhat opaque, but its con-

tents are limpid, like water. On the fourth day, if there be any patches on the face, they are evidently covered with flat confluent vesicles; on the body and arms, the vesicles are larger, and rounder, than the day before. The surrounding redness is a little paler, the skin of the vesicle is whiter, and more of the pearl appearance; so that at the first glance, the eruption seems to consist of white elevations. The vesicles are full and smooth. On the fifth day, they are rather flatter. On the sixth day, the skin of the vesicles, on the body and extremities, is drier and harder, and the contents still limpid; all those on the body are entire, but about the chin, some have broken, and crusts are formed. If there have been patches on the face, these are now covered with flat vesications. On the seventh day, the vesicles on the body and extremities, are of a dead white colour at the circumference, but more glossy, like candied sugar at the centre. Their contents are a little turbid; more crusts are formed on the face. On the eighth day, the fluid on the extremities is whitish. On the ninth day, the crusts on the face, are more numerous, and they begin to be formed about the bend of the arm, &c. The pustules on the extremities, are whiter, as if filled with pus, but the fluid is thin and milky; the skin of the vesicles is thick. On the tenth day, the pustules on the face are covered with scabs, and many are formed on the extremities. On the breasts, the vesicles are prominent, like two-thirds of a sphere, but compressed, and have no redness round them. Many vesicles are empty, and covered with thin, brown skin. Scabs are formed, by the skin becoming dry, hard, and brown, or sloughing. The contained fluid is partly absorbed, and partly effused by exudation, so as to add a crust to the slough of the vesicle.*

When the scabs are picked off, about the seventeenth day, the base of the mark, is, in general, elevated above the rest of the skin, but the centre is depressed, a little, below the margin. The colour is light-red. On the twentieth day, the blanes on the body and extremities are smooth, flat, or slightly scurfy, so that they somewhat resemble leprous spots.

The process is not always regular; for, in very mild cases, the suppuration is indistinct, and the scab thin; the pustule dries without forming much matter, so that inoculators can scarcely get their lancet wet. This is a favourable condition. Sometimes the matter, though considerable in quantity, does not exude

* The pustule is formed in the chorium, and, in mild cases, confined to it. But it may destroy the under surface, and communicate with the subjacent texture. Professor Van der Kolk at Utrecht, showed me, some years ago, a series of preparations, illustrating the progress in, and the reparation of, the chorium, partially or perfectly, according to the extent of injury.

to form a scab, but is absorbed, and the vesicle remains for a time entire, forming what has been called *variola siliquosa*.

About the seventh or eighth day of the disease, when the pustules are numerous, the face swells; but about the tenth, or eleventh, it subsides, and then the hands and feet swell. It is also common, about the sixth or seventh day, for the throat to become sore, with sneezing, and some degree of hoarseness or cough; and in unfavourable cases, the secretion about the throat, becomes tough and thick.

When the pustules are numerous, a return of the fever may be expected about the eleventh day. This is called the secondary fever; but, in mild cases, it is very trifling, and does not last long.

Such is a general history of the distinct small-pox; but the disease may also appear in a different form, known under the name of the confluent small-pox. In this case, the eruptive fever is more severe, attended with greater pain in the loins, and often with coma. It differs also from the former, which is of the inflammatory kind, in being of the low type, so that sometimes petechiæ appear. The eruption comes out earlier, generally on the morning of the third day, and is sometimes preceded, by erythematic inflammation, of the face or neck. The eruption is copious, and at first, more like measles than small-pox, so that some practitioners have, at this stage, mistaken the one disease for the other. The pustules, which are not so much elevated as the *variola discreta*, become confluent, especially on the face; and though they may be confluent only on the face, yet those on the body, are not of a good kind. They form matter earlier, do not retain the circular form, and, instead of having the interstices of the skin, where they do not coalesce, of a red colour, as in mild small-pox, these spaces are pale and flaccid. The coalescence, is most remarkable on the face, which often seems as if covered with one extensive vesicle. The matter which these pustules form, is not thick and yellow, like good pus, but either of a whitish brown, or black colour. Scabs generally form, about the eleventh day of the disease, but these do not fall off, for a length of time, and leave deep pits. The swelling of the face, is greater and more permanent, than in the former species, and the eruptive fever does not go off, when the eruption is completed; it only diminishes a little, till the sixth or seventh day, when it increases, and often proves fatal on the eleventh.

The treatment of the distinct, is different from that of the confluent, small-pox. During the eruptive fever, the antiphlogistic regimen must be carefully enjoined, the diet must be light and sparing, the surface kept cool and clean, and the bowels loose. Emetics, at an early stage of the fever, have

been serviceable, and it is generally proper to give laxatives. Eclamptic fits are relieved by opiates and cool air. When the eruption is coming out, the cool regimen should still be persisted in, and the bowels kept open. After the pustules have appeared, the fever generally abates; and then, although heat should be avoided, the cooling and purging plan, need not be carried so far as formerly. But if the fever still continue, these means should be also continued. The diet must be sparing, and plenty of ripe fruit should be given. If secondary fever supervene, it is to be removed, chiefly, by laxatives and cool air: or if there be oppression at the stomach, a gentle emetic may be given.

In the confluent kind, during the eruptive fever, the cold plan should be diligently employed, and cathartics are of essential benefit. When the eruption appears, the cooling regimen should still be persisted in, and both vegetable and mineral acids ought to be given freely. Quinine is also proper, provided that it be not productive of sickness or vomiting. When the fever is aggravated, at the height of the disease, emetics have been sometimes given with advantage; but in general they are not necessary, and more benefit is derived from laxatives and clysters. Opiates are useful, for abating irritation; and wine, with nourishing diet, should be prudently given, to support the strength, which is apt to be completely exhausted, under the constant fever and irritation. On this account, also, it is necessary to restrain diarrhoea, when it is frequent, and adds to the weakness. Blisters have been advised as stimulants, but they are only useful, when deep-seated inflammation exists. Sometimes the brain seems to be affected, the head being pained, the eyes impatient of light, and the patient delirious. In this case, leeches may be applied to the temples, and a blister put on the head. When the lungs are affected, blisters on the sides, or breast, do good. When the stomach is very irritable, if saline draughts and opiates do not give relief, a small blister should be applied over the stomach. If the swelling of the face subside quickly, and be not followed by tumefaction of the feet and hands, blisters have been applied to the wrists, but sinapisms are better, though it is not decided that either are of great utility. When the throat is much affected, and filled with viscid phlegm, gargles are of use, and sometimes a very gentle emetic gives relief.

If the eruption suddenly subside, cordials tend to bring back a salutary inflammation; or if it altogether recede, the tepid bath, with ammonia, and other internal stimulants, will be proper. The boils and inflamed pustules, succeeding variola, are very troublesome, and sometimes prove fatal. When large, suppuration should be hastened with a poultice; when small,

unguentum resinosum may be applied; or if they be indolent, gentle friction, with camphorated liniment, and bathing with laudanum, is of benefit. The strength must be supported, and, as soon as possible, sea-bathing should be resorted to.

The violence of the variolous disease is generally lessened by inoculation,* which was first introduced, into this country, in the year 1721. The operation itself is very simple, consisting merely in abrading the skin, on the arm or leg, with the point of a lancet, and then applying on the small scratch a little of the variolous matter, which should be taken early, as when it is delayed until the pustules are collapsing or scabbing, it sometimes produces a spurious inflammation. By the third day, we are sure of success, by observing a slight redness on the arm, at the scratch. On the third or fourth day, the part is hard to the touch. The redness gradually increases, for the two succeeding days, and then a small vesicle may be perceived. By the eighth, or at farthest the tenth day, the pustule has completed the variolous character. It forms a circular elevation, surrounded with circumscribed redness, and the vesicle is a little flattened on the top. The constitution at this time becomes affected; and the earlier that the eruptive fever appears, the milder, in general, is the disease. The character of the succeeding disease may, it is supposed, be foreseen, even before the eruption take place, or be completed, by examining the arm; but this is doubtful.

The safety of the practice of inoculation is greatly increased, by having the system as free as possible from every diseased state; and, therefore, children are not inoculated during dentition, at least if they cut their teeth with any trouble. Very young children are not considered as favourable subjects. Dr Fordyce observed that two-thirds of those who died, from inoculated small-pox, were under nine months. If we have our choice, the best age is said to be from two to four years, but it is dangerous to wait so long, lest the child should take the casual small-pox; and Dr Adams informs us, that of three thousand children, inoculated at the hospital, in one year, two thousand five hundred, were under two years of age, yet, only two out of that number died. Full plethoric children, should be frequently purged, and fed sparingly, before the operation. Some particular modes of preparation, have been often employed, such as giving calomel or antimony, but these have very little effect. The attention ought chiefly to be directed, to bring the body into a state of good health, if previously delicate, or diseased: and, on the other hand, if requisite, diminishing plethora, and in-

* Inoculation, even after exposure to infection, is capable of producing a mild disease.

flammatory disposition, by the obvious means. After the inoculation, the bowels must be kept open, and all stimulants avoided; and when the eruptive fever commences, the antiphlogistic regimen is to be strictly practised, and often has so good an effect, that few or no pustules come out; or if they do, they do not maturate, and we have no secondary fever. In general, the arm heals kindly; but when it forms a sore, it should be exposed to the air, or dusted with chalk: if it threaten gangrene, it should be bathed with camphorated spirits, or tincture of myrrh.

SECTION THIRTY-THIRD.

As a preventive of the small-pox, the vaccine inoculation is now universally practised. This is productive, in general, of a very mild and safe disease, consisting of a single vesicle, forming on the place where the inoculation was performed. On the third day, the scratch is slightly red, and, if pressed with the finger, feels hard. Next day, the red point is a little increased, and somewhat radiated. On the fifth day, a small vesicle appears, but it is still more easily seen on the sixth. This gradually increases, until it acquire the size of a split pea. The colour of the vesicle is dull white, like a pearl. Its shape is circular, or slightly oval, when the inoculation has been made with a lengthened scratch, acquiring about the tenth day, a diameter equal to about the third, or fourth, part of an inch. Till the end of the eighth day, the surface is uneven, being depressed in the centre; but on the ninth day, it becomes flat, or sometimes rather higher at the middle than at the edges. The margins are turgid and rounded, projecting a little over at the base of the vesicle. The vesicle is not simple, but cellular, and contains a clear, limpid fluid, like the purest water. On the eighth or ninth day, the vesicle is surrounded with an areola, of an intense red colour, which is hard and tumid. About this time, an erythematic efflorescence, sometimes, takes place near the areola, and spreads gradually to a considerable part of the body. It consists of patches, slightly elevated, and is attended with febrile symptoms. On the eleventh or twelfth day, as the areola decreases, the surface of the vesicle becomes brown at the centre, and is not so clear at the margin; the cuticle gives way, and there is formed a glossy, hard scab, of a reddish-brown colour, which is not detached, in general, till the twentieth day. When it falls off, we find a cicatrix, about half an inch in diameter, and with as many pits as there were cells, in the vesicle. During the progress of the vesicle, there is often some disorder of the constitution; and, occasionally, a papulous eruption, like strophulus, appears near the vesicle.

As all agree that security against the small-pox, is not pro-

cured by spurious vaccine vesicles, it becomes necessary to study, carefully, the character of the genuine disease, which I have briefly described. A very frequent species of spurious cow-pox, is rather a pustule than a vesicle. It increases rapidly, instead of gradually. From the second, to the fifth or sixth day, it is raised toward the centre, and is placed on a hard, inflamed base, surrounded with diffused redness. It contains opaque fluid, and is usually broken by the end of the sixth day, when an irregular, yellowish-brown scab is formed. If the vesicle be regular in its progress, and have pretty much of the general aspect of the vaccine vesicle, but contains on, or before, the ninth day, a turbid or purulent matter, it cannot be depended on; and the security will be still less, if the scab be soft. Besides this, Dr Willan has characterized three spurious vesicles. First, a single pearl-coloured vesicle, less than the genuine kind; the top is flattened, but the margins are not rounded nor prominent. It is set on a hard, red base, slightly elevated, with an areola of a dark rose colour. The second, is cellular, like the genuine vesicle, but somewhat smaller, and with a sharp, angulated edge. The areola is sometimes of a pale red colour, and very extensive. It appears on the seventh or eighth day after inoculation, and continues more or less vivid for three days, during which, the scab is completely formed. This is less regular than the genuine scab, and falls off sooner. The third, is a vesicle without an areola. These forms of the disease, do not give security against the small-pox; and it would appear that a vesicle, which is even regular at first, or which runs through the whole course with regularity, may fail to secure the constitution; for there are well authenticated cases, where the small-pox has thus succeeded the cow-pox. Professed writers on this subject have enumerated three causes of failure. 1st. From matter having been taken from a spurious vesicle, or from a genuine vesicle at too late a period. The best time for taking matter, is about the eighth day; and after the twelfth, or when it becomes purulent, it cannot be depended on: or the same effect will be produced, by any cause which can disturb the progress of the vesicle. 2d. From the patient being seized, soon after vaccination, with some contagious fever, such as measles, scarlatina, influenza, or typhus. 3d. From his being affected, at the time of inoculation, with some chronic cutaneous disease, such as tinea, lepra, &c. The precise circumstances, under which these causes, produce their effect, or the degree to which they must be present, in order to operate, have not yet been determined with certainty. It has also been supposed, that puncturing the vesicle, in order to take matter from it, may, by disordering the process, sometimes prevent its efficacy.

Even where none of these causes exist, and when the vesicle runs its course with distinctness, it does, not unfrequently happen, that the constitution is not rendered insusceptible of the variolous action. It were much to be wished, that some test could be discovered, by which the security could be determined. The constitution is often manifestly disordered, during some part of the vaccine progress, and such children have greater security; but sometimes the disorder is too slight to be discovered, and, therefore, this sign is not to be relied on. We are also assured, that even when no constitutional disorder has taken place, the child is secured. Other means, then, have been resorted to, in order to discover if the system be affected, so as to have as complete a change induced by the inoculation, as it can effect. These are two in number: 1st. If a second inoculation be performed, on the fifth or sixth day, after the first, a vesicle will arise as usual, but it will be surrounded with an areola, nearly, as early as the first one. 2d. If a second inoculation be performed, any time after the twelfth day, after the first inoculation, some degree of inflammation will be induced; but if the system have been affected, no regular vesicle will be produced. But the most satisfactory method is, to inoculate with small-pox matter, which produces a small pustule, generally unattended with constitutional affection; but sometimes, even although the constitution have been changed by the vaccine inoculation, a febrile affection may be excited, either without pustules, or attended by an efflorescence on the skin, or an eruption of little papulæ, or small pustules, which disappear in about three days. It unfortunately happens, however, that parents, in general, do not think it necessary to adopt any of these means; and inoculators, perhaps, trust too much to their own power of discrimination, in determining how far a vesicle is capable of producing the desired effect. Some test is the more requisite, as vaccination is often performed in a very careless manner, and by people ignorant of the character of the disease.

It has been said, that if a child, properly vaccinated, should afterwards take the small-pox, the eruption is papulous, or tuberculated, and does not suppurate, but ends in desquamation. I have, however, known very distinct cases of suppurating small-pox, in those, who, some years before, had gone through the vaccine process, in the most satisfactory manner. Few facts, I believe, are now better ascertained, in our "ars conjecturalis," than that small-pox may take place after vaccination, yes, even the most perfect vaccination; and I believe that the proportion will increase, as we recede from the date of vaccination, and augment the activity of the infection.* Many shall escape, who

* I have known a variolous pustule produced on the arm by inoculation, soon

are merely exposed to the, casual, company of those who have small-pox, who should take the disease, if inoculated with virus. This much, at least, I know, that a majority of those whom I have inoculated, have taken a mild small-pox. The eruption has been more papulous, than if vaccination had not preceded, and has only vesicated, and dried like chicken-pox. In other cases, the principal part of the eruption, has been efflorescent like measles. But all who were formerly conversant with small-pox, know, that children inoculated, and properly treated, often, had scarcely any eruption, and that not coming to suppuration. Those, again, who take small-pox, from exposure to contagion, have the disease more severely; the fever may be high, and attended with delirium, the body completely covered with pustules, which maturate, and leave for a time distinct blanes. The disease may even prove fatal. Variola occurring after vaccination is contagious, and produces the same disease in those who are not vaccinated, as any other small-pox would have done. Some seem to think, that by changing the name they can change also the disease, and have called this, not variola, but a varioloid disease. It must either be small-pox, or it must be something else. If it be not, then, small-pox virus can produce a new disease. We are told it does so, and long ago it was maintained, that chicken-pox was merely a modification of variola! The substitution of the term varioloid, is indeed a very good way of getting rid of the fact, that small-pox may occur after vaccination; but it is not an original idea, for Falstaff fell on the same expedient with regard to stealing—"Call it *conveying*, Hal." I do not, from these remarks, mean to depreciate the cow-pox; on the contrary, it is only by ascertaining the precise power of vaccination, that its full benefit can be derived to mankind: and, although, the warmest friends of this discovery must admit, that it is not always successful, yet, it has hitherto failed in so small a proportion of cases, that we must consider it as justifiable to rely upon it, and adopt it, in preference to the variolous inoculation. Experiments have been made, to ascertain the effects of inoculation, with a mixture of variolous and vaccine matter; and the result has been, that sometimes the cow-pox, sometimes the small-pox, has been thus produced. When a person is inoculated, with variolous and vaccine matter, at the same time, the incisions being very near each other, the vesicles enlarging, join into one; and matter, taken from the one side, will produce cow-pox, from the other, small-pox. When a person is inoculated with the two kinds of matter, at the same time, or within a week

after vaccination, without any constitutional effect, showing that the system was *then* secure; and yet, years afterwards, the same individual has had casual small-pox, proving that time had diminished the efficacy of vaccination.

of each other, both diseases will be communicated to the patient, whether the incisions be near or remote, and small-pox pustules will be produced on the body; but they seldom mature, and the disease is generally mild. When, however, the variolous inoculation is performed more than a week, as, for instance, nine days before vaccination, the vaccine pustule becomes purulent, and sometimes communicates the small-pox even in a very bad form. When, on the other hand, variolous matter is introduced nine days after vaccination, its action is altogether prevented. From these observations, it follows as an important conclusion, that when a child has been exposed to small-pox contagion, vaccination, though it may not prevent, will yet, generally, mitigate the subsequent disease.

SECTION THIRTY-FOURTH.

The chicken-pox, is a disease sometimes mistaken for small-pox; and, at one time, and by some authors, described along with it. It is preceded by eruptive fever, which continues for three days, and is marked by languor, loss of appetite, thirst, furred tongue, pain in the head, back, and limbs, sometimes pain in the epigastric region, with nausea and vomiting. The pulse is quick, the face occasionally flushed, and cough and hoarseness may attend the disease. Convulsions, also, in some cases, occur during the fever, or the child has tremors when asleep, accompanied with terrifying dreams, or he is slightly delirious. The eruptive fever, does not always go off, when the eruption appears, but may continue even till the third day of the eruption. In general, however, the symptoms are mild, and sometimes exceedingly trifling. The eruption commences on the back, or breast, and next appears on the face and head, which is not the order observed by the variolous eruption. Last of all, it appears on the extremities. The pustules very soon contain lymph, and by the fifth day, are covered with scabs or crusts, which is earlier than happens in the variolæ. These drop off sooner than in small-pox, and very seldom leave any cicatrix. The eruption is attended with very considerable itching, in consequence of which, the pustules are soon broken. The pustules are seldom, or never confluent, and Dr Heberden never could count more than twelve, upon the face, but we sometimes meet with many more.

In varicella, almost every vesicle, on the first day, has a hard, inflamed margin. On the second or third, they are full of serum at the top; and those which are fullest of the yellow liquor, resemble small-pox pustules, of the fifth or sixth day. On the third or fourth day, the shrivelled and wrinkled state of the vesicles which remain entire, give a different appearance from

the variolæ; and, on the fifth day, the presence of scab assists the diagnosis. It is proper, however, to add, that, in some cases, I have found the pustules longer than usual of running their course, and the disease altogether so like small-pox, that I should have been at a loss to decide on the nature of the disease, had not the rest of the children in the family, had the chicken-pox, at the same time, in the usual form.

Such is the general description of this disease; but it consists of some varieties, which have, very properly, been separately described by Dr Willan, whose distinctions I shall retain. 1st. The lenticular. The eruption consists, on the first day, of small red protuberances, not exactly circular, with a flat, shining surface, in the middle of which, a minute vesicle is soon formed. These, on the second day, resemble miliary vesicles, are about the tenth part of an inch in diameter, and are filled with whitish lymph. On the third day, the extent is the same, but the fluid is straw-coloured. Next day, many of the vesicles are broken; and those which are not, have shrunk, and are puckered at their margin. Few are entire on the fifth. On the sixth day, small, thin, brown scabs appear universally, in place of the vesicles. On the seventh and eighth days, these turn yellow and dry, from the circumference toward the centre; and on the ninth or tenth day drop off, leaving red marks without pitting. 2d. The conoidal. The vesicles rise suddenly, and have a hard, inflamed border. On the first day, they are acuminate, and contain a bright, transparent lymph. Next day, they are more turgid, the lymph is straw-coloured, and they are surrounded with more extensive inflammation. On the third day, the vesicles have shrivelled; have inflammation round them; if entire, contain purulent matter; if they have burst, they are covered with slight, gummy scabs. The scabs fall off, in from four to five days, and may leave durable pits. A fresh crop of pustules, comes out on the second or third day, and runs the same course with the first; so that the eruptive stage in this species, is six days, and the last formed scabs, are not separated, till the eleventh or twelfth day. 3d. The swine or bleb-pox. The vesicles are large and globated, but the base is not exactly circular. They are surrounded with inflammation, and contain transparent lymph, which, on the second day resembles whey. On the third day, they subside and shrivel, and appear yellowish, the fluid being mixed with a little pus. Before the end of the fourth day, they are covered with thin, blackish scabs, which fall off in four or five days.

The chicken-pox is a very mild disease, and requires no other management, than keeping the bowels open, and the surface moderately cool. The skin may be sponged with cold water,

which diminishes the heat and lessens the number of pustules, if done during the eruptive fever; at a later period, it abates the itching. I have, especially in scrofulous children, observed, that if the bowels were neglected, by the parents, and the diet were full and heavy, the pustules became much inflamed, and ended in sloughs, which left large and permanent cicatrices; and in some cases, boils and abscesses have occurred from the same cause.

SECTION THIRTY-FIFTH.

Urticaria, or nettle-rash, may appear either as an acute or chronic disease.* The first is most frequent with infants and children. It is preceded by languor, sickness, and fever, on the third day of which, but sometimes earlier, an itchy eruption appears, bearing a very exact resemblance, to that produced by the stinging of nettles. It consists of irregular patches, slightly elevated above the surface. These, are of a dull, white colour at the centre, and red towards the margins, which are sometimes hard and well defined. The size and shape of the patches are very various. Generally, they are about the size of a penny-piece, but sometimes form pretty long stripes. This eruption, is, in some cases, attended by a slight turgescence of the skin, but especially of the face and eyelids. The patches do not remain constantly out, but appear and disappear, irregularly, during the disease, which lasts for seven or eight days, including the period of the eruptive fever. When the eruption declines, the languor, stomachic symptoms, and feverishness, go off. The disease terminates by slight exfoliation of the skin. In infancy and childhood, it is often dependent on dentition, or affections of the bowels; and from the itching which attends it, great distress is produced. The febrile urticaria is not infectious, but in certain seasons it is very prevalent; and the same holds true, with regard to the chronic species. Chronic urticaria is more rare in infancy. It differs from the former, chiefly, in being destitute of fever, and vexing the patient, at intervals, for a length of time; sometimes even for years. The patches seldom continue out, however, for above a few hours at a time. They are, like the former, reproduced readily by exposure to cold, and are also particularly troublesome after undressing to go to bed. A temporary eruption of this kind, without fever, is often consequent to eating particular kinds of fish, or substances which disagree with the stomach. An eruption, somewhat, resembling urticaria, is described by Dr Willan, under the name of roseola

* Dr Willan notices five different species of this disease; but for the present purpose, this simple division is sufficient.

annulata ; it differs in size, and some other circumstances, whilst it agrees in others. It consists of circular patches, about half an inch in diameter, the margins rose-coloured, the centre, of the usual colour of the skin ; but I have seen the patches of a purple colour, and with very little central white. These cover the body, and produce, especially at night, a sensation of heat and itching. When unattended with fever, the eruption fades in the morning, and becomes round and elevated at night. The use of mineral acids, and tepid bathing, will be of service.

A gentle emetic, followed by one or two purges, gives relief in acute urticaria. The child should, if possible, be kept from scratching, so as to tear the skin ; and this will be the easier done, if he be preserved in a uniform temperature. The tepid bath sometimes gives relief. The chronic species is more obstinate, and in consequence of the abrasion of the skin, from frequent scratching, it has sometimes been treated as itch, but of course, without advantage. The bowels are to be kept open, by small doses of calomel, or rhubarb and magnesia, and some tonic medicine should be administered. The tepid bath daily will also be proper, but sometimes, sea-bathing, continued for some months, succeeds better. Mercurials have been tried with very little good effect, except in so far as they acted on the bowels. Soda is useful, and sometimes iodine with bitters.

SECTION THIRTY-SIXTH.

Scarlatina,* may appear under two different forms. In the first, it is accompanied with inflammatory fever, and is generally mild ; in the second, it is connected with a low fever, and is very malignant. The first species admits of a further subdivision, according to the degree of mildness ; one variety, being attended with slough or ulceration of the throat ; another, still milder, with little or no affection of the fauces. This has, by some, been called scarlatina simplex, to distinguish it from the first, or scarlatina anginosa.

The scarlatina simplex, begins with a febrile attack, attended with considerable debility, chillness, nausea, and pain in the belly, and about the loins and extremities. It generally attacks, very suddenly, in the afternoon or evening, the patient having been, not an hour before, lively, and apparently in good health. The pulse is extremely rapid, being often 140 in the minute ; the trunk is very warm, and the feet cold ; the respiration frequent, irregular, and sometimes sonorous ; the eye dull, and the eyelids turgid and red on the inside. Sometimes, but not often, con-

* This, roseola, and measles, appear at first to have been confounded with one another.

vulsions occur early, and are to be considered as unfavourable. On the next day, if not earlier, an eruption appears, first on the face and neck, and very soon, always within twenty-four hours, it is diffused over the whole body. It consists of numerous minute specks, so closely set together, that the skin appears altogether of a red colour, like a boiled lobster, and it feels rough. Broad patches also appear on those parts which are most exposed to heat or pressure. Sometimes papulæ are intermixed with, or even precede, the eruption. The inside of the eyelids, nostrils, cheeks, and fauces, are of a deep red colour, and the papillæ of tongue participate in the redness. The eruption is most vivid at night, and especially on the evening of the third or fourth day. On the fifth day it declines, and is wholly gone by the seventh, when desquamation takes place. During the eruptive stage, the patient is generally either restless, or very drowsy, often slightly delirious, and both during this stage, and the process of desquamation, complains much of itchiness. Whilst the fever lasts, the skin is extremely hot. The contagion, in general, operates on the third, or fourth, day after the person has been exposed to it.

The scarlatina anginosa, is attended with more severe symptoms. It commences with the usual symptoms of fever; and in general, whenever these appear, or even before the fever commences, the throat will be found, on inspection, to be affected; but sometimes the cynanche does not take place till the eruption come out, which is nearly about the same period as in the former species. Dr Sims says, that the first marks of disease, are paleness and dejection of countenance, and that, at this time, the fauces will be found to be red. I am very much inclined to adopt the same opinion. From the first, there is a sensation of stiffness, about the muscles of the jaw and neck; and very soon, generally on the second day, the throat feels as if straitened, the voice becoming hoarse, and sometimes a croupy cough takes place. In this case, the breathing often becomes sonorous, or even so obstructed, that the child is suffocated, as in cynanche trachealis. In very many cases, deglutition is performed with difficulty, and sometimes the drink returns by the nose. On examining the mouth, we find, at the first, that the tongue has a very red colour, and its papillæ are evidently elongated. In the progress of the disease, it is often covered with a fur. The tonsils are early observed to be of a deep red colour, and, very soon, whitish streaks may be discovered. Superficial ulceration is frequent on the second or third day, and the parts become covered, with a white, or ash-coloured, substance or slough, whilst the rest of the tonsil becomes of a dark-red colour. These sloughs are sometimes not removed, for a week or more, but

often are detached on the fifth or sixth day, when the cuticular eruption declines. The inside of the nostrils is inflamed, and sometimes excoriated. The lips, likewise, become tender and itchy, and, owing to the child picking at them, they, as well as the gums, are apt to be covered with black patches, chiefly from effusion of blood. The eruption, in this variety, is the same in appearance, and duration, as in the former. When it is slight, or disappears suddenly, it has been said that the event is hazardous, but this is not always the case. The fever is attended, often, with great nausea, bilious vomiting, restlessness, head-ach, and delirium. The heat is excessive, the pulse feeble, and sometimes fluttering, always very rapid. The languor and inquietude are great, especially when the sloughs are forming. About a week, or ten days, after the eruption fades, anasarca swelling of the legs may take place, and continue even for two or three weeks. Sometimes, other parts of the body swell, or the patient has ascites.

Scarlatina is sometimes succeeded by pain in the ear, followed by temporary deafness, and the discharge of fœtid serous fluid. This often abates, upon syringing the ear with decoction of camomile for a few days; but it may be more obstinate, and the child remain permanently deaf. The tonsils occasionally suppurate, after the external disease abates. Swelling of the parotid gland is not uncommon, and it is said by various authors, when it is late of appearing, to protract or renew the symptoms, even the eruption itself; but this I do not believe. Sometimes the glands of the neck swell and suppurate, or the bones of the nose, after obstinate ulceration, become carious. I have seen some unfortunate cases, where the lips have sloughed completely away, and these ended fatally. Even after the patient has, to all appearance, recovered from scarlatina, there sometimes, unexpectedly, supervene languor, debility, and pain of the bowels, frequent pulse, and loss of appetite, which symptoms terminate in dropsy. Bronchitis, or pneumonic affections, may also be produced. In some cases, the patient becomes languid, without fever or dropsy, but these generally do well.

In the second species, or scarlatina maligna, the pulse is very small and feeble, sometimes indistinct. The debility is very great, the patient fainting on making the smallest exertion, and very generally he is unable to sit up in bed. In the scarlatina benigna, the tongue is red, the eyes and eyelids red, the throat at first red, and the skin like a boiled lobster; but in this species, the tongue is livid, tender, and soon covered, together with the teeth and lips, with a brown or black crust, the eyes are dull, and the inside of the eyelids dark-coloured, the cheeks are livid, the throat of a dark red colour, with brown or blackish sloughs;

there is very foetid breath, with much acrid discharge from the nostrils. The inside of the labia pudendi of girls, and of the prepuce of boys, has, in scarlatina, the same colour with the inside of the cheeks and lips; in the scarlatina maligna, the vulva and lips are of a dark colour, and sometimes mortify. The eruption is sometimes faint, in other cases, very dark and purple-coloured, and often appears and disappears irregularly. In the progress of this disease, delirium, great fretfulness, or coma, may come on. The breathing is rattling, the neck seems to be full, and of a livid colour, and the head is bent back. This disease sometimes proves fatal in a few hours. It is not, however, always alike mortal, for there are several smaller degrees of malignity, forming a gradation betwixt this, and the scarlatina anginosa. The former, but especially this species, may produce fatal croup, by the disease extending to the glottis.

The first species, when properly managed, is not very dangerous, but the last is attended with great hazard. The prognosis must be made, by attending to the symptoms of debility, the progress of the affection of the throat, the tendency to inflammation of the trachea, and the general character of the epidemic.*

Drs Withering, Adams, and Willan believe, that the scarlatina does not attack the same person twice, though the throat may be, to a certain degree, repeatedly affected. I am disposed to adopt the same opinion as a general rule. Aphthous affections of the throat, and exudation of lymph from inflammation, are often considered as belonging to scarlet fever, though the eruption be absent, but the conclusion is incorrect. Those who are exposed to the contagion of scarlatina, may have sloughs in the throat, attended with considerable debility, but a regular repetition of the scarlet fever, is certainly not a frequent occurrence. Sometimes other eruptive diseases, such as roseola infantilis, have been taken for it.

