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PRINCIPLES OF MIDWIFERY.

THE

PRINCIPLES

OF

MIDWIFERY;

INCLUDING

THE DISEASES

OF

WOMEN AND CHILDREN.

COLL. REG. MED. EDIN.

By JOHN BURNS, C. M.

REGIUS PROFESSOR OF SURGERY IN THE UNIVERSITY OF GLASGOW,

&c. &c. &c.

SIXTH EDITION, ENLARGED.

LONDON:

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TO HIS GRACE,

JAMES, DUKE OF MONTROSE,

LORD LIEUTENANT OF THE COUNTIES OF STIRLING AND DUMBARTON,

CHANCELLOR OF THE UNIVERSITY OF GLASGOW, &c. &c.

My Lord Duke,

That sound and happy policy which your Grace has steadily supported and maintained, has, by the blessing of Divine Providence, secured the safety and prosperity of the British Empire, and excited a general feeling of estimation, in which I strongly participate.

As a member of the University of Glasgow, I also feel deeply sensible of the unremitting and fostering care, which your Grace has condescended to bestow on that Seminary, and which has been so essential to the advancement of the Medical School within it, and thereby to the benefit of the country at large.

Besides these public motives, a feeling of personal obligation makes me eager to inscribe the following pages to your Grace, as affording me, at the same time, an opportunity of expressing those sentiments of respect and gratitude which I entertain.

I have the honour to be,

My Lord Duke,

Your Grace's very obedient humble Servant,

JOHN BURNS.

Glasgow,
29*th Sep.* 1824.

PREFACE.

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.

I intended to have added to the text copious references to the opinions and cases contained in systems, or scattered through other publications. This would have rendered the present book, in some manner, an index to those already published, and been of considerable service to practitioners, who wished to consult them upon any particular point. But in spite of all my endeavours, the work has extended to a length which rendered it necessary to strike out many references, and shorten the account of cases, to prevent it from swelling to a size which would have rendered it less generally useful.

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.

In preparing a sixth edition for the press, I have carefully revised the whole work, and have made additions, of a practical nature, which I hope may be of benefit to the reader.

There is a disease which I have described in the fifth chapter of the fourth book still more minutely than in the last edition, to which I wish to direct the attention of the profession, and respecting which I am anxious to receive farther information, both with respect to the pathology and remedial means.

Glasgow, Sept. 1824.

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THE

PRINCIPLES

OF

MIDWIFERY.

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 arise evidently 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 bason 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.

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 iliopectinea, 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 roughbump, 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 crest of the pubis, into which Poupart'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 innomi-

natum, 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 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 betwixt 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 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 anchylosed 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 by very strong 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† has lately published an account of this articulation; and is of opinion, that sometimes the one mode and sometimes the other obtains. I am inclined to think, that Dr. Hunter's description is applicable to the most natural state of the parts, which are joined by fibro-cartilaginous substance; but we often, in females, find that this intermedium, especially at the posterior part, is absorbed, and its place supplied with a more fluid substance; or, on the contrary, anchylosis may sometimes take place; a circumstance which Dr. Hunter says he never saw, but which I have met with. Besides this mode of connexion, there is also in addition a very strong capsule to the articulation, the symphysis being covered on every side with ligamentous fibres, which con-

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

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

tribute greatly to the strength of the parts. The fibro-cartilaginous intermedium sometimes enlarges posteriorly, and, together with the capsule, encroaches a little on the diameter of the pelvis.

SECTION SECOND.

The ossa innominata are joined to the sacrum by means of a thin layer of fibro-cartilaginous substance, which covers each bone; that belonging to the sacrum is the thickest: both are rough, and betwixt them is found a soft yellowish substance in small quantity. 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, 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 anchylosis. 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, 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, there is a kind of semilunar notch formed betwixt it and the coccyx. 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 line. The brim of the pelvis, then, is neither horizontal nor perpendicular to the horizon, but oblique, being placed at an angle of 35 or 40 degress. Were the ligaments of the pelvis loosened, there would, from this position, 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 re-act 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 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.†

* Phil. Trans. No. 484.

† Vide Mem. de l'Acad. de Chir. Tome IV. p. 63.

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.*

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

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

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.

It is well known to every practitioner, that, owing to the distension of the muscles during pregnancy, very considerable pain is sometimes felt at the insertion of the rectus muscle into the pubis; and it is also known, that sometimes, in consequence of pregnancy, the parts about the pelvis, and especially the bladder and urethra, and even the whole vulva, may become very irritable. This tender state may be communicated to the symphysis; or some irritation, 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 com-

municated to the peritoneum, and the patient die in great pain.

When the accident happens during gestation, it sometimes take place gradually, in consequence of an increasing relaxation of the articulation, from slow but continued irritation. In the 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, in general, peculiarly liable to a return of it in a subsequent pregnancy, though there may be particular exceptions to this observation.*

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 inflamma-

* 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 from the lameness produced by the third delivery. Introd. Vol. I. p. 16.

tion 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 a 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.

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 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.†

* 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. Coll. 1. n. i. c. 2.

† 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

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 any thing 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 lame in one or both sides, and has

purged, and kept at rest, by which means, especially by 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 at 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. Laurence 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 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. section 2063.

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

* 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. Coll. 1. n. i. c. 1.

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, are covered with a layer of muscular fibres, which arises a little below the brim of the pelvis, and can be traced all the way down to the extremity of the rectum. This is the levator ani; it is a strong muscle, with many glossy tendinous fibres, especially at the fore part, where it lines the ossa pubis. It does not arise from the front of the pubis, and indeed only from the outer part of the smooth portion of the bones lying between the symphysis and the margin of the thyroid aperture. But it takes its origin at the upper edge of the thyroid foramen, and continues to arise from the aponeurosis, which covers the obturator internus, and all the way back to the spine of the ischium. Its fibres tend toward the perineum and anus, so that the muscle closes up partially the outlet of the pelvis, not however like a funnel, to which it has been compared, for it is incomplete both before and behind, and is rather like two hands coming down from within, on each side, to hold up the contents of the pelvis. The anterior portion of the outlet, it is evident, cannot be occupied by the muscle, nor shut up, nor protected by it. For it sweeps down from the pubis, and its margin forms either a semicircle, or an angular aperture, more or less acute, which embraces the sides of the vagina, as the fibres pass on to terminate in the extremity of the rectum, the sphincter ani, perineum, and partially on the orifice of the vagina, which does not pierce the muscle, but the muscle winds along the sides of the vagina, which may be said to rest on it at its passage.

The anterior portion of the outlet being unsupported, so far as the levator is concerned, a different kind of defence or support is employed; after removing a superficial fascia, extending from the arch of the pubis downward to the peri-

neum, we find a deeper and stronger fascia arising from the arch of the pubis and the inside of the rami of the pubis, and ischium, all the way back to the tuberosity. This forms a sheet of strong fascia or thin ligament extending across the upper or anterior part of the outlet, and is similar to the ligamentum triangulare, as it has been called, of the male. The urethra passes, as in the other sex, either through the ligament at its border, or it may in both cases pass by the very margin, firmly and intimately connected to it by a production or detachment of the fascial substance. In different individuals dissection would lead to the opinion, that sometimes the one and sometimes the other mode prevailed. Usually the urethra in the female passes loosely through it, that is to say, is not firmly fixed, whilst the levator passes down by the sides of the urethra, on the inside of this triangular ligament. The ligament, or fascia, is extended over the sides of the vagina, and prolonged forward on its extremity toward its orifice, and is thus insensibly lost. A similar prolongation, but of consequence very small, accompanies the urethra. It is thus evident that the pelvic viscera must be supported, and the outlet of the pubis secured, not merely by the firmness of the perineum, and the tough substance of which it is composed, and by its transverse muscles, but also and essentially by the levator ani and triangular ligament. A strong layer of the pelvic fascia also, as in the male, is reflected off to the pelvic viscera, and greatly contributes to the firmness and support of the parts. This passes off to and over the bladder, the upper part of the vagina, the cervex uteri, and anterior part of the rectum, and it is the due connection and firm support of all the different parts of the aperture, which secures the female against displacement or protrusion of the uterus, vagina, or bladder, and even of the rectum itself. In pregnancy, some of those 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.

2d. Under 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 pully, 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 iliopectinea, 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 must be more or less compressed, according to the size or position of the head, yet the circulation is never interrupted.

SECTION THIRD.

When we attend to the nerves, we find, 1st, Upon the ilium, at least four branches of cutaneous nerves, traversing the iliac, and psoas muscles, in order to pass out below Poupart's ligament. The largest of these cutaneous nerves is the outermost, which has its exit towards the spine of the ilium. These nerves, which supply chiefly the skin of the thigh, cannot suffer during labour; but sometimes may, from the position of the child, or the inclination of the uterus, sustain pressure, during gestation, and occasion numbness and anomalous sensations in the thigh. 2d. Between the two muscles, and in part covered by the outer margin of the psoas, is the anterior crural nerve, which is formed by the second, third, and fourth lumbar nerves. It is of considerable size, and has a greater share than the others, in producing the uneasy sensations I have mentioned. 3d. Running parallel with the brim of the pelvis, but three quarters

of an inch below it, in the cavity of the pelvis, is the obturator nerve, coming from the third lumbar, and which may be traced all along the side of the ilium to the thyroid hole. In many cases, it cannot fail, during labour, to be pressed on by the head. 4th. Beneath the vessels at the sacro-iliac junction, we have the great nerves which form the sciatic nerve, which is made up of the fourth and fifth lumbar nerves, and the first sacral nerve, which is as large as either of the former: to these are added the second and third sacral, which are much smaller. The fourth lumbar nerve passes down on the sacro-iliac junction, and is quite covered with the vessels. The fifth traverses that curved part of the sacrum, which lies betwixt its promontory and side; like the former, it is hid by the vessels. In going to form the sciatic nerve, the fourth lumbar nerve passes under the gluteal artery, or the common trunk of the gluteal and ischiatic arteries, and the fifth passes over it. The first sacral nerve passes along the upper margin of the pyriform muscle, to join with these at the sacro-sciatic notch. There, a large plexus is formed, which, uniting into a single trunk, passes out, and is the greatest nerve in the body. The lumbar nerves may be pressed on early in labour; but from the cushion of vessels and cellular substance which defends them, they suffer little. When the head has descended lower, and is beginning to turn, the first sacral nerve may be compressed. Pressure of the nerve produces pain, numbness, and cramp in the thigh and leg. Different nerves are acted on in different stages of labour. In the very beginning, the anterior crural nerve may be irritated or gently compressed, producing pain in the fore part of the thigh; next the obturator, producing pain in the inside; and last of all, the back part suffers from the pressure on the ischiatic nerve. 5th. The second and third sacral nerves are small, compared to the first. They are covered by the pyriformis muscle, but part of them pierce it, forming a plexus, which joins the sciatic nerve, and sends twigs to the bladder, rectum, &c. This plexus may be pressed in the last stage of labour; and the irritation thus produced may be one cause of the passage of the fæces, which

generally takes place involuntarily. 6th. The fourth sacral nerve is altogether devoted to the extremity of the rectum, and its vicinity.

The great plexus, forming the sciatic nerve as it lies in the sacro-sciatic notch, yields to any pressure it may receive, and cannot suffer in labour, at least so as to cause inconvenience; but the nerves going to it may suffer, and the person not only have cramp and pain during labour, but palsy and lameness for a long time afterwards. Friction, and the warm bath, at first, may relieve the pain; and then, the cold bath may, with much advantage, be employed for 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 Poupart'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, and 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 im-

portance in Midwifery, and consists of the brim, or entrance, the cavity itself, and the outlet. The brim of the pelvis 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 five inches and a quarter; and the diagonal diameter, or a line drawn from the sacro-iliac symphysis to the opposite acetabulum, measures five inches and an eighth; but as the psoæ muscles, and iliac vessels, overhang the brim a very little at the side, the diagonal diameter, in the recent subject, appears to be the longest. 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 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 one tuberosity of the ischium to the other, measures four inches. 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 pubis, or the fore part of the outlet, 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.

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 is an inch and a half. 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, corresponds to this line. From the ramus of the ischium, to the opposite sacro-iliac junction, is five inches. From the top of the arch of the pubis, or orifice of the urethra, to the second bone of the sacrum, is four inches and five-eighths, to five inches. 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.

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 fœtal pelvis, extending from the pubis to the sacrum. By slow degrees, the shape changes; and nearly about the time of puberty, the conjugate and lateral diameters are equal. When the female is fully perfected, the brim becomes more oval, the long diameter extending from one side to the other. 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 with 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. As this, in labour, is parallel to the axis of the brim of the pelvis, until the head makes its turn, I call it the *line of axis*. 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 fontanell, to distinguish it from another smaller vacancy at the posterior extremity of the sagittal suture, which is called the small fontanell. 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 fontanell 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. 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, whilst 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-eight 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 still-born. Dr. Bland† says, that out of eighty-four still-born children, forty-nine were males, and thirty five, females.

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, so that less room is required. The central portion of the sagittal suture passes first, the chin being placed on the breast of the child. Now, 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 head passes, 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 arise from the size of the pelvis. There is so much space superabounding betwixt the

* Phil, Trans. Vol. LXXVI.

† Ibid. Vol. LXXI.

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, pass, without any great additional pain or difficulty, although the capacity of the pelvis be a little contracted. But 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 vertex directed to one side, or a little towards the acetabulum, and 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. When labour begins, and the head comes to descend, the chin is laid on the sternum, and the central portion of the sagittal suture is directed downwards, 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 into the hollow of the sacrum,* and the vertex presents at the orifice of the vagina. This is not fully accomplished, till the cranium have got entirely into the cavity of the pelvis. As the basin is shallow at the pubis, the head is felt near the orifice of the vagina, and even touching the labia and perineum, before the turn is completed, and when the ear is still at the pubis. The whole of the cavity of the pelvis is so constructed, as to

* Dr. Osborn attributes this turn to the action of the spines of the ischia, on the two parietal bones, but not on opposite spots.

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 transversely, 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 misshapen, 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, owing to the expansion stopping prematurely, the different bones, however, being well formed, and correct in their relative proportions and distances. This may occasion painful labour, but rarely causes such difficulty as to require the use of instruments. 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.

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 dimin-

* 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

ished. 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, rendering the shape of the brim more irregular, and 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 vertebræ 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 it, 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 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 could pass, when the soft parts are added, whose long diameter is about two inches and a quarter; and the short one about one inch and a quarter.

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.

SECTION SECOND.

The pelvis is likewise, especially in manufacturing towns, sometimes distorted by malacosteon, or softening of the bones of the adult. 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 decrepid. 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 inwards, towards the sacrum and towards each

* 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 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.

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.†

* 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 eigths 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 virtually 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 eights of an inch; therefore no art can bring a child at the full time through it.

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.

† 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

In this narrow space, when the woman is advanced in her pregnancy, the urethra lies, and the bladder rests upon the pendulous belly; so that, if it be necessary to 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.

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 it would be of great importance to child-bearing women, to know how to check its progress. But the means capable of doing this with any tolerable degree of certainty, have not yet been discovered. As gestation uniformly increases the disease, it is proper that the woman should live *absque marito.* As there is evidently a 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 cold bath, and attending to the state of the bowels. Anodyne frictions, and small blisters, sometimes relieve the pain.*

is externally 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 is 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.

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 stretch for nearly two inches into the pelvis; or steatomatous or scirrhous 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. Enlarged glands in the course of the vagina, polypous excrescences about the os uteri or vagina, scirrhus 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 re-appear after the child is born; others burst, and have their contents effused into the cellular substance. A large stone

* 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. 72.—Baudelocque in the 5th Vol. of Recueil Periodique, relates a case, where, in consequence of a scirrhous 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.

‡ 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 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 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 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 sym-

* M. Peletin 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. 50., and his Synopsis, p. 57.

physis 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 9th month of pregnancy. There was no choice, except between the cæsarean operation, and the extirpation of the tumour. The latter was agreed on; and with the assistance of Messrs. Cowper 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 uretha, 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 the 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 nine years, she still continues well, but has never been pregnant.

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.

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.

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 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, 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 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 this 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 connections, extent, 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.

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.

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 the finger, or any instrument, 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 dis-

tance, on account of the obliquity of the line. But these methods are so very uncertain, that I do not know any person who makes use of them in practice. The hand is the best pelvimeter, and must in all cases, where an accurate knowledge is necessary, be 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.

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 fœtal 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 this 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 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 should not happen, yet the pains are severe and tedious, especially if the practitioner be not aware of the nature of the case.

* 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.

CHAP. VIII.

Of the External Organs of Generation.

SECTION FIRST.

The symphysis of the 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. The labia and perineum are covered with a fascia which lies under the skin, and is particularly strong towards and over the perineum. On separating the great labia, we observe a small projecting body placed exactly on the lower part of the symphysis. 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 down on the inside of the labia, to the orifice of the vagina. These receive the name of nymphæ, or labiæ minores or interiores. 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.

SECTION SECOND.

The labia have nothing peculiar in their structure, for they are merely duplicatures of the skin, rendered prominent by a deposition of fatty matter. Externally they have just the appearance of the common integuments; and at the age of puberty, are, together with the mons veneris, generally

covered with hairs. Internally they resemble the inside of the lips or eye-lids, and are furnished with numerous sebaceous glands. They are placed closer together below than above; and at their junction behind, a small bridle called the fourchette, extends across, which is generally torn whenever a child is born.

The nymphæ at first appear to be merely 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. When injected by filling the pudic artery, each nympha 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.

SECTION THIRD.

The clitoris is a small body resembling the male penis, but has no urethra. It consists of two corpora cavernosa, which arise from the rami of the ischia and pubis, and unite at the symphysis of the pubis. These 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 pubis. 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, is apparently about the eighth part of an inch long, a part of it not being seen, and it is supported by a pretty strong suspensory ligament which descends from the symphysis. When distended with blood, it becomes erected and considerably longer, and is endowed with great sensibility.

SECTION FOURTH.

On separating the nymphæ, we find a smooth hollow or channel, extending down from the clitoris for nearly an inch; and 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. The urethra is the excretory duct of the bladder; it is about an inch and a half long, and passes along the upper part of the vagina, through which it may be felt like a thick fleshy cord. The structure of the urethra is extremely simple, for little can be discovered except a continuation of the internal coat of the bladder, covered with condensed cellular substance. On slitting up the canal, numerous mucous lacunæ may be discovered in its course, and two of these at 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 second bone of the sacrum. 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 carried a little higher, and, in its course, is 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 great consequence to be able to do it readily, and this is by

no means difficult to do. 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 separated with the finger. The clitoris is next to be touched, and the finger run gently down the fossa that leads to the orifice of the urethra, which is easily distinguished, by its resemblance to an irregular dimple, situated just above the entrance to the vagina. 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. 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 closed 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 of the vagina is situated 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 arises from the sphincter ani, and is accompanied with a vascular plexus, called plexus retiformis. In children, it is always shut up by a membrane called the hymen, which consists of four angular duplicatures of the membrane of the vagina; the union of which may be discovered by corresponding lines on the hymen. At the upper part there is a semilunar vacancy, intended for the transmission of the menses. Sometimes it is imperforated, or partially or totally absorbed. When the hymen is ruptured, it is supposed to shrivel into three or four small excrescences at the orifice of the urethra, called the carunculæ myrtiformes.

Immediately below the orifice of the vagina, there is a short sinus within the labia, which extends farther back than the vagina. This has been called the fossa navicularis, and reaches to the fourchette.

CHAP. IX.

Of the Internal Organs of Generation.

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 spongy cellular substance, endowed with some elasticity, and having an admixture of indistinct muscular fibres. It is lined by a continuation of the cutis from the inner surface of the labia; and this lining, or internal coat, forms numerous wrinkles, or transverse rugæ, on the anterior and posterior sides of the vagina. They 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 of numerous glandular follicles, which secrete a mucous fluid. In the fœtus this is white and milky; in the adult it is nearly colourless. 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.

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. At its upper part, it does not join the lips of the os uteri directly, but is attached a little above them, higher behind than before, so that the posterior lip of the uteris is better felt than the anterior. In the infant, the vagina is attached still farther up, so that the lips of the uterus project in it something like a penis.

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 a continuation of the other. The vagina adheres before very intimately to the urethra, behind, it comes gradually to approach to the rectum, and at its upper part it is pretty firmly connected to it. This union forms the recto-vaginal septum. These connexions of the vagina, are formed by cellular substance, there being only a very small part of its upper extremity covered with peritoneum.

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 lower part of the sacrum; during labour, however, the parts being more relaxed, the bone may be felt more easily, but its promontory cannot be touched with the finger.

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 scarcely three inches in length, about two inches broad above, and one below. 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 betwixt 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 small cavity of a triangular shape, which opens into a narrow channel formed in the cervix, and 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 channel 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 skin which covers it is very soft and vascular. The surface of the cervical channel again is rugous, and the rugæ are disposed in a beautiful manner, so as to have some resemblance to a palm tree. 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. Some deny the existence of an internal membrane distinct from the proper tissue of the uterus. Where the cavity of the uterus terminates in the channel of the cervix, there is sometimes a slight contraction of the passage.

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 cutting open the womb, we observe that its sides are about a quarter of an inch thick, but are rather thinner at the fundus, than elsewhere, though the difference is very trifling. Several irregular apertures may be perceived on the cut surface: these are the veinous 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, toward the cervix uteri, and supply it and the 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. The nerves of the uterus, like the blood vessels, have also a double origin, and follow nearly the same course. Those which come from below are derived from the sacral nerves, especially from the fourth pair. Those from above come chiefly from the mesocolic plexus, and trunk of the intercostal. The renal plexus furnishes nerves to the ovarium.

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 those glands hard and swelled, sometimes to such a degree, as almost to close up the vagina.

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 those duplicatures, which, when the uterus is pulled up, seem to divide the cavity of the pelvis into two chambers, are called very improperly the broad ligaments of the uterus.

When the uterus is raised, and those lateral duplicatures of the peritoneum 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.

Besides these duplicatures, we likewise remark other two, which extend from the sides of the fundus uteri to the linea ilio-pectinea at the side of the pelvis, and then run on to the groin. These contain, on each side, a pretty thick cord, which arises from the fundus uteri, and passes out at the inguinal canal, being then lost in the labia pudendi. These cords, which are called the round ligaments of the uterus, consist of numerous blood-vessels, some lymphatics, small nerves, and fibrous matter.

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 of about three inches long, 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 longitudinally.

The ovaria* lie in the posterior pinion of the broad ligament. They are two oval flattened bodies, of a whitish colour, and glandular consistence. They are cellular, but not very vascular, although vessels run to their coat. After pu-

* 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, whilst 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 testical opens, and during copulation, the two individuals mutually impregnate each other. The ovaria of the adder are like strings of beads.

In many quadrupeds, the ovaria contain ova almost as distinct as some of those animals I have just noticed. 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 ovarium of the didelphis is also vesicular. 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.

berty they contain numerous minute vesicles, the largest of which are near the surface, and even form slight projections from it. These are the ova of the female, and are filled with a coagulable lymphatic matter. Their number is uncertain, but Haller says he never saw above fifteen in one woman. In old women they disappear, or shrivel.

The ovarium is covered with the peritoneum; but when the ovum is impregnated and becomes prominent, the peritoneum which covers it is absorbed, the ovum passes into the fallopian tube, and the little scar or altered texture which remains on the surface of the ovarium, is called corpus luteum.

In the fœtus, the ovaria and tubes are placed on the psoæ muscles; but in the adult, they lie loosely in the pelvis, and the uterus sinks within the cavity. The os uteri is directed forward, and the fundus backward, being in general found opposite to, or resting on, the second bone of the sacrum.

The pubis of the female, like that of the male, is lined with a strong fascia which passes off to the viscera it contains. It is reflected to the bladder, to the upper part of the vagina, and then mounts up under the peritoneum along the uterus, but soon is lost in cellular substance. It passes likewise to the rectum, so that all those parts are connected together, and to the pubis, by this expansion as well as by the peritoneum which covers it, and this tends, in no small degree, to the firmness and support of the parts, still mose essentially aided by the levator anni and perinæal muscles and fascia.

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; but frequently it takes place in the pregnant state, especially about the sixth and seventh month of gestation. Sometimes it appears suddenly, and oftener than once in the same pregnancy. Occasionally, it makes its attack in child-bed, 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 nympha 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.

SECTION SECOND.

The internal surface of the labia is often the seat of ulcer-

* Vide Mr. Hey's Surgical Observations, p. 188.

ation and excoriation, which may generally be avoided by the daily use of the bidet. The general 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 applying 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.

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 away or nibbled by a small animal; 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 removed, 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 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 laxatives, acids, mild diaphoretics, and decoction of bark. If there be no fever, mercury, or the nitrous acid, often effectually change the action of the parts.

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 excrescenses appear within 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 opera-

tion, the parts may be washed with lime water. The powder must be applied to the roots 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 belladona. 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 fœtid 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 takes place. These tumours are sometimes scrophulous and have little pain, even when they have gone on to suppuration. Oftener, 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 fungus appears. Soon after this, 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.

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 should there be any hardness about the part where the ligature would be applied, it is best to dissect the whole growth out.

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.

Mr. 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 an 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 folliculus 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

* On Discharges, Part II. p. 127.

seldom necessary to do any thing; 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 distension 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. It differs farther from inguinal hernia, which also lodges in the labium, in this, that there is no tumour discoverable 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. 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 cannot be reduced, we must support it by a proper bandage, which is not to be drawn tight.

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 hemorrhage is great, the vagina must be plugged, and a firm compress applied externally, with a proper bandage.

SECTION EIGHTH.

The most frequent disease to which the nympha 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 nympha cut away. This is done at once by a simple incision; but, as the part is exceedingly vascular, we must afterwards restrain the hemorrhage, either with a ligature or by pressure. By neglect, the patient may lose blood, even *ad deliquium*. In some countries, this elongation of the nympha 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 structure of the nympha 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

* The females amongst the Bosjesmans have the nymphæ sometimes five inches long. Their colour is a livid blue, like the excrescenses of a turkey. Vide Barrow's Travels in Africa, Vol. I. p. 279.

† On the shores of the Persian gulph, 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. Causaubon has inserted a memoir on this subject, in the 1st Vol. of Recueil 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 hemorrhage.—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 plugged, whilst the wound was stuffed with lint dipped in solution of alum, to prevent hemorrhage.

§ In a case related by Mr. Reeve, the tumour, which I suspect proceeded from the rupture of the nympha, 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. Journ. Vol. IX. p. 119.

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.§

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 small puncture in the inside of the labium.‖ Whether the tumour burst, or be punctured, the previous inflammation may close the vessels so as to prevent hemorrhage; 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 hemorrhage from the aperture.

* 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 perineum. 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.

‖ Le Dran relates a case, where above 20 ounces of blood were evacuated by incision. Consultations, p. 413.

If inflammation run high, it is to be abated by the usual means.

SECTION NINTH.

The clitoris may become scirrhous, 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 fungus shoots out. In no case of this kind that I have met with, has an operation been submitted to; and, indeed, unless the whole of the diseased part can be removed, we must be satisfied with palliating symptoms. In one case, however, 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 insupportable pain.

The clitoris sometimes becomes preternaturally elongated; and if this take place in infancy, and be accompanied with imperfect or confused structure of the other parts, the person may pass for an hermaphrodite.‡ This is said to be

* 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.

† Schmucker's Miscel. Surg. Essays, art. XXIII.

‡ Upon this subject, see Arnaud on Hermaphrodites.

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

most frequent in warm climates; and in these, extirpation is sometimes performed. Haller assigns a cause for the enlargement.

SECTION TENTH.

The most frequent disease of the hymen is imperforation; in consequence of which the menses are retained,* the uterus is distended, and the orifice of the vagina protruded, so as sometimes to resemble polypus, or a prolapsus uteri;† or it becomes fretted and covered with scabs. Even the perineum may be stretched, as if the head of a child rested on it.‡ Menstruation is generally painful, and the uterus becoming enlarged, contraction at last takes place, 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 suppression of urine,¶

ponding size; one of them lay on the psoas 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.

In a male child that I lately saw, the external parts resemble those of the female. The scrotum is cleft like the vulva, the penis consists only of corpora cavernossa, and the urethra opens between the labia formed by the scrotum.

* 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 Societé Philomatique, Tom. II. p. 86.

† 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

or pain in passing the fæces,* or convulsions.† Imperforated hymen 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.§

The hymen is sometimes perforated as usual, but very strong, so as to impede the sexual intercourse; yet in those cases impregnation has taken place, and the hymen has been torn,‖ or cut in the act of parturition. Conception may take place, although the hymen be imperforated.¶

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,

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 15 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.

‖ 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.—

considered the crime as proven. But whoever attentively examines the subject must admit, that these are very fallacious marks; that they may exist without any violence having been employed; 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.*

SECTION ELEVENTH.

The perineum 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. But as the recto-vaginal septum is carried forwards and downwards, when the perineum 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 ani remains entire, although the rectum be lacerated; in others it also is torn. This accident is attended with considerable pain and hemorrhage, 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

Mauriceau, ob. 439. In a case lately 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. T. LXVIII. p. 84.

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

made to accelerate delivery. The most effectual way to prevent laceration is by supporting the perineum with the hand, 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 hemorrhage, which is sometimes considerable; and this is best effected by compression and rest, which favour 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, together with frequent ablution, in order to remove the urine, which sometimes for a few days flows involuntary, or the lochia and stools, are requisites in every mode of treatment. As there is nothing in the structure of the parts to prevent their re-union, it has very feasibly 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 parts, 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 sometimes involuntarily; but in other instances, they can from the first be retained, if the patient keep in bed. Sutures have been also employed, and, although they are never in the first instance to be resorted to, yet they ought certainly at last to be had recourse to, if re-union cannot otherwise be effected. The edges of the divided parts must previously be made raw. It would appear that there is no occasion for putting a ligature in the recto-vaginal septum. It is sufficient to place two in the perineum. 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 va-

gina, 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, 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.*

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, try the effect of touching frequently the extremity of the rent with caustic, so as to get it to contract gradually by granulating; or have recourse to sutures, after paring the edges.

SECTION TWELFTH.

The vagina may be unusually small. I have known it not above 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

* 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. Dr. Denman mentions an instance where the perineum was not torn up, but perforated by the head. 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.

† Vide Van. Swieten Comment. in aph. 1290.

to delivery; for during labour, or even long before it, relaxtion* 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 bistory, or curved scissors, the part is to be divided. 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

* 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.

† This may produce bad effects, from retention of the menses. M. Magnan relates the case of a girl, aged 22 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 Societé 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 afterward 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 uterus, and toward one side a small opening was discovered, through which a director was pushed, and then the part divided by a bistory, the greatest portion of the blade of which was wrapped up in lint. The operation was successful.

‡ In this case the fæces do not always pass continually. The patient has been known not to have a stool once in a fortnight; which probably depended on the fæces 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.

it usually occasions much pain about the menstrual period.

SECTION THIRTEENTH.

In consequence of very severe labour, inflammation followed by gangrene of the vagina, may be produced. If the sloughs be small, then partial contraction of the diameter of the canal may take place, and cause much inconvenience from retention of the menses,* or during a subsequent labour; but in this last case, the parts gradually yield, and it is seldom necessary to perform any operation: the pain, however, is sometimes excruciating till the part yield.†

In some instances the sloughs are so extensive, that the whole vulva is destroyed, or part of the urethra and vagina come away, or general adhesion takes place, leaving only a small opening, through which the urine and the menses flow. Should this, by any means be obstructed, the discharges cannot take place; and sharp pains, or even convulsions, may be the consequence. Sometimes calculous concretions form beyond the adhering part.‡

Whenever we have reason to expect a tender state of the parts after delivery, we must be exceedingly attentive; and if the vagina, or any other organ, be inflamed or tender, we must bathe the parts frequently, and inject some tepid water gently, to promote cleanliness. Saturnine fomentations and injections are often of service, but they must not be thrown

* Richter in Comment. Gotting. Tom. III. art. 2. relates a case of a girl, aged 20 years, who for three years had been subject to violent pains about the sacrum, with tremours and syncope every month. The vagina was found to be closed at the upper part, in consequence, it was imagined, of a variolous ulcer in infancy. Fluctuation was felt in the vagina, when pressure was made with the other hand on the abdomen. The contraction was opened, and a quantity of blood let out. Dr. Merriman, in his Synopsis, p. 57. mentions a case where there was a gristly contraction in the vagina, produced by a former severe labour. The patient, again pregnant, was delivered after a labour of 36 hours, but died on the second day. The vagina was found ruptured in a slight degree.

† Harvey, exercit. LXXIII. p. 492.

‡ Vide Puzos Traité, p. 140.—Case by Mr. Purton, in Med. and Phys. Jour. Vol. VI. p. 2.

high. The urine must be regularly evacuated; and should a slough take place, we must, by proper dressings, or the use of a thick bougie, prevent coalescence of the vaginal canal.*

Abscesses and sinuses connected with the vagina, must be treated on the general principle of surgery; but it is proper to mention that sometimes the orifice of the sinus is excessively tender to the touch, insomuch as almost to produce syncope. In all cases of extreme sensibility of this canal, it ought to be carefully examined, and the painful spot may point out the seat of the disease. The sinus should be laid open, and hemorrhage prevented by the injection of cold water, or insertion of lint, wet with cold water.

SECTION FOURTEENTH.

The vagina may be contracted by scirrhous glands in its course or induration of its parietes, which become thick and ulcerated, and communicate with the bladder or rectum. This disease is generally preceded by, or accompanied with, scirrhous uterus, and requires the same treatment.

Foreign bodies in the vagina produce ulceration, and fungous excrescenses. The source of irritation being removed, the parts heal; but we must, by dressing and injections, prevent coalescence.

Polypous tumours may spring from the vagina, and are to be distinguished from polypus of the uterus by examination. The diagnosis betwixt polypus and prolapsus, or inversio uteri, will be afterwards pointed out. The cure is effected by the application of the ligature more solito.

SECTION FIFTEENTH.

The vagina may be inverted or prolapsed, without any material change in the state of the womb, and without symptoms of uterine irritation, farther than slight pain in the back, and

* In some parts of Africa, the vagina is made impervious, in order to prevent coition. This operation is generally performed betwixt the age of eleven and twelve years. Brown's Travels, p. 349.

a little mucous discharge. We find a fleshy substance protruding at the back part of the vulva, having an opening before leading into the vagina. If the procidentia be considerable, the rectum is carried forward, and in every instance is relaxed. At first the tumour is soft; but after some time, if the part has been irritated, it may inflame, indurate, or ulcerate. It is cured by strict attention to the state of the bowels, thereby preventing accumulation in the rectum, by astringent injections into the vagina, the cold bath, the internal use of tincture of kino, and if these fail, by a globe pessary, or a spring-bandage similar to that employed for prolapsus ani, or by pregnancy; but it sometimes returns after delivery.*

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: and 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.

* Burton relates a case, where the prolapsed vagina was mistaken for part of the placenta, and rudely pulled away, by which the vagina and 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.

† 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

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 is distinguished from it by its firmer and more doughy feel, and by the manner in which it can be returned. By handling it, a gurgling noise may be heard, and sometimes indurated fæces may be felt. 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 Mr. Cooper's work on Hernia. 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. Maclaurin, 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 the 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.

a trocar, but this was succeeded by troublesome hemorrhage. 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 tumefaction. 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.

The rectum sometimes protrudes into the vagina, and always does so more or less in an inversio vaginæ. This is remedied by the globe pessary, after all the indurated fæces have been removed. The farther accumulation is prevented by laxatives.

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. 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. After delivery, in those cases where no operation is performed, the tumour sometimes inflames and indurates even so low as the perineum. Friction on the perineum, 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.

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, press-

ing 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 ulceration. 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: 1*st*, it may originate in the vulva, and spread inwards, even to the uterus; or, 2*dly*, 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 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, bark and opium internally, and applying to the surface, pledgits 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

* Maladies des Femmes, Tome II. p. 169.

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 acetite of lead has also been given internally. If the patient be feverish she ought to be blooded, and have cathartics administered, and be 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.

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 bowels open, avoiding stimulants, and applying to the affected parts ung. hyd. nit. or bathing frequently with very weak solution of oxymuriate of mercury, or the same salt mixed with lime water, or lime water alone, or solution of sulphate of zinc alone, or with laudanum, &c. This affection may attend the early period of pregnancy, or the cessation of menstruation.

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 the serous exhalation from the membrane of the uterine cavity. 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, 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.

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 those 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.

Fluor albus may occur in two very different states of the constitution, either as an effect of these, or produced in them

* Chambon Malad. des Filles p. 101.

by accidental causes. These are, 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 is attended with vertigo, or disease produced by fulness. The other by dyspepsia, palpitation, and those complaints which are connected with debility.

The discharge is produced either by the lacunæ of the vagina, or the glandular and exhalent apparatus of the uterus. The most ample and the most frequent source is from the vagina. 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 milk, 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 purulent. 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 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 hemorrhage. 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.

We must bear in mind that fluor albus may be caused by local irritation, including the effect of diseased structure, or misplaced uterus; by a state of increased vascular action; and by debility, either preceded by increased action, or directly produced by weakening causes.

Fluor albus is usually accompanied with pain, and sense of weakness in the back. 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.

Fluor albus may be excited by the presence of a polypus in utero, or in consequence of prolapsus uteri, or of disease of the womb; but in such cases it is symptomatic, and is not at present to be considered. The idiopathic fluor albus may be produced by various exciting causes, such as abortion, menorrhagia, frequent parturition, excessive venery, cold or fatigue after a miscarriage or a delivery at the full time, and whatever can weaken the action of the uterus.* It was at one time supposed, that it might also be produced by a bad state of the fluids of the body, a bilious cacochymy, a leucophlegmatic habit, passions of the mind, &c. The application of cold, or other circumstances exciting irritation of the vaginal membrane, may produce it in the same way as they produce catarrh. Worms may cause it.

In treating fluor albus, we must consider whether it be symptomatic of polypus, prolapsus, or cancer, &c. If it be not, we have then to attend to the general state of the constitution. 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, and even, if requisite, by the lancet. Regular exercise is, in this view, of benefit, but, in all cases, fatigue increases the discharge. Then we give bitters with alkali, to improve the state of the stomach and bowels, and employ an injection of solution of acetite of lead, which is to be thrown three or four times a day into the

* Chambon. Malad. des Filles, p. 104.

vagina, and this may afterwards be exchanged for one of a more astringent quality. I agree with those who think that, in cases connected with plethora, astringent injections, especially if used early, are hurtful, and may give a disposition to uterine diseases.

If the disease occur in a weak habit, or if the plethoric state, though it existed at one time, have now been removed, the internal remedies must 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. 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 by sympathy on the secreting parts, as emetics, others as general tonics. Emetics are of very considerable advantage, on account of their operation on the stomach and alimentary canal, and are accordingly advised by most writers;* but they are not to be repeated, nor employed at all, during the existence of plethora. 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 chylopoetic viscera, such as lime water, myrrh, bark, steel, rhubarb, uva ursi, &c. are also of much utility, and along with them we may, with great advantage, employ the cold bath. Kino has been advised by Vigarous and Gardien, and when astringents are proper, it may be employed in the form of tincture. 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

* Smellie, Vol. I. p. 67.—Vigarous, Tome I. p. 261.—Mead. Med. Precepts, chap. XIX. sect. 3d.—Denman, Vol. II. page 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.

Gilead, diuretic salts, calomel, resins, cantharides, electricity, arnica, &c.; but they have very little good effect, and sometimes do harm. Of all these, the tincture of cantharides and oil of turpentine, by exciting the uterine 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.

When the discharge is very opaque, and attended with considerable pain in the back and loins, there is reason to think that the cervix uteri is in a state of irritation, and by examination it may be found tender to the touch, and the mouth soft and enlarged a little. This state does not constitute disease of structure, though it may lead to it, but it consists merely in an affection of the glands. It is to be managed in the first stage, by the warm sea-water hip-bath, mild mercurial preparations, laxatives, and avoiding all irritation, and either general or topical bleeding, according to circumstances. 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.

Purulent discharge implies previous inflammation, and the present existence either of abscess, ulceration, or a morbid change of a secreting surface. The two first states are ascertained by examination. The last chiefly by the smarting in making water, and other symptoms excited by the action of a virus. To this species belongs the gonorrhœa, which is to be cured by mild laxatives, and injections, first of acetite of lead, and then of sulphate of zinc, dissolved in water. The two first states are to be managed according to the causes which give rise to them.

On the whole, then, our practice in fluor albus, unaccompanied with organic affection, consists in rectifying the constitution, bringing it as far as possible to a state of perfect

health, employing topical applications in the form of injections, and avoiding the farther operation of exciting causes.

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 be extracted. This has been done during pregnancy,* but is only allowable in cases of great necessity. Sometimes the stone makes 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 most frequently the case with young girls, previous to the establishment of the catamenia, or with women of an irritable habit. 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. I have tried many remedies, such as soda, uva ursi, narcotics, antispasmodics, tonics, and the warm and cold bath, but can-

* Deschamps Traite de l' Oper. de la Taille, Tome IV. p. 9.

† Hildanus, cent. I. obs. 68. and 69.

‡ Vide Case by M. Caumond, in Recueil Period.

not promise certain relief from any one of these.* In process of time, the disease subsides and disappears. The use of a bougie may be of service, for the state of the urethra often produces pain, not only in its own course, but general uneasiness in the neighbouring parts, and, indeed, is the most frequent cause of sympathetic pain, or sensibility of the vagina or vulva.

Spasm 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 avoid 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

* 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. The use of the bougie may be proper.

† Morgagni relates an important case, where there was a hard painful tumour in the hypogastric region, accompanied with fluor albus, uterine hemorrhage, and stillicidium of urine. After death, the bladder was found very large and scirrhous, 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.

of viscid mucus, which sometimes has a puriform appearance. Cicuta and balsam of copaiba seem to be the best remedies.

Polypous tumours* may form within the bladder, producing 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, the neck 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 five or six days the slough comes off, and then the urine dribbles away by the vagina. 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 evacuate 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, we must try, by keeping in attentively an elastic catheter,† to make the urine flow by the urethra, and then perhaps the part may heal, more especially if they be yet in a tender state. In more advanced and callous conditions, pressure may, at the same time, be applied from the vagina, and should advantage be gained in this, or in any other way, I would dissuade from the application of caustic, which, in such circumstances, may undo all that has been done. It would appear that a very good method of making pressure or giving support, is to fix a thin piece of sponge on the side of an elastic-gum bottle, which is to be placed in the vagina, so that the sponge be applied to the aperture. The urine is thus retained, and should be drawn off at short intervals. The aperture, if the treatment have been begun as early as

* 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.

† This succeeded in a very bad case related by Sedilliot, Recueil Period. tome I. p. 187.

the tenderness of the parts permit, may thus gradually contract, and at last be shut altogether.* If it remain small and callous, it may be touched with caustic. In a curious case I met with, there was an attempt by nature, to plug up the opening.† Puzos justly remarks, that it is always the bladder, and not the urethra, that suffers.

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.

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, 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

* Vide some cases in Med. Chir. Trans. vol. VI. p. 583.

† 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.

‡ 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.

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. In the unimpregnated state, it sometimes, from a relaxation or laceration of the continuation of the pelvic fascia, descends betwixt the vagina and pelvis, so as to form a tumour within the vagina, or at the vulva. It produces a procidentia of the vagina, but the tumour is formed at the anterior part of the vulva, instead of the back part, as in the ordinary procidentia. 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 naval, 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. In a case dissected by my brother, the bladder was found to form a hernia on both sides of the pelvis, hanging like a fork over the urethra. This procidentia is called a hernia* vesicalis, and is often attended with suppression of urine. If this be inattentively examined, it may be taken for prolapsus uteri; but it will be found to diminish, or even disappear, when the urine is

* Vide the Memoirs and Essays of Verdier and Sabbatier, and Hoin. Sandifort, Diss. Anat. Path. lib. 1. cap. iii.; and Cooper on Hernia, part. II. p. 66.

voided; and by pressure the urine may be forced through the urethra.

The hernia, or procidentia vesicalis, is to be remedied by 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 perineum 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 procidentia. The urethra may be dilated as proposed by Sir A. Cooper.

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 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. 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. Baillie† says, they cannot be known, but by

* Mr. Sharp mentions a case where they grew in small quantity upon the orifice, producing excruciating torment till they were extirpated. Critical Inq. p. 168.

† Morbid Anatomy, p. 321.

the sensation, given by the catheter passing over a soft body. They, however, in one case, were discovered, by turning the instrument to one side, so as to open the urethra a little.* 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.† 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.§

Sometimes the urethra is partially, or totally inverted,‖

* In the instance related by Mr. Warner, the urine was voided in drops with great pain, especially about the menstrual period, and she sometimes even had 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. 296.

‡ 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 above 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 hemorrhage took place from the excrescences. Vide Lond. Med. Journal, Vol. VII. p. 160.

‖ M. Sernin 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, 4 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, Tom. VI. p. 228.

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, the part may be cut off. 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 savine 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 inverted, 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.

SECTION TWENTY-FOURTH.

The uterus may be larger than usual, or uncommonly small,† or it may be altogether wanting.‡ Unless these cir-

* 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.

† 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, 29 years of age, was not larger than in the fœtal 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

cumstances 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 attempts 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 ovarium and

in coitu. The vagina was very short, and had no uterus at its termination.

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 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.—Valisneri 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.

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 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 are 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 veinous enlargement.

SECTION TWENTY-FIFTH.

The uterus is very subject to inflammation after parturition, and this falls to be considered in another part of this work. But here it is to be remarked, that inflammation may attack the uterus in the unimpregnated state, and if I can

* Baillie's Morbid Anatomy, chap. xix.

† Littre found it almost closed, by a continuation of the inner surface of the vagina, Mem. de. l'Acad. de 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. XLVI. 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 menses being retained, and great pain excited, they were let out with a trocar by Schutzer. Vide Sandifort, p. 69.

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, especially 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 any other irritation of the uterus may excite it. There is a constant pain in the lower part of the belly, or near the pubis, and sometimes extending to the back and groin. This pain is permanent, but not unbearable, although most uncomfortable. It is aggravated by pressure above the pubis, and also in attempts to make water, and sometimes also in going to stool. The cervix is sensible, and, sometimes, in one spot, acutely so when touched. But a characteristic of the disease is, that violent and even bearing-down pains come on in paroxysms, not indeed of very long duration, but sometimes of frequent occurrence. The pulse is generally accelerated, and the skin is hot, the bowels rather constipated, and the stomach irritable. 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 antiversion of the womb may also take place, in which case suppression of urine is added to the other symptoms. It is of the utmost consequence to remove this early and at once, not that I have ever known it prove absolutely fatal, 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 scirro-cancer of the uterus may be dated from an attack, perhaps an ambiguous one, of inflammation, and which might, with all their train of evils and disasters, have been prevented by attention to the 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. The hip-bath is useful, and then the application of a blister to the hypogastrium. 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 paroxysm of pain is best prevented by anodyne clysters.

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

Chronic inflammation of the cervix uteri is not uncommon. The os uteri is open, soft, and tender to the touch, particularly on one spot. The cervix is not materially affected in hardness, but is somewhat enlarged, and may even feel rough as if the surface were abraded. There is a considerable discharge of white mucus, which sometimes becomes puriform, and this is often mixed with blood; or there may be very considerable uterine hemorrhage. The patient feels pain in the uterine region, but often complains more of pain in some distant part of the abdomen, not unfrequently near the liver. There is little fever, but the patient becomes weak from discharge, irritation, and those hysterical affections which may accompany the complaint. Examination discovers the uterus to be swelled, and it is painful when pressed with the finger. When the fundus uteri is chiefly swelled, displacement to a greater or less degree is apt to take place, with a corresponding train of symptoms such as bearing-down, retension of urine, &c.

The warm sea-water hip-bath, gentle saline purgatives, mild diet, and the use of cicuta as an anodyne, are proper at first. Gardien, I find, recommends the use of emollient injections, conveyed by a pipe, connected with a receptacle so large as to contain as much fluid as will permit of a continued flow for eight or ten minutes. Of this I have no experi-

* 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. Crouzit 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.

ence. Afterwards, when the symptoms are so far subdued, the use of the cold sea bath, bark combined with bitters, and sometimes Harrowgate water, are proper. In obstinate cases, mercury ought to be tried, with a view of altering the action of the parts; but it must be done cautiously, as it is hurtful when it excites, without rectifying, the action.

When there is considerable uterine pain, or much sensibility of the neighbouring parts, the introduction, at night, into the vagina, of five grains of extract of hemlock, is of service. Pain about the groin is relieved by leeches, and the application of a blister kept open by savine ointment. The effects of displacement or malposition must be obviated by the catheter, and other appropriate means, and are thus ultimately got the better of.

There is a state 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 uterus is not enlarged, nor does it prolapse, nor is it either antiverted or retroverted; and although it may feel more sensible than usual in pressure, yet it is not actually tender, neither does pain dart acutely when one spot is touched. The sensation in the pelvis is not always confined to the uterus, but may affect both the rectum and bladder. There is pain in the lower part of the back, and sometimes even feebleness in the extremities, and pain on pressing the skin and muscles of the thighs or legs. Nothing gives so much relief as rest and the application of a blister to the affected part of the back. This is to be kept open by savine ointment. In a state of convalescence the cold bath is of use. In every stage the bowels ought to be kept correct.

SECTION TWENTY-SIXTH.

The uterus may, from irritation, become ulcerated like any other part; purulent matter is discharged, the patient

feels pain in coitu, or when the uterus is pressed, and sometimes the finger can discover the ulcer. Simple ulceration is very rare, and I apprehend, will always heal, by keeping the parts clean with mild injections. Ulceration from morbid poison is more frequent. Of this kind is the phagedena, or the corroding ulcer of Dr. Clark, a most obstinate and dreadful disease of the womb, which begins about its mouth, and goes on gradually destroying its substance, until almost the whole of it be removed; and sometimes it spreads to the neighbouring parts. It is marked by excruciating pain of the burning kind, in the region of the uterus; in the early stage it is more a feeling of heat, but as the disorder advances it is compared to the effect of a burning coal, fixed, constant, and not shooting; copious, fœtid, purulent, or sanious discharge, alternating with some hemorrhage; small but frequent pulse, wasting of the flesh, and occasionally swelling of the inguinal glands: no tumour is felt externally, but the belly is flat. Examination, per vaginam, discovers the destruction which has taken place, and how far it has proceeded. It also ascertains, that the part which remains is not enlarged to any considerable degree, but is tender to the touch.

On inspecting the body after death, the pelvis is generally found filled with intestines, matted, and adhering to the pelvis, and to one another. In the midst of the mass, there are sometimes one or two simple abscesses, containing healthy pus. On tearing out the mass, the uterus is discovered to be ate away all to the fundus, or a small part of the body. The substance is very little thickened, but resembles soft cartilage, with here and there small cysts, not larger than pin heads. The ulcerated surface is dark, flocculent, and has a dissolved appearance, whilst the substance in its immediate vicinity is vascular and livid. The rapidity of the destruction is various in different cases. It is very difficult to cure this ulcer, which is rarely met with till after the cessation of the menses, or even to check its progress. Sometimes mercury has effected a cure, either by itself, or combined with cicuta; but in such cases I believe the disease to have been

syphilitic, for, in general, mercury does more harm than good; or hyocyamus, or other narcotics, have been given alone. Nitrous acid occasionally gives relief, and when greatly diluted so as to be weaker than vinegar, forms a very proper injection. A very weak solution of nitrate of silver, is also a good topical application. Should the pain be great, tepid decoction of poppies, or water with the addition of tincture of opium, will be of service as an injection. Fomentations to the lower belly, and friction with camphorated spirits on the back, also give relief; but soon, opium, taken internally, affords the only mitigation of suffering, and the quantity required is often great.

There is another kind of ulcer, which attacks the cervix and os uteri. It is hollow, glossy, and smooth, with hard margins; and the cervix, a little beyond it, is indurated, and somewhat enlarged; but the rest of the uterus is healthy. The discharge is serous, or sometimes purulent. The pain is pretty constant, but not acute; and the progress is generally slow, though it ultimately proves fatal, by hectic. In this, and all other diseases of the uterus, the morbid irritation generally excites leucorrhœa, in a greater or less degree; but examination ascertains the morbid condition of the part. Topical bleeding, the hip-bath, saline purgatives, and spare diet, have been proposed, but are of no avail further than as they may, during a period of increased action, allay that temporary condition. Some benefit may be derived from the warm salt-water bath, the regular use of a solution of a saline purgative, or a laxative mineral water, such as that of Harrowgate or of Cheltenham, and the occasional application of leeches to the pubis or groins. This is especially the case, when the ulcer is small, or when the part is only indurated, ulceration not having yet taken place. In this stage, the cervix is felt hard and sensible to the touch, and there is leucorrhœa, and pain in the uterine region. A gentle mercurial course is occasionally of service, but it must have its effect watched, as it may hasten ulceration. Some consider this disease as a species of cancer, but the ulcer is never fungous.

Excrescences of a firm structure, and broader at the ex-

tremity than at the attachment, may spring from the os uteri, and generally, I apprehend, originate from a lobulated or fissured state of the parts. They bleed readily and profusely; but when not irritated the discharge is serous, and so great, that thick folds of cloth are soon wet as if the liquor amnii had been coming away. It is evident that astringents cannot effect a cure, as they do not alter the nature of the substance which secretes. If a ligature could be passed so as to destroy the circulation in the excrescence, a cure might be expected. When this is impossible, we can only palliate symptoms.

A peculiar growth is described by the late Dr. Clarke,* under the name of cauliflower excrescence, which is probably of the nature of that I speak of. It springs from the os uteri, the base is broad, the surface granulated, the substance brittle, and the fragments broken off are white. Pressure does not give much pain, but the patient has more or less at all times; yet not of the lancinating kind. The discharge is at first like fluor albus, and stiffens the linen, though frequently it becomes watery and transparent. It is so great, that when the excrescence is large, it wets ten or twelve napkins daily, and occasions much debility. The progress is variable, and sometimes is so rapid, that the pelvis is filled by it in nine months. The only treatment that bids fair to give relief, is the application of the ligature; but the peculiarity is, that when the vessels are constricted by this during life, or colapse after death, the solidity of the tumour is lost, and it resembles merely a glairy substance. When this is not resorted to, astringent injections are to be employed. I have no reliance on internal medicine of any description, and scarcely more on topical bleeding.

Venereal ulceration may, although the external parts be sound, attack the uterus, producing a sense of heat with pain. There is at first very little discharge, and this consists of mucus; but if the disease be allowed to continue, fœtid puru-

* Vide Trans. of a Society, &c. Vol. III. p. 321. See also Mr. Clarke on discharges, Part 2d, p. 57.

lent matter comes away. The ulcer is at first small, and there is no hardness about the os uteri, nor is it perceived to be dilated; but it is painful to the touch, and sometimes bleeds after coition. The purulent discharge appears earlier than in cancer, but the health for a time is not affected. Then the ulcer spreads, and may destroy a great part of the womb and bladder, and occasion fatal hectic. The history of the patient may assist the diagnosis. The cure consists in a course of mercury, which I have always found produce a good effect soon after the commencement.*

Muco-purulent discharge may, especially in young females, be produced without ulceration by the presence of some intestinal irritation, such as worms, or even by sympathy with a more distant organ, such as the liver. It is to be removed by those remedies which destroy the irritation, or cure the primary disease.

SECTION TWENTY-SEVENTH.

Scirro-cancer generally, or rather I may say always, begins in the cervix uteri. It may take place in the prime of life, but is most frequent about the time of the cessation of the menses. It begins with leucorhœal discharge, succeeded, after a longer or shorter time, by a feeling of heaviness or heat, and darting pains about the hypogastrium, aching in the back, dull pain about the upper and inner part of the thighs, with a sense of bearing-down, together with dysuria and mucous discharge with the urine; glowing heat, and stinging or darting pain betwixt the pubis and sacrum, with itchiness of the vulva, which is sometimes affected with erysipelatous inflammation, or a kind of flabby swelling. Menorrhagia very early attends the complaint, and sometimes is the most prominent symptom for a considerable time, as the pain, and other effects of the disorder, may be late of appearing. The patient is often troubled with flatulence, heartburn, and sometimes with vomiting, and cutaneous eruptions from

* Vide Med. Comment. Vol. XIX. p. 257.—Pearson on Cancer, p. 191.

sympathy with the stomach. The general health soon suffers, the countenance becomes sallow, the pulse quickens, the strength declines, and the body wastes. Presently a fœtid, purulent, or bloody matter is discharged, which indicates that a cyst has burst, and the disease has proceeded to ulceration. Repeated hemorrhages are now apt to take place, and hectic is established. The pain is constant, but subject to frequent aggravations, and the weakness rapidly increases. In the progress of the disease, repeated attacks of retention of urine may come on, 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 power in the sphincter. In some cases the bowel suffers, and a communication may take place with the uterus, whereby much bloody or brown fœtid matter is discharged by stool, mixed with clots of blood. At length the pain, fever, want of rest, discharge, and loss of blood, completely 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 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 many irregular projections like piles, as if it contained small cysts, and presently it is felt to be ulcerated and fungous; but sometimes the fungi are less perceptible, deep excavations being formed, the sides of which however, after death, are found to be fungous.