The scarlatina simplex and anginosa, are often so mild diseases, as to require little medicine, but, still, great attention is necessary. Emetics, given early, are said to be attended with advantage, and supposed to render the subsequent disease milder. But to the truth of this opinion, my experience does not permit me to bear testimony. Laxatives are more useful, and, in mild cases, are the only medicines, which are required. In some epidemics, the bowels are moved, with greater difficulty, than in

* M. Dance in a paper contained in Archives Generales, Tom. xxiii., observes, that inflammation is the chief cause of death, and insists on the antiphlogistic treatment. This paper is valuable from the dissections, which showed inflammation, in the mucous membrane of the air passage, digestive canal, or membranes or substance of the brain, which has been found sablée de points rouges, and the pia mater of a uniform madder red.

others, and in these cases, the laxative must be stronger. Even, when there is a tendency to diarrhœa, if the stools be fœtid, and unnatural in their appearance, laxatives are equally necessary, as in the opposite state. The best medicine, to be given at first, and the earlier the better, is calomel, either alone, in a brisk dose, or combined with some other laxative, to ensure its operation; this often, even at the commencement of the disease, brings away fœtid stools. After the operation of the first dose of calomel, the bowels must be kept open, or even rather loose, by the daily use of mild infusion of senna with an aromatic, castor oil, or any other mild aperient. These are better than repeated small doses of calomel, which often affect the mouth considerably. But if the stools be very fœtid, the patient oppressed, and the belly full, a brisk purgative may be given, oftener than once, in the course of the disease.

Another remedy, is affusion with cold water. This, however, is contra-indicated, when there is any internal inflammation. It is of consequence to use it early, if it is to be done at all; and whenever the patient felt steadily hot, the shivering having gone off, and the skin felt very warm, to the hand of another person, it was, at one time, the practice to put him into an empty tub, and pour over him a large ewer-full of cold water. By this, I have known the disease arrested at once, the eruption never becoming vivid, and the strength and appetite in a few hours returning. Even where it is not arrested, it is pleasant to observe the change, which often is produced. The patient, from being dull, languid, and listless, feels brisk, and disposed to talk or laugh; the skin becomes, for a time, colder, and refreshing sleep is frequently procured. The repetition must depend on the degree of heat, and on the effect of the first. If that have done no good, it is useless to try it again. One application is sometimes sufficient, but it may be necessary, the first day, to use it twice. It is seldom requisite afterwards: for, although the disease may continue, it is mild, and laxatives complete the cure. If the fever be mild, and the heat not pungent and great, we do not employ the affusion. We keep the patient cool, or have the surface cooled, frequently, with a sponge dipped in cold water, and indeed this seems now, in most instances, to have superseded the use of the affusion. These two remedies, especially purgatives, do not only mitigate the disease, but lessen the risk of dropsical swelling taking place afterwards. When, there is marked determination to any of the cavities, it is generally safe to take some blood by the lancet, and cold affusion is improper. When, either in adults or children, there is severe headach, or feeling of weight, accompanied with much fever, the instant use of the lancet, has been attended with immediate and

permanent relief, or, at a later period, I have found leeches of much advantage. If there be delirium, preceded by much ear-ach, a blister to the head may afterwards be applied with good effect. By neglecting these means, at the proper time, the patient is apt to be carried off in a fit, or in a comatose state. Gargles are often useful, when they can be employed. Water, acidulated pretty sharply with muriatic acid, forms a very good gargle. Acid fruits are proper. The diet should be light and nourishing. If the debility be considerable, small doses of wine, may, towards the end of the disease, be administered. Should anasarca take place, laxatives and diuretics, such as digitalis, are proper, but mere swelling of the face, or one or more of the extremities, is generally removed, by the free use of supertartrate of potash. If the urine be dark coloured, as if it contained some of the colouring matter of the blood, vegetable diet has been thought safer than animal food. When the glands about the throat or neck swell, the best application is cloths wet with cold water; or if the glands be painful and tender to the touch, one or more leeches, according to the age and other circumstances, must be previously applied, and this practice is often of signal service, not only in checking the disease of the gland, but in relieving drowsiness or stupor attending this state. If suppuration take place, it is to be hastened by a warm poultice.*

The scarlatina maligna is much more dangerous, and requires the most vigorous practice. Early sponging, with cold water, is proper, provided it give comfort, and be not followed by chillness, and often gives a favourable turn to the future disease. Laxatives are likewise necessary, and so far from weakening the patient, if prudently administered, seem to increase his strength. Wine should be given, in such doses as do not flush the patient, or make him hotter. Ammonia is sometimes of benefit. Two drachms should be dissolved in six ounces of water, and the solution sweetened with sugar. To infants, two tea-spoonfuls, and to elder children, from a dessert to a table-spoonful of this solution, may be given every two hours, or oftener, if possible. An infusion of capsicum in vinegar is also employed with advantage; so much of it is to be added to a given quantity of water, as renders it pungent. This mixture may be given in the same doses as the solution of ammonia, and it both acts as a general stimulant and as a local application to the throat. Quinine has certainly, in many cases, been of service. If it cannot be taken, or retained in the stomach, it may be given in clysters made of

* Dr Higglitz recommends in scarlatina, first, an emetic of ipecacuanha, and then so much Epsom salts as shall procure four stools. In bad cases he gives four grains of calomel daily, or rubs in ung. hyd. Whenever the salivary glands become affected, the disease, he says, takes a turn. I doubt it much.

beef tea without salt. Myrrh has also been given, combined with vinegar; but, of the effect of this, I cannot speak from my own observation. Oxygenated muriatic acid in doses of twelve drops to children, has been employed; but I question if it produce better effects than water acidulated with sulphuric acid, which, if the ammonia be not employed, makes a very proper drink. If the patient, at an advanced period, be restless, and the skin dry and rough, ablution with tepid water will be useful. As gargles, capsicum vinegar with water, or muriatic or nitrous acid with honey and water, or a weak solution of chloride of lime, may be employed; but as children often cannot, or will not use gargles, their utility must be limited. It has been proposed to throw them on the tonsils with a syringe, but they are apt to go into the windpipe, if they get so far back as the fauces. If gargles cannot be used, it is proper to touch the sloughs and tonsils frequently, with a pencil dipped in solution of chloride of lime, or a weak solution of nitrate of silver. Fumigations, made by pouring sulphuric acid on nitre, placed in a vessel in the bedroom, have sometimes a good effect on the throat. When the sloughs are large, or the child breathes with difficulty, or has a croupy cough, gentle emetics have been proposed. On this subject, I must refer to what I have said already, (sect. 28,) respecting laryngeal disease, occurring in putrid sore throat. Blisters have also been applied to the throat, but they never do good, and decidedly add greatly to the irritation of the child. In bad cases, there is also much risk of their being followed by mortification of the part. Sometimes, in the course of this disease, apoplexy, succeeded by hemiplegia, and inability to articulate distinctly, takes place. Blisters should be applied to the head, and if the patient survive, the paralytic symptoms go off in a few weeks.

During the course of the disease, the strength must be supported by nourishment, or, if that cannot be swallowed, by nutritive clysters.

When a disease of this kind, appears in a family, the children who are unaffected ought, if possible, to be sent away, and should not return for a month. In the mean time, the clothes should be washed, and the apartment well ventilated, and fumigated with chlorine. This fumigation may be employed, even during this disease, for the destruction of the contagion, and of the smelling matter in the room.

SECTION THIRTY-SEVENTH.

Measles* commence with a distinct eruptive fever, on the first

* Derived from the Saxon. *Meel* is a leper, *messall* or *mysel*, leprous. The disease is also called *morbilli*, from having been considered as a little plague.

and second days of which, the patient complains of irregular shiverings, alternating with heat, general debility, languor, loss of appetite, has white tongue, thirst, pain in the back and limbs, slight sore throat, hoarseness, with dry cough and sneezing, weight and pain across the forehead, giddiness, drowsiness, sometimes convulsions, frequent and irregular pulse, costiveness, and high-coloured urine. On the third or fourth day, the symptoms become more severe; the eyes are tender, watery, and appear as if inflamed, the eyelids are often swelled, the nostrils discharge thin serum, and the patient sneezes more frequently. There is now often some degree of dyspnoea, and sometimes pain and tightness in the chest. These febrile symptoms usually come on distinctly, about twelve or fourteen days after exposure to infection;* but I have known children seized more gradually, being teased with hard cough, and rendered more irritable and fretful, for many days before the eruptive fever commenced. The eruption appears betwixt the third and sixth day of the fever, but most frequently on the fourth, and it remains for about three days. It is first visible on the forehead, then on the neck, then on the face. Next day, it appears on the breast, and by the evening, it covers the trunk and extremities. The eruption consists, at first, of small red spots, apparently a little raised, like papulæ, but without vesicular tops. Then, the spots extend so far as to form oval or irregular figures, slightly elevated, but flat, resembling flea-bites. Very soon, large patches appear, intermixed with the distinct spots. These are irregular in shape, but tend to the semilunar figure; they are made up of clusters of distinct spots. In some cases, the eruption, though vivid, is not considerable; and in this case, it consists, almost equally, of patches and circular and irregular spots, and the intervening skin is of the natural appearance. When the eruption is more copious, the patches are most numerous and extensive. In children under a year old, the eruption is not so thick and confluent, as in older subjects, and in many places has a papulous appearance, especially on the face and hands. In some cases, the eruption, though of the usual configuration, is pale and indistinct; but in general, whether vivid or not, when the finger is passed over the surface, the skin feels unequal, from the elevation of the spots and patches. The colour is most vivid after the eruption has been out for a day. Sometimes the eruption suddenly and prematurely recedes, or never comes fully out. Both of these cases are unfavourable, the fever is high, and the oppression great.

* It would appear, that during this period the constitution is susceptible to other diseases; thus, I have seen a child seized with chicken-pox, and before this had well gone off, measles appeared, and immediately after that hooping-cough. I have also seen scarlatina precede measles, only by three or four days.

In the regular course of things, the eruption on the face, fades a little on the sixth day, and next day, that on the body becomes also paler.* From this to the ninth day, the eruption is going off, and then the former situation of the rash, is only marked by a slight discoloration. The departure of the efflorescence is attended with desquamation, during which the patient complains much of itchiness. The fauces in this disease, about the fourth day, are covered with small red patches, which next day have a scattered or streaked appearance. The inflammation of the eyes, sneezing, and hoarseness, generally decline with the eruption, and towards the end, epistaxis sometimes takes place. The fever continues during the eruption, but the sickness and nausea abate, when the eruption comes out, and about the sixth day the heat and restlessness go off. A spontaneous diarrhoea often terminates the fever, and then the appetite returns pretty keenly. Sometimes, especially if the disease have been severe, the measles are followed, either by an eruption of inflamed pustules† over the body, which may ulcerate, and prove troublesome, but more frequently they fade, or by a vesicular herpetic-looking eruption about the mouth, or sometimes by gangrenous affections of the lips or vulva‡, or by enlargement of the glands of the neck, or dropsy, or a cough, somewhat resembling that in whooping-cough, or by hectic fever, continuing for many weeks.

Sometimes, the sickness and oppression are great and permanent. The child never looks up, but breathes heavily, and owing to the stuffing of the nostrils, loudly. He coughs often, has frequent pulse and hot skin. He can scarcely be roused up, even to take a drink. This state arises more from the brain than the lungs.

In measles, the membranes are very apt to be affected. Generally, the membranes of the wind-pipe, bronchi, fauces, nostrils, and eyelids, are chiefly affected, but sometimes that of the stomach or bowels principally suffers, producing sickness, vomiting, or purging. At other times that of the brain, is affected, producing coma.

* Sometimes, instead of this, the eruption becomes very dark coloured, or purple, with increase of the languor and fever. Mineral acids in this state are useful, and most children recover. The danger is greater when petechiæ appear among the patches, for this marks great debility.

† These are sometimes taken for a kind of small-pox. They are occasionally succeeded by a scabby disease of the skin. The skin is inflamed and covered with rough, loose, yellow scabs.

‡ The measles, about forty years ago, were more prevalent than any practitioner I met with remembered them to have ever been before. They began about the middle of winter, and continued during the summer and autumn. I had occasion, during that epidemic, to see different instances of the gangrenous affection I have mentioned. The children all belonged to the poor, and lived in confined houses.

Rubeola, in general is not a fatal disease, when stimulants are avoided. When it proves fatal, it is most frequently in consequence of the pulmonic affection, sometimes of coma, or fever and oppression, with symptoms of effusion in the brain connected with recession, or imperfect appearance of the eruption.

The treatment is extremely simple, and is rather negative than positive. We avoid exposure to cold, and even desire a temperature rather warm, keep the bowels regular, avoid stimulants, and give mild, or vegetable diet, with fruit. During the eruptive fever, if it be smart, the use of mild diaphoretics, and the tepid bath will be of advantage. The bowels should be kept open, but the child should not be much purged after the first day. If there be a considerable diarrhœa, from extraneous causes, as dentition, or directly connected with the fever, it is often found that the eruption is late of appearing, and a late eruption is generally attended with some troublesome symptoms, as it indicates a tendency to affection of an internal membrane. A little rhubarb, given early, often moderates this.

If the eruption do not come freely out, or recede prematurely, and the child be sick, oppressed, and breathe high, we must attend first of all to the bowels. If diarrhœa exist, and the child be not plethoric, a little rhubarb should be given, and then spiritus ammoniæ aromaticus with laudanum, and the child must be put into a warm bath, having a little mustard diffused in it; afterwards, a sinapism, followed by a warm plaster, should be applied over the stomach, and we determine to the surface, by giving a saline julep. If in this state the child be costive, a gentle purgative should be given, for the bowels may be either too torpid or too irritable.

I have not advised the liberal use of purgative medicines, though these are found beneficial in scarlatina, because we often find that diarrhœa interferes with the eruption. But the bowels are, upon a general principle, to be kept regular, or rather open: and if the stools be fœtid or ill-coloured, then, even although diarrhœa exist, small doses of calomel should be given and afterwards, if necessary, the purging is to be moderated by anodyne clysters. So far as I have observed, the continuance of the diarrhœa, in this case, does not mitigate the symptoms; and if the child recover, it is either by the use of medicines bringing the bowels into a better action, or it is independent of the mere evacuation produced by the diarrhœa.

If the pneumonic symptoms be considerable, marked by cough, oppressed breathing, flushed cheeks, and pain in the chest, which in young children, may be discovered by the effect of coughing, and if a slight motion excite coughing, a blister should be applied to the breast, and if the symptoms be urgent, either the

lancet must be early used, or leeches may be applied to the top of the sternum, according to the age and constitution of the child, and moderate doses of calomel given to keep the bowels open. If the cough be frequent, without inflammatory symptoms, opiates give great relief. If the symptoms of inflammation be such as to require bleeding, or to render the propriety of using laudanum doubtful, then, small doses, of solution of tartarite of antimony, may be given every two hours, but not to such extent, as to produce sickness or vomiting. Diarrhoea should not be checked, unless severe, and it increase debility, or produce hurtful effects. Anodyne clysters are then the best remedies.

Coma or drowsiness very frequently attends the measles, and the child may perhaps scarcely look up for some days. When the nostrils are stuffed with mucus, the breathing, in this case, has an alarming appearance of stertor. Most children recover from this state; but as some die evidently from this cause, and as we have no means of ascertaining the security of any individual, I hold it expedient to use means for the removal of the coma, particularly by giving a purge, if the child have not a looseness, and shaving the head, and afterwards applying either a sinapism or a blister. When the child is plethoric, it may also be proper to apply leeches to the forehead.

The cough which remains after measles, is generally relieved by opiates. Hectic fever is often removed, by keeping the bowels open, giving an anodyne at bedtime, carrying the child to the country, and adhering to a light diet. Other symptoms are to be treated on general principles.

When the measles are epidemic, it is not uncommon to find those who had formerly the disease, affected sometimes with catarrh* without any eruption, sometimes with an eruption preceded by little or no fever, and without any catarrh. This has been very distinctly observed during every season when the measles were prevalent. Whether the eruption be of the nature of measles, is not easily determined, but certainly the external resemblance is very great, in so much that this eruption has been called rubeola sine catarrho. It requires no particular treatment, and is only noticed because it is sometimes mistaken for measles, but does not prevent the patient from a second attack.

SECTION THIRTY-EIGHTH.

Sometimes an eruption, termed, by Dr Willan, roseola,† is

* During the epidemic, nearly forty years ago, ophthalmia was extremely prevalent amongst young and old.

† This he defines to be rose-coloured rash, without scales or papuls, variously figured, and not contagious. By some former writers, this term is applied to a disease resembling nettle-rash. Vide Lory, 398.—The appearance of roseola setiva is extremely well expressed by Dr Willan in his plate.

mistaken for measles.* The first species, *roseola æstiva*, has no small resemblance to *rubeola*. It is often preceded by chilliness, alternating with flushes of heat, languor, faintness, restlessness, occasionally with severe headach, delirium, or convulsions. At some period, betwixt the third and seventh day, from the commencement of these symptoms, the rash appears, generally first on the face and neck, and afterwards in a day or two over all the body. The patches are larger, and more irregular, than those of the measles,† in which the eruption consists of spots like flea-bites, and patches, made up of these spots, arranged, frequently, in a crescentic form, and of a colour seldom deeper than bright scarlet, often much paler. In this disease, however, the eruption is at first red, but in general it soon assumes a deep roseate hue, from which Dr Willan gives its name. The fauces are tinged with the same colour, and the patient feels a slight roughness in the throat. The eruption appears first at night, and continues vivid next day, with considerable itching. On the third or fourth day, only slight specks, of a dark red colour, are observable, which next day disappear, and, together with these, the internal disorder. In some instances, the skin, on many parts, becomes of a dusky colour, with an appearance of slight vesication or desquamation. The drowsiness, sneezing, watery eyes, and running at the nose, so common in measles, are wanting in *roseola*, and there is no pulmonic complaint, whilst, at the same time, the patches are larger, and occasionally intermixed, on the body, with an appearance of nettle-rash. Sometimes the rash is only partial, appearing in patches slightly raised above the surface, with a dark red flush of the cheek. This form lasts about a week, the rash appearing and disappearing occasionally; and usually the disappearing of the rash, is attended with nausea, faintness, &c. In some cases, no fever is observable, or the progress and duration of the eruption, is more irregular than I have described; and sometimes on the breast or trunk, the eruption has a resemblance to urticaria, whilst on the arms the appearance is like *roseola*. This disease decidedly is infectious. For, in particular seasons, I have observed it to be unusually frequent, and to affect all the children, and many of the adults in a family. In such cases, the eruption has lasted from two to four days, but has been attended with very little fever. The only treatment which is necessary, consists in giving gentle

* *Lichen simplex* is also apt to be at first mistaken for measles. From its itchingness, and the effects produced by rubbing or scratching the extremities, it has also been mistaken for itch.

† Sometimes young infants have an efflorescence of numerous coalescing patches, of a strong red colour, rounded, and of the size of a sixpence. These terminate in desquamation in less than a week.

laxatives, the use of acids, and light diet. If the eruption be suddenly repelled, the warm bath is proper. Should there be a marked determination to the head, brisk purgatives are proper.

Another species, called *roseola autumnalis*, affects children generally in the harvest, and consists of distinct patches, of an oval or circular shape, which increase to nearly about the size of a shilling; they are not elevated, but are of a very dark colour, appearing at a distance, as if a black cherry, or brambleberry, had been pressed on the skin, so as to leave the impression. The patches are not attended with fever, are usually diffused over the arms, and disappear in about a week. Acids, with mild laxatives may be taken internally.

The *roseola infantilis* appears during dentition, or in a disordered state of the bowels. It consists of a red efflorescence, usually very closely set, so that the surface is almost entirely of a red colour, as in *scarlatina*; but there is more appearance of patches, than in that disease, and the other symptoms are wanting. The eruption generally goes off in a day, but it sometimes appears and disappears for several days, with symptoms of great irritation. No particular treatment is necessary, except what is required on account of concomitant circumstances. It is sometimes preceded, or attended, by vomiting or convulsions, with pale face and languor. In such cases a gentle emetic, the warm bath, and cordials are proper.

CHAP. V.

Of Cerebral and Spinal Irritation, and Congestion.

THE action of the brain, and spinal marrow, may be affected in different ways. Certain parts of the animal system sympathize with each other, in a manner which cannot always be accounted for, on the principle of communication of nerves. This sympathy manifests itself variously; but three of the most important modes are, First, where one part becomes associated with another in action, the former having its action increased or altered by the latter. This sympathy of association, may exist between remote parts, which come to act similarly, but not always exactly in the same degree or proportion. Second, where action spreads without interruption, from a part to the neighbourhood, or perhaps, to a great extent. This I would call communication of action; and it may be salutary, or the contrary, according to circumstances. Third, when one part has its action diminished, in consequence of another having an increase, and *vice versa*.

This I have called the sympathy of equilibrium. In all of these ways, the brain and its appendages may be influenced; but they are not the only modes, and some others seem also to assist these. For instance, the brain, considered as the sensorium commune, or origin of the nervous system, may undergo certain changes peculiar to it in that view. A sudden failure in its power or action, by whatever cause, or in whatever way, it may be produced, may occasion instant debility, or even death itself. A slighter degree, gradually produced, is followed by less striking, but not always less serious changes. A similar degree, suddenly produced, occasions not only debility at the instant, but important secondary effects afterwards. These, which have been attributed to re-action, as it has been called, proceed from the communication of action, already mentioned, whereby the part which is weakened, is not allowed to act, in that degree, which is proportioned to its vigour, but has more action excited, than it can properly perform; and the same consequence is produced, as if a positive and direct stimulus, had been applied to it. This is illustrated by bruises, and the effects of cold, inflammation attacking frostbitten parts, not only, from the improper application of heat, but, also, from the communication of action from their vicinity. Hence, one object, in such cases, is to prevent communication of action, by endeavouring to moderate that of the neighbourhood, or even of the system, at the same time, that we avoid the operation of stimuli, on the part itself. It is also illustrated by concussion of the brain, where in the stage of re-action, as it has been called, venesection is required to cure the disease which is excited. A similar state is produced in those, who, having been long exposed to hunger and cold, have heat suddenly applied to the body, and warm soup speedily given, or cordials administered. Such excitement of the brain, thereby is produced, as requires depletion and great care.

Another mode of affecting the action of the brain, is by the direct operation of stimuli, both mental and corporeal, on it. In the latter case, it is similar to any other viscus. The heat of the sun, especially if the person be stooping, a current of cold air blowing on the head, &c., may thus excite disorder.

Injurious effects may also be produced, by irritating the extremities of important nerves, whereby, not only the origins of these nerves are affected, but also the parts in the vicinity of these origins, and the nerves, which come off there, are irritated, or the whole encephalon may, more or less, and in varying degrees, be affected. This is exemplified by the effects of irritation of the nerves of the jaw, in dentition, or of the intercostal, and par vagum, in abdominal affections. These are two of the most important nerves of the body, and are intimately connected

with the basis of the brain and spinal marrow, and also with one another, both anatomically and in function. The 8th pair of nerves, so important to the stomach and thoracic viscera, arises at the very base of the skull, chiefly from the groove, which separates the crus of the cerebellum, from the corpus olivare. It communicates with the intercostal and cervical nerves, and its recurrent, as well as the laryngeal nerve it gives off above, have a most important influence on the larynx. Near its origin, we have the 5th, 6th, 7th, and 9th pairs of nerves given off. The intercostal does not arise, itself, from any particular part of the brain, although so important as to be called the great sympathetic nerve. Considering it as a distinct ganglionic system, we say it begins in the carotid canal, or cavernose sinus, by the cavernose ganglion, which sends twigs to communicate with the fifth and sixth nerves, or, when this ganglion is wanting, these, are sent up from the superior cervical ganglion. Ramuli also are given off, to form connexions with the 8th, 9th, and spinal nerves; and the arteries in the course of the nerve, seem to have a coating of fibrillæ from it. Whilst it is important to the thoracic viscera, and along with the 8th pair, supplies the stomach, it also goes on to all the intestines and abdominal viscera, so, that they cannot be affected, without influencing this nerve.

The effects produced on the brain, or its appendages, by various causes, may, perhaps, be referred to the following heads. 1st. A moderate degree of excitement or irritation, often from turgescence of veins, producing a febrile state, with or without spasmodic affections, or distant pain, or uneasy sensations. 2d. Pain referred to the head, or spasms and pain in other parts, without fever: or extreme sensibility of some organ of sense, with susceptibility of mental emotion. 3d. A higher degree of excitation, inducing inflammation. 4th. A diminution, or loss, of power and action in part of the brain, or its appendages, producing a corresponding injury, in the parts dependent thereon, such as weakness, anæsthesia, palsy, &c. This has too often been attributed to pressure; but pressure only produces this state, which may exist without it, as we see in simple concussion, or some diseases to be soon noticed. 5th. Apoplexy. 6th. As secondary consequences of some of these states, we may have suppuration, serous effusion, torpor, or extreme susceptibility, change of structure, occasioning in its turn, new symptoms. 7th. It is most important to remember, that not only one part of the brain, be diminished both in its power and performance of function, whatever that may be, and another, perhaps in the immediate vicinity, be in a state of excitement, but, the very same part may be diminished in its power or capability, and yet irritated or excited in its action, and thus we may have in a distant

part, the nerves of which are affected by this portion of brain, a very complex condition produced.

On this subject, I particularly request the attention of the reader to the anatomy of the vessels of the spinal cord, and at the base of the skull, especially to the veins of the former, and their connexion with the plexus at the medulla oblongata, well displayed in Breschet's plates. The effect of turgescence of any part of this system must be important.

The evil consequences, of cerebral or spinal irritation, are so various, that it is not only impossible to class them, but also difficult to believe that they arise from the same source. They vary, not only in kind, but likewise in intensity and danger. All that I can propose here, then, is only to give a short sketch, of some of the effects produced, without attempting methodical arrangement. We are very much in the dark, with regard to the effect of intestinal action and irritation. Some suffer nothing, others almost continually from this cause. It appears that there is a kind of sympathy of equilibrium, between the stomach and intestines, the action gradually descending along different portions, so that when the duodenum is active, the stomach is less so. Few, therefore, can eat constantly, unless the nerves be in a particular state, as we see in some patients, who have certain varieties of insanity, and these seldom digest the food. In some cases, the different portions of the canal act irregularly, or inordinately, or become torpid, in consequence of which, the functions of the stomach and liver are disordered; and, on a former occasion, I have said, that in many instances, where the stomach was supposed to be primarily, it is only secondarily, affected. Improper action of the stomach or bowels, may not only operate on the extremities of the nerves, of the portion in fault, but also, by sympathy, on other parts of the canal, and their nerves; a very frequent, though seldom a dangerous effect of this, is headach, which varies in its seat, sensation, and severity, according to the part of the bowels affected. Intense thinking, anxiety, or reading long, gives headach, and in that case the stomach is affected, the food, if recently taken, becoming acid. Abstinence, for a longer period than usual, also causes headach; acid in the stomach does not uniformly occasion, but always aggravates it; so does bile. The most frequent cause of headach, accompanied with anorexia, or sickness, is irritation of the intestines, by acid, undigested food, inefficient doses of laxatives, or whatever can produce partial, or slowly progressive excitement, or irritation of the bowels. An opposite state, or degree of torpor in part of the canal, may do the same. The upper portions of the small intestines, but especially the duodenum, are the most important in the present view. They have more action to perform, than

the lower parts, and the duodenum, in particular, is to be considered as a second stomach, and not only intimately connected with the first, in function, but also by nerves, which communicate directly with the brain, as well as by those, which arise from ganglia. When affections of the inferior tract produce headach, I believe it is by sympathetic action on the duodenum and stomach. If the colon be briskly excited by clysters or medicines, it often happens, that by sympathy, the stomach, or duodenum in its vicinity, are affected, and the person is sick or vomits, when he is going to have a stool; or, in infants, a convulsive fit often takes place at the time. Severe griping, in the lower part of the ileum, has the same sympathetic effect, whilst it produces faintness. A moderate degree of griping generally relieves sickness and headach. Laxatives rather add to the evil, till they get low, and produce this effect; relief is then obtained, if the irritation have not been too great. Griping is also salutary, when it is moderate, and affects the colon, particularly at its sigmoid flexure.* It is not always there, however, when relief is obtained by the discharge of flatus, for this may produce a sympathetic effect on the ileum, and give relief. Griping is quite different from spasmodic pain, which in children often produces eclampsia, probably through the medium of the stomach or duodenum. In female adults, again, spasm of the duodenum, often affects the brain, and in its turn is perhaps renewed by such affection. Severe pain referred to the stomach, often alternates with insensibility, intense headach, spasmodic affection of the throat, or eclampsia. This is peculiarly apt to happen at, or immediately after, the menstrual period. It is relieved by blood-letting, clysters, and laxatives, followed by an opiate, combined with asafœtida. If coma or carus occur, a blister to the back of the head, and leeches to the temples, are to be superadded.†

The eclampsia of infants might very properly be noticed here, but I shall refer its consideration for a separate chapter. The same is the case with spasmodic croup,‡ and chorea.

* Griping is attended with relief, not only as it arises from excitement of the bowels, but from the mere sensation. Many are relieved, for a time, from both headach and sickness, by transient and shifting pain in the side, bowels, arms, &c. When affections of the stomach or duodenum, produce a sensation of stricture or pain across the chest, there may be flatulence, but rarely either headach or sickness.

† The effect of inflammation of the extremities of the nerves, in producing not only pain at the spot, but convulsive jactitation, pain in the head, and delirium, is noticed by Lobstein, p. 147, in a case of inflammation of the semilunar ganglion. Irritation, or spasm, may also have a similar effect. A boy, for instance, had some pain in his bowels always after eating, which was often transferred to the head, particularly at the temples. That pain was also brought on by reading or singing. He was cured by solid diet, and blistering the epigastric region.

‡ The disease termed spasmodic asthma is of this nature; the accumulation of

Cough is another affection of a spasmodic nature, which I can merely notice here. In some cases, in young females, I have known almost incessant cough continue for weeks during the day, and resist both laxatives, antispasmodics, and opiates. Occasionally, there are not only incessant paroxysms of cough through the day, after each of which, the patient falls back exhausted, but there are also many through the night. Sometimes it appears to succeed an ill-formed hooping-cough. When there is no other apparent cause, it may be suspected to arise from some affection, of the cervical portion, of the spinal marrow. If pressure be made on the different vertebræ, cough is excited by pressing on one of them. In that case, leeches, and afterwards blistering the part, and keeping up a discharge, cures the disease. At the same time, the bowels are to be kept open. Even if there be no effect produced, by pressing on the cervical vertebræ, it will be found, if there be any giddiness, or headach, or flushing of the face, that leeches applied to the neck or head, will give almost immediate relief. Quinine, opium, hemlock, mercury, &c., have done no good, after the disease was established, and such as were cured, seemed to be so, rather, by time than medicine. Change of air has often, at least for a short time, a good effect. If this disease be neglected, especially at, or after, the time of puberty, the trachea and lungs become affected, and phthisis takes place, a fact I wish were more attended to.

Palpitation, constant frequency of pulse, and marked debility of the lower extremities, with or without pain of the intercostal or abdominal muscles, may also arise from spinal affection, and be cured by blisters kept open, or issues. Obstinate costiveness, on the one hand, and diarrhœa on the other, may arise from the same cause, and may alternate with cough and other pulmonary symptoms, or with diuresis, the urine being generally pale, or straw coloured, or there may be some pain in the rectum, with or without tenesmus. I wish explicitly to state, as my opinion, that many diseases, supposed to arise from local causes, acting directly on the organs affected, do often proceed from disordered states, or preternatural excitement, of some portion of the spinal cord. Even inflammation of these organs, may thus be produced.

The remarks I have made on cerebral, are applicable to spinal, excitation; and cough is an example of the effects, which will be farther seen, in an obstinate disease I am soon to mention. More irremediable, or even fatal consequences, may arise, from

phlegm, the flatulence, the frequent pulse, and difficult respiration, all coming on rapidly, and going off as speedily, the respiration remaining unaffected in the intervals, depend on an affection chiefly of the eighth pair of nerves; and whatever irritates or disorders the stomach, is sure to bring on an attack.

inflammation of part of the spinal marrow, or effusion of blood, or serum. Local pain, with paralysis or spasmodic affection, or pain of the organs supplied below, are the symptoms, and death succeeds either a general spasm or stupor. If anything can be done, in these cases, it is by free topical bleeding, and the subsequent application of caustic. The cases which end best, are those where there has only been torpor of the part, succeeding possibly to previous excitement. These may be tedious and alarming, but are curable. When the disease is seated high in the cord, the internal muscles of the neck lose their power, the head falls forward, the arms become paralytic, and the inspiration sonorous. If the head be not supported, and caustic applied to the neck, the patient sinks. In elderly people, this state sometimes is produced, by a particular state of the brain. It is more minutely injected with blood, and firmer than it ought to be.