The cervix uteri is sometimes totally indurated, and considerably enlarged, before ulceration takes place, or has imbedded in it a small tumour; but in other cases, the augmentation is much greater after ulceration, than before it.* If

* 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

the disease originally formed a distinct tumour in the cervix, that 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 in the evacuations from either of these parts. The uterus itself is seldom much enlarged in genuine cancer; but it is possible whilst the cervix is affected with this disease, that the body of the uterus may have undergone a different morbid change, for we occasionally find the tumour so large as to be felt during life, like a child's head in the abdomen. The tubes and ovaria have been said to participate in the disease.*

In some patients the disease proves fatal very early, if there be profuse hemorrhage; in others, great devastation takes place, and the bladder† or rectum‡ are opened. In most cases, the vagina becomes hard and thickened, or irregularly contracted with swelled glands, in its course.

On examining the diseased part after death, it is found to be thickened and indurated, and sometimes its cavity is enlarged. The substance is of a whitish or brownish colour, intersected with firm membranous divisions; and betwixt these are 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

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.

† Le Dran attended a patient who had all the symptoms of scirrhous 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.

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 extremely rare for a cyst to burst, or fungi to shoot out on the exterior surface of the uterus, which is covered with the peritoneum. 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 antiversion.

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. Much harm is done by the use of extringent 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 insertion of an issue in the arm or leg, the use of laxative waters,* and spare 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 added. The tepid sea water bath every night is likewise of great service. When there is much sense of throbbing, heat, or pain about the pelvis, taking blood from the loins by cupping, or from

* Rœderer relates a case where scirrhous 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. 670.

† 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.

the pubis and groins by leeches, is of service, and the patient should keep in a horizontal posture as much as possible. When the disease has evidently taken place, we must still persevere in the same plan, and avoid 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. We keep the parts clean, by injecting tepid water, or decoction of camomile with hemlock or opium; allay pain by anodynes, the best of which I think is half a drachm, or a drachm of powdered valerian, with from one to three grains of powdered opium, according to the stage; attend to the state of the bowels; and correct stomachic affections by bitters, antacids, and other suitable remedies. Mercury, antimony, iron, gold, arsenic, sarsaparilla, aconitum, cicuta, &c. have been given internally, but have no good effect. Indeed, no medicine can be depended on even for suspending the progress of the disease, but many may do harm. 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 are prescribed. Whilst every stimulus is shunned, we may, in the more vigorous constitutions, find it useful to enjoin some degree of abstinence in diet, and even all such mild 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, much may still be done by attention to the use of the syringe, and the removal of acrid matter. It has been said,

that very weak phosphoric acid, injected to the uterus, allays pain more effectually than anodynes, but this I am unable to confirm by experience. It has been proposed to produce, with an extracting instrument, a prolapsus uteri, and then cut off the protruded womb. Several years ago, Dr. Osiander of Gottingen, published an account of his mode of extirpating the cancerous neck of the womb, by transfixing it with ligatures, and thereby pulling it so low, and keeping it so steady, as to enable him, with a bistory, to cut off the diseased part. The bleeding is restrained by astringents. At the time of publication, he says he had performed the operation nine times, with success. Dupuytren has also performed the operation. In one instance, he required to remove, at two different times, the diseased substance, as it still returned. Recamier tried the effect of caustic conveyed by a speculum, but the result has not yet been published, nor is any good to be expected from it.* This operation has not yet been performed in this country, but this much may be said in favour of it, that genuine cancer is, if left to itself, always a mortal disease.†

SECTION TWENTY-EIGHTH.

Tubercles are common in the uterus, insomuch that M. Bayle says, that in seven months he met with fourteen cases. They consist at first of fleshy matter, but in process of time 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 pretty compact granulated surface without vessels. A tubercle may take place in one spot, and all the

* Vide Dict. des Sciences Medicales, art. Matrice et Hystorotomie.

† Vide Edin. Journal for July, 1816. Paletta 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. But the patient died on the third night, after the usual symptoms of inflammation. Rev. Med. T. X. p. 89.

‡ Sandifort Obs. Anat. Path. lib. I. cap. viii.—Bayle in Jour. de Med. Tome V. p. 62.—Murray de Osteosteamate, p. 14. et seq. Gardien, T. I. p. 421.

rest of the uterus may be healthy, and nearly of the natural size. 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 is generally slight† after the tubercle has fully projected. In this it differs, even in its most detached state, from polypus, 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. 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.‡

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.

I have never seen the tubercle end in ulceration, nor the substance of the uterus, although 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 a 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

* A steatome is described by Kummer, which sprung from the fundus uteri, by a pedicle only an inch thick. It weighed 40 pounds, was 46 inches in circumference, and 13 in diameter. Quarterly Journal for Oct. 1822.

† Baillie's Morbid Anatomy, chap. xix.

‡ I have found the uterus as large as a child's head of a year old, with many projections and tuburcles.—Peyer has a similar case, Parerg. Anat. p. 131.

gradual loss of strength. There may also be anti or retroversion with their attendant symptoms. The progress is generally slow, unless the cervix uteri, which is 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 not dangerous or hurtful, except by mechanical or sympathetic irritation. During the active stage, pain is perhaps felt, but it goes off when the tumour ceases to grow, which it often does. I have stated that the cervix is not attacked by this disease; 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 sometimes continues unaffected.

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; and 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 healthy.

No remedy has any power in removing the diseased substance, 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, and every source of irritation removed. The tepid bath is useful. Women may live a long time, even although these tumours acquire considerable magnitude.

Sometimes the whole uterus is a little enlarged, and changed into a white cartilaginous substance, with a hard irregu-

lar surface; or it may be enlarged and ossified,* and these ossifications may take place even during pregnancy.† Steatomatous or atheromatous tumours of various sizes,‡ or sarcomatous§ or scirrhus-like‖ 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.

Strumous affections of the uterus are not uncommon, and are sometimes considered as scirrhous, but there is no stinging pain, and 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.

SECTION TWENTY-NINTH.

The uterus is more frequently affected with spongoid tumour than is supposed; many cases of that disease passing for cancer. This is a firm, 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

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

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

‡ Vide Rhodius, cent. III. ob. 46.—Bœhmer Obs. Anat. fasc. 2d.—Stoll Ratio Med. part II. p. 379.

§ 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.

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 tumified, 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 is about to take place, and no blood is usually observed on the finger after examination, unless a fungus has 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 stranguary 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 happen in different parts; it may be directed to the vagina, and then we have fœted bloody discharge, or sometimes considerable hemorrhage, 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 THIRTIETH.

Earthy concretions are sometimes 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. 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.

SECTION THIRTY-FIRST.

Polypous tumours are not uncommon, and may take place at any age; they are not, however, often met with in very young women. They always affect the health, producing want of appetite, dyspeptic symptoms, uneasiness in the uterine region, a variable swelling of the abdomen, aching pain in the back, bearing-down pains, retention or incontinence of

* 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.

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

urine, tenesmus or obstinate and continued costiveness, and a dragging sensation at the groins. When these symptoms have continued sometime, the strength is impaired, and the pulse becomes more frequent. At first, there is generally a mucous discharge; but at length blood is discharged, owing to the rupture of some of the veins of the tumour, but in most cases from the uterine vessels themselves, and the permanent discharge not unfrequently becomes fœtid. Mr Clark, in his late work, very properly notices, that the blood often coagulates over the polypus, and comes off like a ring. These symptoms, however, cannot point out, to a certainty, the existence of a polypus; we must have recourse to examination, by which we discover that the uterus is enlarged, its mouth open, and a firm, but generally moveable body within it. If the os uteri have not yet opened, so as to admit the finger, the diagnosis must be incomplete.

By degrees the polypus descends 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.† In those cases where the polypus arises from the cervix uteri, it comes into the vagina with little pain or irritation, farther than what causes mucous discharge. But when it is attached to the cavity of the uterus, expulsive pains are 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

* 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 Schunkius.—In the patient of Vacoussain, 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.

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 produce, in many instances, copious hemorrhage. But although hemorrhage 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.‡

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 hemorrhage, when they are attached to the cervix, than either higher, or to the os uteri itself. If there be a union 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. Here I may only remark, that the womb is sensible, but the polypus is insensible, to the touch, or to irritation; but it should be recollected, that if the polypus be moved, sensation can be produced by the effect on the womb.

Polypi are of different kinds. The most frequent kind is of a firm semi-cartilaginous structure, covered with a production of the inner membrane of the womb; and indeed it seems to proceed chiefly from a morbid change of that membrane, and a low subsequent enlargement of the diseased portion; for the substance of the uterus itself is not necessarily affected. The enlargement is generally greatest at the

* 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 Mr. Hamilton.

‡ Med. Comment. Vol. IV. p. 228.

§ Mem. of Med. Society in London, Vol. V. p. 12.

farthest extremity of the tumour, and least near the womb; so that there is a kind of pedicle formed, which sometimes contains distinct blood vessels, and the tumour is pyriform. 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 base, or the attachment of the polypus, is broad. 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 sometimes considerable, especially the veins, which may burst. In every instance, I believe, if the patient live long, the tumour is disposed to ulcerate. The ulcer is either superficial and watery, or it is hollowed out, glossy, and has 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 uterus. Some are firm without, but contain gelatinous fluid, or substance like axunge within. Some are solid, others cellular, with considerable cavities.

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 and fatal hemorrhage, and often with febrile symptoms, especially if the discharge be offensive, or the surface ulcerated. Notwithstanding the existence of polypus, however, it is possible for a woman to conceive,* and we are even told that the placenta may be attached to the polypus.

Various means have been proposed for the removal of polypi, such as excision,† caustic, or tearing them away; but all of these are dangerous and uncertain; and therefore the me-

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

† Siebold and his disciples still employ curved scissors in place of the ligature, and deny that the polypus is ever vascular.

thod now generally practised, is 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 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 with a small fork at the extremity. By practice and dexterity, this instrument may doubtless be adequate to the object in view; but without these requisites, the operator will 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,† 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

* M. Baudelocque observes, "Nous regardions ce renversement necessaire pour obtenir la guerison de la malade." Recueil Period. Tome IV. p. 137.

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

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 firmly retained in its situation by an assistant, and the other 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.

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.†

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

* Dr. Denham, Vol. I. p. 94. mentions a young lady who had suffered long from uterine hemorrhage. 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.—Desault 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.

belly; but the symptoms are mild, and no pain is felt when the ligature is first applied.

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. When the tumour is very large, it may be necessary, after it is detached, to remove it with a hook.

SECTION THIRTY-SECOND.

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, 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.

* Vide Mem. de l'Acad. de Chir. Tom. p. 538.—Herbiniaux 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 nine 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.

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 spongoid 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.

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-THIRD.

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,

* 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 hemorrhage. Vide case by Dr. Blackbourn, 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.

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

§ Hoffman. Opera, Tomus III. p. 182.—Stahl. Coleg. Casuale, cap. lxxvi. p. 797.

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, and no case that I have yet met with contradicts the supposition. 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. 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; and more or less hemorrhage accompanies the process, which is very similar to that of abortion, and requires the same management.† Sometimes the expulsion may be advantageously hastened, by extracting the substance 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 of mole may proceed from polypus; but in that case, the breasts are flaccid, and the symptoms indicating pregnancy are much more obscure. The os uteri is not necessarily closed in a case of polypus; whereas in that of a mole, if there have been no expulsive pains, it is generally shut.

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 impor-

* With scirrhus of the uterus, Haller's Disp. Med. IV. p. 751. et 753.

† Puzos advises blood-letting, Traite, p. 211.—Vigarous recommends emetics and purgatives, to favour the expulsion, Tome I. p. 115.

tance, 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-FOURTH.

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

* In the Hist. of Acad. of Sciences for 1714, is the case of a woman who received a fall in the third month of pregnancy. The belly however increased in 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 for 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. 711. 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 becomes flaccid.

Dr. Denman gives an engraving of a diseased ovum; and Mr. 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 have been 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 hemorrhage. Other cases of hydatids are to be found in Tulpius, lib. III. c. 32, Schenkius, p. 685, Mercatus de Mullier. affect. lib. III. c. 8. Christ. a Veiga Art. Med. lib. III. §. 10. c. 13. relates an instance of 60 hydatids, as large as chesnuts, 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. Rusych, Obs. Anat. Chir. p. 25. Albinus Annot. Acad. lib. I. p. 69. and tab. III. fig. 1. describes in an abortion the commencement of this change. The vesicles are not larger than the

placenta, after delivery or abortion. We possess no certain diagnostic; 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 or mole. The remarks in the preceding section are therefore applicable here; but in a great majority of cases, hydatids are formed in consequence of the destruction of an 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 flaccid, and the 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. 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, pains come on, and the mass is discharged, often with very considerable hemorrhage. This expelling process may sometimes be advantageously assisted by introducing the hand to remove the hydatids, or to excite the contraction of the

heads of pins. Wrisberg describes a more advanced state in Nov. Comment. Gotting. Tome 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. Tome 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.

womb; but this must be done cautiously, and only when hemorrhage 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 a 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.

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

* 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.

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.

SECTION THIRTY-FIFTH.

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 retained,‡ and repeatedly discharged in gushes; I do not know to a certainty, that this can take place without some organic affection of the womb, or some substance within its cavity. At the same time, I have met with this where

* 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 vesicles 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, Tome 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. Eclaré, Tome II. p. 287. A case is related by Turner, where the external membrane of the uterus was said to be distended with water. The menses were suppressed, and a secretion of whitish fluid took place from the breasts. Phil. Trans. No. 207.

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 proceed upon the general principle of improving the health, and 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.*

SECTION THIRTY-SIXTH.

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.

SECTION THIRTY-SEVENTH.

Sometimes‡ air is secreted by the uterine vessels, and comes away involuntarily, but not always quietly. Tonics, and astringent injections, occasionally do good; and as this disease rarely causes sterility, it is sometimes cured permanently by pregnancy. It is said, that the air is in certain cases, retained, and the uterus distended with it, producing a tympanitis of the uterus.

SECTION THIRTY-EIGHTH.

The prolapsus, or descent of the uterus, takes place in various degrees.§ The slightest degree, or first stage, has been

* Vesalius, Tom. I. p. 438, says, that he found a 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. Tome 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, Tome I. p. 401.

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

called a relaxation; a greater degree, a prolapsus; and the protrusion from the external parts, a procidentia. It is necessary to attend carefully to this disease, to ascertain its existence, as it may, if neglected, occasion bad health, and many uneasy sensations. The symptoms at first, if it do not succeed parturition, are ambiguous, as some of them may proceed from other causes, particularly, as has already been noticed, from an affection of the nerves which supply the uterus, and in this 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 a sensation of bearing-down. There is a leucorrheal discharge, and sometimes the menses are increased in quantity. In a more advanced state, there is strangury, or the urine is obstructed, and the patient feels a tumour or fulness towards the orifice of the vagina, with a sensation as if her bowels were falling out, which obliges 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 are also, during the whole course of the complaint, but especially after it has continued for some time, 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 are induced.

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 some-

* The tenderness is sometimes at the very coccyx. On examination per vaginam, no part of the uterus is painful, but on 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 irritated.

times 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 was something full and pressing. Pains are felt in the thighs, and the back is generally either hot, or aches. These 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 down than usual, and the vagina in one part or other is always relaxed. In certain circumstances, it prolapses, forming a circular protrusion at the vulva. 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 than 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. 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 orifice of the urethra is sometimes hid by the tumour, and the direction of the canal is changed; for the bladder, if it be not scirrhous, or distended with a calculus of large size, is carried down into the protruded parts†; and a catheter passed into it,

* 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. 419.

† 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. Tenon. in Mem. de l'Institute, Tom. VI. p. 614.—Mr. Paget relates a very interesting case of prolapsus uteri, in which the bladder became retroverted,

must be directed downwards and backwards. In some instances instead of partial retroversion, there is a slight degree of antiversion. 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 or pressing considerably on the face 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, elongate. 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.†

Some have, from theory, denied the existence of prolap-

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 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 Traité de la Tallie, Tom. IV. p. 158.

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

sus,* 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 and vagina. From these causes, getting up too soon into an erect posture, or walking, may occasion prolapsus, particularly in those who are weak or phthisical. When it occurs gradually in the unimpregnated state, it is rather owing to a relaxation of the vagina, and parts in the pelvis, than elongation of the round ligaments. By experiments made on the dead subject, we find, that more resistance is afforded to the protrusion, by the connexion of the uterus and vagina to the neighbouring parts, than by the agency of the ligaments; for although the ligaments be cut, we cannot, without much force, make the uterus protrude. A debility or relaxation of the levator ani and perineal muscles, but particularly an extension and slackness of the pelvic fascia, and its connection with the uterus and vagina, are in a great measure essential to the production of prolapsus. When the anterior portion is chiefly affected, the bladder may prolapse along with, or to a greater degree, than the uterus; and the finger pressed against the front of the vagina near the uterus seems to discover almost a rent or separation of the connection above. Frequent parturition, fluor albus, dancing during menstruation, and whatever tends to weaken or relax the parts, may occasion prolapsus. Sometimes a fall brings it on. No age is exempt from it.† When symptoms indicating prolapsus uteri manifest themselves, 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

* Kirkringius says, *Nemo vidit nemo sensit decepti omnes imagine falsa, alios decipiunt; laxitas quædam colli quæ extra pudendum prominet hæc nobis fecit ludibrio.* Opera, p. 48. Vide also Job a Meckren, Observ. Chir. c. 51. Barbette Chirurg. c. 8. Roonhuysen, Obs. Chir. part I. ob. 2.

† 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.

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 decoction of oak bark, repeated ablution with cold water, tonics, and the use of the cold bath, at the same time that the bowels are kept regular, all exertion avoided, and a recumbent posture much observed. This last advice, it is evident, must, in the early stage, be the most effectual of all, as it allows time and opportunity for the parts to recover their tone or tightness. If these means fail, or if the disease exist to a considerable degree, then, besides persisting in them, we must have recourse to the assistance of mechanical means. These consist of supporting substances called pessaries, which are placed in the vagina, and, resting on the perineum, or kept up, if oval, by pressing on the sides of the stretched vagina, they keep up the womb. They always give immediate relief; but where the relaxation is considerable, they only mitigate, but do not entirely remove the sensation, which must continue more or less, as long as the relaxation remains. It must also be remembered, that they generally excite a mucous discharge from the vagina; on which account, as well as from the dislike many patients have to them, they are seldom employed in the commencement of the complaint, or till other means have failed. In recent cases, or where the relaxation is not great, a perseverance in the use of the spring support, topical astringents, and general tonics, with a recumbent posture, may accomplish a cure. Fatigue or exertion must always be avoided. The liberal use of tincture of kino internally, has been fruitlessly advised, to act as an astringent on the vagina and muscles, at the outlet of the pelvis; topical applications are more effectual in so far as the vagina is concerned, and in no other way can we expect them to do good. Osiander advises the insertion 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. Much relief is obtained by the use of the spring-support, immediately to be spoken of.

Pessaries are made of wood, 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 it ought to be of such 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, and rests on the perineum. Whichever be employed, it ought to be taken out frequently, and cleaned.* By diminishing gradually the size of the pessary, and using astringents, we may perhaps be able at last to dispense with it. In all the stages, a firm, broad bandage applied round the abdomen, frequently relieves the uneasy sensations about the bowels, back, and pubis. The cold bath is also useful. 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 the 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 will not be removed by a pessary, until by continued rest, laxatives, and occasional fomentations, the morbid sensibility of the parts within the pelvis be got rid of.

* Morand relates the case of a woman who had fœtid 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 to 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.

When the relaxation is great, it has been proposed to use a hollow elliptical pessary, so large, as that by pressing against the sides of the vagina, it may support both itself and the womb, but it generally gives pain, and the relaxed vagina turns up within it, and becomes irritated. I am therefore clearly of opinion, that the oval pessary should, though hollow, have no large aperture. The long diameter must vary from $2\frac{1}{2}$ to $3\frac{1}{2}$ inches, according to the degree of relaxation. In such cases of relaxation, if the oval pessary do not succeed in removing the distressing sensation of the abdominal viscera being about to fall out, then, in addition to it, or the globe pessary, benefit may be derived from supporting the perineum itself, with a soft pad, with a spring on a similar principle with that used for prolapsus ani. A contrivance of this kind is to be had of any instrument maker; but it is necessary that it be of the proper size or length, so as to press exactly on the perineum, and also, perhaps, a very little beyond it, towards 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 if the laceration do not extend to the rectum, I am not sure that it would not be advisable to make the edges of the rent raw, and then use stitches; or, by applying caustic, to try and procure some more healing or contraction, by granulations. If we fail, we are not worse than before the trial.

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

* Dr. Denman very properly advises, that a pessary should not be intro-

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.

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, saturine 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 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

duced 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. Tome III. p. 365.

† 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. Tome LXVIII. 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.—The latest 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. Eclaré, par Fourcroy, Tome IV. p. 33. M. Baudelocque, however, says, that the uterus was only partially extirpated. Vide. Recueil Period. Tom. V. p. 332.

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 if the person receive a fall,‖ or have 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 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

* This happened in Ruysch's case. Obs. Anat. vii.

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

‡ Hervey 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. 227.

§ 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. 156.

¶ 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 disease proving fatal, the bladder was found to be thickened, enlarged, and in part mortified. Vide Med. and Phys. Journal, Vol. III. p. 456.

** 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. Tome III. p. 585.

†† See a remarkable case of prolapsus in the gravid state, where the whole uter-

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 protruberant. 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.

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 it have regained 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 remains 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, in so much, that it has been mistaken for presentation of the placenta.

SECTION THIRTY-NINTH.

Inguinal herniæ of the uterus have been long ago described by Sennert, Hildanus, and Ruysch, and very lately by Lallement. This species of displacement may occur in the unim-

us protruded, and reduction was not accomplished till after delivery, by P. C. Fabricius, in Haller, Disp. Chir. Tomus III. p. 434.

* Vide Memoirs by M. Sabatier, in Mem. de l'Acad. de Chir. Tome III. p. 370.

pregnated 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 the 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 so low as the knee.

SECTION FORTIETH.

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, but is of the nature of what has perhaps not very properly been called encysted sarcoma, and consists in a peculiar change of structure,* and the formation of many cysts, containing sometimes watery, but generally viscid fluid, and having cellular, fleshy,† 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 cysts 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,

* Le Dran says, this dropsy always begin with a scirrhus, and is only a symptom of it.—Dr Hunter says, he never found any part of a dropsical ovarium in a truly scirrhous state.

† Dr. Johnson'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

sometimes fleshy, and an inch thick. The fluid they contain is generally thick and coloured, and frequently fœtid, and in some instances, mixed with flakes of fleshy matter, or tufts of hair; occasionally, it is altogether gelatinous, and cannot be brought through a small opening. The analysis of this has not led to any result of practical utility. The male testicle is subject to a similar disease, or I have in the male found, in consequence of a blow, the same disease increasing in the abdomen to a very great size. The tumour has been made up entirely, or in part, of hydatids.* This however is not quite the same disease, although it may be conjoined with it. There is no diagnosis, nor is this of any importance, as both are alike intractable, excepting in so far as the cysts may be, for a time, emptied by puncture.

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 felt 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 stran-

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.

† 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 ureter was distended from pressure. Haller's Disp. Med. Tom. IV. p. 401. This was not a case of extra-uterine gestation, for the ovarium was divided into cells, and had no appearance of fœtus.

gury, which, in a few instances, may end in a complete retention of urine; the bowels are inflated, and sometimes one of the feet swells. By examining, a tumour may often 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 sometime 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 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, and sometimes hysterical affections.‖ It augments in size and carries up the uterus with it;¶ so that the vagina

* 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 enlarged 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. Tome

is elongated; and this is especially the case, if both ovaria be enlarged.* 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. 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 great 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 illustrated by the case of Madame 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.

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

XVII. p. 371, et seq.—The bladder may also be displaced, as in the case of Mademoiselle Argant, related by Portal, Cours d' Anat. Tome 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 Dr. Cleghorn, both ovaria were greatly tumified, 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 16 times.

† Portal, Cours d'Anat. Tome V. p. 549.

fatal in a short time; but in many cases, these 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 distension. By this time, the constitution becomse broken, and dropsical effusions are produced. Then the abdominal coverings are often so tender, that they cannot bear pressure; and the emaciated patient, worn out with restless nights, feverishness, want of appetite, pain, and dyspnœa, expires.

The symptoms of this disease, all arising either from pressure or irritation, 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, which, for a long time, operates only mechanically, 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.

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 pro-

mote 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 am inclined to 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.

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 apply leeches, and use fomentations, or put a blister over the part; or if the activity be great, general blood-letting may be required. But I wish most distinctly to state my conviction, that beyond the object

* 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.

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. Upon the supposition of this disease being a dropsy, diuretics have been prescribed, but not with much success,* and often with detriment. Some have supposed, that diuretics do no good whilst 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 is 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 that 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 mellicerous tumour on the shoulder, or over the disease, when it occurs in the testicle, or over the configuration of the patient's nose. In one case, fomentations and poultices were supposed to have discussed a tumified ovarium;† and Dr. Hamilton has lately 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 would be required to produce any sensible effect on the tumour, would be as hurtful

* 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 for 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 these and similar cases correct?

† Vide Dr. Monro's fourth case, in Med. Essays, Vol. V.

Hamilton on Mercurial Medicine, p. 202.

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 distension becomes 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 always tap the right ovarium on the right side, and *vice versa:* by a contrary practice the uterus has been wounded.† 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 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 gelatinous fluid, but also from the increased action performed by the vessels, which must exhaust as much as any other species of exertion.

Finally, it has been proposed, to procure a radical cure, by laying open the tumour, evacuating the matter, and preventing the wound from healing, by which a fistulous sore is

* 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. Tome VII. p. 372, &c.

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; 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 seldom or never completely removed, nor the tumour emptied, by one operation. Hence, even as a palliative, the trocar must sometimes be introduced into two or more places.

* Le Dran relates two cases in the Mem. de l'Acad. de Chir. Tome 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 great 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, Tome 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. Tome 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 lb. of jelly. The lips of the wounds were then brought together. Next day 15 lb. of jelly were evacuated, but presently vomiting and fever took place; and she died on the thirtieth day, having discharged altogether 67 lb. of fluid. This disease was of sixteen months standing, and was attributed to hemorrhage. Mem. de l'Acad, de Chir. Tome III. p. 152.

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

It has of late been proposed to extirpate the ovarium after puncturing it.*

It has happened, that a cyst has adhered to the intestine,† and burst into it, the patient discharging glairy or fœtid matter by stool.‡ Such instances as I have known, have only been palliated, but not cured, by this circumstance. 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.

There is another disease, or a variety of the former disease, in which bones, hair, and teeth are found in the ovarium.‖ The sac, in which these are contained, is sometimes

* This, we are told, has successfully been done by Dr. Nathan Smith of America. Vide Edin. Journal for October, 1822. I believe a trial has been made of the plan in this country, which held out little encouragement to adopt it.

† 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 fifth day some pus was discharged. She gradually improved in health, and the tumour of the belly subsided; but in two years afterwards the suppuration was renewed, and she died. In this case, the colon had probably adhered to 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 hemorrhage, 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 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.

‖ See Dr. Baillie's Morbid Anatomy, chap. 20. 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

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.* It is to be treated as the former disease.

SECTION FORTY-FIRST.

The ovaria are sometimes affected with scrophula, and the tumour may prove 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 *blanchatre*, *filamenteux*, *grumeleux*, *mal digere*. The substance of the ovarium is soft, and similar to that of other scrophulous glands. Occasionally it contains a cheesy substance. which is found, at the same time, in the mesenteric and other glands. Burnt sponge, 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.

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. Tome XVII. p. 462.

* 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.

The ovarium may also be enlarged, and become hard and stony,* or converted into a fatty substance.† Sometimes it is affected with the spongoid disease, 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. I have seen a mass of this kind weigh thirteen pounds. I have never found the ovarium cancerous.

SECTION FORTY-SECOND.

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-THIRD.

The tubes may be wanting, or impervious, and are subject to many of the diseases of the ovaria.

* 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 fæces. The left ovarium was hard and stony, and weighed three ounces. Haller, Disp. Med. Tom. 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.

† 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 35 pounds. The uterus and bladder were turned to the left side. No water was effused, but the person was cut off by hectic and diarrhœa. Some steatomatous concretions were found in the lungs. Cours d' Anatomie, Tom. V. p. 549.

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.

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 most cases, it is preceded by uneasy feelings, very 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, quick pulse, sometimes hot skin, and a desire to vomit. 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. In a short time the girl menstruates, often without any other inconvenience than a slight pain in the back, though sometimes, during the whole of her life, she suffers from many of the former symptoms every time she is unwell; and all women, at the menstrual period, are more subject than at other times to spasmodic and hysterical complaints.

When a girl begins to menstruate, certain changes take

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

The age at which menstruation begins, varies in individuals, and also in different climates. It is a general law, that the warmer the climate, the earlier does the discharge take place, and the sooner does it cease. In Asia, for instance, the menses begin about nine years of age; whilst in the north, a woman does not arrive at puberty until she is eighteen or twenty years old; nay, if we may credit authors, in very cold countries, women only menstruate in the summer seasons. In the temperate parts of Europe, the most common age at which the menses appear, is thirteen or fourteen years.