Affections of the cervical glands, produced by cold, blows, or struma, sometimes so involve the nerves, as to produce contraction of the muscles they supply, and twisting of the neck, with or without more extensive disease, or affection of the head itself. Friction, with weak mercurial ointment, having iodine added to it, and conjoined with fomentations, is of service.

Some affections of the abdominal nerves, as well as of portions of the spinal cord, produce headach, attended with much feeling of fulness. Now, in many cases, this fulness is the most prominent part of the disease, and is more obstinate than headach. It may even go the length of apoplexy; but this I cannot consider here, nor is it necessary to do more than mention it. There is, however, in females, both at an early, and mature period of life, a very distressing disease, which must be attended to now. It may succeed to exposure to the sun in summer, or stooping; but it may also come on suddenly, entirely from visceral affections. The patient, in slighter degrees of it, merely feels, suddenly, heaviness of the eyes, weight in the head, some pain at the upper part, but this is not constant, vertigo, and a sense of fulness in the throat. If standing, she is obliged to sit down, partly from giddiness, partly from weakness of the limbs. The latter symptoms abate, and she feels relieved, but not well, and suffers many aggravations of the complaint. In the more severe cases, she feels as if the blood were rushing, violently, to the head, and has so much vertigo, that she cannot stand, hardly can sit, and requires to have her head held. If no active means be pursued, the complaint becomes very protracted, and, for months, she cannot walk, and even sits with difficulty. These are merely different degrees of the same complaint. The best remedy is instant venesection, to an extent proportioned to the violence of

the symptoms. Leeches are useful, but in a very inferior degree. Cupping at the upper part of the neck, is highly advantageous. The head ought, in severe cases, to be shaved and blistered. In all, the bowels are to be freely opened. In protracted cases, *asafœtida* with aloes appears to be useful, and an issue in the neck, or on the head is requisite. Some prolonged cases have speedily been removed, by erysipelas, followed by sloughing and copious suppuration, taking place about the issue.

Another modification of this disease, appears under a variety of symptoms, and too often is considered merely as hysteria, as was noticed when considering that disease. I do not object to this, if thereby the proper treatment be not omitted.* I shall describe some of the varieties, as they appear in females, generally, but not always, at an early period of life. One frequent form, is spasmodic croup, or acute difficulty of breathing, accompanied with hoarse cough and wheezing, rapid pulse, and heat of the skin. This yields speedily to bleeding, but is apt to return, and therefore requires purgatives, to remove the primary cause. It often occurs for many nights in succession. Emetics are dangerous, without the previous use of the lancet; and, in severe cases, the patient cannot wait their operation. A full dose of prussic acid I have found, once or twice, check the fit; but it is not to be used if there be much sense of fulness in the head, marking an excited state of the spinal cord, for, then, it is invariably productive of tetanic spasm, relieved only by bleeding. Arsenic and fœtids, in the intervals, are useful; but purgatives and strict diet are indispensable.

In some cases, the pulse is excessively rapid, the face flushed, the eye suffused, and the head confused.† The sensibility is morbidly increased, so that a very little light is offensive, and the smallest noise, excites either spasmodic croup, or general muscular agitation, and there is, at an early, but particularly at a more advanced period, a propensity to laugh or cry without any evident cause. There is thirst, and no appetite. The head either is not pained, or the patient does not attend to it, or at least does not acknowledge it, although she says after being

* In former editions of this work, I called the attention of the profession to this subject, but regret that so little light has yet been thrown on it, or on its treatment. Some valuable cases have been published by different writers, both in this country and on the Continent, and many of them have been collected by Dr Abercrombie, in his late work on the brain. Two important cases are there related by Dr Monteith, in both of which I was consulted, and can say, that the description is not too highly coloured. Dr Marshall Hall seems also to have described a modification of this disease, in a work on female diseases.

† The reader will do well to connect this, with remarks made in the 9th chapter of the last book, and with the chapter on puerperal delirium.

bled, that her head is *now* easy. The eyelids are heavy, and soon cannot be raised. Presently, the fits of spasmodic breathing become less frequent, but the head cannot be supported, from weakness of its muscles; and soon, the whole body becomes more or less paralytic. The arms cannot be moved; a weight, like a bar of iron, is felt on the chest; the pulse becomes slow, and soon beats only perhaps thirty times in a minute. In other instances, the pulse at the first is preternaturally slow, and the face flushed from venous congestion; a weight is felt over the eyes, vision is impaired, the face and its bones feel painful, or seem to the patient herself as if they were swelled, and sometimes there is a sensation, as if the face were projecting or elongated. The patient is sick and vomits. Then, she becomes very hot, thirsty, and restless, with frequent pulse, and feeling of bursting in the head, and pressure about the nose, eyes, and cheeks, with pain extending from the neck over the occiput, in the direction of the suboccipital and first cervical nerves, and down the neck and shoulders, along the parts supplied by the spinal accessory nerve. What the result might be, if relief were not artificially obtained, I do not know; but the probability is, that death would take place. Even active means, if not promptly employed, do not prevent a very tedious and varying disease. The treatment I have found most useful, is the instant and free use of the lancet, detraction of blood topically, full purging, and shaving and blistering the head. These means are soon productive of relief, but it is necessary, afterwards, to keep up the action of the bowels, and occasionally to take away blood, by cupping between the shoulders. This is also of excellent effect, in that variety of puerperal delirium, which I have described as analogous to this. If the first symptoms be not, instantly, attacked with the lancet, and paralysis have come on, nothing gives so speedy relief as caustic applied to the neck; or, any very strong and rapid stimulus, as hot water, might have the same effect. Before the pain of the caustic have been long felt, I have known the patient able to move her arms, and open her eyes, but the slowness of the pulse usually continues long. If the pulse have become preternaturally frequent, before caustic be used, I have remarked, that during its action, the pulse falls, and becomes either natural or too slow. Anomalous and protracted symptoms, may succeed to this partial cure, or may follow, where less active treatment, has allowed the disease to remain in more force. The power of walking, for instance, may be slowly, though not perfectly restored, but slightly convulsive agitation of the muscles, with insensibility, may take place at uncertain periods; or, by the slightest noise, universal spasm may be excited, followed by lipothymia; or, every night, or every second day, for a time,

the patient may complain for a few minutes of headach, or vertigo, or is observed to be dull, and then sinks down in a state of coma or catalepsy; there is no flushing, no stertor, and little affection of the pulse. From this she partially awakes, or is roused by convulsive motions of the arms, or muscles of the trunk; the eye turns spasmodically, and the jaw is opened to its utmost extent, and fixed for a time.* Then the spasm relaxes, and if the patient have been supported, she sinks down, as if quite exhausted and in a senseless state; but the pulse is not weak, though sometimes frequent. Soon, in general, another attack comes on, and then she is relieved. It is usual, during some part of the paroxysm, for the stomach and bowels to seem prodigiously inflated, and feel very hard; but in an instant, and without any evident discharge of flatus, the inflation vanishes. This tumefaction, however, is often, apparently, increased by the spine being bent back, and the abdomen protruded. The paroxysm does not go off, by much eructation, but often by ineffective efforts to vomit. It is usually accompanied with distressing feeling of stuffing, particularly after eating. Sometimes paralysis of particular members or organs, suddenly takes place, and as suddenly goes off; one side may be affected, or the sphincter of the bladder, or the tongue, or pharynx, may be paralytic, and continue so for many hours. The patient cannot speak, and, although tormented by thirst, cannot swallow, but spontaneously these symptoms go off for a time; anæsthesia generally exists as long as the disease lasts, and particularly in the lower extremities. Sometimes the patient, for a long period, cannot sit up, without feeling a distressing sense of failure, sinking or dragging in the upper part of the abdomen, and near the chest, or she has more temporary attacks, of strong sensation of depression and faintishness, as if she were going to die, and yet the pulse is not affected. This temporary feeling, is often relieved, by ammoniated tincture of valerian. At last, after many months, all these affections subside; and although they may be replaced by others, connected with a different set of nerves, yet, in general, the health is slowly restored. It may, however, be years before it be perfected, if ever. For a long time, periodical attacks of weight in the head, with pain, sometimes increasing to agony, and followed by tetanic convulsions, may take place at the end of every fortnight or month, and often attack regularly to a day, and even an hour. They are frequently preceded, for some days, by craving appetite, and general fulness or œdema of the cellular membrane, particularly of the

* These strong, and apparently convulsive, contractions of the muscles, are greatly, and in some instances altogether, dependent on transient paralysis of their antagonists.

face, with inflation of the bowels. The craving which I have noticed, is not attended with digestion, for all the food taken for a day, or more, may be retained in the stomach, and, after a length of time, vomited in an undigested state, probably from the condition of the 8th pair of nerves. Pain is also often felt in the stomach and bowels, sometimes like cramp, sometimes cutting.

The most speedy, and the only certain way, of checking the paroxysm, is to open a vein, the utility of which may at once be seen, from considering the anatomy of the venous system and the effect of local congestion. But as this is very debilitating, it is better, in such periodical attacks, to watch their accession, and, in an early stage, before severe symptoms have taken place, to apply a number of leeches to the head, or, what is more useful, to cup the neck. This, although weakening, is less so than venesection, and prevents the exhaustion by the spasms and pain. I could wish that some means were discovered, of giving relief, with equal certainty, and less objectionable. Opiates of different descriptions, and cold applications have been tried, sometimes with good effect, but oftener they fail. From the periodical nature of the attack, it will naturally occur that the menstrual discharge requires much attention, and certainly the patient often is obstructed; but in other cases, if the health be not broken down, she is more or less regular, and the attacks are not more frequent at that period, than at other times. Nevertheless, it may happen that an intimate connexion takes place, between this disease, and an abortive attempt to menstruate; and in that case, if menstruation can be effected, and made regular, much good is done. Some suffer, almost solely, from general œdema and oppression, for the first fortnight after menstruation, and feel comparatively well during the last two weeks.

To prevent this tedious and uncertain issue, it is evidently important, to attack the disease at the first, in the most vigorous way, by depletion and the means proposed. At this second stage, the plan must be general, such as the administration of laxatives, the regulation of the diet, the use of arsenic, fœtids, mild tonics, &c., and gentle exercise in the country. But I confess, in most cases, I have not known decided advantage, from any medicine, beyond what was required for symptoms as they arise, time appearing to be the chief remedy. In a few instances, where the disease approached more to the nature of hysteria, and there was less determination to the head, the paroxysm has been stopped, by dashing cold water on the patient. But when there is a horror at cold water, this must not be risked. Another variety of this, is attended with violent pain in the head, and

extreme weight or throbbing, alternating with palpitation, incessant cough, pain in the side, or excessive griping, sometimes a feeling as if melted lead were poured on the brain, or as if the limbs were roasting. The occasional wheezing, the tetanic state of the trunk, the convulsive affection of the members, the partial paralysis, and fits of stupor, or insensibility, are similar to the former variety. Mercury, copper, arsenic, purgatives, tonics, and antispasmodics have been tried in this case, with little apparent benefit. Venesection, for the more severe affection of the larynx, or pain in the side, leeches or blisters, for the feeling of fulness in the head, large doses of laudanum, or full doses of prussic acid, for relief of pain in the head or bowels, blisters on the head, issues in the neck, and friction, for the paralytic affection, have seemed to do only temporary good; but, as in the former case, time has been the grand restorer; and it is satisfactory to know, that most deplorable and protracted cases, have thus, though not always certainly, been relieved. In the wane of the disease, the recovery may be accelerated, by redoubling the attention to the bowels, giving, almost daily, some purgative potion, and at night, extract of hellebore. When there is a renewal of the sensation of fulness in the head, or any suffusion of the eye, cupping is useful. This, or the use of leeches, is also proper, when the patient sits weeping. In other cases, the symptoms have been at first, at least, and sometimes altogether, more concentrated toward one organ. In some, for instance, there has been, from the invasion, pain in the head, gradually increasing to the greatest degree, at least, if the complaints of the patient, be admitted as a criterion of severity. The pulse has been frequent, and then slow or irregular, and the same gaping, coma, and inflation of the bowels, attending on a former variety, appear here. In others, there is chiefly throbbing in the head and neck, with much vertigo, so that she cannot sit. Some, again, refer the sensation to the stomach, complaining of much feeling of sinking there, on sitting up, which is soon followed, by frequency of pulse and headach. In many of these patients, if great attention be not paid to the limbs, the knees become bent, and the thighs raised to the belly, so that it is long before the contraction of the muscles can be overcome; but this is generally at length effected by friction, and efforts to stretch the limbs, or walk. In some cases, benefit has seemed to follow the application of firm stays and machinery, but I look on many of these as fallacious, and impute the apparent improvement, to change of air, time, and other circumstances. I may still mention some other modifications, for there are many. The complaint may begin with great oppression in the side, as if the patient could not breathe, from a heavy load on it.

The body soon feels as if dead, and she says she has no command over it. Then, she has tremor of the system, an agitation which may be called both mental and corporeal, she screams involuntarily without knowing why, the pulse is frequent, the skin hot, but the legs cold, the face flushed, and the head confused. The lancet does not always give immediate relief here. Time and purgatives are ultimately more useful. Sometimes different nerves suffer in succession. The whole fury of the storm may be poured forth, on those of the intestines, and incessant diarrhœa take place. Then, the current changes, and the head suffers from pain, perhaps insupportable, with delirium. Next, the lungs are attacked, or the larynx, and we have cough or wheezing; or the stomach becomes the scene of suffering, and there is inordinate craving, with frequent vomiting. Whatever may be the temperature of the surface, the patient may feel sometimes cold within, or, as if on fire, and these sensations, I think, are most frequently referred to the course of the spine. In other cases, the first symptom is uneasiness in the throat, but nothing wrong can be seen. Then, it extends down the neck, and the cervical vertebræ are tender when pressed on. There are thirst, giddiness, lassitude, frequent pulse, irregular chills and twitching, or fidgets in the feet and toes, and, even after the patient, by venesection and purges, and blisters to the spine, is eased, she has long a swelled appearance of the face, and walks like a gouty woman. In all cases, we ought carefully to examine the spine, and ascertain whether any spot be tender. When the affected part is low, we still have the head affected with pain, or confusion. The eye is red, or heavy and turbid. There is pain, often in the course of the accessorius. The abdominal muscles, as well as the thighs, become tender to the touch, and soon, the inferior extremities lose their power. The pulse is variable, being at one time slow and irregular, at another hour very frequent. There are depression of the spirits, and fits of crying, for which the patient cannot account. The body wastes, the appetite fails, the pulse becomes more steadily frequent, and appearance of hectic takes place, with increasing paralysis of the lower extremities. Issues generally effect a complete cure, but it often requires much care, to ascertain the spot where to form them. If they do not soon succeed, we may be sure we are not right, generally too high. In other cases, the first symptom is much pain in the neck and shoulders, passing, too often, for rheumatism. External headach also is complained of. Presently, general paralysis, from the head downward, takes place, and the urine cannot be voided. The pulse becomes more and more slow, and the breathing oppressed; but the mind remains entire till the last. Issues are the remedies, but in the last stage do

no good; we must therefore attend early to the symptoms. The duration is variable. In some, the disease proves fatal within a week; others, linger on for several weeks, and, at last, the paralysis becomes more decided, and in a few days carries off the patient, by interrupting respiration and circulation. Adult males, are not exempted from this disease, which, in one of its forms, attacks them with fits of breathlessness, great variability in the frequency and regularity of the pulse, want of sleep, dropsical effusions, perturbation of mind, ending in fits of an epileptic nature, which carry off the patient. On dissection in this, and other modifications of spinal disease, perhaps nothing is found, perhaps patches of steatomatous depositions on the basilar artery; or we may find evident marks of inflammation of the sheath of the cord, or vascular turgescence, or some change of texture in the cord itself, which may be either softer or firmer than it ought to be. The connexion of this disease with dropsy, is worth attending to, for in some cases, whilst concomitant symptoms, point out the nature of the disease, the anasarca and other dropsical affections, appear to be the most prominent, and more immediately fatal, parts of the complaint.

There is one feature of this disease, still to be noticed, which fortunately is not invariable, but nevertheless is very commonly an attendant, I mean temporary mental aberration.* A very early manifestation of this consists in obstinate deceit. In some cases, the patient pretends to be asleep, in others to be blind, and this I have known persisted in for months, with great pertinacity. Others will not eat, although pinched with hunger, or will only eat in a whimsical way. Then, the mind suffers more, the patient being as if in a waking dream, or sometimes melancholy, sometimes in high spirits. She forgets the names of persons and things, as well as their relation to her, and forms new opinions concerning them, or there may be religious melancholy, as it is called. This state sometimes continues without interruption, for many weeks; in other cases, it comes on at regular intervals; so many days, for instance, at the end of a fortnight, or perhaps even every second or third day: and it is

* This is to be distinguished from a common attack of insanity, which may affect young girls, as well as others, both by the previous symptoms, and by the periods it observes. Insanity may be preceded by cephalic symptoms, and attended with frequent pulse, inflation of the bowels, more or less at different times, and even involuntary discharge of urine; but the mental affection is continued, and the prominent corporeal symptoms mentioned above are absent. Early venesection, followed by purgatives and tepid bathing, and mild diaphoretics, constitute the practice, and generally in a few weeks the attack goes off. Insanity is more frequent in infancy than many suppose, as it passes for fever. The child, however, has little fever, and the prominent symptom is the state of the mind, excessive irritability, or even rage. Leeches applied to the head, and followed by the regular use of purgatives, effect a cure.

observable, that often the appetite is voracious, during these days.* Like the bodily distemper, this yields rather to time than to management; nevertheless, prudent exercise of the mind, and, in a state of convalescence, vigilant efforts to prevent a relapse into any former bad habit, along with strict attention to the diet, and the alvine discharge, will be useful. The best prophylactic of these distressing diseases, is to avoid whatever can irritate the brain, particularly costiveness; and those who have the charge of young females cannot be too careful in this respect.

Allied to this, is the melancholy, or perhaps excited state, which some females are liable to, at every menstrual period. The aberration which takes place, sometimes, in pregnancy, may be, partly, owing to the state of the spinal circulation, partly, to that of the bowels. I have known the illusory idea continue for some weeks, during pregnancy, that a person, lately dead, was constantly present.

It is a circumstance deserving attention, that in these diseases, although different parts become suddenly paralytic, and although the stomach itself be much affected, and perhaps may, even, as well as the bowels, partake of the torpor, if not of the paralysis, for a time, as we see in the sudden inflation, yet the heart and lungs never lose entirely their power. The heart may beat slowly, and the lungs may act with difficulty, but life goes on. In another affection, however, death suddenly takes place, either, from the heart and lungs ceasing, at once, to act, or from the brain losing its activity. The patient merely says she is not very well, and is not disposed to rise, and then suddenly expires, without a groan or struggle. In a few cases, a kind of general uneasiness or languor, has preceded this for a day or two. Dissection often discovers nothing unusual in any of the cavities, or in the spine, for if not very carefully performed, the turgescence of the vessels may be lost, or the small quantity of water effused, may run off unobserved. A very fatal modification of this disease, ends in pulmonary consumption, complicated with, and preceded by, the peculiar symptoms of the complaint; and often even a few hours before dissolution, the patient complains alternately, and at intervals only of a few seconds, of heat in the head, and bursting at the heart.

Children, and even adults, are liable to a very dangerous and insidious form of this disease, which is not considered as important till the fatal instant. In general they complain for some days, perhaps, for a week or two, of slight and varying fever.

* In many of the modifications of this disease, whether the mind be affected or not, every exacerbation is attended with increased appetite.

The pulse is frequent, there is some headach, the nights are restless, there are thirst and anorexia, and a foul tongue. In the evening, the cheeks are a little flushed, and the fever increases, but abates toward morning. The water is not much altered, but sometimes it is thick and white. The bowels are costive. There is either no headach, or very little. Then, all at once, without any material increase of the complaint, nay, even when the patient has seemed to be better, and the appetite has begun to return, the tongue to become cleaner, and with appearance of speedy recovery, he has been seized with a convulsion, and suddenly expired; or repeated fits, with rapid motion of the eyelids, and extreme gaping, have taken place, and in a few hours he has died. In some cases, a little fulness of the veins in the head, has been observed, or I have detected a very little water, at the base of the skull, or in the spinal canal; but in other instances, nothing could be discovered by dissection; and it may be well for the reader, to connect this account, with the subsequent chapter on hydrocephalus. More than one child, in the same family, has died thus. The treatment consists in lessening the cerebral irritation, by venesection or leeches, in the regular exhibition of laxatives, and in determining gently to the surface by mild diaphoretics. If the symptoms do not yield soon, a blister to the back part of the head is useful.

This fever bears a strong affinity to, or rather is only a modification of, that, improperly called the infantile remittent fever, which may very properly be considered at this time, as it really proceeds from cerebral and spinal irritation, or excitement, in whatever way that may be produced, and is connected, more or less, with a similar state of the sympathetic nerve. It will be useful to divide it, into that variety, which occurs in early infancy, and that, which takes place in childhood. The first, is very similar to the early stage of hydrocephalus, but the remissions are more distinct in the morning, and the exacerbations greater in the evening. There cannot, however, be much difference, for in both we have much cerebral excitation, and the difference is more in the result, than in the early condition. The pulse is extremely quick,* the skin hot, the mouth warmer than usual. The child is at first fretful, restless, costive, and inclined to vomit; then, he becomes more oppressed, and in some cases has slight cough, with increased secretion of phlegm in the trachea; perhaps he does not for hours lift his eyes, till the remission come, when he looks up, and attends to the objects presented to him for a short time. He sucks, in general, freely, and some-

* In the early stage of hydrocephalus, the pulse is more irregular, and often beats alternately quick and slow, for two or three pulsations.

times bites the nipple, and very often aphthæ appear in the mouth. The bowels are irregular, but whether the stools be frequent or seldom, they are generally green or brown, and offensive. The urine is usually high-coloured and scanty, and sometimes the feet swell a little, and very often become cold. If the disease prove fatal, it is generally attended, in the end, with symptoms of effusion into the ventricles of the brain, or the infant is exhausted, gradually, by the continuance of the fever, or, more quickly, by the accession of obstinate diarrhœa. A favourable change takes place, sometimes about the fifth day, sometimes later, the child looking up for a longer space of time than formerly, and seeming more free from sickness. After this, the symptoms subside, and the strength is gradually restored. It is very common to find, that at this time, one or more teeth have made their appearance. In many cases, the fever may proceed from affections of the bowels; but frequently it is caused by dentition, the irritation in the jaw, operating either alone, or in connexion with a morbid state of the bowels. In this kind of fever, the gums should be carefully inspected, and, if necessary, cut. Small doses of calomel should be given, morning and evening, mixed with magnesia, to prevent costiveness, or evacuate irritating fæces. A few drops of tincture of hyoscyamus, with a saline julep, may be given occasionally to abate irritation. The tepid bath should be employed once a-day, when the exacerbation takes place, and the strength supported by the breast milk, or beef tea. If the child be plethoric, a leech should be early applied on the forehead; and if a favourable crisis do not soon take place, a moderately sized blister is to be applied to the head. In some cases, although the acute symptoms go off, the child does not recover, but remains fretful, languid and emaciated. The eyes are suffused, the feet swell, and the stools are not regular nor natural. In some instances, tumour of the mesenteric glands seems to be excited, though probably they were originally affected.

The remittent fever of older children, is met with, from the age of two, to ten or twelve years, and is generally found to be produced, either, speedily, after eating some improper substances, which have not been immediately removed, from the stomach or bowels, or, gradually, by the induction of a costive state, or the accumulation of irritating fæces in the bowels. In the first case, the fever attacks suddenly, sometimes through the day, but, generally, at night, and the child is sick, pale, very restless, extremely hot, disturbed in the sleep, and thirsty. Sometimes, he vomits, or complains of headach, or pain in the belly. The tongue is, at this time, tolerably clean, but next day, it becomes furred, and the fits of vomiting or sickness are pretty frequent. They are generally preceded by headach, which goes off, or

abates, after throwing up. If this disease be attacked, immediately, with an emetic, followed, in the morning with a smart purge, the health is soon restored; but if the remedies be delayed till the next day, I have generally found, that although the emetic, with purging, mitigates the disease, it does not arrest it speedily, and notwithstanding the regular use of laxatives, with diaphoretics, it continues for several days. Emetics and purgatives, in this disease, generally bring off some half digested substance, such as almonds, orange peel, &c. It is astonishing how torpid the bowels sometimes are, large doses of medicine, either producing no effect, or, lying for some time inactive in the stomach, they are then vomited. In such cases, strong clysters are proper to assist the physic. In this fever, if the symptoms be acute, and there be much headach, advantage may be derived from the loss of a little blood from the arm. Experience convinces me, that this is safer and better than the application of leeches, which, in cerebral diseases of the febrile kind, may weaken, but seldom do good, unless in the slightest cases. Where the constitution, however, is rather feeble, the lancet must be used with caution, and, here, leeches may be admissible, or in infancy they may be applied.

In the second case,* the attack is often more gradual, the child being, for several days, somewhat feverish and unwell. The pulse is frequent, and in the course of the day, he has several attacks of feverishness, during which he is dull, and disposed to sleep or lie down; but these do not last very long, and in the interval he seems tolerably well, but is easily put out of temper, and complains when lifted or touched, though he be not hurt. The appetite is not steady, he has little thirst, and the tongue is clean. The bowels are sometimes very open, but oftener bound. These symptoms appear, more or less distinctly, for about a week, though sometimes not so long. Then, an acute paroxysm of fever takes place, preceded by shivering, and attended generally by vomiting. The pulse becomes more frequent, sometimes 140 in a minute. The cheeks are flushed, and the patient is very drowsy, but complains of little pain in the head, or indeed any where, except occasionally in the belly, which may at times be very severely pained; or, if he complain of headach, it is evidently from his stomach, for it is followed by sickness or vomiting. There are, however, cases, where the headach is both violent and permanent. The fever does not continue alike severe, during the whole of the day; it remits a little, but not at very regular hours. The exacerbation, which usually occurs in the

* This is commonly called a worm fever, although worms are not necessarily passed in this disease.

afternoon, is generally accompanied with drowsiness. Very soon after the attack of fever, the tongue becomes covered with a white or brown coat, and both the stomach and the bowels seem to be extremely torpid. The appetite indeed, is soon almost totally lost, or the food which is taken, is not digested. The bowels are generally, but not always, costive; and the stools are foetid, dark-coloured, sometimes like pitch, or thin and olive-coloured, or green and curdy-looking, or clay-coloured, indicating a deficiency of bile. This last state, sometimes, alternates with too copious secretion of bile. There is a great desire to pick the nose and lips; and if the child be not watched, sometimes an ulcer is thus produced, upon the lips or angle of the mouth.

The face is flushed during the exacerbation; but except at this time it is pale. The eyes are dull and white: though sometimes, in the course of the disease, they are unusually clear. Generally, delirium occurs in the advanced stage of the disease, and, in some cases, it is difficult to keep the child in bed. From this state, however, he can usually be recalled for a few minutes, and will then answer questions distinctly. If the debility be considerable, the countenance becomes vacant, the child picks at the bedclothes, and though he do not speak much, makes a constant inarticulate noise. In some instances, convulsions have taken place; but these are rare, and are chiefly met with in young children. Sometimes the stools are passed in bed, without any intimation being given. In severe cases, the patient becomes paralytic on one side, and perhaps convulsed on the other, moans much, has fits of screaming, and almost maniacal yelling, strabismus, loss of memory and of sight, or that extreme degree of gaping I have noticed above. This disease runs on for a week or two, or even for several weeks, and may at last destroy the patient by universal debility, or exhaustion, or diminution of the cerebral function; events which will take place earlier, if the proper remedies be not employed, than if they be, even although they may ultimately fail. In general, success attends their use. Tumefaction of the belly, with great and constant fever, are very unfavourable, and the symptoms usually supposed to indicate pressure on the brain, as paralysis, &c., are still more so; nevertheless, these are not absolutely mortal, for they by no means certainly indicate effusion. Even in cases of effusion or pressure, these symptoms proceed from the impaired functions of the brain and nerves, consequent to pressure, and any other causes, capable of producing a similar diminution of function, will have precisely the same effect. We see this exemplified by the effects of concussion of the brain; by that instantaneous loss of power, causing universal palsy and death; and those diseases,

producing sudden palsy, of particular sets of muscles, that I have already described. It is also exemplified in the effect of burns, and surgical injuries, where stupor or paralysis takes place, and often proves fatal. All these cases show, that pressure is only one cause of these symptoms, and merely an exciting, not the proximate, cause. This fact, and a recurrence to some of the cases noticed above, afford strong evidence that we have no diagnostic mark, of structural and irremovable, injury of the brain, in these diseases; and therefore, we are encouraged to proceed in an attempt at a cure, in circumstances where we would otherwise abandon all hope.

This bears a strong resemblance to hydrocephalus, and it cannot be otherwise. The chief assistance, perhaps, in the diagnosis, is derived from the intensity of the symptoms, but this is not a certain rule to go by. In hydrocephalus, there is a more frequent vomiting, and as often a tossing of the hands above the head, as picking of the nose, or lips. There is generally constant pain of the head, which in this fever is sometimes altogether wanting, or is slight, or, if severe, comes in paroxysms connected with sickness, or affection of the stomach. There is screaming and strabismus, and often a more constant delirium, from which the patient cannot be recalled, after it has continued for some time, and convulsions are accompanied with great injury of the mental faculties. There is, in general, in this fever, more complete remission of the symptoms, at some time of the day, than in water in the head, the pulse not only being slower, but the child more lively and easier. The stools are more foetid and darker, than in hydrocephalus, in which they are often thin and bilious, and sometimes glossy. The pulse, in hydrocephalus, is more irregular, and, in the second stage, usually becomes slow and intermittent. It must, however, be repeated, that, in many instances, it is very difficult to make the diagnosis, especially, if we have not attended the child from the first. I have had the happiness of seeing children recovered, from situations apparently desperate, when there was every reason to fear that there was water in the head, though the result proved the contrary. Fortunately, in such ambiguous cases, the exact diagnosis is of more consequence, in determining the prognosis, than the treatment. For in these circumstances, the application of blisters to the head, the use of laxatives, and supporting the strength, are the means to be chiefly resorted to, in both diseases.

This disease very generally, but by no means invariably, proceeds from disorder of the bowels irritating the brain. Derangement of the functions of the stomach and intestines, or liver, &c., unquestionably re-acts on the origin of the nerves, and produces,

as has been already stated, various effects. We are not yet enabled to say, what particular mode of irritation, gives rise to the different modifications of phenomena; or why, in one case, the same apparent exciting cause, should produce spasmodic, and in another, febrile affection. The fact, however, is incontestible, that in some cases, unripe fruit, or much pastry, or costiveness, shall sometimes cause a fever, sometimes chorea, &c. In the present disease, the cause is generally resident in the bowels; but assuredly other exciting causes may affect the brain, in a similar way; and, therefore, the modern view, that the disease is seated in the bowels, and that the remedy is purging, is too simple. But whatever may excite the cerebral excitation, there can be no doubt that it, again, re-acts on the abdominal viscera, and these, on one another, so as to induce soon a complicated, and often both a protracted and dangerous disease. This state of the brain, is not inflammation, but inflammation may supervene on it. It does not seem to affect the whole brain equally and universally, but may be confined to the basis, and the upper part of the spinal marrow: and farther, it is evident, that this state of excitation may be succeeded by torpor of the parts so affected; or one part of the brain may become torpid, whilst another is still in a state of irritation or excitement. This view, I apprehend, explains why some parts of the body are excited to over-action, and others, in course of time, become almost, or altogether, paralytic. In the treatment of this fever, our objects are to remove the farther operation of the exciting cause, to lessen cerebral excitation, and to obviate particular symptoms. In the very commencement of the disease, more especially if there be still some degree of chillness, and especially if there be reason to suspect that any indigestible aliment have been taken, an emetic is of the greatest service, and ought seldom to be omitted. As soon, afterwards, as the stomach will retain it, an efficient purgative is to be administered, so as to operate copiously. It is also proper to attend to the existence of other irritations, whether in the gums or elsewhere, which we endeavour to detect, by accurate and close investigation; and when we are at a loss, we may often be assisted by manual examination of different parts of the body, and of the spinal region. Means are to be taken for removing any cause that can be discovered. All this may be done in a few hours, and, if early resorted to, the disease is at once checked. If, however, it be not, or we have not seen the patient in the first few hours, then, it comes to be considered, how far the detraction of blood is likely to lessen the cerebral excitement. If there be headach, heavy eye, flushed face, ardent heat, and frequent throbbing pulse, I am decided both as to the safety and utility of venesection. I know

there is a prejudice against it, from the hazard of debility ; but it is not ascertained, that a patient who has been bled, but not cured thereby, is weaker at the end of a fortnight of fever, than one at the same period, who has not been bled ; whilst, on the other hand, it is proved, that the disease is often rendered milder, and occasionally at once removed, by this remedy. So soon as the cold stage has begun to pass off, and the heat is increased, bleeding may be resorted to. Leeches are of no great avail in this view. They may relieve locally, but they do not check the fever, unless in very young subjects. Venesection, on the other hand, particularly if it produce sickness or faintness, often brings down the pulse, instantly, to the natural standard. It rarely, however, continues at this, but soon rises, yet not to the same degree as before ; and in favourable cases, the disease passes off, perhaps, within three days from its invasion. I am not, from these remarks, to be supposed to sanction indiscriminate and injudicious venesection, nor this evacuation at all, if it have been postponed beyond the commencement of the disease. Those who are weak, are either not to be bled at all, or sparingly ; and when we find, that during the flow, the pulse becomes smaller, feebler, and more frequent, the evacuation is not safe, and is immediately to be checked. It is impossible to lay down a rule, as to the quantity to be abstracted, at different ages ; for much depends on the constitution, the size of the orifice, and modification, as well as period, of the disease. In general, five ounces are enough, and not too much, from a patient six or eight years old. After bleeding, or in cases where it has not been expedient to practise it, if the skin be steadily hot, advantage is derived from sponging the surface, frequently, with cold water. If the disease be not checked, our object is to mitigate and shorten it as much as possible ; and this may be greatly assisted, by examining daily into the irritation which exists, or the sympathies which have been excited, that suitable remedies may be applied, such as local bleeding, blistering, friction, sinapisms, or internal medicine. If there be no prominent symptom, our attention is chiefly directed to the bowels, which are never to be neglected, and to the secretion from the skin. The surface is to be kept in a soft and slightly moist state, by saline julep alone, or containing a little antimony. The bowels are to be kept in a state of due action by purgatives. We cannot, *a priori*, say what quantity may be necessary to procure stools. Usually, it is great beyond what any one, who has not seen much of this disease, would expect. Senna-tea answers the purpose very well ; jalap or castor oil may also be employed ; or, if the child can swallow pills, the aloetic pills stay well on the stomach, and, if given in sufficient number, act excellently on the bowels. A moderate

dose of calomel may be premised, or given along with any of these purgatives. Clysters are of great benefit. It is useful to purge the bowels freely at first; but after this, it is not proper to give so much medicine as will operate strongly.* Drastic purges, particularly large doses of calomel, must not be employed at this time, for they induce subsequent weakness or torpor of the bowels. It is requisite, however, to give regularly such doses, as shall keep the bowels open, and support their action. When the stools are loose, purgatives are still proper, in prudent doses, to evacuate them; for they are not natural in their appearance, and injure the action of the intestines. The exhibition of one blue pill, for one or two days, alone or with a little rhubarb, is useful in the view of improving the action and secretion of the bowels. Whether this disease have been originally excited by disorder of the bowels, or by some other cause acting on the brain, and the bowels have thereby become affected in a secondary way, still, purgatives will be found useful on very obvious principles.

Opiates, in the wane of the disease, frequently allay irritation and accelerate recovery, by procuring sleep. Anodyne clysters are useful in this respect, and, especially if conjoined with fomentations, also for abating griping or abdominal pain. Pain in the side, if not removed by rubefaciants or anodyne balsam, requires a small blister. The tepid bath sometimes allays general irritation. When there is continued pain in the head, or uneasiness of any description there, it is proper, at an early stage, to apply leeches, and at a more advanced period, to shave the head and bathe it with cold vinegar. Blisters, particularly on the back part of it, are also proper, especially when there is delirium. If symptoms of torpor, or loss of vigour in one part, and undue excitement in another part of the brain appear, blisters, either to the back of the head or nape of the neck, are requisite; but they give less irritation in the first situation, and should, generally, be only of moderate size; at the same time the bowels are, diligently, yet prudently, to be stimulated by purgatives. In such cases, it is useful also to employ mercurials, such as the blue pill, combined with aloes, so as both to excite the bowels, and produce what is called an alterative effect on the system; taking care not to push the remedy too far. Occasionally, small doses of James' powder may be conjoined. By these means, most unexpected recoveries may take place, where the symptoms

* Dr Pemberton judiciously remarks, that if strong purgatives be given, the intestines are apt to become distended with air, and the patient is destroyed with tympanites, *Practical Treatise, &c.*, p. 165. It is worthy of notice, that dissection often discovers nothing but great inflation of the intestines.

were such, as to lead to strong apprehension, that water had been effused in the head.

In the course of the disease, the liver is apt to have its function impaired, and even more chronic diseases may be excited in it. Mercurials and purges are useful in this case, and doubtless, if these, or other means were not early employed, for exciting a healthy action of the bowels, this hepatic affection would be more frequent, and more dangerous. If the region of the liver be tender on pressure, then, besides the other means, we should either apply leeches, or a blister to the part, or both, according to the acuteness of the symptoms.

The diet should be light, but it is not proper to force the patient to eat. In the progress of the disease, infusion of bark, or other tonics are sometimes beneficial, and ought always to be tried. Wine may also be given in small doses, when there is much debility. If it do not produce flushing, headach, and exacerbation of the fever, but rather promote sleep, it will do good. When the disease is protracted, it is often of advantage to intermit the use of purgatives, and employ only clysters, and, at the same time, begin the use of steel. Under this plan, the bowels though formerly not moved by strong medicine, act more regularly, and recovery goes on fast. As this happens in the progress of protracted cases, it is probable that, sometimes, the purgative and mercurial medicines are pushed too far, and keep up an undue irritation. Great attention should be paid to cleanliness and ventilation, and, when convalescent, a removal to the country is highly useful.

In mild, but protracted, cases of this fever, the patient perhaps is confined to bed only part of the day, and becomes cheerful in the afternoon. The stools, for a day or two, improve, and then become very offensive; the appetite returns soon, but the fever, emaciation, tumour of the belly, and other symptoms, may continue for several weeks, the disease resembling marasmus. In this case, the pulse is small, sometimes languid, or nearly imperceptible. The skin often is cold, and the appetite is either very little, or voracious. Occasionally, especially when this modification affects adults, there is an almost paralytic weakness of the legs. Laxatives are proper, and I have known the copper pill useful. Benefit also is derived, from rubbing the back, with a stimulating embrocation, or, if any one part be tender on pressure, from an issue there.

In consequence of dentition, irritation of the bowels, obstruction to the pulmonary circulation, exertion, or more obscure causes, the vessels of the brain may become very turgid. This is productive of fever, generally acute, heat of the surface, parti-

cularly of the forehead, red, and rather full countenance, quick, or oppressed breathing, vomiting of glairy fluid, immobility of the pupil, followed either by giddiness, drowsiness, and insensibility, or violent convulsions, succeeded by coma and death. In some instances, the disease is manifested, purely, by symptoms of congestion in the head. In others, the bowels are affected, perhaps first costive, then loose, but in either case the belly is tender; in other cases, it seems to be connected, with disease in the lungs or liver, and, is not unusual, in hooping-cough, in which case it always causes convulsions. On examination, the smaller vessels of the brain, are found injected with blood, so that a section exhibits numerous red parts, but the congestion is chiefly remarked in the veins and sinuses, which are gorged. In some instances, a little serum is effused into the ventricles, or blood is extravasated under the arachnoid membrane.

The treatment consists, in immediate recourse, either, to the lancet, or leeches, according to the age of the child, free purging, and clysters, with the occasional use of the tepid bath. If the gums be distended, they must be cut.*

CHAP. VI.

Of Hydrocephalus.

HYDROCEPHALUS, is one of the most insidious diseases, to which children are subject. It sometimes makes its attack suddenly, cutting the patient off in a few days; sometimes more gradually, and is protracted for many weeks or months. It has, therefore, been divided into the acute and chronic; and, as it may either appear as an idiopathic disease, or come on, in the course of other diseases, at first quite different, it may likewise be distinguished, into the primary and secondary. Some have described many species or subdivisions, according to minute variations, in the progress or intensity of the symptoms, but this is more perplexing than useful or correct.

Acute hydrocephalus, begins very like a common fever, but there is, usually, greater pain in the head, especially on one side. After the febrile symptoms have continued for some time, marks of oppressed or debilitated brain appear, and the patient dies comatose or convulsed. Such is the outline of the disease, which, however, it will be necessary to describe, more minutely. The

* Some very good cases of this affection are related by M. Guibert, in *Archives Generales*, Tom. xv. p. 31.

patient for some time previous to the attack, may be languid, peevish, and uncomfortable, without any well defined complaint. The appetite is impaired, he has frequent sick fits, or vomits bile, and the bowels are generally costive, though, sometimes, he purges foetid, dark-coloured, or green fæces, and he complains, occasionally, of pain of his head, or giddiness, or is either drowsy or unable to sleep. Towards evening, the face is a little flushed, and the skin is hot, and very soon the disease becomes distinct.

In other instances, however, and these the most frequent, the disease invades suddenly, or, with scarcely any previous indisposition. The patient feels chilly, whilst his skin is hot; he generally complains greatly of his head, especially, at the forehead, causing him to frown, or, at one side; sometimes very much of his neck. Headach is one of the earliest, and most regular symptoms, and it is always a very alarming circumstance, where there is severe pain, accompanied by vomiting of bile, and not removed, or speedily relieved, by that evacuation. In a few cases, I have found the patient denying, that he had much, or even, any, pain in the head, and, with infants, we have no means of judging, whether they have, or have not, pain. Short and sudden attacks of spasmodic croup, as it has been called, are, occasionally, precursors of this disease, and are the more to be dreaded, if attended, or followed, by convulsions. These, in ordinary cases of hydrocephalus, sometimes, appear as one of the first symptoms, but more frequently, they do not come on, till an advanced stage. Where there is no convulsion, there is often a contraction, of one of the extremities, or of the thumb. Sometimes there is spasmodic cough, or pain in a distant part. From the commencement, the patient can seldom keep out of bed, his eyes are usually very sensible to the light, and when examined, the iris oscillates, the pupils are contracted, perhaps irregularly, and the eye, in some cases, is troubled, in others, as clear as usual. I must, however, observe, that, sometimes, there is not the smallest increase of sensibility to light. The headach is constant, and produces moaning, or the patient lies silent, and unwilling to speak a word, or often even to take a drink. The stomach is very early affected, and often, for some days, he vomits bile and whatever he swallows; but this vomiting, is neither so constantly met with, nor so long continued as the headach; he has no appetite; the thirst is variable; the tongue white, the bowels generally costive, but sometimes loose, and the stools, in that case, green and foetid; infants, are generally purged, frequently from first to last, older children, usually the reverse, at first; and, in most cases, pain is felt in the belly. The sleep is broken, and frequently interrupted, as if the patient

had a frightful dream; he starts, grinds his teeth, and picks his nose, which makes the disease, sometime, pass, for the consequence of worms. The pulse, in a few cases, is not very frequent; but in general, especially if the disease be rapid, it is at first very quick, being about 120 in the minute, but subject to pretty rapid, and considerable, variation, within a short time, in point of frequency. In about eight or ten days, the pupils are somewhat dilated, and the patient squints a little. In some cases, the vomiting is renewed, but more frequently it is not. The pulse, at this time, often becomes slow, beating only 60 in the minute, and being generally irregular. The pupil is more dilated, and the eye less sensible, than formerly, to light. The headach is often diminished, but the patient frequently cries out, or even screams. In some cases, delirium comes on, in others, the patient continues sensible and intelligent, until stupor supervene. More food is often taken in this stage than formerly. In the course of either two or three days, the pulse becomes, again, quicker, the pupil more dilated; but still the patient may continue to see, and complain of the light, and often answers, distinctly, every question. Presently, however, the symptoms of oppressed brain become greater; the pulse is weak, and gradually increases to 160 in the minute. The eye squints, vision is at last lost, the urine is either retained, or, with the fæces, passed involuntarily. The breathing becomes stertorous, and the patient dies; or he may sink from weakness, and remain sensible to the last, or, having been delirious, or even comatose, he may recover his intellect and sensibility, for a short time before death. Even the power of vision and hearing have been thus recovered; and it is not unusual, for such an apparent amendment, to take place, as to inspire false hopes, in one, who is not aware of the nature of the disease. In the course of this malady, the cheeks are alternately flushed and pallid; and, after the second stage, one side is often paralytic, whilst the other may be convulsed; indeed convulsions may come on, at any period of the disease, even in its commencement, but in this respect there is a great difference, in different cases. The symptoms are generally aggravated during the night. When the patient sleeps, or slumbers, the eyelids are often only half closed, and the eyes turned up, or they roll and become fixed alternately. He complains much, or becomes giddy, when the head is raised.

Hydrocephalus, has been divided into three stages, characterized by the state of the pulse, and of the sensibility. In the first, the pulse is frequent, and the sensibility great. In the second, the pulse becomes slow, with marks of oppressed brain. In the third, it is again rapid, there is great debility and cerebral

irritation. But it is to be recollected, that these stages are not always well defined; sometimes the pulse never becomes slow, and the division cannot be relied on.

This disease runs on, generally, till the twenty-first day, if the patient be above two years old; but if the child be younger, it often terminates more speedily, sometimes, so early as the third, fourth, or fifth; and this is more especially the case, when the disease is preceded by convulsions, or spasmodic croup. There is another form, which also proves, or appears to prove, rapidly fatal. In this, the symptoms are insidious, and cannot be distinguished from common and not severe fever, and there is seldom much, if any pain, in the head. Water, however, is, either during this, effused into the ventricles, or, by some previous and obscure cause, has already formed there, and caused fever. Were I to speculate farther, I would say, that the fluid is at first confined to the lateral ventricles, or at most, goes not beyond the third, till the moment of death, when any obstruction that existed is removed, and it is, at once, poured into the fourth ventricle, and acts fatally on the medulla oblongata.

From this account, it appears, that the symptoms, when the patient can describe them, are, in the first stage much the same with those of the fever of the adult, or the remittent cerebral fever of children, and that upon these, supervene those of oppressed brain. Nor do I know, after all the attention I have been able to give, any marks, diagnostic, between the two diseases, more especially at the age of infancy. There are, however, indications of higher excitement in hydrocephalus, than we generally meet with in the other fever. In some cases, water has been found in the ventricles, when no symptoms indicated it during life,* or when many of the usual symptoms were absent.† Severe or obstinate headach, with bilious vomiting and fever, are always dangerous symptoms.

Infants cannot give any account of their sensations, and therefore we are more uncertain, until the symptoms of oppressed brain appear. We may, however, dread the nature of the disease, when the infant has a high fever, vomiting, with costiveness or diarrhœa, lies oppressed, and apparently sick, with the eyes obstinately shut, dislikes the light, puts the hand frequently up to the temples, as if going to rub something off the head, has starting and spasms, and awakes suddenly, as if terrified, and sucks or drinks, at first, with great rapidity. The diagnosis,

* Vide Quin's Treatise, p. 43.

† Dr Rush mentions cases, where there was no pain in the head, or where it began like a catarrh, or wanted the strabismus, dilated pupil, sickness, and loss of appetite. Med. Inq. Vol. ii. p. 210.

however, is difficult; for, in disorders of the bowels, from dentition and other causes, spasms, starting, drowsiness, and strabismus, may take place.* Dark green stools, forming a gelatinous mass, not possessed of a foetid smell, have been considered as peculiar to the disease, whilst some assert, that this appearance depends on the use of calomel.† This state of the stools is not to be disregarded, but it cannot be depended on, as pathognomonic, much less, can the micacious deposition, from the urine, noticed by Dr Coindet. Rapid, and frequent variations, in the frequency of the pulse, connected with other symptoms, particularly, with vomiting and somnolency, are very suspicious. It is prudent, whenever there is much fever, with any ambiguous symptoms, to proceed as if the patient were threatened with hydrocephalus; more especially, as the early use of the remedies, thus indicated, shall generally be serviceable, in the complaints, with which this disease, may be confounded; and if we delay, till the last stage, to obtain a more certain diagnosis, we have scarcely any hope of doing good. When children can give an account of their sensations, we may, with great justice, fear this disease, when they complain much of the head, have vomiting, and quick pulse. It is not, however, possible, always, to determine, at once, whether the disease be that fever, already described, or hydrocephalus, nor is it so essential, as may be supposed, for prudence dictates, even in the milder disease of the two, the prompt use of vigorous remedies.

Dissection, shows the brain, and its membranes, in some cases, to be inflamed, and covered with coagulable lymph; but in a great many instances, if inflammation, had at an early stage existed, its appearances have gone off before death. A much more frequent, if not universal circumstance, is congestion of the veins. This, in some instances, is combined with induration of the whole medullary part, or of the tuber, &c., and, in a few of these, no increased vascularity is observable. Betwixt the dura mater, and the brain,‡ but still more frequently in the ventricles of the brain, there is an accumulation of transparent water, sometimes

* A very interesting case, where strong symptoms of hydrocephalus were produced by accumulation of the fæces, and a speedy cure obtained by purging with senna, is related by the late Mr Benj. Bell.—Hamilton on Purgatives, p. 217. Other cases might be pointed out, where strabismus, double vision, paralysis, screaming, headach, &c., all yielded to the same means.

† It is supposed, that hydrocephalic stools, may be distinguished from those changed by calomel, from the former being nearly inodorous, and not tinging water when mixed with it. Calomel, however, is often given in hydrocephalus, and ought to affect the stools.

‡ In this case the disease is called *hyd. externus*, to distinguish it from the species in which the water is in the ventricles, which is called *hyd. internus*. By the former term, some of the ancient writers merely understood œdema of the

to the extent of several ounces; urea has sometimes been found in it. Small tubercular granulations are described by Laennec, and other late dissectors, as being dispersed through the brain; but these, assuredly, are not essential to the disease. The spinal marrow, or its covering, sometimes participates in the affection, and water may be formed there, or pass from the basis of the skull. This appears sometimes to be productive, in the early stage, of pain and rigidity of the neck, or peculiar sensations about the larynx, or slight irritation there, as if a small filament were tickling it. The intestines, occasionally, have an inflamed appearance, or portions are constricted, or intussusceptio is met with. The liver also may be somewhat enlarged.

Hydrocephalus, is more readily excited in some children, than in others, and this predisposition is very remarkable in particular families. Those who are of a scrofulous habit, are liable to it; but it also attacks children who have no other manifestation of that constitution, and none, not even the most healthy, are altogether exempted from it. In infancy, both sexes are alike affected; but it is certain, that about the period of puberty, or a little before it, females are more frequently attacked. Coindet, has stated the proportion, at the age of twelve years, to be as eight to one.

Exciting causes, acting evidently and directly on the brain, can sometimes be detected, as blows, or other injuries, exposure to cold, violent exertion, passions of the mind, the sudden removal of a continued irritation or discharge, from the scalp, or neighbourhood, &c. In other instances it is excited by previous diseases, acting in a secondary way on the brain, such as hooping-cough, scarlatina, &c. Any long-continued fever, by keeping up a constant over-action, in the vessels of the brain, which contain so large a proportion of blood, has been viewed as a cause, and, doubtless, where there is strong predisposition, it will so act. Transition of action, it is also probable, is a cause. The continued irritation of important or very sensible nerves, is perhaps one of the most frequent causes; hence, it may follow dentition, and very often arises from a bad state of the chylipoetic viscera. We have, from excitation of the extremities of the nerve, a similar state not only produced at the origin, but to some extent around that, so that nerves coming off near it are affected. After death, the parts, about the origin of these nerves, are found highly vascular and infiltrated. Having noticed this pathological fact, in the last chapter, I have little to add here. It is an important inquiry, however, why, in one set of cases, mere fever is excited, often simulating, no doubt, hydrocephalus, but rarely ending in it, whilst, in another, this disease is speedily

induced, in its most formidable characters. This would lead to a belief, that either, in many cases supposed to arise from the state of the bowels, the original disease has been seated in the brain, and the apparent disease in the bowels, has been only an early symptomatic affection; or, that the nature of the irritation, communicated to the brain, is different, essentially, in the one case and in the other: perhaps both suppositions may at times be true, and much, also, depends on predisposition. I may at this time, take an opportunity of remarking, that, although, in many cases, where the bowels appear first to be in fault, and are looked on as exciting disease of the nervous system, yet, in many others, the disease, really, at first, existed in the brain or spinal cord, the earliest symptoms exhibited, being the effect of this state, manifested by the altered function of the bowels. In the same way, croup, cough, &c., followed by convulsion and hydrocephalus, depend on the state of the origin of the nerves at the base of the skull.

The next inquiry is, what is the state occasioning hydrocephalus? Is it inflammation, and is the effusion analogous to hydrothorax succeeding pleurisy? An acute and considerable degree of inflammation, ends in suppuration, and this is the termination of many cases of phrenitis. This formidable disease is not rare, but is oftener met with in childhood than infancy. It is marked by high fever, pain, general or local, in the head, perhaps excruciating, followed by stupor, and proving very rapidly fatal. We may find, on dissection, muco-purulent secretion, or a softening of part of the brain. A more moderate degree, capable of greater prolongation, ends in serous effusion. Even a state of action inferior to inflammation produces this; and it is this sub-inflammation, which I believe most frequently exists in hydrocephalus.* During this state of excitation, amounting, at most, to what may be termed sub-inflammation; the pulse is frequent, and the fever generally acute. It ends in a state of exhaustion, weakness, or torpor, in which the cerebral functions are impeded, or diminished, in their performance. Symptoms, supposed to arise from compressed brain, take place at this period; but they do not arise from that source, but from the condition of the brain just described. They take place before effusion, in all probability, exists; they are similar to those produced by concussion of the brain, or any cause capable of interrupting, or interfering with, the performance of its functions. The train of symptoms are various and uncertain, inasmuch,

* My learned and indefatigable friend, Dr Monro, contests, in his work on the brain, this opinion, and considers hydrocephalus to be most frequently produced by scrofula, (not incompatible with this doctrine,) or by those causes which give rise to a derangement of the circulation within the brain, chest, or belly.

as one part may fall into torpor, whilst another remains still in a state of excitement. Where effusion has taken place, the parts are often thereby irritated, and the frequency of the pulse renewed, whilst usually the stupor augments. In a few instances, the nature of which we cannot yet ascertain, this pressure seems to excite, rather to temporary advantage, for there have been instances of the intellect returning, and the patient being better, a short time before death. It is probable, then, that those symptoms, attending what has been called the second stage, and supposed to indicate effusion, merely evince the commencement of that exhausted or enfeebled condition, which leads to effusion, and it is not too late, even at this time, to entertain faint hopes of recovery, hopes founded, however, on the possibility of our being mistaken as to the existence of effusion, which, of itself, independently of the previous condition, usually, is sooner or later productive of fatal consequences. After effusion takes place, in acute hydrocephalus, I hold recovery to be next to impossible: the few instances that have not ended in death, have terminated in fatuity, accompanied with enlarged head. The term hydrocephalus is, therefore, perhaps improper, as it is applicable only to the ultimate and incurable stage of this disorder: but, as it is universally accepted, it would be wrong to change it.

In considering the best mode of treatment, it is evident that we must, in the first stage, or that of excitation, use the most prompt and vigorous means for allaying action; and in the second, or stage of diminished function, use such remedies as may safely excite, to more healthy and vigorous action, without stimulating to inflammation. In the stage of effusion, we may lay down the, almost, hopeless indication of promoting absorption, or artificially procuring the evacuation of the fluid.

In the first stage, much may be done by vigorous treatment, and many lives are saved thus, which should otherwise have been lost; or, in different terms, many are prevented from having the disease, or stage, properly called hydrocephalus, who otherwise should fall victims to effusion. The most efficacious means consist, if the child have been previously healthy, in the detraction of blood by venesection, cupping, or leeches, or both, according to the age of the patient, and the severity of the disease.* In no such instance, ought leeches at least, to be neglected, and they cannot too early be applied. Evacuations of this kind, carried promptly, to a moderate extent, ought instantly to be followed, or rather accompanied, by the administration of smart

* It has been proposed to bleed nearly to the extinction of life; but it is far, indeed, from being proved, that hydrocephalus depends on acute inflammation. Exhaustion, converts doubtful, into hopeless cases.

purgatives; and I wish it could be impressed, sufficiently, on the minds, both of parents and practitioners, that the loss of one day, in this active treatment, may be the loss of the patient. I am far from advising debilitating depletion, or late evacuations, but, in acute cases, early venesection, or leeching, or both, if not carried the length of exhaustion, will do good, or at least prove safe. At the same time that these means are adopted, the head ought to be shaved, and bathed frequently with cold water; and in a few hours thereafter, a blister ought to be applied, to the back part of it. When I advise cold water, I wish it to be understood, that this is to be applied efficiently, not by wetting cloths once or twice, but by keeping the scalp constantly cool, or even cold, by the diligent repetition of wet cloths. Some have advised the application of pounded ice, but, from the pain this gives, if ever it do good, it must be in those cases where there is rather collapse, and the necessity of stimulating the brain by speedy sympathy with the scalp. In this case it acts, though perhaps, not so safely, like a sinapism. The affusion of cold water on the head, I consider as a very hazardous practice, for it is often followed by alarming collapse; but, if it is to be practised, it must be very early, and when there is much heat, and, immediately after, but never antecedent to, evacuations, and, lastly, with great prudence and moderation. Blisters, when not too large, I am confident, are useful; although some, whose judgment I respect, place little reliance on them. Caustic has been applied to the scalp, or tartar emetic, but I do not think with any superior advantage, rather with decided evil.

Hoping that these means have given a check to the disease, our next object is to keep up, and improve our ground, and this is done by strict attention to the bowels. The best remedy, I believe, is calomel, in small doses, or such doses as excite or keep up the action of the bowels, without purging too much. This not only acts on the bowels, but also exercises an influence on the nervous system. Two grains in the twenty-four hours, in divided doses, combined with some other mild laxative, may be given to a child a year old. If this do not agree, we substitute the blue pill, dissolved in a little warm water. One pill may be given for a dose, to a child of eighteen months old. If the mercury irritate the bowels, producing griping, we should add a small quantity of opium, at the same time that we preserve the bowels open, by the addition of another laxative. We are more likely to do harm than good, with calomel, if we allow it to produce griping, and teasing excitation of the bowels. I am not an advocate for drastic purges. Small blisters ought also to be applied, successively to the scalp, and all stimulating diet is to be avoided.

In the next stage, when symptoms appear, of inaction, or loss of energy, in one part of the brain, perhaps with a continuance of excitement in another, remedies have little effect; but still, as our diagnosis is not always certain, and as they sometimes succeed, they ought invariably to be tried, as sedulously, as if we expected certain success. They consist in a repetition of small blisters, the use of mild purgatives, and the continued exhibition of mercury, by friction, or, rather, internally, so as to act on the brain. Antimonials have been used, in conjunction with mercury, but I do not think with advantage, though James' powder, has been advised, by high authority. In this stage, we must be careful not to exhaust the strength, and are more likely to do good by mild nourishment, suitable cordials, and the prudent use, when required, of opiates.

Paracentesis* has been chiefly resorted to in the chronic species. In acute hydrocephalus, the fontanelle is often so prominent and elastic, as to give rise to a belief, that water is really lodged in contact with it. A puncture, cautiously made, has shown the mistake.

Opiates are hurtful at first, but in conclusion they may sometimes render the scene less distressing, by abating the convulsions. These are also sometimes relieved by sprinkling the face with cold water, or administering a large clyster. Opiates are also useful when there is great restlessness, irritability, or suffering, apparently from pain. In ambiguous cases, resembling hydrocephalus, they, in such circumstances, give a favourable turn to the disease, which might otherwise have proved fatal.

When hydrocephalus is known to be a family disease, it will be proper to use every mean to strengthen the constitution, such as the cold bath, light nourishing food, and strict attention to the bowels, not that I believe hydrocephalus ever to proceed directly from debility, but because whatever weakens the constitution, gives predisposition to disease. If the child be plethoric, or have momentary fits of insensibility, or the slightest, and most transient paralytic affections, or eclampsia, or spasm of the glottis, the bowels should be kept loose, and a small issue must be kept on the head; from this I have observed great advantage. We should be particularly careful not to heal, too suddenly, any eruption, especially about the head. The first symptoms of disease must be watched, and we had better be blamed for using remedies too early, than have to regret that we employed them too late.

* Mr Brown relates a case where water was repeatedly drawn off by puncture, and always with advantage, and temporary restoration of the sight, and the faculty of attention, but it ultimately ended fatally. *Med. Phys. Journal*, Vol. xli. p. 102.

The chronic hydrocephalus makes its attack more slowly, and runs its course with much less speed. It seems sometimes to be gradually approaching from birth, the child being dull, languid, subject to frequent fits of stupor or drowsiness, and the head enlarging faster than it ought to do; or it may even begin in utero. In other cases, the child is at first tolerably healthy, and it is many years before symptoms of the disease appear. First of all, we observe him to be duller than usual, with a slight degree of fever, attended with pain in the head, sometimes constant but moderate, sometimes attacking like paroxysms of headache, attended with sickness and vomiting. He is amused, for a short time, with the entertainments of his age, but is soon tired, and generally is found, after a little play, lying on a chair. The appetite is gradually impaired, and his food is apt to sicken him, or to be rejected by vomiting. The headache becomes more constant, and sometimes severe, often attended with giddiness, and pain or stiffness in the neck. The skin is rather hot, the pulse, at first, is frequent and irregular, although, in some instances, it very early becomes unusually slow, and continues so for a long time. The bowels are constipated; the urine sometimes passed with pain and difficulty. The eye is dull and languid, and, at times, the patient sees double or indistinctly. After these symptoms have continued some time, the bones of the head enlarge greatly, if the sutures have not united, and the veins on the scalp become very distinct. The body wastes, and the muscular powers are more or less impaired. In this state the patient may live many months; or, occasionally, the disease seems to receive a check, and the patient lives for years, with an enlarged cranium, and sometimes in a state of idiotism. In general, however, in a few weeks, or at most a few months, the symptoms of compressed brain become more distinct; and it has been supposed, but not always correctly, that these take place, whenever the head ceases to enlarge, and not sooner. The pupils are dilated, the patient squints, the limbs are paralytic and convulsed, the urine is suppressed, so that the catheter is required, the pulse full and slow, but presently it becomes weak and fluttering, and the patient dies comatose, with stertorous breathing. When the patient can give an account of his sensations, we may early be led to suspect some disease in the head, but, in infancy, we can receive no account of the sensations. We may discover it, however, by the vacant look of the child, the frequent application of the hand to the head, which often is larger, and feels heavier than usual, even before water be formed; drowsy fits, and sometimes convulsions; vomiting, and awaking terrified from sleep; at the same time, that there seems to be no tendency to dentition.

Afterwards, the size of the head, enlarged veins of the scalp, and feebleness or contraction of the limbs, indicate the disease more decidedly.

On opening the head, we generally find a great quantity of water in the ventricles, and some even on the surface of the brain. Sometimes the ventricles are so much enlarged, that the cerebrum resembles two vesicles, lying on the cerebellum. The bones of the cranium are, occasionally, very thin and softened, sometimes very irregular on their inner surface. In a girl, who died, after having been ill for about five months, I found the inside of the cranium, at the lower part, covered with sharp bony processes or spines. There is seldom, if ever, any indication of previous inflammation. This disease, therefore, differs from acute hydrocephalus.

The practice consists in the application of blisters to the head, or the formation of an issue on the scalp, by means of savin ointment: or a more general irritation may be kept up, by rubbing with garlic ointment, or ointment with tartrate of antimony.* The bowels are to be kept open, or at least regular, by the use of purgative medicines; and it will be proper to give a course of calomel and mercury, combined with digitalis, nearly in the same doses we would use for dropsy. By this plan, some children are cured, and others have the head reduced in size for a time.† These have had the urine considerably lessened in quantity; and when the medicines do good, they increase the flow of urine. It has been proposed, by bandages and other means, to support the bones of the head, and prevent distention, but of this I can say nothing from my own observation; and am persuaded it would be hurtful.

It has been proposed to draw off the fluid by puncture; and this has been done, and sometimes, it must be acknowledged, with success. One case of this kind, is related by Rossi, and another more lately by Dr Vose, who relieved a child by puncturing three times with a couching needle.‡ Water has also oozed away by the nostril through a foramen, but without benefit to the patient.

There is an affection, which is liable to be confounded with chronic hydrocephalus. The patient complains of his head and neck, for a length of time, has the pain increased by exercise,

* This is never to be so strong as to cause eschars, nor to be continued, if the child suffer from pain or irritation caused by it.

† In a case attended by my brother, he succeeded so far with mercury, and digitalis, as to render the fontanelle slack, whereas, before, it was tense and prominent. But whenever this slackness was produced, convulsions came on, and the patient died.