The quantity of the discharge varies, also, according to the climate and constitution of the woman. In this country, from six 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 than this, and are unwell for a shorter space of time: others, especially those who live luxuriously, and are confined in warm apartments, menstruate more copiously, and continue to do so for a week.

In this country, menstruation ceases about the forty-fourth year, lasting for a period of about thirty years. In the East, the menses begin soon, flow copiously, and end early; the women in Asia, for example, being old, whilst the Europeans are still in their prime. In the north, the menses begin late, flow sparingly, and continue long.

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, but is not an extravasation or hemorrhage, 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.

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 think it wrong to devote more time to 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.

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 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 ne-

glecting 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 fulness 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 of a ball is felt 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 occasionally 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, and seems to be in a faint; 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 by the discharge of limpid

urine, which, by Sydenham, is considered as a pathognomonic 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, palpitation, 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. 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 fullness in the head, with weight or giddiness, mark a more formidable and intractable disease. The immediate abstraction of blood, rather by general than topical means, can alone arrest effectually the progress of this disease. 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, but not of leeches, gives speedy relief, and the patient expresses herself as relieved from a weight on her head, although she had previously 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 stillmore obstinate, we must examine the spine from time to time, as when any spot becomes tender, a blister or issue there is of much use. The lower part should especially be examined, as the inferior 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 hysteric 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 vinegar or Hungary 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, in some carminative water; or should there be a tendency to syncope, a drachm of the spiritus ammoniæ aromaticus may be conjoined. A similar combination of opium is the most powerful remedy in the different hysterical affections above enumerated, when there is no vascular excitement with local fulness.

I may farther 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, 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, the administration of preparations of steel, or other tonics, 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. The menstrual action, if irregular, must, if possible, be rectified by appropriate remedies. The diet should be light, and rather sparing, and all causes of debility must be avoided. Fœtids are sometimes of use.

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 performed. This may be subdivided into checked menstruation, and prevented menstruation, commonly called obstruction.

The retention of the menses is very generally attended with chlorosis, or a feeling of weariness and debility, with dislike to active employment; a pale or sallow complexion, cathetic appearance, œdematous swelling of the legs and feet; costiveness, dyspeptic complaints, such as flatulence, acidity, loathing of food, but craving for indigestible substances, as chalk, lime, or cinders; pains of the head, and different parts of the body; swelling of the belly, with hysteric symptoms, such as palpitation, or dyspnœa; and if this state be not soon removed, it is apt to end either in consumption or dropsy.

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. But when the retention proceeds from other causes, it is to be considered as a disease; and generally, is to be attributed to a 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. In some cases, indeed, the absence of the menses depends upon a malformation of the organs of generation, a deficiency of the ovaria, an imperfect developement of, or a special want of energy in, the uterus; but in far the greatest number of instances, the action is postponed, merely from general debility of the system; and accordingly, the most successful mode of treatment consists in improving the health, and increasing the strength of the patient. This is to be done by regular exercise, proportioned to the ability of the person; the use of the hot salt water bath every day, succeeded by frictions 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 tonic medicines, particularly preparations of iron, such as chalybeate waters, tincture of muriated iron, or the carbonas ferri precipitatum combined with myrrh. Tannin, to the extent of a hundred grains in the day, has also been proposed. The use of the Bath waters, internally as well as externally, is of service in the chlorotic state, but hurtful if the patient be of a full habit. Strict attention must in every case be paid to the state of the bowels. This is necessary in the chlorotic condition, to stimulate the system; for the bowels are generally torpid, and communicate a similar debility to the rest of the system. The aloetic or compound rhubarb pill should be freely employed. The cold bath in chlorosis is seldom proper, as it is apt to be followed by chilness, headach, and langour. It is only useful when succeeded by a sense of heat and comfort. The warm salt water bath is generally of greater service. Besides this general plan, it has also been proposed, to excite more directly the uterine action, by marriage, and the use of emmenagogues: 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. Should the tonic plan, however, fail, then we may employ some of those medicines, which will be presently mentioned.

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 hemorrhage. 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 person 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 person does not digest well.

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 oxyde of zinc, is, I think, of approved efficacy; and the 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, the squill may be used as an expectorant, and an opiate should be given at bed-time. 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 julap may be given. Should the person be of a phthisical habit, and the symptoms increase or continue obstinate, it will be proper to remove her to a mild climate, or the southern part of the island. Emmenagogues are either useless or detrimental.

If retention should be combined with a plethoric state, the best plan is to use purgatives regularly, in a degree proportioned to their effect on the system, and make the patient take as much exercise as she can without producing fatigue.

Suppression of the menses may take place under two cir-

cumstances. 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. 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. 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 julap, 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 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, and leeches applied freely to the pubis. If laudanum cannot be retained in the stomach, it must be given as a clyster, with some asafœtida, and the belly fomented and rubbed with tincture of soap and opium. 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 recognized, by its peculiar effect. In the second, the effect is often 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 patients had begun to complain. In them, the irregularity of the menses is symptomatic, and generally indicates considerable debility, induced, perhaps, by great fatigue, bad diet, loss of blood, or long continued serous discharge, hectic fever, or dyspepsia. At the same time, it is also certain, that in some instances, the popular opinion, that bad health is produced by obstruction of the menses, is correct. For, if other organs, as for instance, the stomach or liver, may become impaired in their action, and occasion disease, I see no exemption which can be claimed for the uterus from a similar state, and this state unquestionably may influence the constitution. 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 pregnany, are produced.

It also sometimes happens, that in consequence of suppression of the menses, hemorrhage 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

* 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 regular. De Virgin. et Mulier. Morbis. Tomus IV. p. 75.

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 other 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 proper, in our curative plan, to recollect, that the suppression may take place in different circumstances of the constitution. It may occur with a debilitated condition, in which case we are to proceed much in the same way as in retention of the menses, with regard to medicine and diet. Moderate exercise, particularly on horseback, and a residence in the country, will be of much advantage, and where there is not decided chlorosis, the cold sea bath will be of advantage, provided it do not produce headach, chilness, or languor. In that case, it must be tepid. Great attention must be paid to the bowels, and the digestive powers must, if possible, be increased by steel and bitters, such as uva ursi, combined with soda. Along with the tonic plan of treatment, it will be proper to have recourse to the use of emmenagogue medicines, such as savin,* hellebore,† madder, myrrh, mustard seed, guaiac, valerian, or nitrous acid; and of these, the three first are the most active. Ergot has been used, but I am not able from experience to confirm its efficacy in this state. About the time when the menses are expected to appear, it is sometimes of advantage to exhibit a mustard emetic, and to make use of the warm bath or semicupium or pediluvium. Tourniquets have, about this time, been applied to the thighs, but not with much benefit. Electricity, directed so as to act on the uterus, is occasionally of service. Blisters have also been applied to thethighs.

When along with suppression of the menses, there is a

* From 5 to 10 grains of the powdered leaves may be given three or four times a day.

† A dram of the tincture may be given twice or thrice daily.

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 dyspnœa, 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 julap will be of service. The febrile symptoms being removed, much advantage may be derived from a combination of myrrh, oxyde of iron, and the supercarbonate of potash; and if emmenagogues be thought advisable, the black hellebore is the best. The aloetic pill is the best purgative.

In the flabby relaxed habit, in which there is a disposition to watery effusions, laxatives, squills, and preparations of steel, 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 hemorrhage, 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. 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. Time, in general, re-

* Vide Epist. XLVIII. Art. 12.

moves the disease better than medicine, which is only to be advised for the relief of pain, weakness, or any other symptom which may attend or succeed to this state. 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 conceives to be a prolapsus or eversion of the internal membrane of the uterus, and which was removed by ligature as a polypus.*

SECTION THIRD.

Some women menstruate with great pain, and the discharge generally takes place slowly, and is sparing. This disease is called dysmenorrhœa. It seems to be dependent on an imperfect menstrual action; and this opinion is supported by observing, that mild emmenagogues give relief, but those of a stimulating quality are not so proper. Saffron, madder, or rue, are often of service; at the same time, the warm bath, or semicupium, is to be employed for a day or two previous to menstruation, and should be repeated every night, during its continuance. The bowels are to be kept in a regular state, by the careful exhibition of laxatives, and the general health is to be attended to on general principles. During the attack, nothing gives so much relief as opium, particularly if combined with ipecacuanha, and given in a full dose so directed, by tepid diluents, as to produce perspiration. It is to be given, if possible, just before the attack. If it cannot be kept on the stomach, it must be given as a clyster. The warm hip bath is also of great benefit during the paroxysm.

This state of the womb sometimes produces, besides uterine pain, spasmodic affection of the bowels, or violent bearing-

* Dict. des Sciences Medicales, art. Matrice.

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 are not expelled. If no organic affection can be discovered, and the whole appears to arise from spasm, we have only to trust to opium in the meantime, with such treatment in the intervals, as the state of the system may point out. When there is tenderness on touching the os uteri, leeches to the pubis, the tepid hip-bath, and anodyne clysters are indicated. 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 laxatives during the interval, and by opiates during the attack of pain.

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 hemorrhage. 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 hemorrhage. 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 hemorrhage, than this state of menstruation. If it is 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.

Hemorrhage takes place from the uterine vessels more frequently than from any other organ in the female system. It may occur in two very different states of the constitution; in a full, robust, and active habit, or in a weak and perhaps emaciated frame. In these opposite states, the vessels of the womb may give way, in the one case, from over-action, or distention; in the other from debility. In the one there is generally a forcible circulation, but always a turgescence of the vessels; in the other, there is a languid motion, and not unfrequently from the same cause, the hemorrhoidal vessels swell, producing piles. Menorrhagia has therefore been divided into active and passive, to which some have added a third species, that dependant on spasm.

Uterine hemorrhage is always accompanied with marks of uterine irritation, such as pain in the back and about the pelvis, and is besides attended by constitutional or general symptoms, such as a febrile state in one case, and debility, with hysterical affections, in another. During the intervals of repeated menorrhagia, the health suffers more or less, according to the loss of blood, and in addition to this general effect, there is usually, especially in those of a debilitated frame, many dyspeptic affections, and very often leucorrhœal discharge. In process of time, visceral disease may be produced, or the patient becomes dropsical.

The causes giving rise to menorrhagia, may be divided into those which occasion the two predisposing states of plethora, and weakness of the vascular system, and those which act more immediately on the vessels of the uterus. Of the first kind, may be mentioned those which, on the one hand, increase the quantity of blood, as rich diet, indolence, &c. and on the other, debilitate the body, as fatigue, abstinence, profuse discharges, &c. Amongst the exciting causes, or those more particularly affecting the uterine vessels, may be men-

tioned, the excitement produced by excessive venery; irritation of the neighbouring organs; tenesmus, worms, torpor of the veins produced by costiveness, or dyspepsia; debility of the womb, occasioned by abortion, or laborious parturition. Menorrhagia may also be caused by irritation of the vessels communicated by the state of the uterus itself, and hence it very often attends prolapsus, some change of structure, or other organic disease, aud therefore, in all cases of obstinate discharge, we ought carefully to examine the state of the womb, both as to position and structure.

Married women are more liable to menorrhagia than virgins, and it is rare for these, if otherwise healthy, to have uterine hemorrhage.

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, a febrile state exists, and the hemorrhage has not produced much debility, excellent effects may result, as in other active hemorrhages, from the early use of the lancet, by which the uterine discharge is speedily checked, and that before the vessels are so much weakened, as to occasion a rapid return. But if the pulse be small or weak, and no febrile state exist, 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 to be 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 winter, and no more bed-clothes 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. For the same purpose nauseating doses of emetic medicines have been employed, and sometimes with good effect. The diet is to be almost dry, and of the least nutritious quality. Wine and all stimulants are to be avoided. In order to re-

strain 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. Acetite of lead has been given internally, or used as a clyster, with good effect; but it is nevertheless a hazardous remedy.

In debilitated habits, or in plethoric patients, when the discharge has been profuse, and 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 both generally and locally; but it cannot be carried so far as in active hemorrhage, 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 clyster or suppository. The injection of solution of sulphate of alumin into the vagina is useful, and also safer than the use of vinous or spirituous injections, which have been proposed by some eminent men. 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. 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 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.

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 hemorrhage. I must therefore next direct the attention to those means which are to be employed for the permanent cure of the patient. These must depend on the state of the constitution, and the nature of the exciting causes. 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 strengthen the vessels, on the one hand, without going the length, on the other, of exciting the circulation, so much as to produce rupture. 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 supertartrite of potash, ethereal spirit of nitre, and other mild diuretics.

As an exception to the rule of employing laxatives, I must notice those cases where hemorrhage 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. The uterine vessels are to be strengthened by the daily use of the bidet, and injecting cold water into the vagina. Astringent injections are not proper, until the active state of the vessels be removed, after which they are of signal service, and should be used at least three times a day. The best is strong decoction of oak bark. Every exciting cause must be avoided. After the plethoric condition is obviated, the cold bath is excellent, conjoined with internal astringents, particularly kino.

In debilitated habits, whether the weakness have existed from the first, or have succeeded to plethora, the practice must be somewhat varied. Moderate laxatives, especially mineral waters, are proper to improve the tone of the bowels, and prevent languid circulation in the veins. Tonic medicines are to be given, such as different preparations of iron, chalybeate waters, as that of Tunbridge, and bitters; of the last, the uva ursi, in doses of half a dram, three times a day, is often of use; at the same time, to either of these medicines, may be added such doses of squills, as shall direct moderately to the kidneys. Some medicines taken into the stomach, appear really to have the property of constricting the vessels at a distance. The extract of rathania root, in doses of from half a dram to a dram, given two or three times a day, has been much extolled by M. Ruitz, but equal, if not more certain benefit, may be derived from the exhibition of a tablespoonful of tincture of kino three or four times a day. Much liquid is to be avoided, but the diet should be more nutritious than in the former case, and so much wine may be given as shall not stimulate the circulation, or produce heat or flush-

ing. Claret is the most useful wine. Opiates at bed time are often of advantage, in preventing irritation. The cold bath is of great benefit; and by way of producing contraction of the uterine vessels, astringent injections should be frequently employed. In obstinate cases, a similar effect may be produced by ipecacuanha emetics. They rarely do harm, and have been known to check the discharge in very alarming situations. Friction on the surface of the body is useful, by determining to the extreme vessels. Every thing which can excite the uterine vessels must be avoided, such as dancing, long walks, venery, &c. If, in spite of these means, the hemorrhage still continue or return, there is reason to fear, that it is kept up by something more than the general condition, which I have been considering; for instance, by some organic affection of the uterus, not discoverable by the finger, perhaps as yet in an incipient state; by a diseased or varicose state of the vessels; or if the patient be young, by a scrophulous constitution, which does not readily yield to general remedies.

In constant stillicidium, unaccompanied with organic affection, the best remedies are tonics and astringent injections. This often stops spontaneously for two days before and after menstruation. When it is uniform, there is often a bad smell arising from the retention in the cavity of the uterus or vagina, of small clots, which putrify. Injections are the best remedies in this case.

In weak habits, there is sometimes a slight discharge of blood for a day, at the end of a fortnight after menstruation. This is to be cured by strengthening means.

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 peculiar 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 prescrip-

tion is requisite, but the earliest and slightest symptom of deviation from health should be attended to.

CHAP. XV.

Of Conception.

Conception seems to depend upon the influence of the semen exerted on the ovaria, through the medium of the rest of the genital system; for women have conceived, when semen has been applied merely to the vulva, the hymen being entire. The ovaria, even in the virgin state, produce or form ova, which unless semen be applied, soon decay, and are absorbed. Sir E. Home* has lately called the attention of physiologists to this subject, and maintains that corpora lutea, so far from being an evidence of the female having been at a former time impregnated, do exist, and come forward in successive crops, in the virgin state. The corpus luteum is a mass, according to him, of thin convolutions, not unlike brain, of an oval shape, with a central cavity; and in some animals, when first exposed, of a bright yellow colour. If no semen be applied, the corpora, which are continually forming during all the breeding period of life, successively decay; but if impregnation take place, the ovum, excited by the semen, is carried to the uterus, by means of the fallopian tube, which at the time embraces firmly the ovarium, whilst the covering of the ovum gives way, either by absorption or rupture. Sir E. Home attributes it to rupture, and says some blood often escapes at the time it passes down into the uterus or vagina. Some also is effused into the cavity of the corpus luteum, formerly filled with the ovum. The coagulum becomes white, and then is absorbed, so that at the time of delivery, no very distinct appearance of corpus luteum remains. In some cases, the coagulum is absorbed, and the cup which it filled is left

* Phil. Trans. 1819. p. 59. Blundell controverts this opinion of Home's, in the 10th Vol. of Med. Chir. Trans.

empty, with fringed edges. After delivery, distended corpora lutea, which have not been impregnated, are observable.

Sir E. Home thinks that the rupture of the coat of the corpus takes place during coition, that the semen may be directly applied to the ovum, but of this there is no proof; whilst, on the other hand, there is incontrovertible evidence that many women have conceived when the semen was emitted only at the vulva.

It would appear, that although an ovum be impregnated, yet, by various causes, the process afterwards may be interrupted; the ovum shrivels and is absorbed. If there be an impervious state of the tubes, or any conformation or condition, rendering it impossible for a child to be supported, the ovum decays, and the woman is barren. Or if such a state be induced after impregnation, and before the ovum descends, the process stops.*

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 it is not yet ascertained what the greatest interval between the two conceptions may be. It appears to be ascertained 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.‡

* 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.

† Vide Med. and Phys. Journ. Vol. XVII. p. 489.

‡ 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

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.

It has been attempted to ascertain what age, and what season was 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 2102 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.

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 register, for ten years, of an extensive parish in this place; 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.

Women are supposed to conceive most readily immediately after the menstrual evacuation, but it is doubtful how far this opinion is correct; 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

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. T. X. p. 129.

* Vide Phil. Trans. Vol. LXXVII.

that the woman should be confined at the end of the forty-second week from that period.

The process of gestation usually requires forty weeks, or nine calendar months 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 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 protracted beyond 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.

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

* 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.

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 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 above 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 integuments prevents it from hanging so much forward as it afterwards does. At this time, it generally measures, from top to bottom, ten or twelve inches, and is oviform in its shape. For the first month, the shape of the uterus is not altered; it is enlarged in every direction. But after this, it swells before and behind, and soon becomes 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 begins to rise out of the pelvis, and it always exists in a greater degree in those who have born many children.

From this position it appears, that the intestines can never be before the uterus, but must lie behind it and round its sides.

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, will naturally descend lower in the pelvis, and thus project farther 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. The ninth month affects the mouth of the uterus chiefly. 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 mouth of the uterus is merely the termination or extremity of the cervix, and consists of two lips of the same consistence with the rest of the uterus. When the womb is not gravid, these are always open, and will admit the tip of the finger. But, soon after conception, the os uteri becomes closer, softer, and rather circular than transverse. In proportion as pregnancy advances, and the cervix stretches, the

lips sometimes shorten, until they disappear: but more frequently they become thicker and continue to project a little, until labour commence. All the inner surface of the cervix uteri, in the whole course of gestation, is full of glandular follicles, which secrete a thick viscid mucus. This extends from the one side to the other, and fills up 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. Malphigi describes them as forming a kind of net work; whilst Ruysch maintains, that they appear at the fundus, in concentric planes, forming an obicular 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 exhibit confusion, rather than any well marked figure.

The increased size of the uterus is by no means chiefly 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 the 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 does not grow thinner in proportion to its increase, yet it does, at the full time, become thinner near the mouth; whilst the fundus continues the same, or perhaps grows a little 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 the viscus, spread completely over its surface; and consequently, were we to search for this ligament, we would be disappointed. Its duplicatures are all 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, cannot now run out loosely from the uterus, but must be laid flatter on its surface, and bound more by the stretched peritoneum. This description applies only to the state of the uterus at the full time. Earlier, we may readily observe the broad ligament flying out, and allowing the ovaria free play. The loose extremity of the tube becomes more expanded, and very vascular, and forms a kind of cavity called the antrum.

On the ovarium we observe a corpus luteum. This is a substance once described as divisible into cortical and medullary matter, placed immediately under the membrane of the ovarium, and adhering to the ovarium, by cellular substance. It is of a yellowish colour, and is largest soon after conception. The nature of this 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 be-

fore the ovum is very visible, we find the uterine artery as large as the barrel of a goose quill, and sending large branches round the cervix uteri, and up the sides of the womb. 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.

The lymphatics are very large and very numerous. The nerves have already been described.

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 determined at what precise time the ovum enters the womb, or when the fœtus first 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.

We know that considerable changes take place in the cavity of the uterus, before the ovum descends; but the time required for the accomplishment of these is not determined. In a very accurate 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 there is reason to suppose that nearly a month had elapsed from the time of impregnation. I have examined very carefully three uteri within the first month, and have not been able to discover either ovum or fœtus. If we admit analogical evidence on this subject, we shall be more confirmed in a belief that the ovum does not, in the human female, enter the uterus, until at least three

* Transactions of a Society, &c. Vol. II. Art. vi.

weeks after conception.* In the rabbit, whose period of gestation is only thirty days, the ovum is not to be found in the uterus earlier than the fourth day, according to Mr. Cruikshanks,† or the sixth, according to Dr. Haighton; and the fœtus is not visible till the eighth day, when it may be seen by dropping vinegar on the ovum.‡ Haller found, that, in the sheep, whose term of gestation is five months, the ovum does not enter the uterus till the seventeenth day,§ and the fœtus is not visible till the nineteenth. These observations and conclusions would appear to be overturned by a recent observation of Sir E. Home,‖ who, after soaking the uterus in spirits, detected an ovum within it, when he supposed that only eight days had intervened between impregnation and death. The cavity of the uterus was lined with decidua; and the plate corresponds most exactly to the appearance I have seen in three different cases I have just alluded to, and where I believe the period to be more advanced. In these I could detect no ovum; but Sir E. Home, by the use of spirits, rendered it more distinct, and found it entangled in the fibres of the decidua, near the cervix uteri. It had an oval shape; one part was quite white, the other transparent; but soon after, being exposed to the spirits, the white became opaque. Mr. Bauer examined it by the microscope, and found it to resemble very much a little shell of the genus voluta, the membrane being open, like a shell, along one side; another smaller membrane seemed to be contained within, filled with a thick slimy substance, and enveloping two small corpuscles of a yellowish tint, supposed to be the brain and heart. The inner membrane formed an oval $\frac{18}{200}$ of an inch long, and not quite $\frac{6}{200}$ broad. The whole ovum was $\frac{19}{200}$

* Dr. Combe possessed a preparation, where there was an appearance of a very minute fœtus. From peculiar circumstances, two and twenty days were supposed to have elapsed from the time of conception. Vide Dr. Hunter's Anatom. Descrip. p. 87.

† Phil. Trans. Vol. LXXXVII.

‡ Phil. Trans. Vol. LXXXVII. p. 204.

§ Elementa, Tom. VIII. p. 59.—Opera Minora, Tom. II. p. 434.

‖ Phil. Trans. 1817. Part 2d.

long, and, $\frac{9}{200}$ broad; that is, it was nearly about the size of a canary seed. The os uteri was shut up with solid jelly.*

The ovum, at first, contains no embyro visible to the naked eye; nothing but vesicular involucra appear. This point is fully established by examining the inferior animals, and is especially confirmed by the incubation of the eggs of fowls. I have examined carefully a most perfect ovum in the ninth week after menstruation, consequently not less than the fifth after conception. In it no distinctly organized embyro could be detected. The chorion was as large as a small chesnut, covered with shaggy vessels, and filled with transparent jelly, like the vitreous humour of the eye. Within, and adhering to one side, was the amnion, not much larger than a coriander seed. It contained nothing but transparent fluid; but I did not try the effect of rendering the contents opaque by spirits.

When the human fœtus is first distinctly visible through the membranes, it is not above a line in length, and of an oblong figure. In the sixth week, it is seen slightly curved, resembling, as it floats in the water, a split pea. In the seventh week, it is equal in size to a small bee; and, by the conclusion of the second month, it is bent, and as long as a kidney bean.

The embryo, at first, appears to the naked eye like two oval bodies of unequal size, united together by a neck. 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. 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 fœtus, and are placed low down.

* Mr. Bushell has lately published in the Med. and Phys. Jour. a fatal case of hemorrhage, arising from the rupture of one of the fallopian tubes. It contained, near the uterus, a vesicle about half the size of a pea, within which floated an embryo like a barleycorn. I have been informed of a similar case of rupture, but no ovum was detected. Are such instances dependant on the retention of the ovum in the tube forming an early extra-uterine case?

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 fœtus does not grow in a uniform ratio, but, as has been observed by the learned anatomist, Dr. Soemmering, the increment is quicker in the third than in the second month. In the beginning of the fourth it becomes slower, and continues so until the middle of that month, when it is again accelerated. In the sixth month, it is once more retarded, and the progression remains slow during the rest of gestation.

In the fœtus the inferior extremities do not grow in the same proportion as the superior, and therefore, as Chaussier has remarked, the centre of the body varies at different periods. At the full time, it is situated a little above the navel, whereas in the adult it is at the upper edge of the pubis. At the end of the eighth month it is an inch above the umbilicus. In the sixth at the end of the sternum, and in the seventh between these two points. 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, or the corpora olivaria and pyramidalia. 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. In the male sex some assistance, it is supposed, may be derived from the position of the testis; the exact period of its descent, however, is not fixed. Mr. Hunter merely says, in the seventh month it is found within the abdomen, in the ninth in the scrotum. I believe that in the eighth month it will be found at the groin. 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 pupilaris closes up the pupil. The heart is large in proportion to the lungs. In the seventh month, the membrana pupilaris 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 gelatine. 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.

The proportion between the weight of the fœtus and its involucra, is reversed at the beginning and the end of gestation. When the embryo does not weigh more than a scruple, the membranes are as large as a small egg. Even when the fœtus is not larger than a fly, the membranes resemble, in shape and size a large chesnut. 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. 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 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 weighs 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. Rœderer* 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 Clarke 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.

* Comment. Gottin. 1755.

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. 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.

When there are two children in utero, the weight of each individual 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 placentæ must have their functions supported. The uterus is also generally more distended, and produces greater irritation; 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.

The proportion of male children, born in single births, is greater than of females. In an extensive parish in this place, the number of males born in a given time, was to that of females, as 3716 to 3177. In the Westminster hospital, it was as 972 to 951; but in the same hospital, it is worthy of remark, that the number of male twins was only 16, whilst that of females was 30.

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. 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 fluid different in its properties, is secreted. The gall bladder is filled with a green fluid, which, before birth, becomes darker, with a tinge of blue, but is said not to have a bitter taste. 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 mix-

ture 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, would 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 straight up from the umbilicus, and enters the fissure; whilst the arteries run at first, for a little way, directly down from the umbilicus and then divaricate.

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 not rendered florid by exposure to air,* and 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.

The stomach is smaller in the fœtus, than in the child after birth. 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 inclosure. They contain a soft substance like ointment, of a dark green colour, called meconium.

The testicles of the male, and the ovaria of the female, lie on the psoæ muscles; but, before birth, the testicles pass into the scrotum. The kidneys are large and lobulated, and the ureters thick. The glandulæ renales are large, and contain a reddish fluid. The bladder is more conical and lengthened

* Bichat made experiments to ascertain this upon Guinea pigs, and always found the fœtal blood black. Anatomie Generale, Tome II. p. 343.

than in the adult. The lungs are dense and firm, and a large gland, called thymus, is contained in the thorax. The heart is very different from its adult state. In the chick, we find that there is in the situation of the heart, a single cavity which afterwards corresponds to the left ventricle. At the forty-sixth hour, the ventricle and bulb of the aorta are visible. Then an auricle is formed by the vena cava: this auricle does not adhere directly to the ventricle, until the sixth day, but is connected with it till that time by a short duct, called canalis auricularis. In about ninety-six hours the auricle begins to exhibit marks of a division into two cavities, or a right and left side, and some time afterwards, the right ventricle and lungs are evolved. The structure of the heart, however, is still different from that which obtains after birth; for though the auricles are divided into two cavities, yet these are seen, in the human fœtus, 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 fœtal 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 fœtus, and therefore the greatest part of it passes on by the ductus arteriosus to the aorta. But 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.

The head of the fœtus is, at first, membranous, and the brain a pulp, soluble in aqua kali puri. By degrees, distinct 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.

The skin is covered with a white substance, which though unctious 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.

The male fœtus 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 fœtus, females sometimes pass in abortions for males.

When in utero, the fœtus 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, at the full time, about ten inches, and the short one, five or six. In the eighth month, the long axis measures about 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.

The umbilical cord is an essential part of the ovum, connecting the fœtus to its involucra. 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, and 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 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 every where, 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.

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.