‡ *Medico-Chir. Trans.*, Vol. ix. Part 2d. The child afterwards died.

agitation, or reading long, and sometimes he squints. The pain, however, is rheumatic, follows the course of that disease, is not constant, and shifts its place. The squinting is either habitual, and consequently accidental, with regard to the disease, or it is caused by a temporary affection of the muscles of the eye, and is increased by looking long at any object. The patient is easily agitated, and there is an approach to the disease described in the last chapter. Laxatives, bark, a seton in the neck, and sea-bathing, are useful.

The secondary hydrocephalus is a very insidious disease. In one respect, perhaps, the majority of cases of acute hydrocephalus may be called secondary, inasmuch as they are excited by other irritations, in the bowels or gums, &c. But by this term, I wish particularly to understand the attack which succeeds to some, previously, well-formed and prolonged disease, such as scarlatina, hooping-cough, &c. It too often happens, that in the progress, or sequel of such diseases, hydrocephalic symptoms supervene, and the child is cut off. That this should take place is not wonderful, when we consider the remarkable sympathy existing betwixt the brain and other organs, and the great vascularity of the brain, as well as its delicacy in children. But, however the fact is to be explained, its existence is undoubted. It is highly necessary, in all diseases of children, to watch the safety of the head; and whenever symptoms appear, indicating an affection of that organ, to have recourse to the application of leeches, blisters, and other means, which have been pointed out. Indeed, in all the protracted diseases of children, especially if attended with considerable fever, it will be prudent to shave the head, and apply a small blister upon it. Calomel purges, when mild, are of great utility.

CHAP. VII.

Of Convulsions and Eclampsia.

CONVULSIONS proceed from various exciting causes, during infancy, but they always depend on an affection of the origin of the muscular nerves produced either by direct or sympathetic causes. (See Chap. V.) They very frequently arise from irritation in the bowels, from dentition, or in the course of eruptive fevers, or along with hooping-cough. Sometimes they proceed from immediate affections of the brain itself, and very often they occur in the commencement, or progress, of hydrocephalus. They may

be divided into those proceeding from a primary affection of the brain, and those occasioned by sympathy with some other organ, in a state of irritation. But in either case, the immediate cause is the state of the origin of the nerves. There is, however, a difference in the probable result, for the most fatal are those which depend on direct affection of the brain or medulla spinalis. In such cases, the child may die during the fit, or in consequence of that state of collapse or torpor, which, as in epilepsy of the adult, may succeed the fit, or from more protracted consequences of the cause which at first gave rise to the convulsions. It is not, however, easy to make the diagnosis, in every instance; and, when convulsions continue long, whatever may have been their origin, the brain ultimately suffers, and if the disease be protracted, the patient becomes emaciated, and perhaps paralytic, or even hydrocephalus may very early be excited, by the state which at first caused convulsions.

We may be assisted in our judgment, by examining the gums, especially if the child be about the time of life when teeth appear; by inquiring into the state of the bowels, whether they be loose or bound, or the child be troubled with worms; by learning if an eruption have suddenly disappeared; or if the child have been frightened, or had heavy food, or too much food, or been sucking a woman whose mind had been recently agitated; or if none of these causes be discovered, we should inquire if the child have, already, had those febrile eruptive diseases, which are often preceded by convulsions, especially small-pox. In many cases, convulsions proceed from irritation of the bowels, the stools being generally unnatural, or the digestive functions impaired. This observation is of much importance, in practice, as it points out both the means of prevention and of cure.

Very young infants are subject to a slight degree of spasms, called inward fits, in which the mouth is, during sleep, drawn into a smile; the eyelids are not quite closed, and the eyes are turned about, so as at times to discover the white; the breathing seems occasionally to flutter, and the child is very easily startled. These fits, appear to be occasioned, by wind in the stomach or bowels, for they are relieved by a discharge of wind, and require some carminative, such as oil of anise, with a gentle laxative. They generally go off in a short time, but sometimes they are succeeded by vomiting or purging, or drowsiness, ending in convulsions.

Some children, very early after birth, appear languid, moan, and pass dark-coloured fæces, different from meconium, and after it, in the usual course of things, ought to be removed. Presently, they fall into a state, rather resembling syncope than convulsions, and die, perhaps, in forty-eight hours after they are born. The

early use of calomel, in small doses, conjoined with some gentle aromatic, is proper.

Others, soon after birth, are seized with a violent fit of crying, and they become more or less distinctly convulsed, and the muscular irritation may repeatedly recur. This is relieved by the warm bath, gentle laxatives, and rubbing the belly with a little laudanum. I have sometimes thought, that this state was induced, by tying the cord too near the belly, by which, an irritation was communicated to the abdominal viscera. Infants of a month old, who are subject to severe fits of crying from colic, which is often induced by bad nursing, may be suddenly carried off by a convulsion, after a violent and continued paroxysm of screaming. This state requires great attention to the bowels and to diet.

There is a state of restlessness, and irritation, almost allied to insanity, sometimes met with in children, a few months old, and, in this case, at particular times, the child cries bitterly, and long, as if in much pain. This is sometimes followed by a convulsion, or we observe a finger or toe contracted. During the crying, the only relief is momentary, and obtained by giving drink. The bowels should be freely opened, a small blister applied to the head, and occasionally repeated, and at the time of most restlessness, an opiate should be given, which seems to be the most beneficial remedy we employ.

Regular convulsions, may occur at a very early period of infancy, and in this case attack those children, who, from the time of birth, have been subject to heavy sleep, or to whine and moan, or to violent screaming, or to start suddenly from their sleep, and who have twisting of the extremities while awake, or spasmodic contraction of the thumb or toes.

Convulsions vary much in their degree and duration. Generally, the child is seized, quickly, with a spasm of the muscles of the arms and legs, which are agitated to and fro, the fists are clenched, the body bent back, the features distorted, the eyelids open, the pupils dilated, and the eyes either fixed in the socket or rolled about. The face is either pale or livid. These convulsions may prove very suddenly fatal; but sometimes after the fit has lasted a minute or two, it goes off and does not return. In other cases, it returns very frequently for several days, or, at uncertain intervals, for many weeks. In general, the longer the fits, and the shorter the interval, the greater is the danger. The occurrence of paralytic symptoms or emaciation, in those cases where fits are frequently repeated, adds greatly to the danger, and generally indicates hydrocephalus. When the child is very much stretched or bent back, some call the disease tetanus, and give the appellation of eclampsia to the other cases. In many

instances, the first symptoms are a kind of wheezing or croupy breathing, immediately succeeded by a general convulsion. Many cases of apparent convulsions, are rather dependent on temporary or momentary paralysis, of a set of muscles, than on spasm of their antagonists.

When a child is seized with convulsions, a great alarm prevails; and it is expected, that, if the practitioner arrive before the child be carried off, or have recovered from the fit, very prompt and active means must be employed. The first thing to be done, is to order a warm bath, and clyster, to be got ready immediately; and whilst these are preparing, we inquire into the circumstances of the case, and examine the gums. If the child be at the time of teething, and no other cause be discovered, it will be proper to cut the gum, freely, over that part, where the teeth ought, according to the usual order of dentition, to appear, even although no swelling be discovered. Then, the child is to be put into the warm bath, the head alone being kept above the water, and he is to be retained there for a few minutes, if the fit do not pass off sooner. Cloths wet with cold water, may, at the same time, be applied to the head, so as to cool it, but not to such an extent as to make it cold. Smart aspersion of the face, with cold water, has also done good, and even pouring cold water on the head has been advised. I am not, however, favourable to this, for I have seen a state resembling syncope produced by it. If the bath do not give speedy relief, I have seldom found much advantage from resorting to it again, if the fits should be repeated. In some instances, the addition of a little mustard, to the bath is useful. When the child is taken out of the bath, a cloth is to be applied over the stomach, or great part of the abdomen, wet with strong spirits, and lightly sprinkled with pepper, and the spine should be rubbed with harts-horn and spirits, or some other stimulating embrocation. A clyster is, at the same time, to be thrown up, so as to operate speedily; and this is to be followed by a calomel purge, and the subsequent use of laxatives, to keep the bowels open. It may be proper, however, to state to the parents, that it is not unusual for the fit to return, about the time of having a stool. If the child have diarrhoea, and the stools be not natural in appearance, laxatives will still be proper, according to the directions given, in considering diarrhoea.* Emetics have also been employed, during the fits, as soon as the child was able to swallow; but unless we have reason to suspect, that some indigestible, or improper substance has been taken, they are not so beneficial as laxatives, and

* The propriety of giving purgatives in convulsions, when the bowels are costive, or the stools unnatural, is confirmed by experience, and the effects of these in chorea.

may, from their effect on the circulation, in the head, be detrimental. But when fits are only apprehended, in dentition, from starting, feverishness, and circumstances ascertained, by former experience, to precede convulsions, I have sometimes found a gentle emetic of service, and it ought to be followed by the warm bath, and some antispasmodic, such as asafœtida, conjoined with a laxative, if necessary. Tincture of asafœtida, with the addition of oil of anise, is a very useful remedy; or we may give tincture of hyoscyamus, with oil of anise. Camphor has been strongly advised, either by the mouth, or in clysters, by Stork, but I do not know that it is very useful. I must say the same of musk.

If the face be flushed; or the arteries of the neck beat strongly, or the child have been previously healthy, it, next, will be proper to apply one or more leeches to the forehead, according to the age and constitution of the child, or, if possible, to take blood with a lancet from the arm. In all such cases, the loss of more or less blood, instantly, is of importance; but if the face be pale, and the child weak, a few drops of the aromatic spirit of ammonia may be given repeatedly. Opium is hurtful, when the face is flushed; and even when it is pale, is only useful when there seems to be considerable irritation, about the bowels or from the gums, or an incessant crying or restlessness. In such cases, an anodyne is often very useful, more especially after the bowels have been freely opened. Oil of rue, is strongly recommended by Dr Underwood; and when the fits are repeated, it will be proper to make use of this, or asafœtida, or other antispasmodics. The spine should, in such cases, be repeatedly rubbed, with some stimulating embrocation, or oil of amber; and a small blister should be applied to the head, if the recovery from the first attack be not complete, and especially if there be a repetition. Blisters and sinapisms have been applied to the extremities, but they only add to the irritation. When the child remains in a state of stupor, after the convulsion, such as we see succeeding epilepsy, in adults, a sinapism, to the back of the head, left on for ten minutes, often excites the brain, to the performance of its functions. Blisters, on the other hand, are intended to act more slowly, and, partly, by their discharge, partly on the principle of sympathy of equilibrium, allay inordinate action within the cranium. The one, acting quickly, on the principle of the sympathy of association, excites; the other, diminishes excitement within, by slowly increasing it without. When the attack has been preceded by spasm about the larynx, which I shall notice in considering croup, one or more leeches, should be applied to the temple, or nape of the neck, or a vein should be opened, according to the age and other circumstances; pur-

gatives should be given, and a blister applied to the occiput. Even after the apparent danger is over, it is useful, for some time, to keep an issue on the back of the head, for there has been either undue vascularity, or inflammation, existing about the origin of the eighth pair of nerves, which is very apt to return, although, for the time, it have been mitigated. In all cases, the diet must be attended to, and it may even be necessary to change the nurse.

When a child has repeated convulsions, and almost constant moaning, and bending back of the neck or spine, the disease is incurable, as it proceeds from water in the head. It may, however, be protracted for several weeks. Repeated small blisters on the head, and the daily use of calomel, may be tried in such chronic cases, but, at last, the only relief is obtained by opiates.

Children disposed to hydrocephalus, sometimes fall down, for a few seconds, in a state of insensibility, without much, or even any, spasm. By purgatives, and keeping an issue on the scalp, the danger is often averted.

Trismus nascentium, is not a very frequent complaint, in this country, but it is not uncommon in warm climates. It makes its attack, within the first fortnight of life, very rarely before the sixth day, and has been supposed, by some, to be connected with a costive state of the bowels, by others, with the falling off of the navel-string, and the state of the umbilicus.* In some instances, the spasm is confined to the jaw, which is rigid and closed; in others, it extends to the neck, or trunk which is stiff and bent back. The disease is very fatal, notwithstanding that the warm and cold baths, opiates, purgatives, and blisters have been fully tried. The state of the navel should be attended to, and proper dressings applied, so as to avoid irritation.

After the period of infancy is past, and, during the time, when the second set of teeth are coming out, convulsions are generally of the eclamptic kind, attack suddenly, the patient screaming as if terrified, and then he falls down convulsed. When the fit goes off, he becomes nearly quite well. These, do not indicate, that the patient shall be subject, after puberty, to epilepsy. They are relieved, by attending to the state of the gums, removing decayed teeth, and cutting the gum, over the grinder which is coming out, but, especially, by keeping the bowels open, which must be done with perseverance, in the most efficient way. We thus remove a frequent exciting cause; but we must not confine our attention to the bowels alone, but must inquire whether any

* Vide a Paper by Dr Bartram, in *Trans. of Coll. of Phys. at Philadelphia*, Vol. i. p. 227, and by Dr Colles, *Dub. Hosp. Rep.* Vol. i. p. 235.

other source of irritation exist. Near the time of puberty it may occur in either sex, from irritations which exist at that period, but it is particularly frequent in the female. Sedulous attention must be paid to the bowels; and, as in other cases, we must call in the aid of remedies of a different description. Ol. succini, valerian, sea-bathing, and tonic medicines, as zinc, have been found of service; asafoetida or camphor, given by the mouth, or in clysters, have also been useful; when attended with fascial neuralgia, the removal of a decayed tooth has removed them. When there is much determination to the head, especially in the first attack, either the lancet or leeches ought to be used. If these means be not successful, an issue ought to be established in the neck. But, in obstinate and protracted cases, organic alterations have generally taken place, and the patient becomes fatuous, a state sometimes preceded by morbid perversity of disposition. This condition of the brain, is more apt to take place, if suitable evacuations have not been made early. Bleeding and purging, timely employed, may be of the most signal service, in preventing organic changes. Eclampsia, occurring at the menstrual period, although partaking much of the nature of hysteria, requires the same treatment. Convulsions have sometimes been caused by impure air, and can only, in such cases, be relieved by a removal to a purer atmosphere. This is a fact which it may be of service to remember.

I do not mean to enter on the consideration of epilepsy here.

Catalepsy often depends on the state of the spinal cord, and alternates with convulsions. The same tonic and antispasmodic medicines already noticed, with sedulous attention to the bowels, and the application of repeated blisters to the nape of the neck, or the formation of an issue there, will be proper.

CHAP. VIII.

Of Chorea and Paralysis.

THE convulsions, called chorea sancti Viti, attack children, most frequently, from the age of eight years, to that of puberty. This disease, makes its approach, with languor and dislike to the entertainments of the age; a variable and sometimes very keen appetite; in general, continued costiveness, attended usually with a hardness and swelling of the abdomen, especially at the lower part, though, occasionally, the belly is flabby, and

rather small, instead of tumid. Sometimes the bowels are open, but the stools are not of a natural appearance. Presently, convulsive twitches, and motions of the muscles of the face, take place, and are succeeded by more marked convulsive affections, of the muscles of the extremities and trunk, so that the patient cannot sit still, nor carry a cup of tea safely to the mouth; and this motion, in different cases, and different periods, varies greatly in extent and degree, from a mere fidget, to a universal agitation. There is constant restlessness, and sometimes in place of involuntary jerking; there is an irresistible desire to dance, jump, or whirl. In some cases, the twitches and contractions, evidently, proceed from spasm of the fibres, but in others, and these not the least frequent, they depend on temporary paralysis of the antagonist fibres. These are often almost constant; even when the patient is asleep, the limbs are in motion, and the sleep is greatly disturbed. He does not walk steadily, and sometimes seems to be palsied, or the motion may be very rapid, the head shaking like a rattle. The patient is sensible during the convulsive motion. At a more advanced period; the countenance becomes vacant, the eyes dull, the speech is affected, and, in some cases, the patient cannot even swallow without difficulty. Emaciation takes place, and a febrile state may be induced.

This disease frequently originates from the state of the alimentary canal, which is irritated by bad or undigested fæces, and thus the extremities of the nerves are acted on. These, influence their origins, or the brain itself, and the same convulsive motions are produced, as if the encephalon were directly affected. It sometimes seems to be dependent on the irritation of dentition, or on a decayed tooth, and has been cured by extracting that. Other irritants have the same effect, and, hence, chorea has followed the exhibition of strong saline or poisonous substances. But independent of all irritation by fæces, the condition of the bowels themselves, considered as organs, capable, by their sympathetic influence, of acting on the nervous system, particularly, on the origin of the spinal nerves, may produce this state.

Chorea may also be produced, by direct irritation of the brain, by tumours, or change of structure, in some part of it. In this case, it terminates in hydrocephalus. I have known blindness, and ability to see, alternate each other, daily, for a considerable time. In one case of this kind, the pons Varolii was the original seat of the disease. It has also been dependent on high vascularity, or inflammation, of the spinal sheath, or of important nerves.

A variety of remedies has been tried in this disease, but none with so much advantage as purgative medicines, which have been

prescribed with the happiest effect by Camper,* Sydenham, and Hamilton. These, if given early, and before the disease be fully formed, will, if there be no organic affection of the brain, very effectually relieve the patient, and at this time they only require to be gentle, and repeated as the state of the bowels may require. But when the disease is confirmed, "powerful purgatives must," as Dr Hamilton observes, "be given in successive doses, in such a manner that the latter doses may support the effect of the former, till the movement and expulsion of the accumulated matter are affected, when symptoms of returning health appear." Calomel and jalap are useful purgatives in this disease, and Dr Hamilton was in the habit of using aloetic pills, on the days when these are not employed, which is a useful practice when the patient can swallow pills. My own experience leads me, decidedly, to agree with Dr Hamilton in the employment of the aloetic pills, which must be given in sufficient number, daily, to produce a full effect. Infusion of senna, alone, or with the addition of sulphate of magnesia, may be occasionally substituted. Dr Underwood recommends aloetic and mercurial purges. By these means, chorea is perhaps cured in a fortnight, or, in obstinate cases, within two months, if there be no organic disease. Boys are said to be more readily cured than girls. Purgatives are not merely useful by evacuating bad fæces, and removing thereby a deleterious agent, but also, and most decidedly, by producing a more active and healthy condition of the chylopoetic viscera. If no great amendment take place soon, we must not on that account desist, but continue the purging plan for several weeks; but it is a great mistake to suppose, that purgatives can, infallibly, cure the disease. Removing irritating fæces, and, more particularly, exciting the action of the alimentary canal, are, as I have just stated, essential to the cure, but cannot, always, alone effect it. In obstinate cases, we must take the assistance of tonics, arsenic, nitrate of silver, carbonate of iron, and the other remedies, which, formerly, were chiefly trusted to, for the cure of convulsions. But of all these, none, I think, equals the copper pill: or a prescription may be given for a smaller dose

* "Having described the nerves, I now come to the symptoms, which are easily explained by their connexion. I will begin with tremor of the feet, which is common in hysterical cases. But I ought in the first place to mention, that the dreadful hysterical symptoms, which we daily see, either in individual parts, or in the whole body, are altogether dependent upon the accumulation of acrid matter in the primæ viæ; for the intolerable fœtor, the scantiness and unnatural appearance of the fæces, always warn us of an approaching paroxysm of rigors and convulsions.

"Ought not purgative medicines, and even the most drastic ones, to be exhibited? They probably might cure spurious epilepsy, chorea sancti Viti, and other spasmodic diseases, hitherto, generally, deemed hopeless by medical men."

Camper on the Pelvis, Chapter iii. section 7.

of the cuprum ammoniatum. If the patient be not very young, a pill should be given twice a-day, if the bowels bear it. Sulphate of zinc, is also a very useful medicine. The food should be light and nourishing, and due exercise taken in the open air. If other means fail, the scalp and spine should be rubbed with a strong rubefacient, or blisters should be applied.

There is a variety of chorea, in which the patient, generally a female, has paroxysms of starting, and convulsive contraction of the muscles, particularly after eating, sometimes accompanied with pain in the region of the stomach. When this state has continued for some time, she is seized, more acutely, with an attack of severe general spasms, in which the whole body feels as if it were cramped. The face is flushed, the pulse frequent, and much weight is felt in the head, but the patient does not become insensible. It participates, in its nature, with an obstinate spasmodic disease, considered in Chap. VI., and may attack those who have recovered, for some time, from that. The acute paroxysm, which may be mistaken for a common hysterical fit, demands the instant use of the lancet, and the application of a blister to the neck; afterwards, the usual treatment of chorea, is to be strictly adopted. A gentle mercurial course is sometimes of service, and the assistance of varied tonics is not to be neglected. Fœtids are also occasionally serviceable.

When chorea occurs in a child, of a family prone to hydrocephalus, we ought, if it do not *speedily* yield to the usual remedies, to establish a small issue on the scalp or neck, and redouble our attention to the bowels.

Some children are apt to awake during the night, screaming violently, or in great agitation, as if in dreadful terror. This proceeds from a dream, but the imaginary scene continues after awaking; the child, for example, insisting that snakes are crawling along the curtains. This is cured by a smart purgative, given every two days, for some time, and avoiding much supper.

A weak, or even completely paralytic state, of one of the superior or inferior extremities, may take place, in consequence of a bad state of the bowels, in which case the stools are offensive, and the belly tumid. This is cured by purgatives and friction. But it may also proceed from some slight disease of the brain, or medulla spinalis, though no mark of this can be discovered locally, unless it be, that often the head is rather larger than usual, but even then the eye is lively. Sometimes one arm appears to be either powerless or weak, for many days, and yet, otherwise, the child is in health. This, generally, yields to a purge and friction with oil of amber. In other cases, one leg is long weak, and the child drags it slightly. Whimsical practitioners have mistaken this for diseased hip-joint, though the bone

were precisely the same with that on the other side. It goes off in course of time, and only requires the cold bath and laxatives.

When paralysis occurs, as a prominent symptom in chorea, or in the sequel of that disease, brisk purgatives are to be employed, along with the hot bath, friction, small blisters to the spine, strychnine, electricity, &c.

The violent and involuntary jumping, tossing, or dancing, described by some authors, are to be referred to the same cause as chorea. It is not easy to point out a cure, but the disease sometimes ceases suddenly, without any very evident reason.*

CHAP. XI.

Of Croup.

CROUP, is divided, by some writers, into two species, the inflammatory and spasmodic, or rather paralytic; but there is perhaps no case of croup, in which muscular action is not concerned, only, in some cases, the inflammatory symptoms, are more prominent, than in others. Croup begins with shivering, and other symptoms of fever, which, when the child is old enough, can be very well described by him; but in infancy, we discover them by thirst, restlessness, starting, hot skin, and a tendency to vomit. Along with these symptoms, but sometimes even for a day or two preceding them, the child has a dry hoarse cough. Often, however, the attack is very sudden, the previous indisposition being short and scarcely observable. The local disease manifests itself, by a difficulty of breathing, attended with a wheezing noise; the voice is shrill, the cough is of a very particular sound, somewhat resembling the barking of a little dog, others describe it as resembling a cough, sounded through a trumpet. The barking hoarse cough, however, is of much less importance, than the symptom of difficulty in breathing. It is not uncommon, for vomiting to attend this cough, in the early stage. The pulse from the first is frequent, the patient is restless and anxious, and the face flushed, the eyes often watery and inflamed, and the mouth frequently filled with viscid saliva or phlegm. Very soon, especially in those cases where the face is much flushed, a great degree of drowsiness comes on, from which the child is frequently aroused by the cough, and fits of suffoca-

* A case which occurred in this city, is described by Dr Watt, Med. Chir. Trans. Vol. ii., and another by Mr Wood. Ibid. vii. 337.

tion, and great agitation; for this disease has exacerbations, during which, the heavy sonorous breathing, is exchanged for a violent struggle, in which the child makes a crowing noise, and, if old enough, starts up, and clings instantly to the nearest object, and stares most piteously. If the disease be more mild, the face, in this remission is sometimes pale, otherwise it is flushed, and before death it assumes a blue and purple colour, whilst the lips become livid; in the early stage they may be rather pale. If it do not prove suddenly fatal, the face and lips become tumid in the progress of the disease. Convulsions sometimes succeed the cough, and, in most cases, more or less coma takes place, one cause of which is, that the blood circulating in the brain, is not properly arterialised.

The duration of the complaint is various; in some cases, it proves fatal in a few hours, in others, not for a week, but most frequently within two days. Much depends, in this respect, on the degree of inflammation, the violence of the spasm, and the strength and constitution of the child. Sometimes there is much more of spasm, than inflammation, in the disease, in which case, we have less fever, less permanent dyspnœa, and less frequent cough, but the attacks of suffocation are not milder. Much also depends on the degree of cerebral affection, which is quite sufficient, of itself, to produce fever, and, as I shall immediately observe, excite inflammation of the larynx. Those cases end best, where the breathing is least sonorous, the fever most moderate, the cough early attended with expectoration, and the symptoms seem, at times, to become so slight as to constitute intermission, and where there is no mark of cerebral disease, which is more intimately connected, with the spasmodic respiration, than many imagine.

Dissection has always discovered, on the inside of the larynx, an exudation, or layer of fibrinous substance, which is sometimes coughed up in considerable portions. This, though it add greatly to the danger and distress of the patient, is not to be considered as the cause of the disease, for it is merely an effect of inflammation, which, together with spasm, could produce all the symptoms without its aid. This is evident from observing, that the exudation is often only partial, and, sometimes, it consists merely of a very thin layer of soft muco-purulent looking substance, whilst we, always, find the membrane red and inflamed, or altered in its structure. Often, the principal seat of the disease, is about the epiglottis, vestibule, and very top of the larynx, and the chief obstruction, seems to be from swelling of the membrane at the glottis. This also, with the parts for some way down, is covered with effusion. If the disease do not prove very rapidly fatal, the lungs are found to be inflamed, although there were no pain

felt in the chest.* The stethoscope is useful in ascertaining the existence of this state of the lungs.

The most frequent cause of the immediate production of inflammatory croup, is the application of cold and damp. But it is very often a speedy sequel to what is called the spasmodic form, which arises from different causes. Infants under six months are not often affected with croup, and I have never known a child soon after birth seized with it. Children are peculiarly liable to it soon after being weaned. The largest proportion of cases occurs under a year old; and although peculiar circumstances may, in particular families, or months, alter the case, yet, in general, males are more liable to it than females. So far as the registers of this city can be depended on, for the proportion of fatal croup, it appears that out of 233 deaths, there were 84 under one year; 78 one, but under two years of age; 51 between four and five, and 20 between five and ten. Although we should expect croup to be most frequent in winter, yet in one table, the number of deaths was, next to January, greatest in June.

From the nature of the disease, blood-letting, evidently, is the appropriate remedy, and ample experience has convinced me, that it is the only one on which, in such cases, dependence can be placed. There are two facts, however, which I wish earnestly to impress on the reader. The one is, that this remedy is only useful, in the very commencement of the disease; for if it be neglected until the symptoms become severe, and, more especially, till they have lasted for many hours, it only increases the suffocation, and hastens death. The other is, that the blood ought to be taken, at once from the arm, by a lancet, and not by leeches. I am not prepared to affirm, that leeches applied to the throat itself, are of no avail; and, therefore, when a vein cannot be opened, this is the practice to be adopted. But I am quite at liberty to pronounce, that leeches applied to a distant part, as for instance to the foot, are worse than useless; and the practitioner who advises, or acquiesces in, this application, is guilty of a great mistake. In a disease so formidable as croup, it is not to be expected that any remedy shall be uniformly successful; and, therefore, I am not surprised, that venesection may have fallen into discredit; but I would wish to learn from the practical physician, what remedy has proved more beneficial, or better deserving of confidence.

Emetics have been greatly recommended by some, whilst

* A pretty good epitome of the symptoms, causes, and treatment of this disease, up till the year 1808, will be found in the tract of Schwilgué. See also Observations by Lobstein, in Mem. de la Soc. Med. d'Emul. Tom. viii. p. 500.

others, have little faith in their utility. I have sometimes observed great benefit from them, if employed very early; and would advise them to be given in every instance. Even in the advanced stage of the disease, emetics sometimes do service, appearing mechanically to remove some of the exudation, but this is very rare, and their principal utility, is from their action on the eighth pair of nerves; and, therefore, they are chiefly beneficial in the early stage of what is called spasmodic croup. Decoction of seneka, and preparations of squills, have been used to assist the expectoration of the membrane, but they do not equal emetics for this purpose, and are seldom prescribed.

Antispasmodics have been trusted to, almost exclusively, by many; but I apprehend that their exhibition ought to be confined to a different disease, which I shall immediately notice.

Blisters applied to the throat, though rarely useful, yet, should not be absolutely rejected. They add prodigiously to the irritation, and, if they fail to do good, they do positive harm, by exhausting the child. If the other means, particularly bleeding, do not give immediate relief, a blister should either be instantly applied, or not at all, and it never should be allowed to remain on, above four or five hours. It can do nothing but harm in the end of the disease, and even, in the beginning, I look on it with suspicion. Dr Lehman advises the application of a sponge, wrung out of hot water, to the throat, on the first appearance of croup. The warm bath is of service in slight cases. The affusion of cold water on the body, has been advised by a Russian practitioner. I tried it without doing evident harm; it certainly did no good.

Calomel, would appear, in some instances, to be a powerful remedy in this disease. I do not, however, recommend it, to the exclusion of other remedies, with which it is by no means incompatible, and to which, in general, it is only subsidiary. It is most likely to do good, when given early, in that very frequent species of croup, which appears to owe its immediate origin, to the state of the eighth pair of nerves, and which I shall immediately notice as spasmodic croup. The early detraction of blood, followed by an emetic, and the subsequent use of calomel, will afford the greatest hope of removing the disease. But I think it my duty to state, that in some cases, no alleviation was obtained by any remedy but the calomel; and in others, it was trusted to alone, and with success. To an infant of six months, a grain and a half of calomel may be given every hour, until it purge freely; to a child a year old, two grains; and to one of two years, sometimes even four grains, are given every hour, until the bowels are acted on, and the child purges freely, or vomits repeatedly. The stools are generally green in colour,

and their discharge is usually accompanied with an alleviation of the symptoms. When this is observed, the dose must be repeated less frequently, perhaps, only once in two hours, for some time, then, still seldomer, and finally abandoned. Should the child be greatly weakened, either by the disease or the medicine, the strength must be, afterwards, carefully supported, by nourishment and cordials. It is astonishing how great a quantity of calomel is sometimes taken in a short time, without affecting the bowels, or purging violently afterwards. Occasionally above 100, and often 50 or 60 grains have been given in this disease. But it is seldom, if ever, pushed now to this extent. Salivation is not produced in children.

That experienced practitioner, the late Dr James Hamilton, to whom we are chiefly indebted, for the introduction of the use of calomel, in croup, into this country, from the practice of Dr Rush, was extremely unwilling to bleed children, freely, in their diseases, from its subsequent debilitating effects; and in croup, begins at once with the calomel, after having used the warm bath. He observes, that "in every case where it was employed, previous to the occurrence of lividness of the lips, and other mortal symptoms, (amounting now to above forty,) it has completely succeeded, both in curing the disease, and in preventing any shock to the child's constitution." He adds, that he has now seen two cases, where, although the croup was cured, the patient sunk from weakness; and therefore, very properly, gives a caution to stop the calomel, whenever the symptoms begin to yield. The alleviation, in true croup, follows the discharge of dark green stools, like boiled spinage; in spasmodic croup, it takes place whenever vomiting has occurred. When much debility is produced, he, besides using cordials, applies a blister to the breast. I have a good opinion of the efficacy of calomel, but I cannot speak, by any means, so strongly as Dr Hamilton; for even when it was early, pointedly, and exclusively employed, and brought away green stools, it frequently failed, and I most earnestly caution the reader, against trusting to it, exclusively: at the same time, I must add, that in one or two cases, I have known it procure recovery, under very desperate circumstances, even without evacuation by stool; and when, after a great quantity of calomel was given, and relief obtained, it was necessary to open the bowels by clysters. In those who are old enough to express their feelings, we generally find, that relief is not obtained, till the medicine gripe, as well as purge. Whether it act by positively diminishing inflammation, or principally, if not entirely, by relieving that part of the disease, which is muscular or spasmodic, is not determined; but I am inclined to the latter opinion, as it is not of much efficacy in the laryngitis of

adults. I expect most benefit from it, as I have already stated, in the early stage of croup, which is dependent on the condition of the base of the brain, whether induced directly, or through the medium of the bowels. Calomel has been combined with ipecacuanha, to produce vomiting, but I cannot satisfy myself that I have ever seen this combination do more good, than ipecacuanha would have done singly.

In cases, otherwise hopeless, it has been proposed to perform the operation of bronchotomy, and it is, in certain circumstances, justifiable, on every principle, both of science and prudence. Assuredly, we would not wish rashly, or too early, to have recourse to this operation, but if relief be not early obtained, by the vigorous means I have advised, and more especially, if these have not been employed, and the disease have run on, with little effectual check, we are too well warranted in saying, that death must be the result. If this state of danger, arise from the mere existence of inflammation of a sensible or vital part, acting by sympathy on the system, as that of the lungs or stomach would do, then, an operation, as it cannot remove that, should do no good, and it must be worse than folly to propose it. But if it proceed, not so much from this source, as from the effect produced on respiration, and the organs concerned in that function, some hope may be entertained, that if we can obviate this immediate, and urgent, effect of the disease, time may be allowed for the subsidence of the complaint. I acknowledge the great difficulty of deciding, as to the precise degree of danger, to be ascribed, in any one case, to either of these sources. But if the disease be very early severe, and the symptoms rapidly and steadily increasing, in spite of the remedies used, and, at the same time, the child be not already so ill, as to extinguish hope, and be free from appearance of cephalic and pulmonic disease,* the operation, as the only, and last resource, may, though with little hope of success, be performed. It should not, when it is to be resorted to, be delayed long, for the risk is increased, by the tendency which exists, to the induction of inflammation, or disease, of the lungs; and, independently of this, by the debility, produced by the continuance of the disease. It has also been objected to the operation, that there may be extensive coating of fibrin, like membrane; but we have no symptom which can, in any sure way, inform us on this point. Many fatal cases exhibit, after death, only a thin coating of soft secretion from an inflamed surface, with a swelling of the membrane at the glottis. I would, however, dissuade most decidedly from making the trial on an infant, who cannot be expected to bear the violence, both

* The stethoscope is useful in ascertaining the state of the lungs, and to a certain degree that of the larynx and trachea.

of the disease and the operation. I think the chance of success, *ceteris paribus*, is greater after three years than sooner. Parents naturally recoil from an operation, and practitioners too often shrink from responsibility. Let such timid people, bring forward the opinion of Dr Baillie, and the conduct of eminent men in our profession, as a shelter from reproof, if they fail; and above all, let them solace themselves with the gratifying reflection, that if they have not succeeded, where there was enough of hope, to warrant a trial, they, at least, have done all that skill could suggest, or art accomplish. One of the earliest, successful cases of tracheotomy, in this disease, is that of the boy, five years of age, operated on by Mr Andree.* Another boy, two years older, was operated on by Mr Chevalier, on the afternoon of the third day, when venesection, and other means had been tried in vain. His breathing was difficult, his pulse 160, countenance livid, he was covered with cold sweat, and although still sensible, was evidently sinking. On dividing two rings of the trachea, one ounce and a half of frothy-coloured mucus was discharged. Next day, his pulse fell to 144, and in the same evening the breathing became easy. The third day he coughed up some tough mucus, and soon recovered.† In this case surely the operation was too long delayed, if it were at all in contemplation. Far, indeed, be it from me to make this remark, with a view to blame the operator, who, so fortunately, performed it, with little encouragement before him. But I make it, with the hope, of others profiting by the case, and being excited, to a still earlier operation, where circumstances indicate, that there is no other alternative, than that of death. I frankly say, I could not have expected any good, to result from an operation, so long delayed, and under so desperate symptoms.‡

* Med. Chir. Trans. Vol. iii. p. 335.

† Ibid. Vol. vi. p. 115.

‡ At birth, the trachea is about one-fourth of an inch broad. It is almost entirely covered with glands; for the lateral lobes of the thyroid descend, and the upper extremities of the thymus gland ascend, so as to meet. At this period, the distance from the cross lobe of the thyroid gland, to the sternum, is three-fourths, but in that space we can only expose the trachea, by going down, in front, between the prolongation of the thymus and thyroid glands. The crico-thyroid membranous space, is one-fourth across, and one-eighth perpendicular. The rima glottidis is three-sixteenths long. From the back of the epiglottis, to the end of the chink between the arytenoid cartilages, is three-eighths. The diameter of the trachea one-fourth. The measurements do not rapidly change. At three years of age, the length of the slit, between the arytenoid cartilages is still three-eighths; that of the rima glottidis three-sixteenths. The diameter of the trachea, externally, is seven-sixteenths; internally, one-fourth. The crico-thyroid space measures, transversely, one-half; perpendicularly, three-sixteenths. From the lower part of the thyroid gland, in front, to the sternum, one and a half. The thymus mounts, five-eighths, above the sternum. From the lower part of the cricoid cartilage, to the sternum, full seven-eighths.

At seven years, the breadth of the trachea is one-half; the crico-thyroid space, transversely, three-eighths; perpendicularly, three-sixteenths. Length of the

Spasmodic, is often, but not necessarily, connected with inflammatory croup. There is, perhaps, no case of the latter disease, unattended with affection of the muscles of the larynx, but there are many cases of this affection without inflammation; yet if it continue long, there is a great risk of inflammation taking place, and of a membrane being formed. The spasmodic croup, attacks children, chiefly, but it may also affect women, especially about the age of puberty, and harass them, occasionally, for many years afterwards. It makes its attack very suddenly, generally at night, and sometimes for many nights in succession, especially if the child be agitated, or the mind of the young woman anxious respecting it. The patient breathes with difficulty, and with a wheezing sound, has a hard barking cough, with paroxysms of suffocation, as in inflammatory croup. The extremities become cold, the pulse during the struggle, is frequent, but in the remission it is slower; and if the remission be great, it becomes natural, unless kept up by agitation. There is little or no viscid phlegm in the mouth, some drowsiness, but more terror, and the eye stares wildly during the paroxysm. The disease is often suddenly, for a time, relieved by sneezing, vomiting, or eructation. It differs, then, from the inflammatory croup, in the suddenness of its attack, in there being at first little fever, but only quickness of pulse, greatly abating when the child does not struggle for breath, less drowsiness, and little phlegm about the mouth. The cough is less shrill, and the fit often goes off suddenly and completely, either spontaneously, or by the use of the remedies acting quickly. Sometimes, however, even in adults, inflammation takes place, and in infants,

rima, one-fourth; from the base of the epiglottis, to the back of the chink between the arytenoid cartilages, three-eighths. The distance from the notch, in the thyroid cartilage, to the lower margin, is three-eighths.

In the adult, the length of the rima varies, from five-eighths to seven-eighths. The internal diameter of the trachea, laterally, from five-eighths to three-fourths. The distance of the cross slip of the thyroid gland, from the sternum, varies exceedingly, from five-eighths to two inches.

In forming an estimate of the comparative merits, of laryngotomy and tracheotomy, I would say that the former is certainly more easily performed, and the aperture more readily kept open. The size of the crico-thyroid membrane, we have seen, is such as to afford, if properly divided, an opening fully as large as the rima glottidis. The only objection is, that we may be more likely to come on a diseased, or thickened part of the membrane, than if we opened the trachea lower. After three years of age, tracheotomy is more easily performed than earlier, but, on the whole, I am more partial to laryngotomy. If we choose the former, we must, after separating the muscles, explore the situation of the glands, and also of the arteries, for sometimes the carotid crosses the trachea, where the incision should be made. The innominate may also rise high. Observation leads me to enforce the rule, that the air passage is not to be opened, till the external bleeding be, in one way or other, stopped. By neglecting this rule, suffocation has been speedily caused.

this disease, if neglected, is almost invariably converted into true croup.

It is, at times, brought on by exposure to cold, and in that case, it is, occasionally, preceded by slight sore throat, or hoarse cough; but oftener the spasm comes on without any precursory symptoms, and seems to arise, sometimes from direct affections of the brain, at the origin of the eighth pair of nerves, but much more frequently, indirectly, from the state of the fifth pair of nerves in dentition, or from irritation or injury dependent on abdominal disorder. The recurrent of the eighth pair, seems to be often chiefly affected; and when we call the disease spasmodic,* we are generally wrong; its nature being, in most instances a temporary paralytic state of that nerve, or, at least, a condition unfitting it for its function, and the *modus operandi* of emetics, may be to excite the nerve. Bleeding, on the other hand, relieves the cerebral affection, or state of the origin of the nerves. I have, in a former chapter, noticed this symptom, in a particular and very obstinate affection, dependent on abdominal disorder; and am inclined to think, that a great majority of cases of croup, in infants, are of this description at first, and that inflammation is only an effect. If we divide the recurrents of a rabbit, croup is produced, and after death, we find the larynx and trachea inflamed, and smeared over with fibrinous exudation. The drowsiness which often attends this complaint, is owing to that affection of the base of the brain, which frequently exists, and which might prove fatal independently either of laryngeal

* I retain the name of spasmodic croup, both because it is generally received, and as it is probable that spasm may, in certain cases be the cause. There, however, is often a mistake made, by considering the contraction of one set of muscles, produced by torpor or paralysis of the antagonists, as spasm; and it is this kind of contraction which often takes place in croup, and produces doubtless the same feeling and effects as spasm. Inaction of both sets of muscles about the glottis would have the same effect. When both the recurrents are cut, the rima closes, and the animal dies. In my lectures I have long illustrated this disease by the effect of dividing the pneumogastric nerves, or their recurrent branches, in the rabbit; at the same time I am not prepared to disprove that in certain cases the nerve supplying the constrictors may be irritated, and these muscles unduly contracted; but these I hold to be rare. From what I have stated in the commencement of Chap. V., it is easy to understand how the same part may be partly weakened or paralyzed, and partly irritated.

The constrictors and dilators of the glottis were supposed to be supplied, respectively, by the superior and inferior laryngeal nerves, and, therefore, if the latter lost its power, the glottis must be contracted. Mr Hilton (Guy's Hosp. Rep. No. v.) maintains that the superior, is a nerve of sensation, and goes, not to the small constrictors but to the mucous membrane, &c. But if this membrane be cautiously peeled off, in a direction from the trunk of the nerve, so as to expose the constrictors, and the trunk be then gently pulled, so as to stretch its minute ramifications, many of these, by a good glass, may be seen entering into the muscles. But whatever may be the opinion on this point, it is evident that loss of power of the inferior laryngeal nerve, must prevent the dilators from acting, and leave the glottis as small as it appears after death.

paralysis or of the inflammation; often by the secretion of serum,* or by the condition of the blood in the arteries. Sometimes this disease is excited, if the patient be older, by passions of the mind. Not unfrequently a renewal of the paroxysm is excited, in those who are subject to it, by eating a full meal in the evening.

With regard to the treatment, I shall briefly state the result of my observation. In young girls, venesection has uniformly given relief, the constriction, be it from spasm, or from paralysis, or both, suddenly abating, and very soon going entirely off, after a certain quantity of blood has flowed. Topical blood-letting has not the same effect, and indeed is nearly useless. But if the paroxysm should be repeated for many nights, venesection cannot be employed on every attack, as it debilitates and predisposes to the disease. Emetics, such as sulphate of zinc, or ipecacuanha, have the effect of abating, and, occasionally, of removing the paroxysm, but not of stopping it so soon, and so suddenly, and entirely, as blood-letting. They debilitate less, however, and may be oftener repeated. In this species, and in the commencement of inflammatory croup, they act probably through the eighth pair of nerves, or the recurrent, which is much affected; but sometimes the fit, though impeded during their operation, returns, and in such cases has yielded to venesection. When the emetic has been very long of operating, the stomach not being easily acted on, blood-letting has produced speedy vomiting and immediate relief. Opiates, and antispasmodics, such as ether, given in large doses, have, if exhibited in the very commencement of the attack, occasionally checked it, but have not always that effect, and, if not given soon, are longer of procuring relief. A full dose of prussic acid, determined by the age of the patient, has sometimes had the effect of checking the fit, by inducing a species of carus, without which it does no good. If there be much spinal excitement, I have already noticed that it may induce tetanic spasm. Calomel, in croup affecting girls and women, is out of the question; for the paroxysm is so severe, that we cannot, and must not, trust alone to its operation.

A relapse is to be prevented, by giving purgatives, and avoiding exposure to cold damp air, and in infancy, great attention must be paid to the state of the head. When there is any suspicious symptom, a small blister should be applied to the back of

* I have great pleasure in referring to a valuable dissection, published by Dr Munro, in his work on the Morbid Anatomy of the Brain, Vol. i. p. 76. All the nerves at their origins were sound, except the fifth and eighth, which were of a deep scarlet colour, and there was water in the spinal canal. The whole cord was affected. The cervical portion was of a vermilion colour, the lumbar dark red. The eighth pair of nerves was of a deep red colour, as far as its branches to the lungs.

the head, and a part of it kept open, for some time. When the paroxysms return every night, in older children, there is strong ground to suspect that the bowels are in fault. Aloes, combined with a little calomel, or with the mass of the blue pill, ought to be given, so as to operate freely and effectually, and we are not to relinquish this plan, because it does not immediately cure the disease. In young girls, a course of tonic medicines alone, or combined with asafœtida, or valerian, will be useful; and, when the attacks have been kept off for some time, sea-bathing will be proper.

With infants, we generally succeed, by giving instantly an emetic, and afterwards calomel in considerable doses, so as to produce sickness and vomiting, or free purging. But if the emetic do not decidedly and immediately mitigate the disease, then in place of trusting solely to the calomel, we premise venesection. I have already expressed my opinion, that calomel is more likely to be useful, in this case, than when there is much inflammation. Asafœtida* has been strongly recommended in this disease, and has sometimes a very good effect. Sulphate of copper has been extolled; but when a cure was accomplished, it was either given so as to produce vomiting, or was preceded by the use of leeches. The warm bath is always proper. If the child be about the period of dentition, the gum should be examined, and cut if tumid. If the disease do not soon yield to these remedies, there is ground to suppose, that it will be converted into the other species of croup; but this affects the prognosis rather than the treatment.

Some children are subject to slight wheezing, continuing for a day or two, with intermissions, and accompanied with a hoarse cough, but without fever. Emetics, laxatives, and a large Burgundy pitch plaster, applied to the back, remove the disease.

Infants, during dentition, are subject to sudden attacks of spasm about the windpipe, producing a temporary feeling of suffocation, with a crowing sound, but there is no hoarse cough. It is apt to take place suddenly at night, or when crying. It is relieved, by giving a combination of tincture of asafœtida, and of hyoscyamus, and using laxatives. The tepid bath is also useful. The gum should be cut, and if there be any tendency to return, particularly, if the child be hot and the pulse quick,

* Dr Millar has given an ounce of this gum, to a child of eighteen months old, in forty-eight hours, and almost as much at the same time in form of clyster. His formula is as follows:—℞. G. asafœtidæ, ℥ ij.; Spt. Mindereri, ℥ j.; Ap. pulg. ℥ iij. M. s. a. A table-spoonful of this is to be given every half hour. Vide Observations on Asthma, p. 43. This medicine is also prepared as a nostrum, under the name of Dalby's Carminative, which has been used for children.

the eye heavy, and the face unusually pale or flushed, leeches should be applied, and then a blister to the back of the head.

I have, in the seventh chapter, noticed the spasmodic breathing, which is complicated with convulsions. This sudden, and perhaps transient, attack of spasmodic or paralytic croup, requires constant attention, as it is often the prelude, to incurable disease in the brain or spinal cord, and is more immediately alarming, if complicated with, or succeeded by, general convulsions. It is too often connected with an inflammatory, or highly disordered, state of the origin of the nerves, coming off at the base of the skull, and this points out the imperative demand for prompt treatment. Immediate detraction of blood, by the lancet or leeches, is essential, then, a purgative, and next, an issue should be kept open, for some time, on the under and back part of the head. The diet and bowels must be regulated.

Dr Ley, describes, with some modification, this, under the name of *Laryngismus Stridulus*, and ascribes it to enlarged cervical or thoracic glands pressing on the nerve. He treats the case, by attention to the general health, the use of iodine, &c. This view may in some cases be correct, but not so frequently as is supposed. That intelligent physician, Sir H. Marsh, besides attending to the gums, bowels, &c., prescribes quinine, and a removal to the country.

Some children, very nearly from the time of their birth, have a constant wheezing, or sonorous breathing, subject to exacerbation. This does not indicate the existence of an organic affection, for I have known it removed by change of air. An enlarged thymus gland may not only cause dyspnoea, but sudden and often fatal fits, called thymic asthma. This has been described by Drs Hood and Montgomery, and also by Kopp and Hirsch. Leeches, blisters, and iodine, are the remedies.

Besides these affections, ending acutely, there are others which produce more slow effects. The parts about the larynx inflame, and this may doubtless cause speedy death, by suffocation; but in other instances, necrosis of the cartilages, or abscess, or ulceration, takes place, and the patient is thrown into the disease called laryngeal phthisis. This is to be prevented, in the outset, by vigorous antiphlogistic treatment; but when it takes place, if issues do not give relief, we have only to consider the probable effects of laryngotomy.

The œdeme de la glotte, described by the late M. Bayle,* is merely laryngitis, attended with serous effusion.

* Journ. General, Avril, 1819.

CHAP. X.

Of Hooping-Cough.

THE hooping-cough,* often, begins like a common cold, the child coughing frequently, and having more or less fever. In some cases, the fever is slight, going off in the course of a week, in others, very severe and long continued, attended with great oppression, or sickness, and want of appetite. I believe, that this fever, may sometimes be strictly, and essentially connected, with the specific disease of hooping-cough, but the most alarming degrees of it, are, I suspect, connected with, and greatly dependent on, an inflammatory state of the lungs. The cough generally comes on very abruptly, and is sometimes early attended with that sonorous, spasmodic inspiration, denominated hooping; in other cases, not for a considerable time; and this is considered as a favourable circumstance, but it is not always so, for, in young children, death may take place, although the disease never fully form. The fits are generally most frequent, and most severe, during the night. When the cough becomes formed; the paroxysm consists of a number of short expirations, closely following each other, so as to produce a feeling of suffocation, relieved at last, for an instant, by a violent, full, and crowing inspiration; then, in general, the cough or spasmodic expirations recommence, and the paroxysm, consisting of these two parts, continues until a quantity of phlegm be coughed up or vomited, alone, or with the contents of the stomach, and this ends the attack. The expirations sound like a common cough, but are more rapid, and frequently repeated, as in violent laughing. Sometimes the sound is lower, or the cough resembles the chattering of a monkey, quickly repeated. These paroxysms vary in frequency and duration. Sometimes they are slight; at other times, and especially during the night, they are attended with a most painful sensation, and appearance of suffocation, the face becoming turgid and purple, the sweat breaking, and blood gushing from the nose or other parts. The extremities become cold, during the fit, the whole frame is much agitated, and the child clings to anything near him. But even severe as the paroxysms are, if the disease be not attended with fever, the patient seems quite well after the fit, and begins to eat with a

* This disease is supposed to have been first distinguished in Franco, 1414, and received the name of coqueluche, from a cowl, to keep the head warm, being thought useful. Sauvages, who calls it *tussis convulsiva, seu serina*, says it comes in paroxysms called *quintas*, from the old French word *quinte*, a great cough. This may be corrupted into *kink-cough*.

renewed appetite. A fit of crying will, at times, even after the disease have been apparently removed, excite the cough. The features often remain swelled for a considerable time.

Hooping-cough is very dangerous for infants, as they often die, suddenly, in a fit of suffocation; elder children escape more safely, though, even they, are sometimes carried off, the fever continuing, or anasarca coming on, with exhaustion. Sometimes the lungs become diseased, and hectic fever takes place, or peripneumony is produced, or the lungs become œdematous, or some of the cells are ruptured, and emphysema takes place. Convulsions may also occur, and carry off the child. These may either precede the fit of coughing, and go on along with it for a short time, and then leave the cough, in full possession of the child, or the cough first begins, and, almost immediately, the convulsions take place, and suspend the cough, or the respiration is arrested, and death takes place. When the face and extremities are swelled, the danger is greatest, and scrofulous children suffer most. There is an intimate connexion, between this cough and the state of the brain and medulla spinalis, and sometimes an ill formed hooping-cough, ends in an obstinate spasmodic cough, as already noticed.

The danger arises from various sources. The fever may exhaust the child, without much cough; the inflammation of the lungs, or secretion of phlegm, owing to a bronchitic state, may destroy him, or pus may form, and hectic fever be produced, or cephalic disease and convulsions may take place, or the child may be suffocated.

Generally speaking, the main source of danger is from inflammation of the lungs or bronchial tubes. The membrane lining the latter, is found, after death, to be red, and the ramifications filled with mucus. The lungs are engorged and infiltrated. The brain seems to be affected only in a secondary way. The vessels may be congested, or even effusion found, but it also suffers from the blood being imperfectly arterialised, and this does not necessarily produce any change visible on dissection. Immediate death may be thus produced.

Many remedies have been employed in this disease, which it will be proper to divide, into those intended to abate the fever, and those given to relieve the cough. Venesection has, for the first of these purposes, been recommended; but it is very rarely requisite, and only when the patient is plethoric, and we apprehend that some vessel may burst in the lungs, from the violence of the cough, or when there are symptoms of inflammation. Leeches may, in these circumstances, be applied to the chest, but this practice falls rather to be considered, as a mean of removing a complication. The most general useful remedies,

are laxatives and the saline julep, which, often, in a few days, moderate the fever greatly. The tepid bath is useful, and, if there be much irritation and restlessness, hyoscyamus sometimes does good. The diet ought to be mild.

For the relief of the cough, nothing is so beneficial as gentle emetics. These, have been given in nauseating doses so as to make vomiting be readily excited, by the cough; but, in general, a full dose of ipecacuanha, will be as effectual, and is less distressing. At first, the emetic should be frequently repeated, especially to infants, perhaps once a-day, or once in two days, according to circumstances; and this degree of frequency is by no means injurious. Antimony has been highly praised by many, but it is more apt to weaken the stomach, and, in very young children, it sometimes produces violent effects. I therefore do not advise it as an emetic. Stimulating substances, such as a combination of soap, camphor, and oil of turpentine; or juice of garlic, or oil of amber, or of thyme, &c., rubbed over the spine, particularly the cervical portion, so as to produce tenderness of the skin, have a good effect. Opiated frictions, over the thorax, are also proper; and stimulating applications, to the soles of the feet, have, certainly, in some cases, done good. Antispasmodics, such as asafoetida, ol. succini, musk, &c., have been recommended, and in some cases are successful, but oftener fail. Opiates are also of service. Dr Willan says, that he found the watery infusion of opium, more useful than any other narcotic. When the disease is protracted, cicuta has been recommended, but it does not seem to have any advantage, over opium or hyoscyamus. It has also been applied externally. Prussic acid given three times a-day in small doses, that is to say, in such doses as do not produce strong or sensible effects, has been praised, but, although I have seen it sometimes useful, it cannot be relied on. *Lactuca virosa*, and belladonna, have also been employed. The most effectual remedy, however, is change of air, which often has a marked effect on the disease, in a few hours. When the patient becomes restless, or feverish, and coughs more, it should again be changed. The diet ought to be light.

If there be fixed pain in the chest, difficulty of breathing, and fever, indicating inflammation, either venesection or leeches, according to the age and circumstances of the child, will be absolutely necessary; but our evacuation must be prudently conducted. Blisters, in such cases, are useful, but once for all, I would observe that they are never to be used, rashly, in infantile diseases, nor repeated, if they do not at first do good, for, with the exception of those applied to the scalp, they generally produce much irritation and subsequent debility. They ought not to be allowed to remain nearly so long, on a child, as on an adult, and

may even be prepared, with a smaller proportion of cantharides, or, the liquid blister may be used. Pain, produced merely by the violence of the cough, remitting, or going, at times, entirely off, and generally seated about the upper part of the sternum, is relieved by those means which relieve the cough. If fever be the prominent symptom, I would advise saline julep alone, or with a little tincture of opium and of ipecacuanha, laxatives, leeches, if there be pain, and, if the weather permit, change of air.

When the paroxysms have been very severe, the breathing oppressed, the cheeks livid, and the pulse very weak, some children have been saved by the application of leeches to the chest, blisters and small doses of the compound powder of ipecacuanha, with diuretics.

When the patient is threatened with hectic, or becomes emaciated and weak, nothing is of so much benefit as country air, and milk diet, at the same time that we keep the bowels open. Small blisters should be applied to the breast, if there be fixed pain or dyspnoea. If there be anasarca swelling, digitalis, conjoined with squill and cordials, will be useful, but digitalis never ought to be given, to the extent of producing weakness, nor persisted in, if it do not act on the kidneys.

Convulsions accompanying the fits are very alarming, and may suddenly carry off the infant, especially if he be very young. They depend, generally, on turgescence of the vessels in the head, and, therefore, unless the child be previously much reduced, we ought, always, in the first instance, to apply leeches to the head, the number to depend on the age and strength. Older, and more robust children, may require the lancet. The bowels should be opened, and the head shaved, and even a small blister applied to it if the fits be repeated. The tepid bath is also to be had recourse to, when the fits come on. The air ought also to be, if possible, immediately changed. In some cases, tincture of hyoscyamus given in a mixture, or clysters containing camphor, seem to allay the tendency to spasm; and, in every instance, it is proper to rub the back and belly with anodyne balsam.

If the cough return, after it had gone off for a time, a gentle emetic is the best remedy. A sudden change of weather from warm to cold, is very apt to renew the cough. If the face or lips remain swelled, gentle laxatives are proper.

Inflammation of the lungs may occur, by very slight causes, after hooping-cough, in consequence of the predisposition by it.

During the continuance of the disease, the diet must be light, but nourishing, if the patient be weak; but more sparing at first, if he be, on the other hand, plethoric and inclined to inflammation. Toward the conclusion of the disease, quinine, and tonics are useful, to re-establish the health.

There is a cough very like hooping-cough, and which gives rise, sometimes, to the groundless fear, that the child is going to take that disease; or, on the other hand, if somewhat prolonged, it may pass for hooping-cough, and afterwards the child being exposed to infection, takes the disease, and is said to have had it twice. This kind of cough has less of the suffocating appearance than the hooping-cough; the expirations are fewer, and do not follow each other so quickly, and the inspiration is not performed so rapidly, and with the distinct hooping sound. It sometimes succeeds measles, or appears as a kind of influenza. It is cured by an emetic and anodynes.

CHAP. XI.

Of Catarrh, Bronchitis, Inflammation of the Pleura, and of the Stomach and Intestines.

INFANTS are subject, as in after life, to catarrh, either common or epidemic. It is attended with fever and inquietude, redness of the cheeks, watery discharge from the eyes and nostrils, disposition to sleep, frequent and sometimes irregular pulse, panting and shortness of breathing, with frequent cough, which, however, is not severe. It, generally, goes off, within a week, by the use of gentle purges, antimonials, and, if the fever be considerable, leeches applied to the breast; if more obstinate, a very small blister should be applied to the sternum. A hoarse barking cough, is cured by an emetic, and wearing flannel round the throat.

Bronchitis, is far from being an uncommon disease of infants, but it is seldom met with, in a severe degree, alone, for the lungs, soon, become affected. It sometimes takes place, very early, after birth; in other instances, not for several weeks. It begins with fever, cough, and pretty copious secretion of mucus or phlegm, which, however, the child will not allow to come out of the mouth, but swallows. The cough is frequent, but not uniformly so, coming on in paroxysms. It has a stifled sound, and is somewhat hoarse, or occasionally even shrill, from slight inflammation at the top of the windpipe, and at first it is dry. The breathing is oppressed, hurried, or rattling, but not permanently so. Vomiting is also not an uncommon attendant, the epigastrium often is distended, the stools are generally bad, the face is pale, and the child sick and oppressed. He takes the breast, but dislikes all meat. The stethoscopic indications are to be attended to.

Presently, if death be not produced by the accumulation of phlegm, the secretion becomes more of a purulent appearance.

The respiration is more oppressed, and the noisy breathing is more frequent. There is a degree of stupor. The hands, but especially the feet, swell a little, whilst the body becomes emaciated. The cheeks, are occasionally flushed in the evening, and the pulse, which was always frequent, becomes still more so, and irregular. The fits of coughing are severe, and attended with appearance of suffocation, and at last the child dies. On opening the body, we find the ramifications of the trachea, filled with purulent-looking matter, and, in some parts, there is an approach toward the formation of tubercles. The lungs are sometimes paler, than usual, but, generally, darker and more solid.

This is a very obstinate disease, but it does not prove very rapidly fatal: seldom sooner than in a week, or ten days, sometimes, not for several weeks. Milder cases, terminate favourably within a week. In the commencement, it resembles common eatarrh, and requires the same treatment. A gentle emetic of ipecacuanha should be given, followed by a purgative, and if these do not give decided relief, a very small blister should be immediately applied, for a few hours, till it redden the skin, which generally rises after the blister is removed. Venesection, or even leeches, are only to be resorted to, in severe cases, at an early stage, and in children who are robust, and rather beyond infancy. In the advanced stage, and under various circumstances, I have tried emetics, blisters, calomel, and expectorants, but without decided benefit. The use of calomel, combined with ipecacuanha, to act both on the bowels, and also as an expectorant, together with the occasional application of a very small blister, and a removal to the country, appear to constitute the best practice. I think it right to mention, that though the pectoral disease may be slight, yet, by the sickening effect of a purgative, especially castor oil, great panting, paleness, and other appearances of danger, have been produced, which have all gone off, after having the bowels opened, freely, by clyster, which brought away the purgative.

Inflammation of the pleura, is more frequent with children than many suppose, and like the former disease, soon affects the substance of the lungs. The skin is very hot, the face flushed, the pulse quick, the breathing short and oppressed; there is a cough, aggravated by crying, by motion, and by laying the child down on bed. He is likewise more disposed, to cough, and is more uneasy on the one side, than on the other. If not relieved soon, the breathing becomes laborious, the extremities cold, the cough stifling, with rattling in the throat and stupor: or, the pulse becomes irregular and intermittent, the extremities swell, the countenance is sallow or dark-coloured, the breathing diffi-

cult, with short cough, and frothy expectoration, which oozes from the mouth. The stethoscope should be used, but I do not think it necessary to detail its indications, as these are elsewhere to be studied. On inspecting the chest, the inflammation is, sometimes, found to have terminated in hydrothorax, oftener, in adhesions, not unfrequently, in hepatization. This disease requires venesection, or the early application of leeches to the sternum, according to the age and constitution of the child; the subsequent use of a blister, calomel purges, and the tepid bath. Antimonials, given in a pleasant saline julep, are also sometimes of service, but never ought to be given, to such an extent, as to produce decided sickness. In the last stage, diuretics are proper, especially a combination of squill and digitalis, whilst the strength is to be supported, by the breast-milk, or light diet.

This disease, sometimes terminates in abscess, and purulent spitting, with hectic; but much more frequently, the pulmonary consumption, of infants and children, begins, as in adults, more slowly, is marked by a short dry cough, flushings of the face, frequent small pulse, difficult breathing, wasting, and nocturnal sweats. The expectoration is generally swallowed, but sometimes it is rejected, or it is vomited up, and is found to be purulent. There is seldom any cure for this state; all that can be done is to send the child to the country, apply small blisters to the breast, keep the bowels in a proper state, give a mixture containing opium and diuretics, and support the strength with suitable nourishment. If the expectoration be only phlegm, then, although all the other symptoms be present, there is considerable hope of saving the child. But if it be purulent, and the parents be consumptive, the danger is much greater. This state, however, does not in general succeed pleurisy. It is generally induced, more slowly, by tubercles, accompanied with enlargement of the bronchial glands.*

Inflammation of the stomach, is not a common disease of infancy, nor is it discovered, without considerable attention. There is great fever, frequent vomiting, the mildest fluid being rejected soon after it is swallowed, the throat is first inflamed, and then covered with aphthæ, which spread to the mouth. The child cries much. The region of the stomach is full, and very tender to the touch. The bowels are generally loose. If the child be old enough to describe the sensations, he complains of heat or

* Although it is not exactly connected with my present subject, I may mention that sometimes the bronchial cells are much enlarged, the child has cough and difficult breathing. The air escapes, and passes from the root of the lungs to the mediastinum, insinuating itself betwixt its layers, and thence to the neck, where it produces emphysema. Punctures ought immediately to be made, if the external swelling be inconveniently great.

burning, about the stomach and throat; if younger, it is known by the incessant crying, fever, thirst, with constant vomiting, and increase of crying on pressing the abdomen. It is not necessary, to be too minute, in drawing the distinction, between the inflammation of the stomach, and enteritis, as they both require the same treatment, and I have seen both prove fatal, in a few hours. There is sometimes, from the first, cough and short breathing, but the constant vomiting, shows the disease to be in the stomach. It is not easy to say what causes this, for it cannot always be traced to acrid, or stimulating substances swallowed. It is proper immediately to bleed, or apply leeches to the pit of the stomach, according to the age and strength of the child; then, a blister is to be applied, and stools are to be procured by clysters, and afterwards by mild laxatives. Fomentations and the warm bath are also useful. M. Saillant recommends the juice of lettuce, to be given in spoonfuls every hour, but I do not know any advantage this can have, over mucilage and opiates.