There is a small sac, or bladder, found on the placenta, at or near the extremity of the cord, in the early part of gestation. It is most distinct betwixt the third and fourth month of pregnancy, and is placed exterior to the amnion. It is filled, though not quite distended, with a whitish fluid, on which account, it is called the vesicula alba.* From this, a very fine vessel proceeds along the cord, adhering firmly to the amnion; but, without a glass, it cannot be traced all the way to the navel. It has been supposed to be subservient to the nourishment of the fœtus in its early stage. A small artery and vein pass along the cord from the navel, to the vesicle which is between the chorion and amnion. These are the omphalo-mesenteric vessels.

Besides the blood vessels, there is in brutes another vessel, which is a continuation of the fundus vesicæ. It passes out at the navel, and, running along the cord, terminates in

* Vide Albinus. Annot. Acad. lib. I. cap. xix. p. 74. et tab. I. fig. 12.

a bag, which is placed betwixt the chorion and amnion. The bag is called the allantois, and the duct the urachus. In the human subject, in place of the urachus, we find only a small white impervious cord. There is of course no 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 about 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. When it is too long, it is often 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.§

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

* Hildanus, cent. II. obs. 50.

† Mauriceau has seen it a Paris ell and a third, obs. 401.—Hebenstreit 40 inches.—Haller Disp. Anat. Tom. V. p. 675.—Wrisberg 48 inches—Vide Com. Gotting. Tom. IV. p. 60.

‡ Vide Mauriceau, obs. 133. and 156.

§ Dr. Hunter thinks he has twice seen these formed previous to birth.

‖ Vide Baudelocque l'Art, note to section 1084.

be retained for several weeks; afterwards the ovum is thrown off, like a confused mass, inclosing 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 hemorrhage.‡

Two cords have been met with, connected with one placenta, or with two placentæ 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.

SECTION NINTH.

A placenta, or something equivalent to it, is to be found connected with the young of every living creature.

We find it requisite that a pabulum should be supplied to every animal, and that certain changes should be performed on the blood, qualifying it for supporting life. In oviparous animals, two different parts of the ovum perform these separate functions. The umbilical vessels of the chick ramify on the membrane of the albumen, and thus come in contact with the air, which is absorbed through the pores of the shell; and, by this contrivance, changes analogous to those effected by respiration, are produced on the blood. From the inner surface of the membrane of the vitellus, a nourishing fluid is absorbed, which is conveyed to the intestine by a proper duct; and, before the chick is hatched, the remainder of this fluid,

* 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 Period. Tome V. p. 343.

inclosed in the membrane of the vitellus, is taken within the abdomen, and covered with the abdominal integuments.*

* In the eggs of fowls, we observe the following circumstances. 1st, Upon removing the porous shell, we find the albumen inclosed in a membrane, consisting of two layers, and called sacciform by Leviellé. These are separated from each other at the large end of the shell, so as to form a small sac, called the folliculus aëris. The albumen is divided into three strata; the first, or cortical, is most liquid; the second or middle, is more abundant, and thicker than the first, but less so than the third or central. The middle and central strata are inclosed in a delicate membrane, called leucilyme by Leviellé, which separates them from the cortical. 2d, Within the albumen we have the vitellus or yolk, which is inclosed in a vascular membrane, called chlorilyme, or membrana vitelli, which again is enveloped by a membrane common to it and the intestines of the chick, called entro-chlorilyme. 3d, To each end of the vitellus, we have connected a portion of the central albumen, called chalaza; and in each of these a membranous substance is discovered, attached to the membrane of the vitellus, and a vascular structure, which can absorb the albumen into the vitellus, to contribute to the nutrition of the chick. 4th, Upon the vitellus, we observe the cicatricula, or small sac, called by Harvey the eye of the egg, and which was supposed to contain the fœtus, the rudiments of which are allowed by Malpighi, Haller, and Spallanzani, to be pre-existent to fecundation. This cicatricula was considered as analogous to the amnion, and supposed to contain a transparent fluid, called by Harvey colliquamentum candidum, or liquor amnii. More modern observations ascertain that the embryo is not formed in the cicatricula, but very near it on the vitellus, and that the amnion inclosing it can at first scarcely be distinguished from the embryo. The cicatricula soon disappears. Harvey's account must therefore be transferred to the amnion. 5th, During incubation, the vitellus becomes specifically lighter than the albumen; and rises towards the folliculus aëris. Two arteries and two veins go from the meseraic and hypogastric vessels of the fœtus, to the membrane of the yolk, and are supposed to absorb the vitellus, which therefore is carried to the vena portæ of the chick, and nourishes the fœtus. There is also a connexion betwixt the intestines and vitelline membrane, by means of a ligamentous substance, which was supposed by Haller and Vicq. D'Azyr to be a tube, and called vitello-intestinal canal, for it is said that air has been passed through it. It was supposed to absorb the yolk, by many villi on the inner surface of the vitelline membrane; but these are said by Leviellé not to be vessels, but soft lamellated plates. At the end of the second day, red blood is observed on the membrana vitelli. A series of dots are formed, which are converted first into grooves, and then into vessels, which go to the fœtus. This appearance has been called figura venosa, and the marginal vessel, vena terminalis. 6th, The vitello-intestinal ligament, and these vessels, form an umbilical cord. But besides these, we find, after the fourth day, a vascular membrane at the umbilicus, called membrana umbilicalis, which rapidly increases, and comes presently to cover the inner surface of the membrane of the shell. It is the chorion, and has numerous vessels ramifying on it, like the chorion of the sow, and connected in like manner

In many quadrupeds we find, that, after impregnation, certain portions of the inner surface of the uterus enlarge, and

with the fœtus. The blood of the umbilical artery is dark-coloured, that of the vein bright. 7th, As incubation advances, the amnion enlarges, and comes in contact every where with the chorion. The albumen is all consumed, being taken into the vitellus, which is in a great measure absorbed; and what remains is taken, together with the sac, into the abdomen of the chick, and the parietes close over it. On the 21st day, the chick breaks the shell and escapes. By increasing or diminishing the temperature within a certain extent, the process may be somewhat accelerated or retarded. The eggs of large birds require a longer time to be hatched; those of the ostrich, for example, take six weeks.

Hence it appears, that the vitellus and albumen contribute to the increment of the fœtus, whilst the exterior membranes act as lungs, the air being transmitted through the pores of the shell.

Sir Everard Home has lately investigated more minutely, by means of the microscope, the structure of the egg. The yolk is inclosed in two layers of membrane, the outermost very thin and delicate; the internal one, on the contrary, thick and spongy, with a small aperture, or deficiency, at one spot. Here the gelatinous molecule, from which the embryo is to be formed, is found placed on the surface of the yolk. It is not quite so large as the opening in the membrane, and therefore, seems to be surrounded by a margin, or an areola. In its passage along the oviduct, the yolk comes to be surrounded by the albumen, which presently is covered with a very fine membrane. During this descent are also formed the chalazes, which terminate in that double membrane which is added when the egg has reached the lower end of the oviduct, and which is distinct from, and exterior to the fine membrane already noticed. In four hours after the commencement of incubation, the outer edge of the areola had become enlarged, and that part next the molecule darker. One end of the molecule appeared like a white line, which is the rudiment of the embryo. In eight hours the white line had extended, and rudiments of the brain and spinal marrow could be discerned, surrounded by a membrane which afterwards becomes the amnion. The areola had extended, and the surface beyond the line which had formed its boundary had acquired the consistance of a membrane, and was circumscribed by a distinct line. This he calls the outer areola. In thirty-six hours, a vesicle had begun to protrude under the inner areola, apparently at the termination of the spinal marrow. In sixty hours, auricles and ventricles were seen, the former filled with red blood; a trunk from the left ventricle gives off two large vessels which send branches over the whole areolar membrane. The vesicle somewhat enlarged. In three days, the vesicle, still more enlarged, had forced its way through the external covering of the yolk, whereby a part of the albumen was admitted to mix with the yolk. In four days, the vesicle was still larger, and its vessels contained red blood. On the fifth it was of great size, very vascular, and its cavity contained a fluid. On the sixth, it had expanded, like a double night-cap, over the yolk, and its coverings were beginning to enclose the embryo. This vesicle, Sir Everard, in another place, compares to the bag which, in the human subject, and in quadrupeds, is to become the urinary bladder. This increases with such rapidity that it bursts

form protuberances, having many hollows or foramina, from which a milky fluid can be squeezed. From the chorion,

the amnion, and the arteries lying on its two sides are carried directly to the chorion, and there the placenta is formed in the empty space between the two edges of the chorion. Phil. Trans. 1823, Part II. p. 339. Vide also a paper by Dutrochet on the envelopes of the fœtus, in the Bull. de la Soc. de Med. 1819. No. 9.

The eggs of fishes have a general resemblance to those of fowls, and consist of a vitellus and albumen, with their membranes; but in place of being furnished with a shell they have a tough, or sometimes a horny covering; and some, as those of the shark, torpedo, &c. are quadrangular in shape. The yolk is connected to the intestines of the fœtus, and its membrane is very vascular. As in fowls, so in fishes, it is ultimately inclosed within the abdomen of the young. In the skate, numerous blood vessels are formed in the albumen, which supply the place of gills, and are supposed by Dr. Monro, to be afterwards covered and converted into gills. The two functions of a placenta, then, are still more distinctly fulfilled here than even in fowls, for the apparatus for nutrition and respiration has different or distinct terminations; whereas in fowls and quadrupeds, all the vessels enter at one place. A similar fact is observed in the ova of frogs, for the umbilical cord in the tadpole goes to the head.

The egg of the serpent is nearly the same with that of the fish, and is inclosed in a flexible membrane. The fœtus is coiled up spirally within it, and the chorion is vascular, as in the egg of the fowl.

The adder is a viviparous animal; its uterus is membranous, and divided, I find, into eight or nine cells, each of which, in September, contains an ovum as large as a chesnut. This consists of an exterior membrane, which incloses a fœtus about six inches long, and coiled up. About an inch from the tail, the umbilical cord passes out, which consists of vessels that go to ramify on the exterior membrane, which resembles the chorion of the sow. There is also a connexion with a vitellus, which is as large as a hazel nut.

The coluber natrix is said, by Valmont-Bomare, to have a placenta and cord within the egg, but this is contrary to the general structure of eggs; most likely the chorion has been taken for the placenta. The eggs of reptiles are often deposited in packets, the eggs being glued together.

The egg of the turtle is as large as a hen's, and is inclosed in a covering like parchment. It is deposited in the sand, and is hatched in about 24 days. The egg of the alligator is similar in structure to that of the turtle: it is rather larger than a goose's egg, and covered with a thin skin, so transparent, however, that the fœtus may be seen through it.

Those animals which are called oviparous, hatch their eggs out of the body, either by sitting on them, as we see in fowls, or by exposing them to the heat of the sun, as the turtle, crocodile, and many serpents. Oviparous fishes, which comprehend all those called osseous, expel their ova into the water, where they are fecundated by the male, but without copulation. Many fishes leave the sea, and come up the rivers to spawn. Others remain in the ocean; and the eggs, specifically lighter than the water, float on the surface. Many fishes attach them to

corresponding vascular efflorescences arise, which shoot into these apertures; and thus an union is effected betwixt the mother and fœtus.

marine plants, and in some cases the ova are fixed to the body of the parent. The ova are covered with a kind of mucus, which has been supposed to defend them from the water.

The ova of frogs, &c. are likewise fecundated and hatched out of the body. They are enveloped in a glairy matter, which, perhaps, contributes to their increase; for during incubation, the egg both enlarges and changes its shape.

Those animals which hatch their eggs within the body, are called ovo-viviparous, such as cartilaginous fishes, as the shark, skate, torpedo, &c. The scorpion and venomous serpents also belong to this class. Ovo-viviparous animals expel the young fully formed, and therefore have been sometimes considered as having uteri like quadrupeds, and a cord attached directly to it. Spallanzani at first supposed that the fœtus of the torpedo was attached directly to the uterus, but afterwards found that it was contained in a distinct ovum. Experiences, p. 294. See also Cuvier Leçons d'Anat. Comparée, Tome V. p. 142. The shark is said to have an uterus like the bitch, and Belon says he saw a female delivered of eleven young attached by a cord. Its mode of gestation most likely is similar to the torpedo. This class expel their young often very quickly. A female syngnatus hyppocampus was observed to expel at least a hundred in a very short time.

Analogous to ovo-viviparous animals, are those which receive the ova into cells on the surface of the body, where they are hatched. This is well seen in the pipa, a species of toad. Even the tadpoles are said to be metamorphosed in these cells. The opossum tribe has a modification of this gestation; for in them the fœtus, when very small, is expelled into a bag situated on the belly, and immediately attaches itself to a nipple. The utero-gestation of the oppossum of North America lasts only from 20 to 26 days, and the embryo, when expelled, does not exceed a grain. It remains in the sac about 50 days, and acquires the size of a mouse. In other animals, as for instance the bat, the young, after birth, attach themselves to the nipple, partly for the convenience of being transported or carried about.

In plants we find likewise a placenta or structure, intended for the nourishment and respiration of the fœtus. To take the kidney bean for an example, we find within the membranous covering two parenchymatous lobes, or cotyledons; and at the margin betwixt these, there is the corculum or cicatricula. During incubation, we find that this sends up a small shoot called the plumula, and down a radical into the earth. But to support the plant until the root and leaves are capable of maintaining it, we find the cotyledons rise up out of the earth, on each side of the plumula, forming what are called seed leaves. These both serve for the respiratory organs, and also supply pabulum, which is absorbed by proper vessels, and in consequence thereof they presently are destroyed. When there are more lobes than two in the seed, there are a corresponding number of seed leaves. In many cases these cotyledons do not rise out of the ground, but the plumula alone appears. This is the case with the garden pea, but the cotyledons still per-

In the sow and the mare there is no projection from the uterus, but its surface is every where smooth and vascular. There is no efflorescence from the chorion, but it has numerous vessels disposed over it, which are the extremities of the umbilical arteries and veins. In these animals, then, we have no distinct placenta, the chorion alone serving that purpose.

The cetaceæ have uteri like quadrupeds, but I am unacquainted with the precise mode of connexion betwixt the mother and the fœtus.

The monkey differs from other quadrupeds, in having no permanent papillæ; but the maternal part of the placenta is deciduous, like that of women.

In the human subject, the placenta is a flat circular substance about a span in diameter, and, when uninjected, an inch in thickness. It becomes gradually thinner from the centre to the circumference, by which it ends less abruptly in the membranes. Its common shape is circular; but it is sometimes oblong, or divided into different portions.

The umbilical cord may be fixed into any part of the placenta, or sometimes into the membranes, at a distance from

form their functions below the ground, and exist until the foliage of the plant, or adult organs, be formed. The greatest part, then, of a vegetable seed or ovum, consists, like the eggs of fowls, of an apparatus intended for the nutriment and respiration of the fœtus, whilst the embyro itself is very small. The cotyledon consists, in many cases, of a farinaceous substance. In other seeds it is oily and farinaceous, and in some is almost all oily.

Vegetable ova sometimes are contained in a dry pericarpium, and are shed into the earth when it bursts. But others have an apparatus provided, not only for their present growth, but also for accelerating their incubation in the earth. In stone fruit and nuts, we find that vessels pierce the shell at the bottom, and pass on toward the top, and reach the kernel or lobes, which are contained within the shell, enveloped in a soft membrane. They are inserted very near the embryo. Now, for the farther support of these parts, we find that stone fruits are covered with a quantity of nutritious matter. The almond, for example, has its ligneous nut covered with a fleshy substance about an inch thick, inclosed in a proper membrane. The rhamnus lotus has the stone surrounded with farinaceous matter, which tastes like gingerbread. Other seeds are contained in a parenchmatous or succulent substance, as the apple or pear; or in a firm white substance, like cream or marrow, or in a mucilaginous matter as the gooseberry, or in an organized pulp as the orange and garcinia mangostona. Some are deposited in a luscious fluid at first, which ultimately becomes farinaceous, as the plantain.

the placenta. When this happens, the vessels run in distinct branches to the placenta, without forming any spongy substance on the membranes. Most frequently, however, the cord is inserted at a point about half way between the centre and the circumference of the placenta. From this the umbilical vessels spread out, like a fan, ramifying over the surface, and dipping their extremities into the substance of the placenta itself.

That surface of the placenta which is attached to the uterus, is divided into lobes, with slight sulci between them, and is covered with a layer of the decidua like clotted blood. On the surface which is next the child, we see the eminent branches of the umbilical vessels, over which we find spread the chorion and amnion.

If we inject from the umbilical vessels of the human fœtus, we find that the placenta is rendered turgid, and vessels are to be found filled in every part of it; but always between their ramifications there remains an uninjected substance; even the uterine surface of the placenta is not injected, for the fœtal vessels do not pass all the way to that surface.

If we inject from the uterine arteries, we, in like manner, render the placenta turgid, but nothing passes into the umbilical vessels; and when we cut into the placenta, we find cells full of injection, and covered with a fibrous uninjected matter. Hence we may infer that the placenta consists uniformly of two portions. The one is furnished by the deciduous coat of the uterus, the other by the vessels of the chorion; and these two portions may, during the first three months, be separated, by maceration, from each other.

The structure of the fœtal portion, so far as we know, appears to be similar to that of the pulmonary vessels, the artery terminating in the vein. But the other portion is somewhat different; there is not a direct anastomosis, but the artery opens into a cell, and the vein begins from this cell; for, by throwing in wax by the uterine artery, we may frequently inject the veins. These cells communicate freely with each other in every part of the placenta, and may be compared to the corpora cavernosa penis.

From the general principles of physiology, as well as from experiments on the chick in ovo, and from the fatal effects which instantly follow compression of the cord whilst the child is in utero, it is allowable to infer, that the placenta serves to produce a change on the blood of the fœtus, analogous to that which the blood of the adult undergoes in the lungs; and from considering, that the fœtus itself cannot create materials for its own growth and support, we may farther infer, that the placenta is the source of nutrition also.

The placenta may be formed at any part of the uterus, but, in general, it is found attached near the fundus.

Its structure is sometimes changed, part of it being ossified or indurated, or, on the contrary, unusually soft. These changes may produce either hemorrhage, or retention of the placenta. Hydatids may form in the placenta; or fleshy tumours may grow in its substance. In neither of these cases does the child necessarily die.

SECTION TENTH.

The ovum when it descends into the uterus, consists of two membranes, one within the other, having very transparent jelly interposed between them. But in process of time the innermost, which is called the amnion, grows so much faster than the outermost, called the chorion, that it comes in contact with it, or at least has only a thin layer of jelly interposed.

The amnion is thin, pellucid, and totally without the appearance of either vessels or regular fibres: yet, in the end of pregnancy, it is stronger than the chorion and its vascular covering: 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, is filled with a fluid, which appears to be composed chiefly of water, with a very little earth, albumen, and saline matter. As this water is contained within the amnion, it has received the name of liquor amnii. In this sac the fœtus lies.

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. In the early periods, the quantity is larger, in proportion to the size of the uterus, than afterwards.

The chorion, like the amnion, is thin and transparent, adheres firmly to the placenta, and covers all the vessels which run on its surface; but it does not dip down with them into the substance of the placenta. The ovum, when it first descends, or at least very soon afterwards, has the chorion every where covered with vessels, which sprout out from it. These form a covering to it, which, from its appearance, has been called the shaggy or spongy chorion.

SECTION ELEVENTH.

The last coat to be described, is one yielded entirely by the uterus, and serves to connect the uterus with the fœtal vessels of the chorion. This, as Harvey observes, is not a covering of the fœtus, but a lining of the uterus, which falls off after delivery; and therefore it is called the caducous coat, or the membrana decidua.

The illustrious Haller supposed, that this was formed by naked vessels shooting out from the uterus. Dr. Hunter imagined that the arteries of the uterus poured out coagulable lymph, which was afterwards changed into decidua. His brother, Mr. John Hunter, attributed its origin to coagulated blood, which formed a pulpy substance on the inner surface of the uterus.

Having been so fortunate as to meet with three or four opportunities of investigating the state of the uterus, within a month after conception, I shall describe what appears to me to be the structure of the decidua. Very speedily after impregnation, and always before the embryo enters into the womb, its size is increased, its fibres are softer and more separated from each other, and its vessels very much enlarged. On cutting it up, its cavity is found to be considerably broad-

er and longer, and somewhat wider than in the unimpregnated state; and all the fundus and body have their surface covered with a dense coat, which adheres firmly to the uterus. If the vessels have been injected, this evidently is seen to consist of two different substances, namely vessels, and a firm tough gelatine. It seldom happens that all the vessels can be equally filled, and therefore some spots are redder than others. The vessels do not pass on to the surface of this coat, but are seen shining through it. They proceed directly from the surface of the womb, and project at right angles to the plane which yields them; they are intermixed with a little gelatine, and consist of both arteries and veins. Over their extremities is spread a layer of gelatinous matter, which very early is observed to contain fibres, forming a kind of net-work. Thus the decidua consists of two layers, one highly vascular, proceeding directly from the uterus; the other, which is most probably formed by these vessels, is more fibrous and gelatinous; and when this is removed, the primary vessels, or outer layer, may be seen like a fine efflorescence, covering the surface of the uterus. In some cases the decidua extends a little into the fallopian tubes; in other instances it does not. In no case does the cervix form decidua. It is only produced by the fundus and body of the womb; and immediately above the cervix, the decidua stretches across, so as to form a circumscribed bag within the uterus. In some instances, however, I have observed this continuation to be wanting, although the parts were opened with care. In all other circumstances, these uteri resembled those where the decidua was continued across; but, perhaps, notwithstanding this, there may have been a difference of two or three days in the period of impregnation, occasioning this variation. In every case, the decidua, consisting thus of two layers, is completely formed before the ovum descends.

When the embryo passes down through the tube, it is stopped, when it reaches the uterus, by the inner layer, which goes across the aperture of the tube, and thus would be prevented from falling into the cavity of the uterus, even were it quite loose and unattached. By the growth of the embryo,

and the enlargement of the membranes, this layer is distended, and made to encroach upon the cavity of the uterus, or, more correctly speaking, it grows with the ovum. This distention or growth gradually increases, until at last the whole of the cavity of the uterus is filled up, and the protruded portion of the inner layer of the decidua comes in contact with that portion of itself which remains attached to the outer layer. We find then, that the inner layer is turned down, and covers the chorion; from which circumstances, it has been called the reflected decidua. In Sir E. Home's case, he says, the tubes were quite pervious, that is, no decidua was stretched across them, and the ovum lay at the cervix uteri. In such a case, the ovum instead of growing downwards would grow upwards, and carry still a reflected coat of decidua with it.

Thus we see, that whenever the ovum descends, it is encircled by a vascular covering from the uterus, which unites, in every point, with those shaggy vessels which sprouted from the chorion, and which made what was called the spongy chorion. One part of these vessels forms placenta, and the rest gradually disappear, leaving the chorion covered by the decidua reflexa. This obliteration begins first at the under part of the chorion. Sir E. Home says, that the umbilical arteries get at the chorion, and form placenta, by the urinary bladder bursting the amnion, as has been already noticed in his account of the chick in ovo.

CHAP. XVII.

Of Sterility.

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 uterus very small. In these cases the menses generally do not appear, the breasts are flat, the external or-

gans 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 extremely 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 and exhaustion 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 debility, 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 condition of the constitution and habit of body, with regard to plethora, irritability, torpor, or debility, and use varied and persevering means for rectifying those states; always, however, taking care that

we do not injure the constitution in seeking for a remote good. In the majority of cases, weakness of uterine action is the cause, and the remedies are sea bathing and tonics, in various forms; general stimulants, such as Bath waters, mercury, essential oils, nitrous acid, &c. when medicines of this description are not contraindicated by the state of menstruation; local stimulants, which act more directly on the uterus or its vicinity, as the semicupium, cantharides, balsam of copaiba, &c. Of all these, the first class is the safest, and the most frequently useful. 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 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.

* 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.

The symptoms of extra-uterine pregnancy are not, at first, very definite; but generally, the usual sympathetic effects of pregnancy, or the diseases of gestation, are more distressing than if the fœtus were contained in utero, nor do they 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 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 upon 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 stage of pregnancy, pains § resembling those of colic are felt, and these are often so severe as to excite syncope,‖ or convulsions; ¶ and it has happened, that

* Vide Paper by Dr. Garthshore, Lond. Med. Journ. Vol. VIII. p. 344.

† Vide Mr. Tucker's case, Med. and Phys. Journ. 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. Morbosoque Gener. p. 166.—In Dr. Mounsey's case, the pain, vomiting, and fainting fits, continued till the woman quickened. Phil. Trans. Vol. XLV. p. 131.—In Dr. Fern's case, the person complained of great pain till the third month; and from that period till the 8th 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.

during these pains, the tube or ovarium has burst, and the person died, owing to the internal hemorrhage.* When these pains either do not occur, or are removed, or the patient survives the rupture of the sac, we generally find, that at the end of 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 des cimetieres*, whilst the sac which contains it becomes indurated. More frequently, however, considerable irritation is produced,‖ with nausea, loss of appetite, frequent vomiting, chills, difficulty of breathing, 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

* In Mr. Langstaff's case, the patient felt violent pains in the lower belly, sickness, and 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; and 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. Tome I. p. 343. Dr. Abercrombie has informed me of a fatal case of hemorrhage of this kind.

† 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.

‖ 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.

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, even an entire fœtus has been brought away from the umbilicus,‖ or by the rectum.¶ It is worthy of notice,

* 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.

† 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. XLIV. p. 617. Morley, Vol. XIX. p. 486. Gordon, in Med. Comment. Vol. XVIII. p. 323. Cammel, in Lond. Med. Jour. Vol. V. p. 96. Case by M. Bergeret, in the Recueil Periodique. Tom. XIV. p. 289. Gaitskell, Med. Rep. March, 1823.

‡ Vide Marcel. Donatus, De Med. Hist. Mirab. lib. IV. c. 22.—Horstii Opera, Tom. II. p. 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 diarrhœa 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 fæces continued to come by the wound, but at last she got well. Med. and Phys. Jour. Vol. II. p. 262.—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.

§ Vide Stalpart Van der Wiel Opera, Tom. I. p. 305. In this case, bones came away with the urine.—In the case of Ronseus, the child was discharged partly by 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 Period. 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. Stag, in Lond. Med. Obs. and Inquiries, Vol. II. p. 369; 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. Goodsir'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

that the placenta, in this process, always is ultimately destroyed,* and discharged among the putrid fluid. Often, time is not allowed for this process to be accomplished, but the person dies at an early period. Extra-uterine has been combined with ordinary pregnancy.†

Thus it appears, that there are different terminations of the extra-uterine pregnancy. The sac may burst, and the person die speedily of hemorrhage;‡ or the child may escape into the abdomen, and be enclosed in a kind of cyst of lymph;§ or the sac may remain entire, the child being retained many years,‖ and the parts become hard; notwith-

rectum in the second year. At an earlier period, pains, with milk fever, &c. had come on. Rev. Med. Tome 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 Cliet, Nouv. Jour. Tome III. p. 287.

‡ 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. Littre 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.

§ Vide a case by La Croix, in La Med. Eclarée, Tome IV. p. 349.

‖ I have known the fœtus 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. XLIV. 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 fœtus is converted into a substance, which Fourcroy finds to resemble the gras des cimetieres. 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. Observationes, 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 fœtus, 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.

standing 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 fœtus is expelled in pieces, and the cure is slowly accomplished. 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 hemorrhage 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 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 pre-

* 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.

† 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 labour 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.

sent, 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 somewhat,* and in most instances, I imagine, decidua† is formed. In a remarkable case, related by the ingenious Mr. Hay‡ of Leeds, the placenta was formed in the uterus, while the fœtus lay in the tube.

Tubal pregnancy sometimes 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 many 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 a uterine placenta in being much thinner and more extended. External examination discovers

* Bœhmer long ago observed this; and Dr. Bailie, 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.

† 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 hemorrhage. Mem. of Med. Society, Vol. III. p. 176.

‡ 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.

little difference, at the full time, between this and common pregnancy.

Ovarian* is much more rare than tubal pregnancy, and it is seldom that the ovarium acquires a great size. It either bursts early,† or inflammation and abscess 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 has 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 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.§ It has been

* 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 also a case in the Recueil Period. Tom. XIII. p. 63; and in the Recueil des Actes de la Societé de Lyon.

† Vide Chambon, Malad. de la Grossesse, Tome 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. Journ. de Med. 1683. Bœhmer 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 hemorrhage and fainting fits proved fatal. The fœtus was found in the ovarium. Annals of Medicine, Vol. III. p. 379.

‡ Vide Rœderer, Elemens, c. 15. §. 758. In Mr. Duma's case, a fluid like chocolate was drawn off by tapping, which was twice performed. The ovarium contained hair, bones, &c. La Med. Eclarée, Tome IV. p. 65. Mr. Bell's tubal case excited ascites.