There is another state of the stomach, which from the softness of the texture, is apt, after death, to be confounded with gangrene. There are, however, no marks of inflammation; but the stomach seems, as if it had become so soft, by maceration, that it gives way on being handled. This state, is sometimes confined to one part of the stomach,* sometimes, it extends, even, to the small intestines, and, more than one child, in the same family, have died of this disease. It is not easily discovered before death, for its most prominent symptoms, namely, purging, with griping pains, occur in other diseases of the bowels. It is, however, very early attended, with coldness of the face and extremities, and the countenance is shrunk and anxious. It affects the intestines, oftener, than the stomach. This state of the stomach, cannot always be attributed to the effect of the gastric juice. When the stomach is acted on, by this solvent, after death, we find, that it is very soft, some of it, in a state of semi-solution, the inner surface being dissolved, and some of it actually removed, so as to make a hole. When the preparation is put into spirits, and held between the eye and the light, the flocculent appearance, of the inner surface is distinct, and numerous globules are seen within the peritoneal coat, which are probably the glands undestroyed.

Peritoneal inflammation, or enteritis, is not an uncommon complaint with children. It begins, with violent pain in the belly like colic, but is more constant and continued, and is ac-

* Dr Armstrong mentions a case of this kind, where the upper part of the stomach was thus diseased, but the pylorus sound. The stomach was distended with food, but the intestines were very empty, which might be owing to diminished power of contraction in the stomach.

accompanied with a considerable degree of fever, costiveness, and tenderness in the belly. If this disease do not prove speedily fatal, and, if, on the other hand, it be not perfectly removed, the child remains long ill, perhaps for some weeks, and the nature of the complaint, may, for a length of time, be mistaken. There is constant fever, but it is subject to exacerbation in the evening. There is increasing emaciation, and, at first, occasional attacks of pain in the belly. The stools are usually obstructed, and when they are procured, they are slimy, bloody, ill-coloured, or scybalous, afterwards, there is, frequently, a diarrhoea. On examining the belly, externally, induration may sometimes be discovered. The appetite is lost, the thirst is considerable, the pulse becomes more frequent and feeble, the debility increases, and the extremities become cold, and in this exhausted state, the child sometimes lies for many hours before dissolution. On inspecting the abdomen, the bowels are found adhering, or forming knots, and sometimes the liver or omentum partakes of the disease. A less severe degree of inflammation, is productive of general secretion of purulent fluid, swelling the belly like ascites, and attended with hectic fever.

In younger infants, the consequences of peritoneal inflammation, when it does not prove rapidly fatal, or excite convulsions, are abdominal pain or tenderness, obstinate slimy purging, vomiting, and increasing emaciation.

In young infants, we cannot carry evacuation far. But, whenever, there is a prolonged attack of colic, we may apprehend a severe disease, and must use the warm bath, clysters to open the bowels immediately, and then, an opiate clyster, to allay morbid sensibility; a rubefacient should be applied to the belly, and if the symptoms be very urgent, this should be preceded by the application of two or more leeches to the abdomen. In elder children, the attack is often brought on, by cold, or by eating indigestible substances, as for instance, nuts. No time is to be lost in opening the bowels, by clysters and laxatives, and, in detracting blood from a vein. Fomentations, and blisters are useful; but the latter are not to be repeated. If these means be neglected, or do not succeed, there is little hope, afterwards, of saving the patient, unless the bowels adhere to the abdominal muscles, and an abscess take place, which is indeed very rare. When abscess forms, near the pelvis, or about the rectum, the child cries much, on going to stool, seems afraid to pass the fæces, and may, at the time, be seized with spasm or convulsions. The fæces are very offensive, and occasionally purulent matter is discharged, and sometimes comes continually away, or constitutes the whole, or the greatest part, of the stool. In such cases, occurring in infancy, I have found magnesia useful as a laxative,

and hyoscyamus, with oil of anise, of great benefit as an anodyne. Older children, may have castor oil, senna or any other laxative, they prefer. If the appetite be not lost, there is hope of a cure, and I have known cases, apparently desperate, recover. Mild tonics with suitable nourishment promote this.

Sometimes, this produces a contraction of the rectum; or a stricture may exist there naturally, and produce great pain on going to stool. In either case, a cure is effected by cutting the stricture, which is generally membranous and easily divided. This symptom, however, of exquisite pain on going to stool, oftener depends on fissure, and is effectually relieved by dividing the sphincter. The pain is sometimes so great as to produce convulsions at the time.

The accumulation of purulent matter, in the abdominal cavity, preceded by mild symptoms of inflammation, is generally cured by paracentesis, at least, every case I have seen of this kind has recovered.

Inflammation of the mucous coat, if situated high, causes purging of slimy and watery stuff, with griping. If in the large intestines, the symptoms are those of dysentery, the treatment is that of dysentery.

Cystitis, also, may occur in infants, and is known by the frequent and painful micturation, pain on pressing the pubis, and fever. It requires leeches to the pubis, or venesection, and the tepid bath, with laxatives.

CHAP. XH.

Of Vomiting.

VOMITING, is very seldom an idiopathic disease of children. Many puke their milk after sucking freely, especially if shaken or dandled. This is not to be counted a disease, for all children vomit, more or less, under these circumstances. A fit of frequent and repeated vomiting, soon after sucking or drinking, if unattended with other symptoms, and the egesta be of natural appearance, may be supposed to depend on irritability of the stomach, which can be cured, by applying to the stomach, a cloth dipped in spirits, and slightly dusted with pepper, or an anodyne plaster. Sometimes a spoonful or two of white wine whey settles the stomach. If, however, the egesta be sour or ill smelled, and the milk very firmly curdled like cheese, and the child be sick, it is probable that more of that caseous substance remains, and a gentle puke of ipecacuanha will give relief. On

the other hand, should the egesta be green and bilious, gentle doses of calomel will be serviceable, especially after an emetic. The sickness which sometimes precedes vomiting, especially if it be caused by bile, is accompanied with great oppression, panting, deadly paleness, and an appearance altogether as if the child were going to expire. The relief given in this state, by vomiting, is great and sudden.

Vomiting, connected with purging or febrile disease, is to be considered merely as symptomatic. It is, however, desirable to restrain it, which is done by giving small doses of saline julep, and removing the primary disease. When it is immediately succeeded by a stool, there is reason to suppose it to be dependent on the state of the bowels, but if accompanied merely by fever, we must look to the state of the head. Sometimes the œsophagus is found ruptured in children, and the contents of the stomach poured into the thorax. This probably happens from spasm taking place, at the upper part of the œsophagus, whilst the stomach is rejecting its contents.

CHAP. XIII.

Of Diarrhœa.

WHEN we consider the great extent of intestinal surface, its delicacy, and the intimate connexion, which exists, betwixt the bowels and other organs, we shall not be surprised, at the powerful, and important effects, produced on the system at large, by disorder of the alimentary canal.

In attending to diarrhœa, we must consider the structure of the intestine, and the purposes it is destined to perform. The bowel itself consists of muscular fibres, of glandular apparatus, of nerves and blood vessels, and of a system of lacteal vessels, which probably do more than absorb, assisting also, by glandular action, in the formation of chyle, which does not, likely, exist, in a perfect state, in the contents of the bowels. Now, although these different parts, constitute one organ, yet, they are not so blended in action, that all must be alike affected, when the organ is deranged. All may be disordered, but one sooner, and to a greater degree, than the rest. The fibres may be excited to inordinate action, producing rapid contraction, and speedy expulsion of the contents, and this may, or may not, be accompanied with spasms and great pain. The exhalants, may be greatly affected, producing copious discharge of intestinal secretion, which may be watery, mucous, slimy, or, when the vessels

are abraded or open, tinged with blood. The absorbents, may have their action impeded, and the chyle be not duly absorbed. The injury of one of these systems of organization, not only affects the rest, but this intestinal disease, influences parts immediately connected with the intestines, such as the stomach, liver, pancreas, &c. This leads us to consider the contents of the bowels. If the food be good, and the stomach digest properly, the chyme is good and natural. But, if the food be bad, or in exuberant quantity, or the power of the stomach be impaired, the chyme is not properly formed, and the food is found, in the intestines, not thoroughly changed or digested, perhaps, little altered in its appearance. If the bowels, have the same torpor with the stomach, it is retained, and forms accumulations, ending in great mischief. If the bowels be irritable, as in diarrhœa, it is generally passed speedily. The egesta, from the stomach, are naturally mixed with the bile, pancreatic juice, and intestinal secretion; and the colour of the compound is yellow, or yellow with a brown tinge; and during its passage downwards, a certain quantity of gas, possessing a peculiar smell, is extricated.* In young infants, however, when they are properly suckled, the stools are somewhat different, from their state at a more advanced period. They are of a yellow colour, are something like custard, or are curdy, and have by no means the offensive smell they afterwards possess. If the stools have a very curdy appearance, or are too liquid, or green, or dark-coloured, or ill-smelled, they are unnatural. The changes effected in the passage of the chyme, are not merely chemical, but dependent on animal action; for the contents of the stomach, mixed with the fluids found in the intestines, and exposed to the same degree of heat, will not form natural looking fœces, but the substances will simply assume, the acetous or putrefactive fermentation. If the powers of the stomach and intestines be impaired, then, this fermentation goes on to a great degree, in the stomach and bowels; much gas is extricated, inflation is produced, and the aliment becomes sour or putrid. If too much bile be added, the fœces are green, sometimes dark-coloured. This redundancy of bile may be produced by causes acting immediately on the liver, at least, not through the interposition of the intestines, and the bile comes even to be a source of irritation to the bowels, and excites diarrhœa; or the affection of the bowels may influence the liver, and excite it to a greater secretion. Some children are more bilious than others, and are subject to fits of paleness, sickness, and bilious vomiting. The pancreatic juice and intestinal secre-

* Both the smell and the colour of the fœces are found to depend greatly on the bile. When the bile is obstructed, the stools are clay-coloured or pale, and have not the feculent smell.

tion, when not changed in quality, but only increased in quantity, are probably not like the bile, a source of irritation, but only the produce of it. But these discharges, sometimes mixed with bile, sometimes with blood effused from a small vessel, may accumulate, together with the egesta of the stomach, and form a black, pitchy-looking substance, which sooner or later produces very bad effects. In other instances, these form a more watery substance, which is passed off with griping, and purging of stools like moss water.

The colour of stools in diarrhoea, varies according to the violence of the disease. In slight cases, where the action of the bowels is only increased in degree, but not altered in kind, and the stomach is not injured, the fæces are of a yellow colour, but thin, owing to the increased discharge, and have not run into fermentation. When, in children, the digestive faculty is somewhat impaired, and the aliment is improper, fermentation goes on more strongly, and the fæces become acid, which, although the bile be not increased in quantity, may give them a green colour, and the intestines are distended with air. Very green stools, however, imply a redundancy of bile, and the darker the shade of green, the greater is the quantity of bile. When the irritation is great, and universal, the stools are very watery, and of a dark green colour; or, if the irritation be still greater, they are brown; and, in either case, if the child be on the breast, portions of coagulated milk, are found swimming in the fluid; if not, we have either bits of any solid food, taken by the child, or small masses of dark-coloured fæces, which had been accumulated in the bowels. When the digestive faculty is almost gone, the stools consist of the aliment mixed with bile. Thus, if the child be drinking milk and water, or be not weaned, the stools consist of green watery fluid, with clots of milk, streaked with bile. When the irritation is greatest, at some particular part of the intestines, it is not unusual for these appearances, to alternate with discharge of slime and blood, as we see in *intus-susceptio*. When the secretion of bile is diminished, the stools have a cineritious appearance; but this state is not often met with in diarrhoea. Sometimes, when the liver is affected, or the bowels much diseased, the fæces may, among other changes, put on the appearance of pale yolk of egg, or are almost like pus.

Diarrhoea may be injurious in different ways. The increased peristaltic motion, of so extensive a tract of sensible muscular substance, must, like other great muscular exertion, weaken the bowels, and, thus, the whole body, which sympathizes with it. Great debility is often rapidly excited, by affections of the intestinal fibres, though there have been little evacuation.

Diarrhœa likewise injures the system, by the irritation and great secretion, which often accompany it; add to this, the diminution of the powers of digestion, and the obstacle afforded, to the absorption of the due quantity of chyle, together with the derangement, which other parts of the system may suffer, and the diseases thus excited, such as convulsions, anasarca, &c.

On inspecting the bowels, after death, they are sometimes found in a state of inflammation, but, oftener, greatly inflated and relaxed, or with more or fewer intus-suscepted portions. In one case, no fewer than 47 intro-susceptions, were found in the same body. On examining these portions, the valvulæ conniventes, are found to be rather more prominent, than usual, but the parts are not inflamed. Invagination of the intestine, is a very frequent cause of fatal diarrhœa, not less than 50 cases having occurred to my brother, in the course of his dissections. Intus-susceptio, may be produced suddenly, in consequence of spasm, and may occasion great pain, with purging; or, it may be caused by acrid purgatives, or those which produce much griping, as senna tea, made by boiling the leaves; or, it may take place in diarrhœa, when attended with considerable irritation, and it adds to the violence of the disease. It is sometimes accompanied with a diseased state of the glands. In this case, there may be a swelling of the external glands, and there is often a tendency to cough. There may be a double intus-susceptio, and the tumour, so formed, may lodge in the pelvis and fill it. Inflammation is very far from being a necessary attendant on this state; it is even uncommon.

The diagnostic of intus-susceptio is very obscure, and, whatever may be said to the contrary, I believe we have no certain mark by which to judge. It has been discovered, when no previous circumstances, led to a supposition of its existence. But, in general, there are considerable pain, and marks of local irritation, such as slimy stools, with or without blood; sometimes a little frothy slime is passed, sometimes, a substance like rotten eggs, and, at times, the contents of the intestines are vomited. It is attended with stretching and crying, as in colic, with occasional attacks of great paleness, like syncope; the belly is tender to the touch, and sometimes, in infants, the pulsæ is slower than ordinary. When the disease continues long, the emaciation is very great, the face resembling the bones, with merely a skin covering them, whilst the eyes are sunk. On the extremities, the skin is lax, and seems much too wide for the bone and muscles. Sometimes the intus-suscepted portion is thrown off, and passes by the rectum.

Dissection, likewise shows that a diseased state of the liver, not unfrequently accompanies diarrhœa, and this may be a cause

of purging, oftener, than is supposed. It is to be suspected, when the biliary secretion is most affected, and the region of the liver is fuller than usual, when there are cough, frequent fits of sickness, and vomiting or purging of bile. It is most effectually remedied, by small doses of calomel, alternated with opiates.

Obstinate diarrhœa, also depends, on inflammation of the mucous coat of the bowels, marked by fever, pain on pressing the belly, bloody and slimy stools, tenesmus, and tormina. When protracted, the whole mucous membrane upwards to the nose and eyes, is inflamed, and aphthæ or crusts line the cheeks, and cover the tongue and fauces. If not attacked, early, by fomentations and mild laxatives, followed by opiates, it is apt to become chronic, and, often, incurable.

In some cases, the intestines become very soft, white, or almost diaphanous, and easily torn, and contain a substance somewhat like purulent matter, or thin custard.

Diarrhœa appears under various circumstances, not only with regard to the nature of the stools, but their frequency, the pain which attends them, the duration of the complaint, and the effect on other parts. In some cases, the stools are extremely frequent, and uniformly so. In others, the dejections come in paroxysms, being worse, either through the night, or through the day. Some children are greatly griped; others are sick, oppressed, and do not cry, but moan. In severe cases, the stomach is very irritable, rejecting the food; but it is not equally so, in every stage of the disease, though, the stools may be the same in frequency. The appetite is more or less impaired, and, in bad cases, the aliment quickly passes off, and every time the child drinks, he is excited to purge. The mouth, in obstinate bowel complaints, generally becomes aphthous, and the anus excoriated or tender, and it is not uncommon for the feet to swell. Sometimes the child is flushed, at certain times of the day, or the face is uniformly pale, and the skin waxy in appearance. In general, if the disease, be severe, a considerable degree of fever attends it; and a continued fever, in this disease, is always unfavourable. The stools may come away with much noise from wind, or may be passed as in health. When there is great irritation, they are either squirted out, forcibly, or come in small quantity, with much pressing. Diarrhœa sometimes proves fatal, in 48 hours, but it may be protracted, for several weeks, as is often the case, when intus-susceptio has taken place. In such protracted cases, the emaciation is prodigious, the face is lank, the eye sunk, and the expression anxious: the strength gradually sinks, the eyes become covered with a glossy pellicle, the extremities cold, the respiration heaving, and the child dies, completely exhausted.

Diarrhœa may be excited by a variety of causes; such as too much food, or sudden change of the kind of aliment, and, hence, it is often caused by weaning a delicate child. Attempts to bring up children, altogether, on spoon meat, some injurious quality of the nurse's milk, improper diet after weaning, the irritation of ill-digested food, redundancy of bile, previous costiveness, dentition, the application of cold to the surface, or a morbid state of the bowels, connected with general debility, produced either by bad air, or natural delicacy of constitution, are causes of diarrhœa. Irritation of the origin of the nerves, is another cause; hence, diarrhœa often precedes more marked disease in the head. The first, might perhaps have been cured, and the second, prevented from running its fatal course, by timely recourse to an issue, on the back of the head, preceded by leeching, if there were fever. Those children suffer most, who are feeble, puny, or delicate.

As diarrhœa is a frequent cause of death, we cannot be too attentive to its treatment, nor too early in the use of remedies, especially, as we find, that if it be neglected in its commencement, it is apt to end in a most obstinate, if not incurable state. On this account, I have been led to consider this disease very carefully, and shall briefly mention the treatment I have found most effectual. When the stools are natural in colour, but more liquid than usual, the frequency moderate, the continuance short, and no fever is present, it will be useful to give small doses (one grain) of rhubarb, conjoined with an aromatic, taking care, however, that these do not end in producing the opposite extreme, or costiveness. In many cases, the disease will subside of itself; but if it do not abate spontaneously, or by the use of small doses of rhubarb, then it comes to be considered, how far it is proper to check the inordinate action of the fibres of the intestines. This is readily done by an anodyne clyster. But if the diarrhœa have been excited by improper food, or redundancy of food, or if it be attended with acute fever, and especially if the child be plethoric, it will be useful to give some mild laxative, such as magnesia and rhubarb, or an emulsion containing castor oil, or small doses of calomel. The tepid bath is also beneficial. If there be oppression, with fever or sickness, a gentle emetic will be a proper prelude to the laxatives. Afterwards, if the disease continue, and there be marks of much irritation of the fibres, anodyne clysters will be of signal service.

If there be accompanying fever, starting, and any change of countenance, we ought to examine carefully into the state of the head, and into the existence of any symptom, denoting disease there. Many children might probably be saved, were we early to take the alarm, and treat the disease as cephalic, by leeching,

blisters, and mild mercurials. Doubtless, we might use, sometimes, strong measures, when the child might have recovered without them. But if we do not go to an imprudent length, we can rarely, if ever, do harm, and may do much good.

If the diarrhœa come on quickly, and the stools be, from the first, green or morbid, and the stomach be irritable, or its functions impaired, we should examine the gums, and cut them, if the child be getting teeth. This removes or lessens a source of irritation. We also must look, attentively, to the state of the head, and, if warranted, use the other means just noticed.

But whether the disease be produced by teething, by change of food consequent to weaning, or other causes, great attention is necessary. If the child be sick and oppressed, a few grains of ipecacuanha will be proper; and afterwards small doses of calomel,* or some other laxative,† should be given morning and evening. These carry off the morbid feculent matter, and excite a better action of the bowels. Calomel, is usually, an effectual remedy, and it may be given even to infants a few days old. To them, a quarter of a grain, rubbed up with sugar, is a proper dose, and may be given for several nights. To older children, we give half a grain. If calomel gripe; or cause sickness, or otherwise disagree with the child, from one to two grains of the mass of mercurial pill, may be substituted. If laxatives do not increase the debility and pain, and, if they render the stools more natural, in appearance, they do good, and may be continued, in decreasing quantity, till they be abandoned altogether. But if they merely increase the frequency of the dejections, without greatly altering their quality, the stools continuing watery, ill-coloured, and offensive; and the strength and appetite sinking, we can expect no good, by continuing them, and must restrain the purging, by repeated anodyne clysters, taking care that we do not delay their use too long. When the secretion is copious, and the stools frequent, and perhaps squirted out, with great irritation, the strength will sink very rapidly, and a few hours may decide the fate of the child. In these cases, there is more or less inflammatory action, and therefore, in the commencement, we should, if there be tenderness on pressure, apply one or more leeches to the belly, according to the age and strength, and use fomentations. It is also, immediately necessary, even although

* That excellent practitioner, Dr Clarke of Dublin, has strongly advised half a grain of calomel to be given every night, or every second night, to infants when troubled with green stools and griping; observing, that in the course of a week or two, the stools become natural, and that it is rarely necessary to give more than from 4 to 5 grains altogether. Mem. of Irish Acad. Vol. vi.

† Cold drawn castor oil may be given in the following form: ℞ Ol. Ricini, ℥iij.; Mannæ, ℥ss.; Spt. ammon. Arom. ℥j.; Aq. Cassiæ, ℥ss.; Aq. Font. ℥jss. Fiat emulsio. Of this a tea spoonful may be given as often as necessary.

the contents of the bowels be morbid, to moderate the fibrous and secretory action, by anodyne clysters. Afterwards, the morbid matter is expelled, or can be removed by gentle laxatives. Opiates, given by the mouth, are never equal in benefit to clysters; still, when the clysters are not retained, we must have recourse to the exhibition by the stomach. When they, in moderate doses, seem to have produced stupor, or other bad consequences, it is probable, that they only hastened the progress of disease, already existing in the head. Cretaceous substances, joined with aromatics, are useful when there appears to be a redundancy of acid; but the salt formed, does not seem to be so styptic as many suppose. Astringent medicines, such as kino, or catechu, though they sometimes seem, in slight cases, to be of service, yet, in more obstinate diseases fail, unless they be combined with opium, and then the benefit is, perhaps, more to be ascribed to that drug, than to their effect; still, in moderate doses, they are safe, and not to be neglected. If given in great quantity, they may perhaps excite to invagination of the intestines. In obstinate cases, small doses of the mercurial-pill-mass, given morning and evening, with the use of anodyne clysters at the same time, to keep the purging within due bounds, are of more service than any other remedies; I can speak of this practice with confidence. Dr Armstrong, however, when the stools are liquid or watery, sometimes colourless or brownish, or streaked with blood, and of very offensive smell, advises antimonial vomits, repeated every six or eight hours, till the stools change their appearance. But this remedy operates severely, and may induce no small degree of debility. If the plan be rejected, he advises a solution of Epsom salts, with a small quantity of laudanum. I object to both plans. Dr Underwood, in this disease, prescribes emetics, then, warm purges, and afterwards, small doses of ipecacuanha, with absorbents and aromatics.

Dr Cheyne, in obstinate and prolonged purging, which, from frequently occurring about the time of weaning, he calls atrophia ablatorum, strongly advises small, and repeated doses of mercury, as the most effectual remedy.

When there is much fever, the use of the tepid bath, morning and evening, and small doses of saline julep, or compound powder of ipecacuanha, and clothing the child in flannel, will be of great benefit. When, along with fever, there is much pain, and the stools are slimy, bloody, or squirted out, forcibly, there is reason to fear inflammation of the mucous coat, and leeches should precede the bath.

In every case, external applications have, I think, a claim to be employed. These, consist of friction, with anodyne balsam, or camphorated oil of turpentine, or, what is better, the applica-

tion of an anodyne plaster,* to the whole abdomen. Small blisters applied to the belly are useful, if they do not give much irritation. They are not to be kept on long. It is also proper, to bandage the belly pretty firmly, but by no means tightly, with flannel.

During the whole course of the disease, it is proper to support the strength with light nourishment, such as beef tea, arrowroot jelly, toasted flour boiled with milk, &c. ; or, if the child be not weaned, it is sometimes of service, in continued or repeated attacks of diarrhœa, to change the nurse. The system should be supported, by small quantities of white wine whey, given frequently. If the child, as is frequently the case, will not take nourishment, then, clysters of beef tea, or arrowroot, are to be employed, mixed with a few drops of laudanum. These are of signal service, and ought to be early, and carefully, employed, till the child can take food into the stomach.

When the mouth becomes apthous, it may be washed with a little syrup, sharpened with muriatic acid; or borax may be employed, along with the proper internal remedies; and, when these restore the bowels to a healthy state, the mouth becomes cleaner. The appearance and disappearance of the apthæ, generally, mark the fluctuation of the bowel complaint. The excoriations which appear about the anus, require to be bathed, with solution of sulphate of zinc, and call for great tenderness, in administering clysters.

When the feet become swelled, and the urine diminished in quantity, some diuretic must be added to the other means. The best is the spiritus etheris nitrosi.

If the child become drowsy, or have a tendency to coma, much benefit may be derived, from shaving the head, and applying a small blister to the scalp. Affections of other organs, supervening on bowel complaints, must be treated, promptly, on general principles.

It will thus appear, that the practice in diarrhœa, is chiefly confined, to the following points:

First. To remove every exciting cause, scarifying the gums in dentition, rectifying the action of the liver, when it is deranged, lessening cerebral excitement when it exists, and regulating the diet, when the quality of the food, may be supposed to have disordered the bowels.

Second. To lessen sickness and oppression of the stomach, when considerable, and not dependent on the state of the head,

* Such as the following: ℞ Saponis. ℥j. ; Empl. Lytharg. ʒvj. ; Ext. Cicutæ, ʒij. ; Ol. Ment. pip. ʒss. Fiat empl. Or, ℞ Empl. resinos. ʒvj. ; Pulv. Opii, ʒj. ; Camph. ʒij. ; Ol. Junip. ʒss. Fiat empl. Or, if there be much spasm, we may use the empl. asafœtidæ Pharm. Edin. with the addition of opium.

by a gentle ipecacuanha emetic; to remove irritating fæces, and excite a better action of the intestinal surface, by small doses of calomel, or blue pill, in prolonged cases, or by a dose of rhubarb and magnesia, in recent cases of purging. The circumstances, under which, the administration of laxatives, is beneficial or injurious, have been already pointed out.

Third. To restrain inordinate peristaltic motion, and excessive secretion, by anodyne clysters, and external applications, neither of which, are incompatible with the occasional, and cautious use of calomel, or hydrargyrus cum cretâ.

Fourth. To remove, or allay coincident, or consecutive symptoms, by appropriate remedies.

Fifth. To support the strength, from the first, by suitable nourishment and cordials; and, whenever the stomach cannot receive, or retain food, to give nutritive clysters.

CHAP. XIV.

Of Costiveness.

COSTIVENESS is natural to some children—acquired by others. In the former case, it often happens, that the mother is of the same habit, and in these circumstances, we find that less detriment accrues, than in the other; yet, even here, it is necessary to prevent the costiveness from increasing, as it may excite not only colic, but more serious diseases, such as convulsions, or diseases in the bowels. Some children, of a very irritable habit have the rectum spasmodically affected, at times, on passing the fæces, which may be followed by a convulsion. This being frequently repeated, the child becomes afraid to go to stool, and retains the fæces as long as possible, which induces a costive state. Sometimes the terror is so great, that the child can only be made to pass the fæces when half asleep. I have noticed this already, as well as the effect of fissure.

In hereditary costiveness, it is difficult, if not impossible, to induce a regular state of the bowels; and perhaps in some cases, this, if it could be done, would, seeing that it is not natural to the constitution, be injurious to the child. But we must beware, lest, by indulgence, this habit increase. Whenever the child is pale and puny, or dull, and does not thrive, there is risk of convulsions, or some severe disease being induced. At a more advanced period of childhood, chorea may be produced. Acquired costiveness may be overcome by medicine, and encouraging ular attempts to procure a stool. A variety of means have

been employed in these cases, such as suppositories, magnesia, and other laxatives. The best remedy for changing the state of the bowels, seems to be calomel, or blue pill, which may be given in a mild dose, even to an infant, for a day or two in succession, and then omitted; employing, in the interim, a little manna, alone, or combined with castor oil, and sometimes magnesia may be substituted for a change. In more obstinate cases, mild infusion of senna, may be given. A quarter of a grain of ipecacuanha, mixed with sugar, may also be tried. An injection of tepid water, given morning and evening, if not sufficient, of itself, will, at least, make less medicine operate; as, for instance, two grains of the mass of pil. hyd. It is also proper, to change the nurse, or alter the diet of the child, giving barley-meal porridge, veal soup, aleberry. I wish explicitly to urge, that the milk, whether that of the mother, or of a nurse, may be costive; and, in such cases, if another nurse be not procured, whose milk is more laxative, the most serious effects may follow. In the early weeks of infancy, fits are apt to occur, often attended or preceded by fever. In later periods, hydrocephalus is induced, possibly, also, in the earlier age.

CHAP. XV.

Of Colic.

COLIC, is a frequent complaint with children, especially when they are costive. It is often produced by too much food, exposure to cold, irregularities in the diet of the nurse, or some bad quality of her milk. It makes its attack suddenly, and is known by violent screaming, induced without any warning, alternated with short intervals of quietness, and accompanied with hardness of the abdominal muscles, kicking and drawing up of the legs, and, often, suppression of urine. These symptoms are soon removed by a clyster, or suppository, which brings away both fæces and wind. The warm bath, fomentations, and friction on the belly with anodyne balsam or laudanum, will be serviceable; and, if the pain continue, two or three drops of tincture of opium, or a rather larger dose of tincture of hyoscyamus, with a drop of oil of anise, may be given. When the child is costive, a laxative is to be exhibited after the anodyne.

If a child be subject to repeated attacks of colic, a few drops of tincture of asafœtida, may be given once or twice a-day, and we must always take care to prevent the long continuance of pain, as it may end either in visceral inflammation, or convulsions.

CHAP. XVI.

Of Marasmus.

CONNECTED with, and generally dependent on, a morbid state of the bowels, is the marasmus, or wasting of children. This disease is preceded, and accompanied, by costiveness, sometimes alternated with a diarrhoea, in which the stools are foetid, or unnatural in appearance. It begins with lassitude and debility, loss of appetite, or depraved appetite, foetid breath, and foetid stools, tumid belly, pale leucophlegmatic countenance, with swelling of the upper lip. Presently, fever supervenes, the countenance becomes at times flushed, and the skin hot and dry, with frequent pulse, thirst, restlessness, picking of the nose, and disturbed sleep, in which the patient grinds his teeth and starts. The debility gradually increases, and if relief be not procured, death, preceded by great emaciation, takes place. This disease, is most frequent with those who are fed on improper food, or eat many raw roots, or much unripe fruit; or those who have the digestive faculty impaired by confinement, bad air, or neglect of the bowels. It very often is considered as produced by worms; but these, although they may often exist in the bowels, are by no means essential to the disease. It is still more frequently, and more certainly, caused by some disorder of the branches of the sympathetic nerve, occurring, as I have noticed, in a modification of the affection, considered in the chapter, treating of cerebral and spinal disorders. In such a case, it is often the only very marked symptom, and exists to a great degree.

This disease may, in the commencement, and before the appearance of fever, be arrested, by a course of active purges, at proper intervals; at the same time that we give light nourishing diet, and inculcate the necessity of exercise, in the open air. In the febrile stage, the cure is more difficult, but is to be accomplished, on a similar principle, by attending to the state of the bowels. For this purpose, purgatives must be frequently repeated, in such doses as the state of the bowels requires. The kind of purgative to be used, must depend much on the effect of a trial. Aloetic pills, infusion of senna, castor oil, rhubarb and magnesia, &c., may be employed; and occasionally we interpose a mild dose of calomel, or give small doses of it oftener, if the appearance of the stools, indicate that the secretions are very unhealthy. The stools are not always hard; they are often fluid, but generally foetid, and dark in the colour, or appear to contain indigested food. A course of purgatives, however, by degrees, procures discharge of faeces of natural appearance. Whilst this course is

conducting, the strength is to be supported, by proper diet, and the prudent use of wine. The power of the stomach, may be increased by chalybeates, iodine, bitters, or other tonics, provided these be not nauseated by the patient. After recovery has taken place, we must, by very gentle laxatives, preserve an open state of the bowels, which will prevent a relapse. Warm sea-bathing is likewise of advantage.*

The state of the bowels which gives rise to marasmus, sometimes produces, speedily, more acute symptoms. These constitute a very frequent species of fever, which we have already noticed.