§ 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 vertebræ. 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

supposed, that the examples of 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.

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. Ovarian requires a similar management with tubal pregnancy, except that if it be complicated with dropsy, relief may be obtained by tapping.

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 the accession of labour; but

ventral pregnancy, complicated with hernia, is related by M. Martin in the Recueil des Actes de la Societé de Santé de Lyon. Courtial found it adhering to the stomach and colon.

* In a case probably of this kind, related by Lauverjat, and quoted by Sabatier, the child was extracted by an incision through the vagina, and the woman recovered. De la Med. Oper. Tome 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 Societé 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.

† M. Colomb. performed the cæsarean operation, but it ended fatally. Recueil des Actes de la Societé de Lyon. Osiander has also failed. Gurney extracted by operation. Med. and Phys. Journal, April, 1823.

there is not only great danger from the wound, but likewise from the management of the placenta, which, if removed, may cause hemorrhage, especially in ventral pregnancy, and, if left behind, may produce bad effects. The last, however, is the safest alternative.

The result of the numerous cases upon record will certainly justify, to the fullest extent, our trusting to the powers of nature, rather than 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.*

* 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. Œuvres, Tom. II. p. 557. 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 hemorrhage 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

The 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 apprizes 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, or dyspeptic state of the stomach. 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 also is affected, becoming unusually irritable, changeable, or melancholy. The breasts often at first become smaller, but about the third month they enlarge, and occasionally

operation, did recover. No placenta was found. Mem. of Med. Society, Vol. IV. p. 342.

* 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 12 days longer, and the portion was thrown off before death. Med. Jour. Vol. VI. p. 52.

become painful; the nipple is surrounded with a brown circle or areola; and often, even at an early period, a serous fluid begins to ooze from it. She loses her looks, becomes paler, and the under part of the lower eye-lid is of a leaden hue. The features become sharper, and sometimes the whole body begins to be emaciated, whilst the pulse quickens. In many instances, particular sympathies take place, causing salivation, tooth-ach, jaundice, &c. In other cases, very little disturbance is produced, and the woman is not certain of her condition, until the period of quickening.

Some females, at the time of conception, have a slight discharge of blood from the uterus, and in almost every case the 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 is attested 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 quantity of the menses. I have not known any instance where menstruation was perfect and regular during the whole of pregnancy.

In the commencement of pregnancy, the abdomen does not become tumid, but, on the contrary, is often rather flatter than formerly; and, when it does first increase in size, it is rather from inflation of the bowels, than from expansion of the uterus. 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 those signs, pronounce a woman to be with child. The enlargement of the belly is at first accompanied with tension or uneasiness about the navel, which becomes rather prominent, especially toward the sixth month.

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 month, or a little sooner or later, in different women, the uterus ascends 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. The motion is first felt 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, but very often is referred to a part of the abdomen, where the motion of the child could not possibly be felt. 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. The child is not felt to move till after the ascent of the uterus out of the pelvis. Does this arise from any change of 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 fœtal motion, however, is not to be confounded with the sensation 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 is 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.

Many women suppose, that by examining the blood drawn from the veins, their pregnancy may be ascertained. Very soon after impregnation, the blood becomes sizy; but it differs from the blood 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.

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 lower in the vagina than formerly; its mouth is not directed so much forward as before impregnation; it is shut up, and the cervix is felt to be thicker, or increased in circumference. When raised on the finger, it is found to be heavier, or more resisting. Some have advised, that the os uteri should be raised 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 tolerable certainty, the womb being then felt decidedly to be heavier, and more easily balanced on the finger; during which something can be felt to be floating within the uterus. In the beginning of the fifth month, it is found to be higher than when unimpregnated: 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

rolled about. 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 mouth becomes more circular, in place of being transverse, whilst the general bulk of the womb and its weight are increased. 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 unfrequently, 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, sometime 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 felt high, and its cervix often apparently developed from being raised, and the vagina elongated, whilst the os uteri itself may have its lips shortened. 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.

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 by an altered state of the blood. This state is the consequence of local increased action, which irritates and excites the system, in the same way 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 evidently rendered more irritable. The gravid uterus, also, has an effect, by sympathy, on other organs or viscera; and likewise produces changes in 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 are 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 great intercostal 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, sometimes occasioning even a temporary insensibility, or paralysis. Hence some varieties of apoplexy and palsy are originally dependent on affections 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 would 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; 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 gently laxative quality; for thereby the intestines are excited to a hurtful, but not to a sufficient degree; they are irritated, but not 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 these; 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.

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 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 of 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 thes

are not altogether successful, the camphorated julap is a useful medicine.* 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 very 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. Wherever fruit agrees with the patient, it 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

* 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.

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 day-break, 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 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.

In slight degrees of this febrile state, all that is necessary is sedulously to keep the bowels open, and take away a little blood. 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 julap is of considerable service, by producing a gentle moisture, but a copious perspiration is neither necessary nor useful. The julap 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 is 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 foul 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. I strongly suspect that this disease originates 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 cool fit, to check it by warm diluents, with the saline julap. 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 is sick or squeamish, a very gentle emetic will be proper. 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. It is a general rule, in such cases, to take away early a small quantity of blood, a quantity proportioned to the vigour and fulness 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. Narcotic substances, such as opium or hyoscyamus, have been tried internally, either without blood-letting or subsequent to it, but uniformly without

* It is worthy of remark, that abortion is very seldom occasioned by this cause, though emetics are apt to produce it.

advantage. 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 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, which have been much recommended by Dr. John Sims and M. Lorentz. I have so often found advantage from this remedy, that I speak of it with confidence. If these means fail in procuring speedy relief, it is necessary to refrain for a time eating, and have recourse to nourishing clysters, or to give only a spoonful of milk, soup, &c. at a time. When the vomiting is bilious, and accompanied with pain in the right side and shoulder, cough, and other symptoms of hepatitis, a seton should be immediately introduced into 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 sometime accelerates the fate of the patient.

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.

SECTION FOURTH.

Heartburn often takes place very early after conception, but sometimes not till after the fourth month. This is a complaint so very common, and so generally mitigated by absorbents, such as magnesia, soda, or chalk, 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 potassa, or the chalk mixture, with a large proportion of mucilage, may give relief. 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.

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 may be useful, and rubbing the epigastric region with anodyne balsam.

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 depend 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 to the influence of the mind. It is necessary to interfere prompt-

ly, 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 steel. It is, at the same time, essential that the bowels be kept open, and for this purpose, asafœtida 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, and not unfrequently occasions convulsions.

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 combination of aloes with extract of hyoscyamus, should the former gripe, may be employed. Castor oil is also given, either alone, or made into an emulsion with mucilage.

It sometimes happens, that indurated fæces are accumulated in the rectum or colon, producing considerable irritation. This causes not only pain, 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. 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. And if there be fever, or considerable pain in the abdomen, bloodletting 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, producing considerable pain and frequency of pulse. When there is much irritation and 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, and increased serous secretion; or a more obstinate disease, depending on debilitated and deranged action of the bowels. In the first kind, 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 white. 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, 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 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. Attention must be paid to the diet, which is to be light, and the food taken in a 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 of the mucous coat of the intestine, is very dangerous and obstinate. It seldom proves fatal before, but often after delivery. It is best relieved by anodyne clysters, or opium suppositories.

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 hemorrhodial 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 alimentary canal. The treatment of this disease is two-fold. We are to remove the cause by such means as give a brisker action to the bowels, such as bitters 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, or of any of the mild neutral salts, dissolved in a large quantity of water. 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 acetate of lead, or a weak solution of the acetate of lead in rose water, or a mixture of the acetum lithargyri and cream. Sometimes astringents are of service, such as the gall ointment; or narcotics, such as

opium* or belladona. 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 hemorrhage be moderate, it gives relief; but if profuse, it causes weakness, and must be restrained by pressure and astringents. Great pain, or much hemorrhage, are both apt to excite abortion; as the former is apt to act by sympathy in the neighbouring parts. Even in the unimpregnated state, internal piles are apt to produce symptoms, supposed to arise from the womb or vagina. The rectum-bougie in such cases is useful.

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 retroversion of the uterus may, at a certain stage of gestation, be readily occasioned. There is not much to be done with 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. 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

* Dr. Johnston advises the following ointment to be applied, and then a poultice to be laid over the tumour. R. Ol. Amygd. ℥i. Ol. Succinni ℥ss. Tk. Opii. ʒii. M. *System*, p. 125.

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, if they do not reach the bladder as mucilage, at least afford a bland addition to the blood, from which the urine is secreted. 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 distressing 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. If much fever exist, the saline julap, 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 involuntary, 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. Gentle doses of calomel, or of other laxatives, with 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 cautious 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 asafœtida. Fatigue and exertion must be avoided, and the mind kept tranquil. If the person be plethoric, 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 tendency to nervous or hysterical diseases is to be prevented, in those who are liable to them, by occasional bloodletting, the use of laxatives, and camphor, or fœtids. Opiates are only to be given for the immediate relief of urgent symptoms.

SECTION FOURTEENTH.

Another distressing affection of the heart, attendant on pregnancy, is syncope. This may take place at any period of gestation, but is most frequent in the three first months, or about the time of quickening. It often occurs in those who are otherwise healthy, 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. 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 person 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 regulated.

There is a species of syncope, that I have oftener than once found to prove fatal in the early stage of pregnancy, which is 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, I have also seen it take place so late as the sixth month of pregnancy.

SECTION FIFTEENTH.

Sudden attacks of dyspnœa 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 danger of this disease, for it is extremely apt to induce 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. Should abortion take place, and the cough continue, tonics, such as myrrh and oxyde of zinc, ought to be administered.

SECTION SIXTEENTH.

In some instances, hæmoptysis or hæmatemesis take place in pregnancy, especially in the last months, and these are very dangerous affections. Blood-letting is the remedy chiefly to be depended on; and afterwards purgatives should be given; acids and hyoscyamus may be employed to allay irritation. If these means do not succeed, the patient dies. Should the hemorrhage 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. 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 such 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 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 these diseases 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. I shall only remark, that the first thing to be done is to detract blood 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 an individual vertebra be painful on pressure, an issue over it may be required.

If the patient be seized with apoplexy, there is seldom any attempt made to expel the child,* and, in my own practice, I have never known that event take place. In eclampsia, on the contrary, if the paroxysm be protracted, there is generally 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. Whenever expulsive effects come on, we must conduct the labour according to the rules hereafter to be noticed, In some instances, palsy either succeeds an apoplectic attack, or follows headach and vertigo. This disease 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 gradually abates, or yields to appropriate remedies.

All headachs, however, do not forbode 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

* Mr. Wilson's case is an exception to this. Vide Med. Facts, Vol. V. p. 96.

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 habits, or in those who are naturally 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 generally is 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.

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.

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 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 very generally 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 accesion; but a greater and more universal effusion indicates a dangerous degree of irritation. 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 sensations 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 pot-ash, or sweet spirit of nitre. 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 woman 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 is 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 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 pot-ash, &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 never to be omitted. 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.

Ascites may have existed previously to pregnancy, and the two causes combined, may produce a very great enlargement of the belly. In this case, the uterus may be felt through the teguments, 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 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.

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 woman being unusually large at an early period of gestation, for generally by the seventh month, she is as big as she ought to be in the ninth. It is distinguished from ascites, by the 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 hemorrhage. 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 basons, 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 fœtus itself is often malformed, or at least blighted. The affection *in toto*, may be considered as a species of monstrous conception. Some particular condition of the parent may, however, in certain cases, occasion it. 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 a state of general or uterine debility; or with an original imperfection of the ova in the ovarium: for a woman may, without any apparent cause, have repeatedly this kind of pregnancy. All of these causes do not operate uniformly to the same extent; but the fœtus 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 begins.

If the liquor amnii be not increased greatly 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 venesec-

tion, and the use of laxatives, during pregnancy, may be of service, but frequently fail. Diuretics do no good. 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 is 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 the 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.* This practice is, however, generally improper, and is seldom requisite; pains usually coming on whenever the symptoms become severe. When the os uteri is considerably dilated by the pains, it may be proper to rupture the membranes, as has been advised by Puzos.

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 every instance, where the liquor amnii has been artificially evacuated, labour has taken place. But we can suppose, that the action 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 quan-

* Vide case by Noel Desmarais, in Recueil Period. Tome VI. p. 349. M. Baudelocque gives a memoir on this subject, in the same volume. Scarpa, also, seems to defend the paracentesis, but it is impossible to discover any superiority this has over the safer mode of introducing a catheter or tube, by the os uteri.

tity 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 even irregular pains have taken place, and yet the woman has gone to the full time.† These prove, as far as the nature of the case will admit of proof, that the water has 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 vessels or glands about the os uteri, if the woman be not careful, a hemorrhage 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 or vessels about the os 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 se-

* Vide Dr. Alexander's case, in Med. Comment. Vol. III. p. 187.

† Dr. Pentland relates a very distinct case, where the liquor was, in the third or fourth month, discharged in a fit of coughing. The belly fell, but she still went on to the full time, and had a good labour. Dublin Med. and Phys. Essays, No. I. art. 3.—I have known a discharge of water take place, at short intervals, for some weeks; and then the funis umbilicalis protruded, without any exertion, or any pains to rupture the membranes, which is a demonstration that the membranes had been previously open, and that the discharge of liquor did not speedily excite labour.

veral weeks before parturition. If care be not taken, this may be followed by hemorrhage.

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 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.

There is another cause of pain, which sometimes affects these muscles, but oftener those about the pelvis and hips. This seems to consist in a diminished power of the muscles, in consequence of the uterine action, and thus the fibres are not capable of the same exertion as formerly. 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, they may 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.

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, and sensibility of part of the abdominal muscles. Blood-letting and purgatives, followed by anodynes, and rubifacient applications, form the practice. If these fail, a blister applied to that part of the back which is on a line with, or a a little above, the seat of the pain, may be useful 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 be affected with spasm. This 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, 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 powerful doses of opium, either by the mouth, or as clysters; and this remedy must be repeated as often as necessary. When inflammation has taken place, the detraction of blood must be pushed farther, the semicupium 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.

SECTION THIRTIETH.

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-FIRST.

It is very usual for the navel of pregnant women to become 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.

In some cases, during gestation the fibres of the abdominal muscles separate, so that a ventral hernia is formed. 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 hernia, to be careful that compression be ap-

plied immediately after delivery, and also during the expulsion of the child. By neglecting this, syncope and uterine hemorrhage have been occasioned.

Herniæ 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.

SECTION THIRTY-SECOND.

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 immediately 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 glassfull every three hours, either alone or with a tablespoonful of saline julap. 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.

SECTION THIRTY-THIRD.

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.† We recognize retroversion of the uterus chiefly by its effects on the bladder, and also by difficulty in voiding the fæces; for although the patient may be distressed sometimes with tenesmus, she usually passes little at a time. 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 equal the pains of labour itself. These are much connected also with the state of the bladder, being most severe when it is distended, and generally abating in frequency and force, when the urine is evacuated. 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; and when we come to examine her, we find a tumour betwixt the rectum and vagina.‡ This

* 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 scirrhous. 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.

‡ 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.

is formed by the 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. This is a disease which we would 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 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, which I will notice in the conclusion of the section. In the one case it takes place more slowly, and it has been said that its progress could 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. Sometimes the urine dribbles away involuntary, or can be passed in small quantity, especially during the commencement of the disease; but often, within a few hours, it becomes almost completely obstructed, with pain about the loins, tenderness in the lower belly when it is touched, and a severe bearing-down sensation. The great danger proceeds from the distention‡ of the

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.

* Vide Mr. Giffard's case in Phil. Trans. Vol. XXXVI. p. 455. 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.

‡ In the case described by Dr. Hunter, Med. Obs. and Inq. Vol. IV. p.

bladder, which either bursts* or inflames,† and an opening takes place, in consequence 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, and do not believe that such a case can occur, 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 ;¶ occasionally the water is not quite obstructed, but

400, the bladder after death was found to be amazingly distended, but not ruptured.

* In Mr. Lynn's case, the bladder burst, 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 also gave way. Med. Review for 1801.

† 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.

‡ 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 fœtid 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

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,* which may be slightly curved, the concavity being directed to the sacrum; or we may employ an elastic catheter; but in general, the common instrument succeeds. If it do not pass easily, we may derive advantage from introducing the finger into the vagina, and endeavouring to depress the os uteri, or press back the vaginal tumour.† If the catheter cannot be introduced, we have been advised to tap the bladder;‡ but this, fortunately, is never requisite. I cannot conceive any case where a gum catheter could not be introduced. I certainly, as yet, have never met, under any circumstance, with such a difficulty.

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 catheter 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 alter the position of the uterus so much as to lessen the pressure on the orifice of the bladder. In this case, on getting up, a great quantity of urine has

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.

* A case is related by Mr. Ford, in which the catheter being allowed to slip into the bladder, produced a sinous ulcer. Med. Facts, Vol. I. p. 96.

† In Mr. Hooper's case, whenever the tumour was pressed back, the woman called out that she could now make water. Med. Obs. and Inq. Vol. V. p. 104.

‡ 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.

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; detract blood, if there be fever or restlessness; and give an anodyne injection, if there be strong bearing-down efforts. This is, in general, 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 at least morning and evening, or a gum catheter may be left in the bladder. By this plan we generally find, that the uterus 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, it is sufficient to empty the bladder regularly without making any attempt to push up the womb. But if the uterine tumour be very low, and near the perineum, it may be necessary, and certainly it is allowable, to 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 too keenly made, and that often more harm than good is done by them. It may be said, that although the immediate danger be done away by the regular use of the catheter, yet the womb may remain for ever in its malposition, and give rise to great difficulty in labour, or to

* 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.

the same event as in extra-uterine pregnancy. I can only reply, that in almost every instance where the bladder has been regularly emptied, the case has done well; and I do believe, that in those where the uterus did not rise spontaneously, very little good could have been done by mechanical efforts.

The attempt to replace the uterus is to be made by introducing the whole hand into the vagina. The uterine tumour is then to be pressed up slowly, firmly, and steadily; and this may sometimes be assisted by elevating the breech of the woman. Forcible and violent attempts are, however, to be strongly reprobated; they give great pain, and may even excite abortion, inflammation, or convulsions. They can only be justified on the principle of preventing a great 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. 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 fœtus can be felt by the finger through the uterus.

When the uterus ascends, occasionally a little blood is discharged;* but abortion does not take place unless much injury has been sustained. Thus the woman has miscarried quickly after the bladder had burst, 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,† followed by vomiting of dark coloured stuff. Abortion will generally take place, if the liquor amnii have been discharged.

* M. Roger's case, in Act. Havn. Tom. 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.

That the uterus does generally rise spontaneously, if the urine be regularly evacuated, 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, 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 will be very tedious and severe. The os uteri must 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;

* 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. Mrs. 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 perineum. 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.

† Vide New York Med. Rep. V. 40.

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 fœtal bones were discharged by the anus. She died in March.

In order to prevent retroversion, we must understand its cause, which most frequently, if not always, consists in distention of the bladder. But this may take place under two circumstances. First, the uterus may descend lower than usual. Its mouth and cervix fall downward and forward, the fundus lies back in the hollow of the sacrum, and the body is placed obliquely. It is indeed a simple case of prolapsus; but thereby pressure is made on the urinary passage, retention of urine is necessarily produced, the bladder is distended, and thus the os uteri is raised and drawn more forward, and retroversion gradually accomplished. In this case the primary cause is the pressure of the uterus on the urethra or bladder, and the bladder re-acts on the womb. Second, if the female retain the urine too long, the bladder is distended, and from its connexion with the uterus, must affect its position, whatever its former state may have been. The os uteri is elevated, and the fundus falls in the same proportion backward. Now in the unimpregnated state, the uterus is not sufficiently large to remain retroverted; and after the fourth month of pregnancy, the uterus is too heavy to be much raised by the bladder, and too large to fall into the pelvis. If, however, the pelvis be very wide, and the uterus have consequently been longer than usual of rising, it may be retroverted at a later period. It would appear that agitation, or violent exertion,* may cause this state to take place more readily than would otherwise happen; but whether concus-

* 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.

sion, or other circumstances, can produce retroversion, without some previous distention of the bladder, is not positively proved, though some facts favour the supposition.

Retroversion is sometimes, but not necessarily, followed by abortion. It has no influence in altering the presentation of the child.

The same woman has been known to have the uterus retroverted in two successive pregnancies.* Retroversion may also take place after delivery.

SECTION THIRTY-FOURTH.

The uterus is also sometimes antiverted, that is, the fundus is thrown forward, so as to compress the neck of the bladder, and its mouth is turned to the sacrum.† Of this accident I have never seen an instance during gestation, and, from the nature of the case, it must be very rare; but I have met with it from enlargement of the fundus uteri in the unimpregnated state. The urine should be evacuated, and the fundus raised up; but unless the cause of misplacement be removed, we can only do temporary good by this. We have little control over tumours seated in, or acting on the fundus uteri, and time often effects a change attributed to the physician, who has little in his power. Dr. Granville says, he cured one case, by astringent injections thrown into the vagina, and applying a compress above the pubis. The symptoms are, weight in the lower part of the belly, a desire to make water, but difficulty in doing so, the existence of a tumour near the pubis, the direction of the os uteri to the sacrum, and an impediment to the passage of the fæces, with bearing-down pains.

* Vide case by Dr. Senter, in Trans. of Phys. at Philadelphia, p. 130. Both times it was reduced by the hand.

† Vide Chambon, Malad. de la Grossesse, p. 16. M. Baudelocque relates a case from the practice of Choppart, where it was produced in the second month of pregnancy, by the action of an emetic. L'Art, &c. §. 255. Levret notices a case where the disease was mistaken for calculus, and the operation of lithotomy actually performed. Journ. de Med. T. IV. p. 269.

SECTION THIRTY-FIFTH.

Rupture of the gravid uterus may take place at any period of gestation. The moment of the accident is generally marked by severe pain, occasionally by vomiting, and frequently by a tendency to syncope, which, in some instances, continues for a length of time to be the most prominent symptom.* The pain sometimes resembles labour, but more frequently colic, and its duration is variable. In some cases, hemorrhage takes place from the vagina, but the greatest quantity of the blood† flows into the abdomen. At the time of the accident, and for a little thereafter, the child is felt to struggle violently. Then the motion ceases, the woman feels a weight in the belly, and if the pregnancy be far advanced, the members of the child can be traced through the abdominal parietes.‡ The tumour of the belly generally§ lessens, and milk is secreted, indicating the death of the child.

If hemorrhage, or peritoneal inflammation, do not quickly carry off the patient, we find, that at the end of some time, occasionally of the ninth month of gestation, pains like those of labour come on, which either gradually go off, and the child is retained for many years,‖ being inclosed in a kind of

* Vide Dr. Underwood's case, in Lond. Med. Journ. Vol. VII. p. 321.

† Sometimes the hemorrhage proves fatal. A singular case is to be met with in Medical Facts, Vol. III. p. 171, by Canestrini, where the woman had a double uterus. One of the uteri, after some pains, burst in the fourth month. The ovum was found entire in the abdomen, and much blood was effused.

‡ A twin case is related by Dr. J. Hamilton, where the uterus was so thin, that even the sutures of the head could be felt through the abdominal parietes. Violent pains were produced by the motion of the child, the uterus felt very light, and the woman had been exposed to a degree of violence. This case had a very considerable resemblance, in some respects, to a ruptured uterus, but she was delivered safely of two children. Cases, p. 124.

§ Sometimes the tumour rather increases. In Dr. Percival's case, the belly became much larger after the accident, and continued so for about a year. Then it subsided all at once, when the woman was in a recumbent posture. Med. Comment. Vol. II. p. 77.

‖ In Dr. Percival's case, the fœtus was retained for 22 years, and then discharged by the rectum.

cyst; or inflammation and abscess take place, and the child is discharged piece-meal.*

In some instances, it would appear, that the ovum may be expelled entire into the abdomen; and in that case, it is possible for the child to live for some time, and even to grow, although out of the uterus. When this happens, its motions are felt more freely and acutely than formerly. As the os uteri opens a little after the expulsion, and a sanguineous discharge takes place, 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 as-

* Dr. Drake's case, where the uterus seemed to burst in the fourth month terminated by suppuration at the navel. Excrement was for some time discharged at the opening. Phil. Trans. Vol. XLV. p. 121.—A washerwoman at Brest had the uterus ruptured by a fall in the seventh month, and ultimately expelled the fœtus at the navel. Mem. of Acad. of Sciences for 1709.—Guillerm, in the same work for 1706, mentions a woman who had the womb ruptured by a fall in the sixth month. She immediately fainted, and a discharge took place from the vagina. The child was expelled by the anus.—See also the cases by Dr. Percival, Mr. Wilson, &c.

† In the Journ. de Med. for 1780, there is a case of a woman, who had the uterus ruptured in the fourth month of pregnancy. The accident was followed by uterine hemorrhage, 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, beat natural, pulse 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 be-

sist materially in the diagnosis, between this and extra-uterine pregnancy existing from the first. The menses return, and though the belly does 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.†

Rupture of the uterus may be the consequence of mental agitation,‡ but in most cases it is owing to external violence.§

Three modes of treatment present themselves, when the uterus is ruptured during gestation, and previous to labour. To leave the case to nature; to deliver *per vias naturales;* and to perform the cæsarean operation. To dilate the os uteri forcibly, and thus extract the child, is a proposal so rash and hazardous, that I know none in the present day who would adopt it. I question if the woman could live till the deli-

tween the uterus and pubis. No distinct member can be felt through the abdominal parietes.

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.

* Vide Journ. de Med. Tom. V. p. 422.

† In the Journal 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 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.

‡ Dr. Percival's patient attributed her accident to a fright; Dr. Underwood's referred hers to mental agitation.

§ 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. Journal, Vol. VIII. p. 334.—Mr. Goodsir's patient to exertion. Annals of Med. Vol. VII. p. 412.—In the 5th and 6th volume 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. Other instances, if necessary, might be added.

very were accomplished. The cæsarean operation is safer, and in every respect preferable; but we cannot yet, from experience, determine its advantages, and certainly it ought not to be performed, unless we can thereby save the child, or the patient have reached an advanced period of pregnancy. The third proposal, therefore, to leave the case to nature, like an extra-uterine pregnancy, is most likely to be successful, more especially when the rupture happens in the early months of gestation. We find, from the result of cases, that the patient has the best chance of recovery, if we are satisfied with obviating symptoms, and removing inflammation in the first instance; and supporting the strength of the patient through the progress of the disease, should it not prove rapidly fatal; enjoining rest, giving mild diet, and favouring the expulsion of the bones, by poultices and fomentations, and, if necessary, by enlarging the abscess, if it point externally.

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.

SECTION THIRTY-SIXTH.

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 a uniform relation to each other in their degree. The first is productive of hemorrhage, the second of

pain; for the one is attended with rupture of vessels, the other 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, even before the fœtus or vesicular part of the ovum has descended into the uterus, or, at least, can be readily detected, and when the decidua only is formed. 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 hemorrhagic 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 vessels are very small, and are soon displaced, they cannot be detected in the discharge. Nothing but coagulum can be perceived; and this, as in other cases of uterine hemorrhage, 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 substance.

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 descended into the uterus, and 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. 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 hemorrhage appears.

If the uterus contain more vascular and organized matter, as in the beginning of the third month, the vesicle never escapes first; but 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 are 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 hemorrhage.

When the membranes come to occupy more of the uterus, and a still greater difference exists betwixt the placenta and decidua, we have again a change of the process; we have more bearing-down pain, and 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 fœtus 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 separating and confounding its different parts or layers. Retention of the secundines, when accompanied with considerable or repeated hemorrhage, very generally is dependant 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 fœtal 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 hemorrhage goes off, and is succeeded by a discharge, somewhat resembling the lochia.

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 has 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.

There is frequently, for a longer or shorter time before the commencement of abortion, a 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

* In all cases the placenta is retained much longer after the expulsion of the child in abortion, than in labour at the full time.

† In some cases, shooting pains and tension are felt in the breasts before abortion, and the patient is feverish.

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 hemorrhage 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 very apt to be attended with sickness, vomiting, and faintness.

I may only add, that, *cæteris paribus*, we shall find, that the farther the pregnancy is advanced beyond the third month, and 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

* 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.

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.

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 fœtid 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 fœtus, should diminish, and become in the first case merely sufficient to nourish the uterus; and in the second, to apply 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 fœtid sanies than red blood.

Abortion may very properly be divided into accidental and habitual. The exciting causes of the first class may, in ge-

neral, 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 pecular pre-disposing 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 pre-disposing 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 prin-

ciple 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; but the operation of cutting the indurated os uteri, which has been proposed, is seldom necessary. I have known one instance, in which 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

* "Per hanc vero consuetudinem nihil aliud intelligo, quam pravam vasorum uteri laxitatem et inde provenientem humorum stagnationem, ex abortiendi labore sæpius repetito inductam." Hoffman, Tom. iii. p. 180.

actions, should take place; but 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 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. In this case, it cannot perform its function 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 other functions. 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, open 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. But 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 a 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 diminished 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 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; but the size of the nerves of the uterus is not increased in proportion to the action; we must therefore 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 nerve 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 less to some other part.

This is the case with all organs whose action is increased, other parts being deprived in proportion as they are supplied, except when irritation raises 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 vigorous; 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 easily. 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 case, 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 re-act 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.

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 rises 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 instance, 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 doses of hyoscyamus or opium, 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 only 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. This action is sometimes so great, that the person feels weight in the region of the uterus, 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 has been effected, be undone.

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, 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 lodgment, 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 know that we have been told of instances where contraction, after beginning, stopped for several weeks. 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 os uteri, which has less to do with the action of gestation than any other part 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 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 commence. Whenever, then, at any period of pregnancy, we have paroxysms of pain in the back,* and region of the uterus, more especially if these be 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 sure that expulsion, though retarded, will 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 pain-

* 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.

ful sensations which may attend a threatened abortion, or which may be present, although there be no appearance of abortion; but it does not hold with regard to those regular pains proceeding from universal action of the uterine fibres; and we may save both ourselves and our patients some trouble, by keeping this in remembrance.

Seeing, then, that 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 mention 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 re-union.

Violent exercise, as dancing, for instance, or much walking, or the fatiguing dissipations of fashionable life, more especially in the earlier months, by affecting the circulation, may vary the distribution of blood in 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 muscles 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.* Even at a more advanced period, inconvenience will be produced upon the principle formerly mention-

* 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.

ed; 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 usually 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 the gland 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 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

* It has even been known, that, 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 has 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.

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 muscular system, is well known; and the uterus is 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 it is more probable when they have that effect, that it is owing to mental trepidation.

Emmenagogues, or acrid substances, such as savine and other irritating drugs, more especially those which tend to excite a considerable degree of vascular action, may produce abortion.

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;* hence emetics, strong purgatives, diuretics,

* 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 two 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 women 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 advanced, because then not only the uterus is more easily affected, but the fœtus 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.

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 had 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.

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. The piles ought, therefore, never to be neglected.

Tapping the ovum, by which the uterus collapses, and its

* Chronic inflammation of the heart is generally 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 most of these are 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 bed-time, for some time, premising 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, either from loss of blood, or spasm in the stomach, or convulsions. I knew one instance 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 hemorrhage 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.

When abortion is threatened, the process is very apt to go on to completion ; and it is only by interposing, before the expulsive efforts are 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 has 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, pro-

ducing a slight separation; because here the hemorrhage 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 hemorrhage, 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, or rather loose, which may be effected by drinking Cheltenham water, or taking some other laxative. We must not, however, carry this plan too far, nor make a sudden revolution in the constitu-

tion, 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 departed from. We may also derive so considerable advantage from conjoining with this plan, the shower-bath or sea-bathing, that they ought not to be omitted. 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, I suppose that nine-tenths of those 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.

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. The cold bath should be conjoined, and we may derive advantage by using the digitalis,* so as slightly to affect the pulse, keeping it at or below its natural frequency, and to diminish its throbbing. But it is not requisite to be given to the degree employed in some other complaints; and, if it be pushed to an imprudent length, the child may suffer. Half a grain may be given, twice or thrice a-day. It may be continued for two days, and then omitted for a day; and in this way it may be continued till the danger is past. In those cases where the digitalis produces feebleness, it is evidently improper to continue it regularly. Indeed, when this effect takes place, its further exhibition is unnecessary. It is also improper where it acts powerfully on the kidneys. By attending to these cautions, it may, in some cases requiring it, be continued with occasional omissions of a day or two, even for some weeks, but it is very seldom necessary to persist in it above a fortnight at most.

Injecting cold water into the vagina, twice or thrice a-day, has often a good effect, at the same time that we continue the shower-bath every morning. When there is much aching pain in the back, it is of service to apply 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 requisite that she live *absque marito*, at least until gestation be far 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 con-

* The acetite 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.

nected 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 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.

We also derive, in both cases, advantage from the daily use of the warm 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 the Bath waters, previous to conception, is often of service; or where the circumstances of the patient will not permit this, we may desire her to drink, morning and evening, a pint of tepid water, containing half a dram of sweet spirit of nitre. Throwing up into the vagina tepid salt-water twice or thrice a-day, seems also to have a good effect.

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 irritable. The tepid 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 injecting cold water often into the vagina, or pouring cold water every morning from a watering-can, upon the loins and ilia; at the same time we must attend to 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 relieve 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 aërated water. At other times the bowels yield, and the patient is obstinately costive. This is cured by aloetic pills, or manna, with the tartarite of potash. 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 bed-time, will be of most service.

It is evident, that it is only by attending minutely to the history of 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 affected.

General weakness is another condition giving rise to abor-

tion; 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 the Peruvian bark, and wearing flannel next the skin, constitute the most succesful 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 fœtus 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 of it 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 ob-

viate palpable predisposing causes of injury to the uterine functions.

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 general contraction of the uterine fibres is a criterion of this cessation.

Still, 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 the subsequent exhibition of an anodyne clyster, or a full dose of opium*, together

* Opiates are of signal benefit in this situation, and should seldom be omitted after venesection.

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 the 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 attention which is necessary at this period; but being persuaded that if this period be allowed to pass over with neglect, and contraction begins, 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 stops, 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 hemorrhage is necessary for its accomplishment, although it always attend 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 feeble in its functions. The same discharge 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, prescribe the prudent and occasional use of digitalis, and give an anodyne at bed-time, 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. A table spoonful of tincture of kino may be given three times daily. Styptic injections into the vagina, two or three times a-day, are of great benefit.

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 teazing 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 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 hemorrhage. 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; and if so a vein may be opened with advantage. This is not always the case, and therefore, unless the vessels 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 has 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 hemorrhage, unless they excite sickness, which is a different operation from that which

is expected from them. They are more useful in protracted, but moderate hemorrhage.

The application of cloths, dipped in cold water, to the back and external parts ought always to be had recourse to. If the digitalis have been exhibited, it assists that medicine in moderating the circulation. Even when trusted to alone, it lessens the action of the sanguiferous system, particularly of the uterine vessels. The introduction of a small piece of smooth ice into the vagina has been recommended, and has often a very speedy effect in retarding the hemorrhage, whilst it never, if properly managed, does any harm. A small snow-ball, wrapped in a bit of linen, will have the same effect; but neither of these must be continued so long as to produce pain, or much and prolonged shivering. The heat of the surface is also to be moderated, by having few bed-clothes, and a free circulation of cool air.

But the most effectual local method of stopping the hemorrhage is by plugging the vagina. This is best done by taking a pretty large piece of soft cloth, and dipping it in oil, and then wringing it gently. It is to be introduced with the finger, portion after portion, until the lower part of the vagina be well filled. The remainder is then to be pressed firmly on the orifice. This acts by giving the effused blood time to coagulate. It gives no pain; it produces no irritation; and those who condemn it, surely must either not have tried it or have 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 hemorrhage. 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

hemorrhage in the same way as when the plug has been used. This naturally points out the advantage of using the plug, together with the digitalis, as we thus produce coagulation at the mouth 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 by any astringent effect produced on the vessels.

The principal means, then, which we employ for restraining the hemorrhage, are bleeding, if the pulse be full and sharp; if not, we trust to the digitalis, combined with sulphuric acid, except in those cases already specified, as forbidding its use, in which we may substitute kino: to stuffing the vagina: to the application of cold to the external parts, keeping the heat of the body in general at a low temperature; and 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, if the patient desire any, 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 larger doses, they only postpone the evil, for they cannot check abortion after contraction has begun. 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 hemorrhage. By suspending for a time its action, it returns afterwards with more vigour and perfection, and finishes the process. But when the process is going on regularly, opiates will only tend to interfere with it, and prolong the complaint.

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 I am much inclined to consider it 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 better to trust to smart clysters, and restrain the hemorrhage by means of the plug. We thus have a greater likelihood of getting all the ovum off at once, and 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 hemorrhage 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 hemorrhage 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 briskly stimulate the rectum, and excite sympathetically the uterus. But if we be disappointed, or the symptoms urgent, the finger must be introduced within the uterus,* and the remains of the ovum slowly detached by very gentle motion; and we must be very careful not to endeavour to pull away the secundines until they be fully loosened, for we thus leave part behind, which sometimes gives a great deal of trouble; and further, if we rashly endeavour to extract, we irritate the uterus, and are apt to excite inflammation, or a train of hysterical, and sometimes fatal symptoms. It is these two circumstances which make me cautious in advising manual assistance; and fortunately, the proportion of cases requiring it is not great in abortion at an early period. When there is retention of the secundines, with repeated or continued discharge, and frequent but useless pains, with feeling of sickness or sinking, we may suspect that part of the uterus is contracting spasmodically round the upper portion of the placenta, whilst all the rest is detached. This state of the womb, known under the name of the hour-glass contraction, is frequent after delivery at the full time; but it is perhaps scarcely less so after abortion, and may be met with even at a very early period, and most probably is the cause of every obstinate, and especially every fatal, case. There are few instances of faintness or sinking, unless from extreme hemorrhage, which do not proceed from uterine spasm. If a smart clyster do not excite regular and efficient contraction, it is necessary to introduce the hand into the va-

* In some instances the half of the secundines will be found in the vagina, and the other half still in the uterus. In this case, all that is necessary is gently to bring them out.

gina, and with one or more fingers remove the secundines, and excite the womb to proper action. The part of the placenta retained in the upper division by the constriction, is sometimes not larger than a walnut, although the patient be three or four months pregnant. I most decidedly, in such cases, advise cautious extraction.

When part of the ovum is left, or the whole of the secundines are retained, for a considerable time, we have another danger besides hemorrhage; for, within a few days, putrefaction comes on, and much irritation is given to the system, until the fœtid substance be expelled. Sometimes, if gestation have not been far advanced, or the piece which is left be not very large, it continues to come away in small bits for many months; and during the whole time, the woman is languid, hysterical, and subject to irregularities of the menstrua, very often to obstruction.* But more frequently the symptoms are very acute; we have loss of appetite, prostration of strength, tumid or tender belly, frequent, small, and sharp pulse, hot and parched state of the skin of the hands and feet, nocturnal sweats, and various hysterical symptoms. The discharge from the vagina is abominably fœtid, and hemorrhage sometimes occurs to a violent degree. The treatment of this will hereafter be pointed out.

From these observations we may see, upon the one hand, the impropriety of allowing the secundines to remain too long in the uterus; and, on the other, the danger of making rash or unnecessary attempts to extract, by which we irritate the uterus, and tear the placenta, which is almost always productive of troublesome consequences. The mechanical removal of the placenta is effected with least trouble and smallest irritation, in those cases in which it is most required, namely, where it is entirely or nearly detached, but still retained by a spasmodic contraction round the upper part, whilst in those where there is adhesion, there is generally less occasion to

* I have been informed by Mr. Angus of a case where, in the third month, the fœtus was discharged, but the placenta was retained, and converted into hydatids. This did not prevent the woman from becoming again pregnant, and the second conception, apparently sound, at the fourth month was expelled, along with a great quantity of hydatids, and most alarming hemorrhage.

interfere, in the way of extraction, on account of the severity of the hemorrhage. I now return to the consideration of the usual progress of abortion. The stomach very soon suffers, and becomes debilitated, producing a general languor and feebleness, with a disposition to faint, which seems in abortion, to depend more upon this cause than directly upon loss of blood. Indeed, the hemorrhage produces both slighter and less permanent effects in abortion than at the full time, although less blood may have been lost in the latter, than in the former case, for the vessels are smaller and the discharge is not so sudden. There is still another cause for this; namely, that the action of the uterus is less in the early than in the late months. Now, we know that the effect of hemorrhage from any organ is, *cæteris paribus*, in proportion to its degree of action. Hence the discharge is less dangerous than at the full time, and still less in menorrhagia than in abortion.

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, is nevertheless beneficial, lessening the action of the vessels in the same way with digitalis, the use of which is improper when this condition is present. The strength of the pulse is much abated; sometimes it becomes slower; but in general remains much as formerly, in point of frequency; we are therefore not to be too anxious in removing this condition, which restrains hemorrhage; 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 hemorrhage 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 aërated water; or we may give a little peppermint

water, with fifteen 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 ether 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 forty drops of the tincture of hyoscyamus in two tea-spoonfuls of the compound tincture of lavender.

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 bark, 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.

SECTION THIRTY-SEVENTH.

Of all the incidents to which a pregnant woman is exposed, none is more alarming or troublesome than uterine hemorrhage, when it occurs in the advanced stages of gestation, or after the delivery of the child. This, from its extent and im-

petuosity, has aptly been called a flooding; and, from the frequency of its occurrence, it must be extremely interesting to every practitioner.

The ovum is connected to the uterus by means of a vast multitude of delicate vessels, which pass almost at every point from the one to the other. These vessels are large where the placenta is attached; smaller where they pass into the decidua.

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. When this happens, an extravasation or discharge must be the consequence, which will be greater or smaller in proportion to the number and magnitude of the vessels which have given way, and the strength of the action, which exists in the sanguiferous system.

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 hemorrhage, 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, and the paroxysm is for the present ended. This coagulation, in slight cases, may take place even without the intervention of faintness. Re-union, however, when the separation is extensive, and the coagulum considerable, cannot be expected to take place; and therefore when the clot loosens, a return of the hemorrhage 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 the whole surface of the womb pressing more strongly upon the ovum, a greater resistance will be given to the flow of the blood.

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 hemorrhage 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 tense, so that it feels hard 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 hemorrhage; because this contraction lessens the size of the vessels, and keeps up a firm 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 fugacious. On the other hand, the permanent contraction would 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 hemorrhage, 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 will be 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 hemorrhage whenever the cervix comes to be fully developed, and the mouth to open.

The vessels going to the placenta are much larger than those which enter the decidua; and 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 hemorrhage will appear. But sometimes, if it be fixed 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. But if the placenta be placed over the os uteri, then the case is different; profuse discharge will take place, sinking the whole system, and very much enfeebling the uterus itself, so that 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 structure 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, will 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 hemorrhage, the placenta will be found attached to the fundus uteri; and we cannot suppose that in all of these, the whole extent of the membranes, from the placenta to the os uteri, has been separated: yet this must happen before the discharge can in these circumstances appear. We can often account for the hemorrhage by supposing a portion of the decidua to be detached; and we know that the vessels about the cervix are sufficiently able to throw out a considerable quantity of blood, if their mouths be open. But in most cases of profuse hemorrhage, 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

* 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 hemorrhage 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.

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 firmer and tenser, as well as larger, the strength diminishes, and even faintings may come on. In course of time, weak slow 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 if no bad effect be produced, and the separation be not extensive, the accident may not be discerned or suspected, at least till after the child is born, when often a great quantity of blood is evacuated without affecting the pulse or strength, which it would do, did it come recently from the vessels of the uterus.

Let us next consider the causes giving rise to hemorrhage 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 fœtus 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

* Vide Albinus Acad. Annot. lib. I. p. 58. Recueil Periodique, tom. ii. p. 15. and tom. iii. p. 1.

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, will upon general principles be 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 exertions 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 irritation; 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 the cervix and os 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 hemorrhage 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 hemorrhage 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 os 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 os 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 hemorrhage. 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

* 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.

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 hemorrhage is renewed, and the patient may be lost if we do not interfere.

Some undue state of action about the os uteri, removing or ceasing to form that jelly which naturally ought to be secreted there, 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 hemorrhage, under certain circumstances, may prove fatal; and yet, upon dissection, no separation of the ovum be discovered, the discharge taking place from the vessels about 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.

* Vide a case in point, by M. Heinigke, in the first volume of Brewer's Bibl. Germ.

† So far as I have observed, uterine hemorrhage, 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 those hemorrhages, which are cured without delivery, proceed from the detachment 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 hemorrhage must take place. It is rare, however, for the accident to be postponed so long. In general, 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 hemorrhage 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.

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 betwixt them. But in this examination, we must recollect, that only a small portion of the edge of the placenta may present, and this may not readily be felt at first.

To conclude this part of the subject, I remark in general,

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.

that hemorrhage from the uterus is not merely arterial, but also veinous, 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 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 will take place, and the necessity of encouraging coagulation, which checks veinous still more readily than arterial hemorrhage.

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 hemorrhage, 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 hemorrhage, or by the repetition of the paroxysms, if this be allowed to take place, certain alterations highly important are taking place. There is much less blood circulating than formerly; and this blood, when the hemorrhage 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 languidly, 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 allow-

able, move in an inferior sphere. In this state, very slight additional injury will sink the system irreparably—very trifling causes will unhinge its actions, and render them irregular. If the debility be carried to a degree farther, no care can recruit the system—no means can renew the vigour of the uterus. We may stop the hemorrhage, but recovery will not take place. We may deliver the child, but the womb will not contract. If when the system is debilitated by hemorrhage, some irritation be conjoined, then the muscular action becomes more or less irregular, and an approximation is made to a state of fever. 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 hemorrhage. 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.

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 hemorrhage generally leaves the patient in a state of simple weakness; but if the discharge be allowed to be frequently conjoined, and the case thus protracted, some irritation often comes to be produced, which adds to the danger, and excites, if the patient be not delivered, more speedy returns.

A woman seldom suffers much in a first attack of hemorrhage. If she be stout and plethoric, she may lose a great quantity of blood, and yet, to appearance, not be greatly injured. The hemorrhage may come on in every different situation; in bed she may awake suddenly from a dream, and feel herself swimming in blood; or it may attack her 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. 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 hemorrhage 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 hemorrhage may never have entirely ceased, continuing for a day or two like a flow of the menses, and then being suddenly increased, or flowing in a torrent. But although this state 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 hemorrhage 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 find her voice good and generally the intellect clear. The hemorrhage has, perhaps, stopped, and a young man would suppose it still possible for her to recover. But although not a drop of blood is 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 hemorrhage, 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 placenta is generally separated, sometimes to a very considerable extent, and a re-union, without which the woman can never be secure against another attack, can rarely be expected. If the placenta present, the hemorrhage, although suspended, will yet to a certainty return, and few shall survive if the child be not delivered.

But in those cases where only a portion of the decidua, or

a little bit of the margin of the placenta* 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 hemorrhage 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 hemorrhages 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 hemorrhages, 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 diminishes 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

* In this case, after labour is over, we may discover the separated portion by the difference of colour; it is generally browner and softer than the rest.

a hemorrhage, 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 hemorrhage, 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—she calls 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 hemorrhage, 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 flooding, we find, that during the paroxysm, the pulse flags, and the person becomes faint. Complete 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 hemorrhage 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 hemorrhages may be cured; but without it, no woman can be safe. Even after the immediate alarm of the attack is over, the woman 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 hemorrhage.

The immediate alarm from the flooding having subsided, the patient often expresses herself as more apprehensive of a premature labour, than of the hemorrhage, 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 hemorrhage be renewed. There is no disease to which the practitioner can be called, in which he has greater responsibility than in uterine hemorrhage. 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 intreat, 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 of 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 hemorrhage, 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 hemorrhage 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

* 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 hemorrhage.

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 hemorrhage.

The first remedy which, upon a general principle, offers itself to our attention, is blood-letting. In those cases, where the attack has been produced by over-action of the vessels, 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. By the timely and decided use of the lancet, much distress may be avoided, and both the mother and the child may be saved from danger. But we are not to apply the remedy for one state to every condition; we must have regard to the cause, and consider how far the hemorrhage 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, venesection is not indicated. We have in these cases, which are, I believe, 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 in the disease in question. 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 rupture of vessels has been 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 by sponging over the legs, arms, and even the trunk, with any cold fluid;

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 in all its vigour: 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 much below the natural standard, the vigorous application of cold might 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 hemorrhages, 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 hemorrhage 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 hemorrhage. 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.

Plugging the vagina with a soft handkerchief,* answers every purpose which can be expected from them; 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 or 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 or 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, 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

* 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, T. 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 the mouth. T. II. p. 404.

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 hemorrhage 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 hemorrhage, when the os uteri is firm, and manual interference is improper, I know of no method more safe or more effectual for restraining the hemorrhage and preserving the patient. But when the hemorrhage 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 hemorrhage from appearing outwardly; but there have been instances, and these instances 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 hemorrhage, 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,

* Vide Dr. Johnson's System of Midwifery, p. 157. and Dr. Leak's Diseases of Women, Vol. II. p. 280.

it is our object to confine the liquor amnii as much as possible, until we turn the child. Blood may also collect in the upper part of the vagina, to a dangerous quantity, when the plug has been trusted to, too late. At a very early period, I do not think there is much 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.

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 hemorrhage does not depend on plethora, the exhibition of a full dose of laudanum, which tranquillises the patient, allays irritation, and checks, for the time, the discharge.

Such are the most effectual methods of speedily or immediately stopping the violence ef the hemorrhage, 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 hemorrhage, 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 circum-

stances conclude, that the vessels which have given way 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 forms new vessels to supply the place of those which have been torn, and whether re-union be effected by the incorporation of those with corresponding vessels from the chorion. In the early months we know that re-union may take place; but when, in the advanced period of pregnancy, the decidua has become very thin, soft, and almost gelatinous, it is not established 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 when the injury is not extensive. The means for promoting re-union of the uterus and decidua, are the same with those which we employ for preventing a return of the hemorrhage; and these we advise, even when we have little hope of effecting re-union, and making the patient go to the full time, because it is our object to prevent as much as possible the loss of blood.

When the placenta is partly separated, all the facts of which we are in possession, are against the opinion that re-union 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 down, 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 hemorrhages 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 will appear, if we consider, among other circumstances, that when a patient has had an attack of flood-

ing, a surprise, or any agitation which can give a temporary acceleration to the circulation, will 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 risk of a renewal of the bleeding; and in several cases, as, for example, in hemoptysis, 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 hemorrhage; 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 hemorrhage 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 hemorrhage? 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 hemorrhage from the lungs? and can nourishing diet and motion be proper in hemorrhage 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 would 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 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

* Such as animal 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.

† 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 should attempt to prevent this by stimulating the system, would only hasten the fatal termination. Does not heat overpower and destroy those parts which have been frost-bit?

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 hemorrhage, to cure our patient with less expense of blood than we could otherwise do. Digitalis is of this class. Acetite 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 with confidence a reliance on either of these.

At the same time that we thus 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 carefully 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 hemorrhage again.

Uneasiness about the bladder or rectum, or even in more distant parts, should be immediately checked; for in many cases hemorrhage is renewed by these irritations. In those 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 an adequate

dose of tincture of opium will 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 is necessary before the anodyne be administered, and the digitalis may either succeed the opiate or be omitted, according to the state of the pulse and of the stomach.

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 hemorrhage. 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 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.

Complete syncope is extremely alarming to the bye-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,

* 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 hemorrhage, and therefore ought not to be too rapidly removed, in a first attack, and before the os uteri has become dilatable.

for although faintness be a natural mean of checking hemorrhage, yet absolute and 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 sixty or eighty 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 hemorrhage 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 deliquium, 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. It proceeds very generally from 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 hemorrhage; but sometimes it seems fortunately to excite the contraction of the uterus, and gives 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; or give two grains of solid opium, or even more, if the weakness be great. Sometimes a little infusion of capsicum is of service. It should just be gently pungent. 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 fœtid 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 does not necessarily indicate that the hemorrhage does not proceed from separation

* The quantity of blood lost is sometimes so great as to do irreparable injury to the heart, and ever after to impede 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.

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 of giving, a quarter of an hour before I begin, 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; and the practitioner will do well to remember, that he shall succeed best when he rather acts so as 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 dilation 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, or 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. 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 ruptured, the hand introduced, the child slowly turned and delivered, as in footling cases; endeavouring rather to have the child *expelled* by uterine contraction than *brought away* by the hand. Hasty extraction is dangerous, for the uterus will 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 not begin to deliver until we perceive that the womb is contracting. The delivery must be but slow until the breech is 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, and gently 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 upon no account are we to separate the placenta and extract 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 hemorrhage. 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.

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 hemorrhage, 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 hemorrhage, 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 dilatable. 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 plug the os uteri itself, which will excite extraction. 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.

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 plug, 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 those 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 he 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 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 hemorrhage, 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 artificial delivery.

But it may happen that we have not had an opportunity of restraining the hemorrhage 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 strength.

* We are not to confine our attention to the quantity which has been lost, but

Hemorrhage 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 hemorrhage, 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 hemorrhage 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 hemorrhage 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 hemorrhage, I hope it will not be imagined by the student that I wish to make him 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, nor acquainted with the sound principles of physiology, had no fixed rule relating to delivery, but endeavoured to empty the uterus early; but it was uniformly a remark, that those women died who had the os uteri firm and hard.* What is this but to declare, that the rash and premature operation is fatal? It is an axiom which should be deeply engraved on the memory of the accoucheur, and which should constantly influence his conduct. Pain and suffering are the immediate

to the effect it has produced; and this will *ceteris paribus* be great in proportion as the hemorrhage has been sudden.

* Vide the Works of Mauriceau, Peu, &c.

consequence of the practice; whilst a repetition of the flooding after delivery, or the accession of inflammation, are the messengers of death.

It was the fatal cansequence of this blind practice that suggested to M. Puzos the propriety of puncturing the membranes, and thus endeavouring to excite labour. His reasoning was ingenious; his proposal was a material improvement on the practice which then prevailed. The ease of the operation, and its occasional success, recommend it to our notice; but experience has now determined that it cannot be relied on, and that it may be dispensed with. If we use it early, and on the first attack, we do not know when the contraction may be established; for even in a healthy uterus, when we use it on account of a deformed pelvis, it is sometimes several days before labour be produced. We cannot say what may take place in the interval. The uterus being slacker, the hemorrhage is more 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 will, without any other operation, safely restrain hemorrhage, 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

* The ingenious M. 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 conseilant 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 series par l'effect de cette même pratique." Leçons sur les pertes de sang, p. 45.

has been observed, in objection to this, by Dr. Denman,* that if turning be 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 yet not be acting so briskly as to restrain flooding: nothing but brisk contraction can save a 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, 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 will be proper to rupture them, if we have reason to think that a slight stimulus to the uterus would renew its action: and in determining this, the practitioner must be influenced by the previous discharge; for if the uterus have been much reduced by it 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 stimulate in the necessary degree, and finish the process with safety, than to a method, which is much more uncertain and less under our command.†

The proposal of M. Puzos then will, if this reasoning be just, be 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.

* Introduction to the Practice of Midwifery, Vol. II. p. 310.

† 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.

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 very continuance of the ovum within it is more than it can bear. The general system is completely exhausted, and cannot support its condition long. 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 two days, we may 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, we may prevent a great loss. When to these considerations we

* The use of the plug cannot here certainly prevent the farther loss of blood, for the uterus affords no resistance, the hemorrhage continues, and after death large coagula will be found within the womb.

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 formerly advised; and afterwards, twenty drops of the same medicine are to be given at stated intervals, in order to support the strength. In the course of two days, several hundred drops may be given, without affecting the head, or producing stupor; 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. This practice does not rest on my own experience alone, but is corroborated also by that of Dr. Hamilton, the justly celebrated Professor of Midwifery in Edinburgh. 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 a firm bandage applied over the abdomen, in order to support the muscles and contained viscera; and this is a precaution which never ought to be omitted.

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 and M. Levret * were among the first who established it as a rule that the placenta did not fall down, but was from the first implanted over the os uteri: and the latter gentleman published a very concise and accurate view of the treatment to be pursued. Mr. Rigby, of Nor-

wich, afterwards published an abstract of the doctrine of Puzos and Levret, with the addition of some 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 completely developed and expanded; and in the ninth month, very little distance intervenes betwixt the ovum and the lips of the os uteri. These changes cannot easily take place without a rupture of some of the connecting vessels; for either the placenta does not 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 about the os uteri, produces a rupture.

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. But whether the separation happens in the seventh, eighth, or ninth month, the consequent hemorrhage is always profuse, and the effects 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 hemorrhage 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, the

* Je m'engage a prouver 1mo. que le placenta s'implante quelquefois sur la circonference de l'orifice de la matrice; c'est-a-dire, sur celui qui du col va joindre l'interieur 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 3tio. Qu'il n'y a pas de voye plus sure pour remedier a cet accident urgent que de fair l'accouchement forcé.—L'art des Accouchemens, p. 343.

† In some cases, hemorrhage 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.

woman 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.

If the os uteri be firm and close in a first attack, we ought to use the plug, which will restrain the hemorrhage, and insure the present safety of the patient. If this practice have been immediately followed, she shall in general soon recover; and the length of time for 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; but the moment that they are produced, we ought to deliver; and 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 consequence of dangerous hemorrhage, 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.