An emaciated or general unhealthy state, may be produced by the milk not agreeing with the child, or being deficient in quantity. The nurse ought to be changed immediately.

It is astonishing what recoveries may take place, both in infants and children. I have known these, with wrinkled face, and loose skin wrapped over the bones, get well by removal to the country or sea coast, the use of small doses of iodine, laxatives, or opiates, according to circumstances, and light nourishment.

CHAP. XVII.

Of Tabes Mesenterica.

TABES mesenterica, or hectic from disease of the mesenteric glands, is not often met with before the time of weaning, nor after puberty, seldom after eight or ten years, but no age is entirely exempted. The disease consists in enlargement of the mesenteric glands,† which are sometimes universally affected, but are especially enlarged, into a hard mass, about the root of the mesentery. These tend slowly to the formation of a cheesy substance, but death may take place before that process be accomplished. The commencement of the disease is slow and obscure; the patient complains of little or no pain, but is subject to an irregular state of the bowels; is either costive, or passes dark loose fæces; is unhealthy in his appearance, and liable to

* Those who wish to know what other remedies are employed, without much benefit, may consult Baumes, de l'amaigrissement des enfans.

† This state is sometimes accompanied with swelling of the thymus gland, and the lymphatic glands of the neck. Swelling of the thymus gland, by pressing on the trachea and œsophagus, produces difficulty of breathing and of swallowing, and sometimes suffocation. By pressing on the subclavian vein, it obstructs the passage of the chyle, and may thus excite disease in the mesenteric glands. Blisters applied to the top of the sternum, preceded by leeches, and conjoined with the use of iodine, constitute the practice.

occasional attacks of fever. The urine is white or turbid. The appetite is not much diminished, and digestion goes on; but the belly is hard and somewhat tumid. The child is more fretful than usual, and sometimes, especially if very young, is troubled with vomiting. This is the incipient stage, and resembles very much that of marasmus, proceeding from affection of the bowels, independent of diseased glands. As the disease advances, the body wastes away, the face is pale, and the features become sharp, the abdomen gradually enlarges more, and the patient complains of lancinating pains, of short duration however, within the belly, or near the back. The stools are now sometimes bound, but oftener loose, frothy, and mixed with bile; occasionally, the patient has diarrhoea, with vomiting. A short troublesome cough, is generally a prominent symptom; sometimes this is dependent on tubercles, but often it is sympathetic, and the lungs are found healthy. The fever, which at first is obscure and intermitting, becomes more acute and distinct, with exacerbation in the evening, attended with restlessness and acceleration of the pulse, which rises to 120 strokes in a minute, or even more. The patient is listless, and his mind becomes gradually inactive, though he does not lose hopes of recovery. The tongue is generally clean, but sometimes covered with a white or brown crust, especially in the middle; and, in an advanced stage, the whole mouth and throat become aphthous. The thirst is trifling, but the appetite is usually impaired, or becomes very fastidious. As the disease proceeds, the emaciation of the body increases, the eyes are sunk and glossy, the nose sharp, and apparently elongated, the face sallow, but the lips are sometimes florid, and the cheeks flushed at night. The abdomen is hard, and sounds like a drum when struck upon, or if not very tense, knots may sometimes be felt within it.* The urine is lessened in quantity, and it often deposits a white or lateritious sediment, the feet swell, and during sleep, the forehead, scalp, and sometimes the breast, are covered with a profuse sweat, whilst the rest of the skin is hard and dry. The progress of this disease is not always alike rapid. In some cases, the patient lives for a year or two in bad health; but in general, after hectic has appeared, a few months, sometimes weeks, cut him off.

In the commencement of this disease, the steady, and repeated use, of mild purges, with the occasional addition of calomel, conjoined with some light bitter infusion, decoction of bark, tonic medicines, and gentle friction over the belly, continued for a considerable length of time, morning and evening, would appear to

* Sometimes a hard tumour may be felt within the belly, pretty early in the disease. It is often felt in the right side, near the origin of the colon, or at the edge of the liver, or above the navel.

be of more service, than any other plan of treatment. It has been proposed to give calomel in small doses, as a mercurial; but it does not appear to have great efficacy, and is chiefly of use, in so far as it acts as a gentle purgative. Copious evacuations in this disease are not required. It is sufficient that the bowels be brought into, and kept in a regular state, which, in the incipient stage, at least, sometimes requires pretty strong doses. But in the confirmed and advanced stage, stools are easily obtained; and from the loose state of the bowels which often prevails, it comes to be a question how far laxatives are proper. Upon this important subject, I observe, that these medicines ought not to be severe, but gentle, and given frequently, provided they have the effect of diminishing the tumour of the belly, making the stools more natural, and do not impair the strength. The lax stools which take place in this disease, spontaneously, never abate the tumefaction; but a gentle course of laxatives often does, and this is a most favourable effect. Farther, if the paroxysms of fever be severe, and early in their appearance, we find it necessary to use purgatives more freely, than in opposite circumstances; evacuation by stool being in such cases advantageous. In the confirmed and advanced stage, it is sufficient that such a dose of a laxative be given every night, or every second or third night, as shall keep the bowels open, if disposed to be costive, or, if loose, make the stools more natural in their appearance, than they would be, without the administration of medicine. If calomel be employed, we must take care, that the mercury do not produce much effect on the constitution, lest debility be increased; it is therefore prudent, sometimes, to combine it with rhubarb, or to employ a little castor-oil emulsion.

Along with this plan, we may, in every stage of the disease, derive advantage from the use of tonic medicines, such as angustura bark, and other bitters, or chalybeates, especially in the form of mineral waters. But iron is to be used cautiously, if there be marks of inflammation existing in the glands; and in such cases, some light bitter infusion is preferable. In such circumstances, the laxatives are to be used more freely; the tepid bath, especially of sea water, is to be employed, and the belly rubbed freely with anodyne balsam. Tincture of iodine is often useful, especially in the early stage. It aids the laxatives, and acts as a mild tonic, but if it excite, it must be given up.

Gentle exercise in the open air is of great service, and it is useful, in the early part of the disease, to reside near the sea; but if the glands seem to be in a state of inflammation, discovered by shooting pain, with fever, the patient must not bathe; and indeed at all times, the utility and safety of the cold bath seem to be doubtful, except when the disease is so far removed, that

we have chiefly to contend with debility. The warm bath is more generally useful.

The diet should be light and nutritious, but all stimulating and indigestible substances must be avoided. If an inflammatory state exist, milk in different forms, soft boiled eggs, and vegetables, are proper. If no inflammation be present, some animal food will be of service; nay, as in other scrofulous affections, a very considerable proportion of animal diet, is sometimes beneficial, in preventing the tumour from inflaming, and forming a cheesy substance, or in giving a favourable turn to the action, when the acute state of inflammation has abated, in those cases where it is met with, for it is by no means a universal occurrence.

In the latter end of the disease, little can be done except palliating the symptoms, and supporting the strength by soups and a little wine. Diarrhœa should be restrained by anodyne clysters. Doyer's powder often succeeds better, as an opiate, than any other form.

Cicuta, and some other medicines, have been advised in this disease, but I cannot say that they have been employed with any advantage. Electricity has been proposed, to promote absorption, but it does not seem to have that effect.

CHAP. XVIII.

Of Worms.

WORMS exist in the bowels, perhaps, of every child,* but especially in those, whose bowels are debilitated, by bad management, or by acute disease; and hence, in the end of disease, or after recovering from such illness, worms are often expelled, both by children and adults. Worms are of different kinds, but infants are chiefly infested with lumbrici and ascarides, the tæniæ being rarely met with, until children are four or five years old. We also sometimes meet with some uncommon species of worms, which are ejected by vomiting. Insects of different kinds may also be introduced, accidentally, into the stomach and bowels, and live there for some time.

Ascarides, generally occupy the rectum, producing much itching in that part, so that sleep is often prevented. The irritation causes indigestion, and pain in the belly, with picking of the nose and white face, a variable appetite, and sometimes a

* Worms rarely appear in the bowels, till after the child is weaned.

desire for indigestible substances. The worms are discovered in the stools, like small white threads, and occasionally they creep out from the rectum. The stools are often slimy or mucous. This kind of worm, is removed by injections of aloes mixed with water, or decoction of chamomile flowers, or of semen santonicum, or any strong bitter infusion, containing salt in solution, or the common turpentine injection; lime water and olive oil also sometimes destroy them, but cannot be depended on. Calomel purges are proper likewise; and any disordered state of the alimentary canal, which exists, is to be treated on general principles, improvement of the digestion, being one of the best means of preventing the continuance of the worms.

The ascaris lumbricoides, is often from six to ten inches long. In its general appearance it resembles the earth worm, but differs from it, in having, besides other distinctions, a longitudinal line on each side, whereas the earth worm has three lines on the upper surface. It dies soon after its expulsion, but when alive, it moves like an eel, and does not shorten the body like a worm. Dr Hooper, in the fifth vol. of the Mem. of Med. Soc., has a valuable paper on intestinal worms. Lumbrici may exist in every part of the alimentary canal, and frequently are ejected by vomiting, as well as by stool. The symptoms are those of intestinal irritation,* pain in the belly, frequent attacks of diarrhoea, variable, and often voracious appetite, the child sometimes becoming hungry, almost immediately after having ate heartily, fœtid breath, pale complexion, tumour of the lips, with livid circle round the eyes, swelling of the belly at night, and disturbed sleep, the child occasionally awakening in great terror, and being liable to starting, and grinding of the teeth. When awake, he picks his nose, is plagued with temporary headach, sometimes has a dry cough, with slow fever, or convulsive affections, or eclampsia. I have already pointed out several diseases, proceeding from disorder of the bowels, and these may arise from worms, inasmuch as they are capable of irritating the bowels, or injuring their action, or increasing such a debilitated state, as may have predisposed to their accumulation. A variety of anthelmintics have been advised, for an account of which, I refer to the writers on the Materia Medica. Sulphur, tansy, aloes, spigelia marylandica, dolichos pruriens, geoffræa, worm seed, tin powder, filings of steel, &c., have all, at times, a good effect; but in general, calomel-purges, given repeatedly and liberally,

* Hence it is not easy to say that worms are the cause of a child's complaint, for other morbid affections of the bowels produce the same symptoms. A course of purging removes these symptoms, without bringing away any worms; although the slimy appearance of the stools is attributed to the worms being dissolved.

provided the constitution of the patient will bear them, will be found more effectual; or these may be alternated with saline purgatives, oil of turpentine, or suitable doses, of aloes or jalap. Carbonate of iron, in considerable doses, or other chalybeates, are useful.

In obstinate cases, much benefit will be derived, by giving a regular course of purgatives, so as to keep up a constant, but gentle, effect on the bowels. After the worms are expelled, a bitter infusion, or chalybeate water, will be useful to strengthen the bowels, or these may even be employed, whilst we are using the purgatives.

The *trichuris*, or long thread-worm, is about two inches long, and two-thirds of this form a tail like a hair. The body is about the 16th of an inch thick, and the worm is white like the *ascaris*. It is found in the rectum, and also higher up, even in the ilium.

The *tænia* consists of many flat, jointed, portions, and is divided into the *T. Solium*, where the orifices are placed on the margins of the joints, and the *T. Lata*, where they are found on the surface. The symptoms are similar to those attendant on the presence of the round worm, but more severe in degree. The best remedies are smart purges of calomel and jalap, alternated with doses of oil of turpentine, proportioned to the age; a dessert spoonful may be given to a child of four years of age. But to ensure its quick operation by stool, and to prevent strangury, another laxative, such as castor oil, should be combined with it. Colchicum may also be prescribed at a more advanced age. The *tænia* is more difficult to be removed than other worms.

CHAP. XIX.

Of Jaundice.

THE jaundice of infants, is a disease attended with great danger, especially if it appear very soon after birth, and the stools evince a deficiency of bile; for we have then reason to apprehend, some incurable state, of the biliary apparatus. I conceive that there are two species, of this disease, which are very opposite in their nature. In the first, there is an obstacle to the passage of the bile into the intestine, the child is costive, and the meconium is paler than usual, and after it is removed, the stools become light-coloured; the skin, very early after birth, becomes of a deep yellow colour, which extends to the eyes. The child sucks very little, has occasionally a difficulty in

swallowing, is languid, becomes emaciated, moans much, is troubled with flatulence, sometimes with cough and phlegm in the trachea; or, vomiting, convulsions, colic, and fever, occasionally, supervene. In some cases, the liver is felt enlarged, and the hypochondrium is tumid. The water is very high-coloured. This disease often proves fatal in a week, but it has been known to continue, in variable degrees of violence, for a considerable time, and at last to disappear, though such children continue long delicate. With regard to the cause of this disease, we find, that sometimes it consists in obstruction of the hepatic duct, or ductus communis, either by thickening of the coats, or pressure, in consequence of enlargement of some part in the vicinity of the duct: or it may consist in imperforation of the duct. Sometimes it proceeds from temporary obstruction in the duct, owing to viscosity of the bile. Now, some of these cases are irremovable, others are not; but as we cannot, *a priori*, say what the cause may be, in any particular instance, we must use the means of cure in every case. The most likely remedies, for removing this disease, are very gentle emetics, given early, and followed by the exhibition of half a grain of calomel, morning and evening, till the bowels are acted on; or we may give this medicine even three times a-day, in some cases; but we must be cautious not to induce much purging, or push the mercury far, lest we bring on fits.

The second species, differs from the first, in the stools being dark coloured or green, showing that there is no obstruction, or at least no permanent obstruction, to the passage of the bile.* Like the first species, it appears soon after birth, and is accompanied with great oppression, moaning, colic, and convulsive affections. It is attended with much danger, and frequently carries off the infant in a few days. The early use of calomel, in small doses, would appear to be the most proper practice, and the strength must be supported, in all those cases by the breast milk, given with the spoon, if the child will not suck, and small doses of white wine whey.

Jaundice, appearing at a considerable period after birth, does not require a separate consideration here, nor is it a very common occurrence.

* It is in this species alone, that the opinion can be admitted, that infantile jaundice depends on absorption of bile from the intestines.

CHAP. XX.

Of Diseased Liver.

ENLARGEMENT of the liver, is not unfrequent, in infancy and childhood. It is productive of vomiting, oppressed breathing, cough, fever, and sometimes purging. The liver can be felt enlarged, and extending lower down, or more to the left side, than it ought to do, which will distinguish this complaint from inflammation of the lungs, which is, also, not so frequently, attended with vomiting.* I cannot say much that will be satisfactory respecting the treatment. Mercurial friction, with the occasional application of small blisters, for a few hours, on the region of the liver, are chiefly to be relied on. We may also give iodine, in small doses for a length of time alone, or with a light bitter. This is not inconsistent with a very mild course of mercury. But the latter is not to be employed if the child be evidently strumous.

Hepatitis, in infancy, is frequently attended, by the symptoms of enlargement of the liver; but there is more fever, and, if the disease be acute, there is pain, when the liver is pressed on. The disease often begins, with symptoms of disordered stomach, and colic pain. Fever comes on, accompanied with cough, which is sometimes, soon, succeeded by jaundice. The stools are often like yolk of egg, or if there be obstruction to the passage of the bile, they are clay-coloured, and the urine red, with much sediment. On inspecting the body of infants, who have died of this disease, the surface of the liver, sometimes only its convex surface, is often found of a deep red colour, with an exudation of white lymph, exactly resembling the cuticle of a blistered part. Betwixt the liver and diaphragm, we find white flaky fluid, something like pus, and similar matter, is often found among the bowels, mixed with pieces of fatty-looking lymph. The liver is not necessarily enlarged, nor its substance affected. The stomach and bowels are not inflamed, but sometimes have a white blanched appearance, and contain a fluid like thin custard. The bile is not changed in its colour. In some instances of chronic inflammation, the liver is somewhat enlarged, of a dark colour, and the veins turgid. Leeches, small blisters, and a gentle laxative course of mercury, are the means of cure, but they must be used promptly.

* On examining the liver, it is sometimes found soft, and not much altered in structure, sometimes hard, and almost cartilaginous, with the pori biliarii hardened and obstructed, so that secretion of bile does not take place, and the gall bladder becomes shrivelled. This state cannot be attended with jaundice.

In older children, we find hepatitis to commence, either, acutely or slowly. When it begins acutely, the child, probably after a surfeit, or some irregularity of diet, or exposure to cold, complains of severe pain, in the upper part of the belly, like colic, accompanied with sickness and vomiting, and either attended, or soon succeeded, by fever, short cough, and pain, sometimes dull, sometimes sharp, in the right side, and, occasionally, affecting the shoulder. Jaundice, also, not unfrequently, is produced, and lasts for a few days. There is thirst, no appetite, but the child feels continually as if he had ate too much, is subject to fits of squeamishness, and complains when the liver is pressed. If the remedies do not check the disease, the liver enlarges, and its region is full; abscess is formed, attended with irregular chillness, hectic symptoms, and much pink-coloured sediment in the urine. In a few weeks, sometimes in a shorter period, the patient is sensible of a smell like rotten eggs, which he thinks comes from the stomach; then, a little foetid matter is coughed up, which is followed by copious expectoration; or he ejects pus, as if he vomited it from the stomach. The cough and spitting, with hectic symptoms, continue long, but at last, decline and go off.

In the early stage, blood-letting, if instantly resorted to, may be of service, but not if delayed. Leeches are safer at a later period, and ought to be applied. Small blisters are always proper. The bowels should be freely opened, and afterwards a gentle course of mercury employed. Iodine seems likewise to be useful, when the disease is approaching to the chronic state. In the suppurating stage, mercury should not be used, but the strength is to be supported by proper diet. In the expectorating stage, the same plan is necessary, with the use of tonics, such as chalybeates joined with myrrh, and occasionally opiates. A speedy removal to the country, if the weather be mild, is advantageous. Sometimes, the abscess points externally, or bursts into the stomach or intestines, adhesion previously taking place; or, I have known it burst into the general cavity of the abdomen, and the matter accumulate there, forming a tumour like ascites, bursting at last by the navel, which inflamed; or it has been drawn off with a trocar, and recovery has been accomplished. This, I have, in the eleventh chapter of this book, noticed as also following, a certain degree, of peritoneal inflammation.

The more slow or chronic species, may be excited by a torpid state of the whole chylopoetic viscera, consequent to neglected bowels, or other causes; or, it may occur, after some other disease, such as peripneumonia, scarlatina, &c. The child has fits of sickness, vomits bile in the morning, and loses his appetite;

or, if he have a strong desire for particular kinds of food, or feel very hungry at times, he either cannot eat, when he receives food, or is instantly filled. The strength diminishes, the bowels are torpid, and the stools white, in some cases bilious, or dark and offensive; in others, there is a constant dry cough, and inclination to hawk or spit; the pulse is frequent; the upper part of the belly becomes swelled at night, but there is little or no pain in the region of the liver; if any be felt, it is rather referred to the bowels. By and by, considerable pain, like colic, is felt near the stomach, especially at night, and that part of the belly is then swelled, but towards morning it subsides. On examination, however, the hypochondriac region is felt full, and the liver can be perceived extending towards the left side, and pain, and sometimes sickness, are produced by pressure. The urine is high-coloured, the feet swell at night, and the face has a slight hectic flush. If the disease be not checked, it goes on to suppuration, producing distinct hectic fever, terminating in death, if the matter be not discharged; or, it may be, irritation proves fatal, even without suppuration. Repeated small blisters, laxatives alone, or combined with muriate of lime, and mercurial inunction are the remedies, with iodine along with sarsaparilla. We give diuretics, if there be dropsical symptoms.

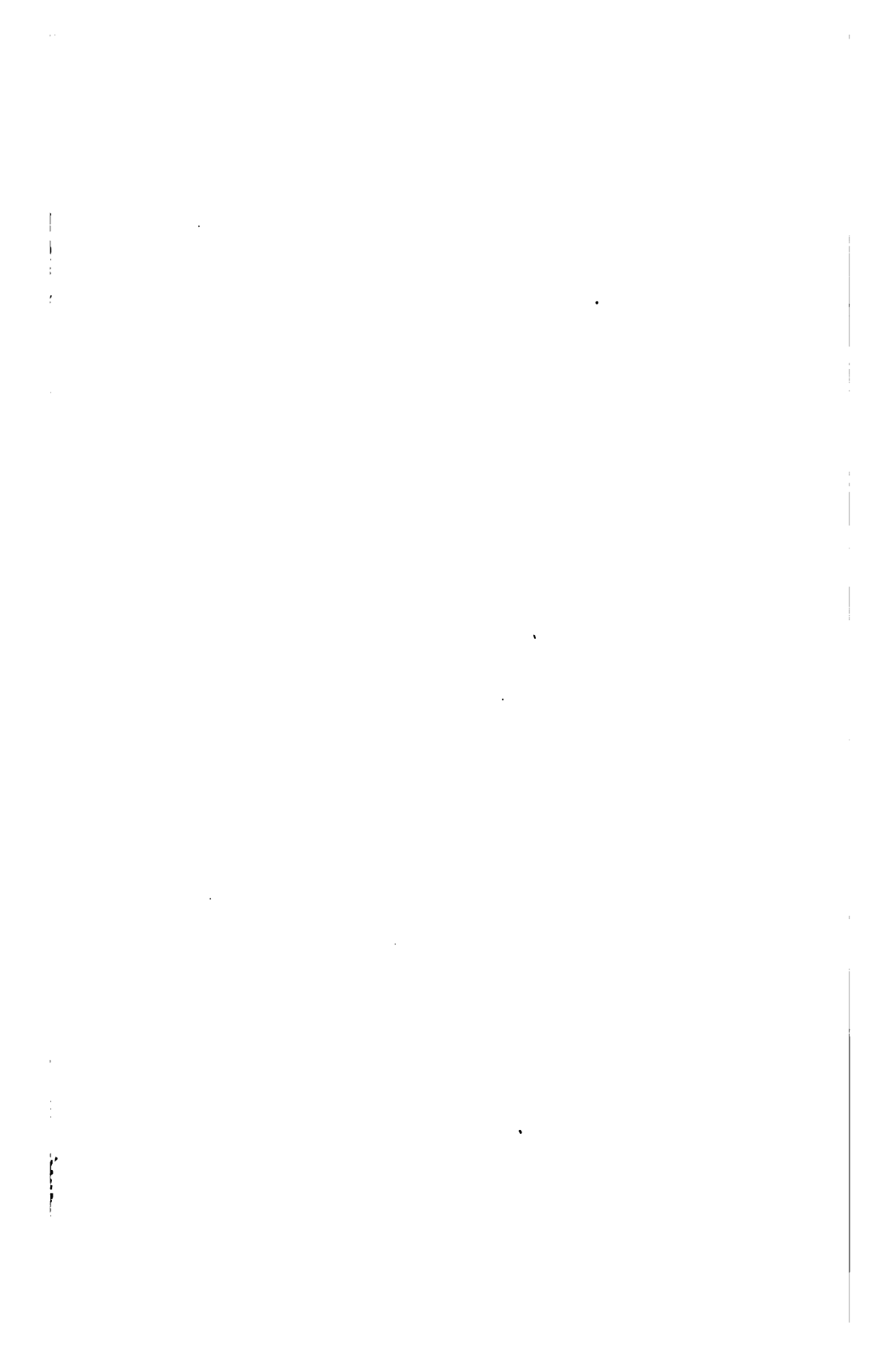
The spleen is frequently enlarged, and sometimes contains tubercles. I do not know any other diagnostic symptom, than the belly being tumid and hard, in the region of the spleen; frequently a cough attends this state. Bitter laxatives, and blisters are the best remedies, but most cases, I have met with, have proved fatal.

CHAP. XXI.

Of Fever.

FEVER is a frequent disease in infancy and childhood, but it is generally symptomatic, or produced by some local irritation, and has been considered in some of the former chapters, particularly, in the chapter on spinal and cerebral irritation. Typhus fever is extremely rare in infancy, but it sometimes is communicated to children a few years old. It is known by our evidently tracing the channel of infection. The child at first is languid, pale, chilly, and debilitated, the appetite is lost, the head becomes painful, the skin hot, the tongue foul, the eye dull, or suffused, and the pulse very quick; and if a favourable crisis be not procured, great oppression succeeded by stupor, precedes death.

In the course of the disease, the bowels are generally bound, the stools foetid, and the urine thick. It requires the early use of emetics in the cold stage, succeeded by saline julep. If the hot stage, however, be fully established, and the heat considerable, cold sponging will be of advantage, succeeded by calomel purges and saline julep, with light diet, and the use of ripe fruit. A free circulation of air, is of essential benefit. The skin, in the course of the disease, especially among the poor, should be sponged daily with tepid water, and the bedclothes, if possible, changed frequently. If the head be very painful, in the first stage, the application of leeches to the forehead, and the use of laxatives will be proper; or if the pulse be full, a little blood may be taken from the arm. If pain continue, or stupor, or constant drowsiness supervene, blisters will be proper. The strength, in the latter end of the disease, is to be supported by the prudent use of wine. Cough, in general, requires a small blister on the breast, with the use of expectorants.



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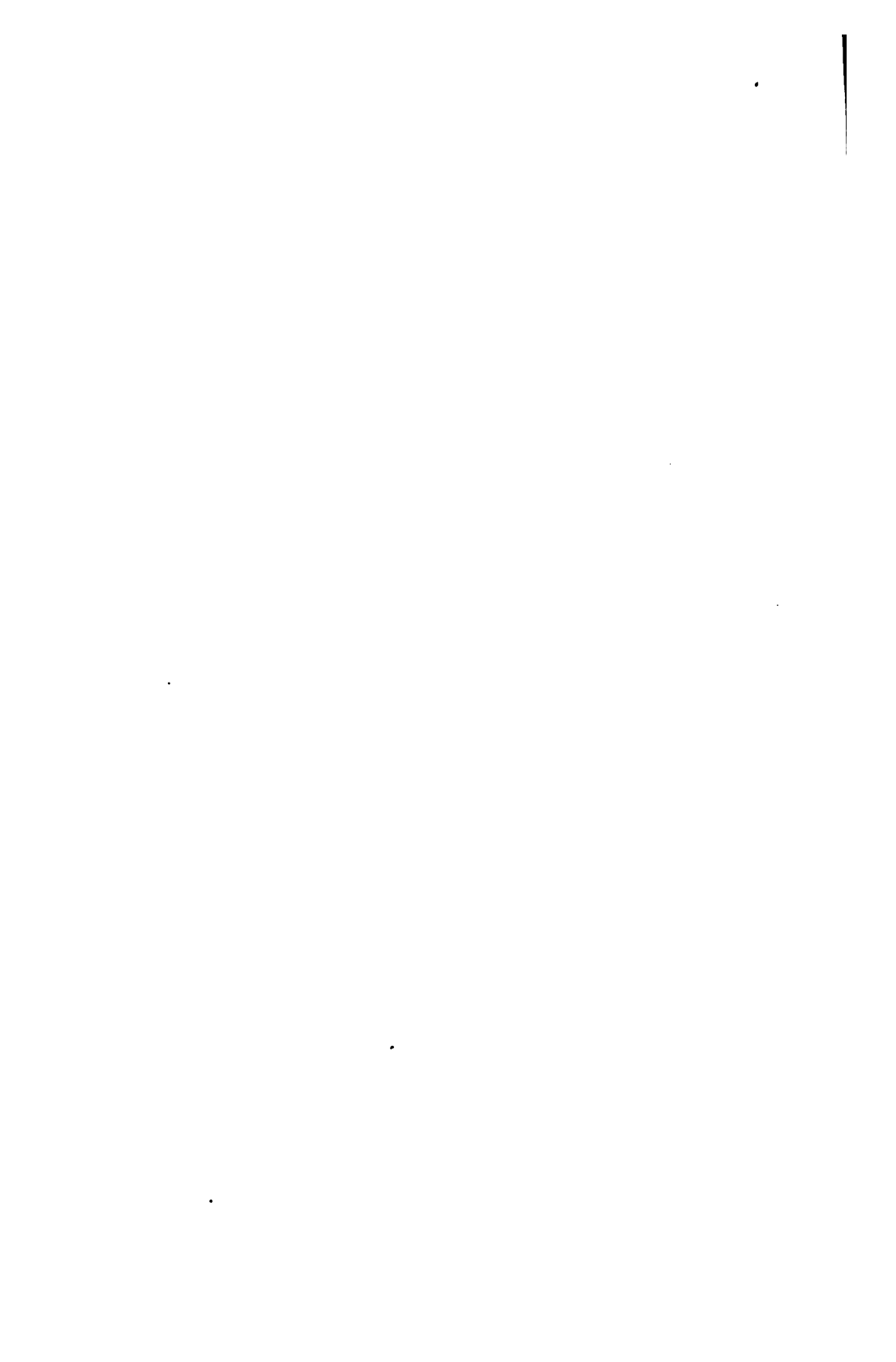
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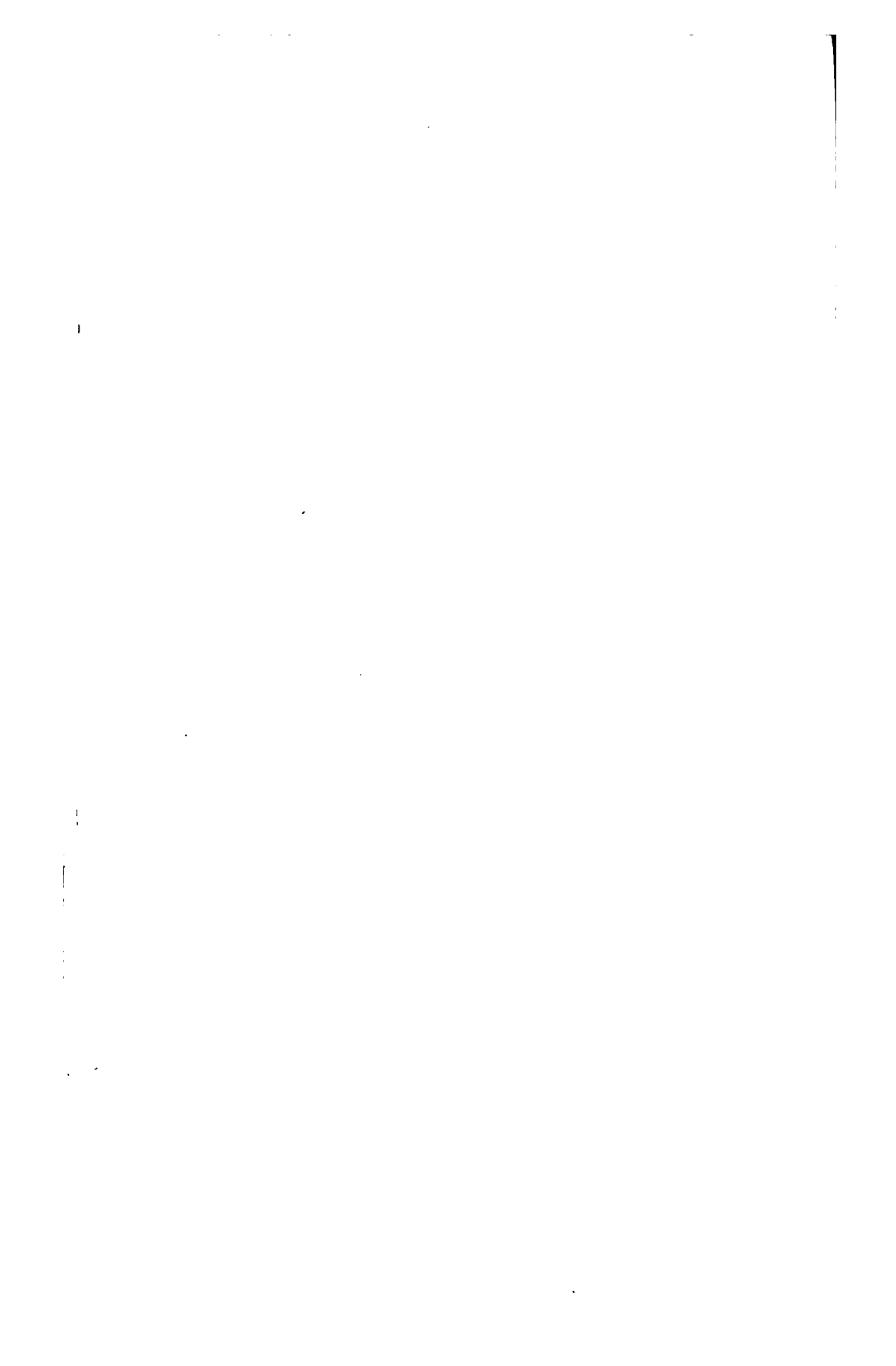
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