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 hemorrhage, 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 hemorrhage, 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 was 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 woman. But whenever we find the os uteri softer, and in any degree more open than in its usual state before labour, admitting the finger to be introduced easily within it, we may deliver safely; and if the hemorrhage 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 hemorrhage 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; and if the hemorrhage be not considerable, he will even, if the state of the patient allow him, wait until slight pains have appeared, or the os uteri begin sensibly to open without them; for he will recollect, that 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, who 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

* 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 hemorrhage. T. II. p. 404.

whenever this is necessary, it is easy, the os uteri yielding to his cautious endeavours.

But very frequently we are not 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 the lymph 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 those cases the rule is the same. We pass by the placenta to the membranes, rupture them,* and turn the child, delivering 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 cure the flooding, and carry the patient to the full time; and in those cases, which are indeed the most numerous, where this cannot 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 conducting the woman safely to the full time. We have no ground to look to contraction or labour pains as a mean of safety; for, on the contrary, every effort to dilate the

* This is much safer for the child than pushing the hand through the placenta; and it is equally advantageous for the mother, and easy to the operator

os uteri separates still more the placenta, and increases the hemorrhage.* The very circumstance which in some other cases would save the patient, will 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 will be very much to blame." I do not mean from this to say, that we are

* The greatest number of profuse or alarming hemorrhages 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. ccxxxviii. and ccxxxix.

‡ Most of those who have met with such cases, do not seem to count much upon them.

to blame, in every instance, the accoucheur who 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 hemorrhage, 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-EIGHTH.

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, shifting their place, and being 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 from 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 diarrhœa; 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.

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 la-

bour; 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 altogether off 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 perineal 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 By letting her alone, she most likely will have a continuance of pain, terminating, it is true, in labour, but the process will be tedious and fatiguing; whereas, by suspending the action by an opiate, and if necessary by venesection, 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 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 re-

lieves the musculur 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.

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 or 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.

BOOK II.

OF PARTURITION.

CHAP. I.

Of the Classification of Labours.

LABOUR may be defined to be the expulsive effort made by the uterus for the birth of the child, after it has acquired such a degree of maturity, as to give it a chance of living independently of its uterine appendages.

I propose to divide labours into seven classes; but I do not consider the classification to be of great importance, nor one mode of arrangement much better than another, for the purpose of practice, provided proper definitions be given, and plain rules delivered, applicable to the different cases.

The Classes which I propose to explain are,

CLASS I. *Natural Labour*, which I define to be labour taking place at the end of the ninth month of pregnancy; the child presenting nearly the central portion of the sagittal suture, and the forehead being directed at first toward the sacro-iliac symphysis; a due proportion existing betwixt the size of the head, and the capacity of the pelvis: the pains being regular and effective; the process not continuing beyond twenty-four hours, seldom above twelve, and very often not for six. No morbid affection supervening, capable of preventing delivery, or endangering the life of the woman.

This comprehends only one order.

CLASS II. *Premature Labour*, or labour taking place considerably before the completion of the usual period of utero-gestation, but yet not so early as necessarily to prevent the child from surviving.

This comprehends only one order.

CLASS III. *Preternatural Labours*, or those in which the presentation, or position of the child is different from that which occurs in natural labour; or in which the uterus contains a plurality of children, or monsters.

This comprehends seven orders.

Order 1. Presentation of the breech.

Order 2. Presentation of the inferior extremities.

Order 3. Presentation of the superior extremities.

Order 4. Presentation of the back, belly, or sides of the child.

Order 5. Malposition of the head.

Order 6. Presentation of the funis.

Order 7. Plurality of children, or monsters.

Class IV. *Tedious Labour*, or labour protracted beyond the usual duration; the delay not caused by the malposition of the child, and the process capable of being finished safely, without the use of extracting instruments.

This comprehends two orders.

Order 1. Where the delay proceeds from some imperfection or irregularity of the muscular action.

Order 2. Where it is dependent principally on some mechanical impediment.

Class V. *Laborious or Instrumental Labour;* labour which cannot be completed without the use of extracting instruments; or altering the proportion betwixt the size of the child, and the capacity of the pelvis.

This comprehends two orders.

Order 1. The case admitting the use of such iustruments as do not necessarily destroy the child.

Order 2. The obstacle to delivery being so great, as to require that the life of the child should be sacrificed for the safety of the mother.

Class VI. *Impracticable Labour;* labour in which the child, even when reduced in size, cannot pass through the pelvis.

This comprehends only one order.

Class VII. *Complicated Labour;* labour attended with some dangerous or troublesome accident or disease, connected in particular instances with the process of parturition.

This comprehends six orders.

Order 1. Labour complicated with uterine hemorrhage.

Order 2. Labour complicated with hemorrhage from other organs.

Order 3. Labour complicated with syncope.

Order 4. Labour complicated with convulsions.

Order 5. Labour complicated with rupture of the uterus.

Order 6. Labour complicated with suppression of urine, or rupture of the bladder.

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 1897 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 breach; 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 towards the pubis. Nine, or one in 210, had uterine hemorrhage 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. Nägele, in the hospital of Heidelberg, out of 263 cases there were four twins; 256 children presented the head; and two of those the face; 5 the breach; 3 the feet; 1 the arm; 1 the breast; 1 the hip. Hence, 1 in 26 cases was preternatural.

* 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 10387 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 hemorrhage 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. p. 367. See farther the report of the Westminster Hospital by Dr. Granville.

At Dresden, out of 221 labours, the vertex presented in 211, the face in 5, the breech in 3, and the feet in 1.

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 observe certain precursory signs, which appear sometimes 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 she 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 point to be gained is the expulsion of the child itself: and last of all, the fœtal 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 different 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 very drowsy, but at other times is 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 chilness; 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 do not generally precede the uterine pain, but may be almost synchronous in their attack: in other cases, they do not appear until the pain have lasted for a short space of time; but whenever they do come on, 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 vary from a gentle tremor to a concussion 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 of 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 rigours, 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. In consequence, partly of these feelings, partly of the anxiety and solitude 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, is apt to become desponding, and sometimes 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, sometimes not.

The os uteri being considerably dilated, the second stage begins. The pains become different, they are felt lower down, they are more protracted, and 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; the woman 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 outward, and the labia are put upon the stretch. The protrusion of the perinæum gradually increases, but it is not constant: for when the pain goes off, the head generally recedes a little, and the perinæum is relaxed. Presently the head descends so low, that the parts are kept permanently on the stretch, and the anus is carried forward. Then the vertex pressing forward, the labia are elongated, and the orifice of the vagina dilated. The perinæum is very thin, much stretched, and spread over the head of the child. As

the head passes out, the perinæum goes back over the forehead, becoming narrower, but still more distended laterally. If the perinæum did not move backward, as the head moved forward, it would run a greater risk of being torn; and indeed even in the most regularly conducted labour, a part of it is often rent. 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 expulsion of the body is generally accomplished 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, by a very slight degree of pain, which is consequent to that contraction which is necessary for the expulsion of the placenta. This expulsion is accompanied and preceded by a slight discharge of blood, which is continued, but in decreasing quantity, for a few days, under the name of the red lochia.

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 24 hours after the first attack of pain, provided the pains be truly uterine, and are continued regularly; for occasionally, after being repeated two or three times, they become suspended, and the person 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 12 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 are sure that they are in labour, and feel themselves becoming worse. As the celerity of the process cannot be previously determined, many women thus bear their children alone, becoming rapidly and unexpectedly worse. On an average, it will be found, that in natural labour, the accoucheur is not called above four hours previous to delivery.

The regularity and comparative length of the different stages is also various ; but it will be generally 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 debility 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 labours 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 this is not the case, for in a great majority of cases, the pelvis is so proportioned, as to permit the head to pass with great facility. The pain and difficulty attending the expulsion of the child in natural labour, are to be attributed to the forcible contraction of the sensible fibres of the uterus, and to the dilatation of the os uteri and vulva, in consequence thereof. Women will therefore, *ceteris paribus*, suffer in proportion 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

* "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."—Crantz's History of Greenland, Vol. I. p. 161.

Long tells us, that the American Indians, as soon as they bear a child, go into the water and immerse it. One evening he asked an Indian where his wife was; "he supposed she had gone into the woods, to set a collar for a partridge." In about an hour she returned with a new-born infant in her arms, and coming up to me, said, in Chippoway, "Oway saggonash payshik shomagonish;" or, "Here, Englishman, is a young warrior." Travels, p. 59.

"Comme les accouchemens sons tres-aises en Perse, de meme que dans les autres pais chauds de l'Orient, il n'y a point de sages femmes. Les parentes agées et les plus graves, font cet office, mais comme il n'y a gueres de vieilles matrones dans le harm, on en fait venir dehors dans le besoin." Voyages de M. Chardin, Tom. VI. 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

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 occasionally meet with instances of labour making great progress with scarcely any pain, and I have even known cases when 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 child may be born before the patient can be got into bed, or removed from the night-chair, if she had been at stool. 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

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.

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 fore finger is to be introduced. It never ought to be carried to the fore part of the vulva, and from that back to the vagina. The introduction is to be accomplished as speedily and gently as possible, and the greatest delicacy must be observed. The information which we wish to procure is then to be obtained by a very 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.†

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 will 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 not understanding the importance of procuring early information of their condition, are

* 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.

† This mark has been properly insisted on by Mr. Power in his ingenious Treatise on Midwifery, p. 25.

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. 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 bed-clothes, 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 whilst 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 it is dilated, and the position of the head with regard to different parts of the pelvis.

Before labour begins, the os uteri is generally closed, and directed backwards towards the sacrum. 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 fore part 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. 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 protuberant; in others, thin and tubulated; sometimes it is not prominent, 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 both 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, espe-

cially 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, the os uteri, 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; 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

* 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.

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 perineum, the membranes protrude the perineum, 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 a universal occurrence; for in numerous instances the membranes protrude very little, and scarcely form a perceptible bag in the vagina. When the pain s 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 feebleness 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 time.

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. The finger can easily ascertain the sagittal, and afterwards the lambdoidal suture; the central portion of the sagittal suture is the point from which we set out, and, if the finger be readily led to the angle formed by the posterior edges of the parietal bones, we may be sure that the presentation is favourable. If, on the other hand, we can feel the anterior fontanelle, the vertex is generally directed to the sacro-iliac articulation. 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.

In proportion as the head descends in the pelvis, the vertex is turned forward; so that, when the whole head has entered the pelvis, the face is thrown into the hollow of the sacrum, and the sagittal suture rests on the perineum, whilst the occiput is placed under the symphysis pubis, or on its inside. This takes place earlier in one case than in another.

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 perineum 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 perineum, it may yet 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 perineum become stretched, and the anus be carried forward a little during the pain, we may expect that delivery is at hand. If the woman have already born children, the child is sometimes delivered within a few minutes after the perineum is first felt to become full.

When the pelvis is well formed, the head generally descends without much change of the scalp; but when it is contracted, or the head rests long on the perineum, the scalp is either wrinkled, or protruded 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 it, together with the head, 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 cervix beginning to turn round, 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 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 always slow and severe.

When the head is brought so low as to protrude the perineum, 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, but it recedes completely thereafter, it is likely that the delivery of the head will be difficult 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 in-

terrupted 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, hemorrhage 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 no great 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 perineum, 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 farther to remark, that often a mistake is committed in 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 re-

lax 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. Blood-letting 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 is 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 uppermost, 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 a 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 bed-clothes, must be determined by the woman 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 good 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; and 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 women 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 for that purpose, 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; 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. The knees are a little drawn up, and generally at this time 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 too strong 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 evacuation of the water is always hurtful; for there are circumstances in which it may be allowable and 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 few pains at farthest, give way; but by rupturing them we can take precautions to keep the person dry, and more comfortable than she would 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 a useful rule to adhere to, 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 scissars, 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 perineum; 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 rapid delivery of the head, and the consequent laceration of the perineum. 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 perineum 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 perineum 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 individuals may be, to whom it is to happen. We may decidedly say, that the perineum is torn in consequence of distention; but in every delivery, the perineum must be distended, and in some to a great degree. In proportion to the facility of the distention, and the ease with which the vagina dilates, is the risk of laceration diminished. It has, therefore, become a practical rule, to resist, with the hand placed on the perineum, 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 perineum have been perforated by the head, which did not pass through the orifice of the vagina, yet usually, the rent begins at the fourchette and proceeds backwards to a greater or less degree. In every case, the fourchette, and a small part of the posterior surface of the vagina, are lacerated, though the integuments of the perineum remain sound. By firmly supporting the perineum, 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 perineum relaxing, we may generally prevent laceration; and therefore this accident will seldom if ever happen in the hands of a prudent practitioner. Still it is possible for the perineum 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 is 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 perineum unexpectedly lacerates at the time when it is supposed to be in a favourable state. As there must be some point where the resistance must stop, else the labour would be unnecessarily protracted, or perhaps even the uterus ruptured, 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 perineum, 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 perineum to be torn.

It is not sufficient that the practitioner support the perineum, 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 perineum, and even the face moving along it, may produce injury. After the head is delivered it is still necessary to place the hand under the chin, and on the perineum, 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

* Dr. Denman, a most worthy and experienced practitioner, with a candour which does him honour, acknowledges, that from this cause the accident occurred in his own practice.

forwards. But there is no occasion that the child should be carried forward betwixt the thighs, for, in a natural labour, the back of the child is directed to the thighs; he can easily bend, and will naturally so incline himself in the delivery, as to take the proper direction. The last advice to be 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 some minutes. 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, examining 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, and 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 press gently on the belly, 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 woman for a discharge of blood. But hemorrhage 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, 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 hemorrhage supervene.

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, or 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, hemorrhage is very likely to occur. If it still adhere to the uterus, the risk of hemorrhage certainly is diminished, for those vessels alone, which opened on the de-

cidua, 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 hemorrhage.* But this, although a dreadful 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 hemorrhage, or if rashly performed, by inversion of the womb. The practice then, I think, may be comprised in two directions:—First, that we ought never to leave the bed-room, until the placenta be expelled; and, secondly, that if it be not excluded within an hour after delivery, we ought 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 less 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

* Mr. Whyte has, in his Treatise on the Management of Pregnant and Lying-in Women, p. 507, related several cases where the practice of leaving the placenta to be expelled by nature alone, was productive of fatal hemorrhage; and in one instance, this event took place, although the placenta was at last expelled.

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 persisted in, they generally 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 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. Opiates have been proposed to remove this spasm, and render the introduction of the hand unnecessary;

they seldom, however, succeed alone, but given in a full dose they make the manual attempt more easy. Sometimes the sudden application of a cloth, dipped in cold water, to the belly, has the same effect. A retention of the placenta from spasm, is rarely a simple consideration, for in the majority of instances it is attended with hemorrhage, 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 structure, 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 hemorrhage. 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 finger 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

* Dr. Smellie relates two cases of this kind. In the first, he brought away the indurated portion, but the woman died from hemorrhage. 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.

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 putrid state in forty-eight hours. Sometimes the placenta adheres when it is unusually tender and soft, and then we must, with peculiar care, avoid hasty efforts, by which the placenta would be lacerated, and part left behind, which would 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.

CHAP. III.

Of Premature Labour.

When a woman bears a child in the seventh or eighth months of pregnancy, she is said to have a premature labour; and this process forms 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, be expanded by muscular action, before the os uteri can be properly dilated; and 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 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 attended with more sanguineous discharge; and if the woman move much, or exert herself, considerable hemorrhage 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 rigidity of the uterine fibres. Certain general conditions of the system render the operation of these causes more easy, such as plethora, debility, and great irritability. 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 rigidity of the uterine fibres, or of the abdominal muscles, tepid fomentations, gentle laxatives, and repeated small bleedings, 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 will not be improper. The patient must avoid much motion, lest hemorrhage 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, little or no effect being 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, 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 gently the uterine region after delivery. If the placenta be long retained, or hemorrhage 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; or we may 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 redundance 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 to be 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.

CHAP. IV.

Of Preternatural Labour.

VARIOUS signs have been enumerated, by which it was supposed, that malposition of the child might be discovered antecedent 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; have all been mentioned as indicating this, but are all, even when taken collectively, uncertain tokens. We cannot determine the presentation, until labour have begun. 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 seems to recede, but afterwards returns to its proper position. When labour begins, we may generally distinguish the head by its proper character; 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

* 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.

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 presentation, 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.

ORDER FIRST.

The breech is distinguished by its size and fleshy feel, by the tuberosity 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.† 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. Before the membranes burst, the presentation is usually very mobile, and bounds up readily from the finger; but in some instances it is from the first firmly pressed down in the pelvis, and felt through the uterus very much resembling the head.

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 has passed the external parts.

The breech, and consequently the body of the child, may vary in its position with regard to the mother; but there are

* 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. 90.

† A discharge of liquor amnii, apparently coloured with meconium, is no proof that the breech presents, neither is it a sign that the child is dead.

chiefly two situations requiring our attention, because the rest are ultimately 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. 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 will also be turned toward the pubis, and cannot clear its arch so easily as the vertex.

When the thighs are directed to the back part of the pelvis, we find that the process of delivery is as follows: The breech generally descends obliquely, one tuberosity being lower than the other. The lowest one follows the same turns as the vertex does in natural labour, and observes the same relation to the axis of the brim and outlet of the pelvis. The breech is expelled with one side to the symphysis of the pubis, and the other to the coccyx; and after the presenting tuberosity protrudes under the arch of the pubis, the other clears the perineum, like the face in natural labour. Whilst the breech is protruding, it gradually turns a little round, so that the shoulders of the child come to pass the brim diagonally, the diameter from the acetabulum to the sacro-iliac junction being the greatest. 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, and the head alone enters the cavity of the pelvis. The face turns into the hollow of the sacrum, and the chin tends towards the breast of the child. Then it clears the perineum, which slips over the face, and the vertex comes last of all from under the pubis. If, however, the chin be folded down on the breast, before the head has descended into the pelvis, then, from the unfavourable way in which it enters the brim, there may be some difficulty to the passage, for it in some respects resembles a

presentation of the face. The hand should be introduced, and the face pressed up. In one case, Dr. Smellie found so much difficulty, that he applied the crotchet on the clavicle.

Now the management of this labour is very simple. Whilst the breech is coming forth, the perineum is to be supported, and nothing more is to be done till the knees are 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 perineum 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, we introduce a finger, and gently bring down first one, and then the other, using no force, lest the bone should break. The perineum is also 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. To guard the perineum, the hand must be applied on it, and the body of the child moved near the thighs of the mother, that the vertix 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 pass so easily 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. The first symptom of danger is a convulsive jerk of the body, and if the head be not speedily brought 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 cannot live long, if it be not delivered, as the function of the placenta is soon destroyed, that organ being often entirely detached from the womb, following the head whenever it is born.

When the thighs, in breech cases, are directed to the pubis or acetabulum, then the face cannot turn in to the hollow of the sacrum. It rests for some time on the pubis, and it comes out with difficulty under the arch; for in breech and footling cases, the face is generally born before the vertex. In order to prevent this difficulty, it will, as soon as the breech is expelled, and the feet are delivered, be proper to grasp the breech, and slowly endeavour to turn the body round; but, should this not succeed, or not have been attempted till the shoulders have come down, and the head is about to pass the brim, the practice is dangerous, and the neck may be materially injured. It is, in this case, better to introduce a finger, and press with it 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 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 perineum.

When the pelvis is contracted or deformed, it will be prudent, at an early stage of the labour, to bring down the feet. But if this have been neglected, then, should the difficulty of delivery, or the length of time to which the labour is protracted, require it, some insinuate a blunt hook, or a soft rib-band over one of the groins, and thus extract the breech; but the forceps may be applied with much more advantage. 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 open spiritous 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 present. 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 toes and heel, and the articulation at the ankle. Sometimes both the feet and the breech present. Two circumstances 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. The best practice is to avoid rupturing the membranes till the os uteri be sufficiently dilated; then we

* 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 hemorrhage; the second is the consequence of 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.

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 towards the belly of the mother, we grasp the thighs, and gently turn the body round. 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.

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 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 often advantageous to bring down the feet.

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 connection 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 presents. 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

* 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, to change the situation.

† 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

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 Guillimeau disregarded the rule, and left it to Mauriceau to enforce it, both by reasoning and practice.* 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 dilatable 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 employed 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 the consequence of this

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.

* 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.

injudicious practice, whereby both parent and child might be lost.

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 ruptured. The hand is then to be immediately carried into the uterus, and, if we have decided on turning, upwards until the feet be found. 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. 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 this assertion 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 will 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 rendered easier, and less painful, by previously dipping it in oil or linseed tea, or any other lubricating substance.

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. After a delay of some hours, however, the uterus may be less violent in its action, but it is better at once to moderate it by art. 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, the bladder is to be emptied lest it should be ruptured during the operation; and, if necessary, a clyster is to be administered. 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. Our first object is to get the hand into the uterus; and for this purpose, we must raise up the shoulder a little, working the fingers past it, by slow, cautious, but steady efforts. 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

* The spasm may yield rather suddenly to the hand, as if rupture of the fibres had taken place. I was informed of one case of this kind, but the womb was entire, and no bad symptoms came on.

not to be in too great hurry to overcome this. We must wait the effect of the anodyne, and are never to use force or violence. I believe that slow efforts after the use of opium shall always prove successful. Sometimes our efforts renew the pains, which, although they may not prevent the operation, 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 possible, we seize and bring down; but if we cannot easily find 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. 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; a contrary practice is apt to 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. We must also consider, whether we shall succeed best with the right or the left hand. If the right shoulder or arm present, some have made it a rule to deliver with the left hand, others with the right; but much must depend on the dexterity of the operator, and the position of the woman. The most common position is the same as in natural labour. Sometimes we may find it useful to make the woman lie forward on the side of the bed, with her feet on the ground, and to place ourselves behind her. Dr. Breen advises that we should bring down the knees rather than the feet, at the same time pushing up the presentation. 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 uterus; and when this was impracticable, it has been torn or cut off, especially if the child was supposed to be dead. Others advise, that we should not attempt to reduce the arm; nay, even that we could, in difficult cases, 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 shall 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 by 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 was supposed to be alive, the os uteri has been cut, or the cesarian 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 per-

* Vide memoir by M. Baudelocque, in Recueil Period. Tome V. table I. cases 5 and 15.

† 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 3.

‡ Vide Perfect, Vol. I. p. 351.—Dr. J. Hamilton's Cases, p. 104. He found it necessary to separate three of the vertebræ.—Dr. Clarke twisted off the arm, and

forator. It is in general sufficient to carry the finger between the perineum and the thorax to the abdomen, pierce it, and either by means of the finger or a hook fixed on the pelvis, it may be pulled down. 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 accomplished.* In other cases, the child has been expelled double. In a greater number of instances, 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. Dr. J. Hamilton justly observes, that the evolution can only take place when the action of the uterus cannot be exerted on the presenting part, or where that part is so shaped that it cannot be wedged in the pelvis. It may also be added, as a requisite, that the uterus contract efficiently, and not spasmodically. This occurrence was first of all noticed, I believe, by Schœnheider;† but Dr. Denman‡

perforated the thorax freely. At the end of 36 hours the fœtus was expelled double. Med. and Phys. Jour. Vol. VIII. 394.

* Giffard, case 211; and Baudelocque L'Art, §. 1530, in a note.—In Mr. Gardiner's case, the head followed the shoulders. Med. Comment. V. 307.

† Acta Havn. Tom. II. art. xxiii.

‡ Lond. Med. Jour. Vol. V. p. 64.—See also case by Mr. Outnwait, in New Lond. Med. Jour. Vol. II. p. 172.—Mr. Simmons, Med. Facts and Obs. Vol.

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. It does not appear that the child being large, is an 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 were received into the uterus 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." This was disputed by Dr. Douglas, who maintained that it was impossible for the upper extremities to mount up into the contracting uterus; and 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 perineum, 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.

Dr. Kelly agress with Dr. Denman as to the existence of an actual revolution or turning of the child; but differs from him in maintaining that the original 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.

After all that has been written on the subject, there appears

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.

no ground for doubting the explanation given by Dr. Douglas, and however extraordinary it may appear, it seems nevertheless true, that when the process once begins, that is to say, when the child is brought so low as to enable the breech to get into the hollow of the sacrum, it is soon accomplished. In one of Dr. Denman's cases, the third, he 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." This case merely establishes the rapidity with which the delivery may be accomplished; but as it partakes much of the obscurity of the oracles of old, it may be quoted both by Dr. Douglas and Dr. Kelly. When it is impossible from the strong action of the uterus, to turn the child, we may have some hope of this evolution taking place, when the strong pains carry the shoulder so much downward and forward as to bring the thorax fairly into the pelvis. When the breech has got into the hollow of the sacrum, and the perineum is by the trunk greatly distended, the process may be considered so near its completion as scarcely to be prevented by any injudicious effort.

A knowledge of this fact does not exonerate us from making attempts to turn; 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, which contains more than 150,000 inhabitants, I cannot learn that more than one case of spontaneous evolution has taken place, though some women have either died undelivered, or have not been delivered until it was too late to save them. I need therefore scarcely add, that the short remarks I have made on this subject are not derived from personal experience but from consideration of the subject.

Sometimes the arm presents along with the head, and this can only render delivery tedious or difficult, by encroaching on the dimensions of the pelvis. This case does not require turning; but if we can, we should return the arm beyond the head; if we cannot, 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 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. Wansbrough, 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 and this is in general proper.

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.

ORDER FOURTH.

The hips, back, belly, breast, or sides, may, though very rarely, present, the child lying more or less transversely. The hip is sometimes taken for the head,† 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

* Med. Repository. Vol. XIII. p. 8.

† La Motte was of opinion that no part resembled the head more than the hip. Vide Obs. 283. and 284.

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.

1st, The forehead, instead of the vertex, may be turned to the acetabulum. In this case, the presentation is felt in the first stage high up, smooth, and flatter than usual. In a little longer, we discover the anterior fontanelle, and the situation of the sutures. By degrees the head enters the cavity of the pelvis, the vertex being turned into the hollow of the sacrum; and by continuance of the pains, the forehead either turns up within the pubis, and the vertex passes out over the perineum; or the face gradually descends, and the chin clears the arch of the pubis, the vertex turning up within the perineum towards the sacrum till the face be born. The first is the usual process in this presentation; all the steps of the labour are tedious, and often, for a considerable period, the pains seem to produce no effect whatever. In the last stage, the perineum is considerably distended and it requires care and patience to prevent laceration. This presentation is difficult to be ascertained, at an early stage, before the membranes burst; and sometimes the duration of the labour is attributed to weakness of the uterine action, and not to the position of the head. If it be discovered early, it is certainly proper to rupture the membranes, and turn the vertex round; a proceeding which is easily accomplished, and which prevents much pain and fretfulness. If this opportunity be lost, we

may still give assistance. Dr. Clarke says, that, in thirteen out of fourteen cases, he succeeded in turning round the vertex, by introducing either one or two fingers between the side of the head near the coronal suture, and the symphysis of the pubis, and pressing steadily, during a pain, against the parietal bone. Of the advantage of this practice, I can speak from my own observation; and I have, even when the head 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. Some have advised that we should keep up the forehead during a pain, to make the vertex descend; or that we should, with the finger, depress the occiput.

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. It is a much more uncommon presentation than that noticed above. The labour is, at first, a little slower than in a natural presentation, but, by degrees, the head becomes more oblique, the vertex descending; and this may be assisted, by supporting the forehead with the finger during a pain. Should any untoward accident require the delivery to be accelerated, we have been advised to turn the child, and, in doing so, to use the left hand, if the occiput lie on the left acetabulum, and *vice versa*. But this operation can seldom be requisite.

The crown of the head may also present with the face to the pubis or the sacrum, but these positions are extremely rare. 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 may 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 does not turn at all, but enters the pelvis in the original direction, and becomes wedged, requiring the use of instruments. This is oftenest the case, when the occiput is turned to the pubis; for the forehead being broad, does not, by a continuance of labour, slip to the side of the promontory of the sacrum so readily as the occiput would do.

2d, The side of the head may present. In this case, the presentation is long of being felt, but it is recognised by the ear. If, however, it has been long pressed in the pelvis, it is extremely difficult to determine the case. It is very rare, and has even been deemed to be impossible. In some instances the child has been turned, but it is most common to rectify the position of the head, by introducing the hand.

3d, 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 some part of one of the psoæ muscles, and from this oblique position of the head, the labour is tedious. It has been proposed, in this case, to turn; but is better, if we do any thing, to rectify the position of the head with the hand. 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.

4th, The face may present with the chin to one of the acetabula, or to the sacro-iliac junction, or to the pubis, or sacrum. The first two are the best, the second is more troublesome, and the last is worst of all. When the face presents, the labour is generally tedious and painful, for it is little compressible, and affords a broad surface, not well calculated to take the proper turns in the pelvis. The head, also, being thrown back on the neck, a larger body must pass, than when the chin is placed on the breast. By a continuance of the pains, the face becomes swelled; and although at first it was recognisable by the mouth and features, yet now it is indis-

tinct, and has been taken either for a natural presentation or the breech. By rude treatment, 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 is directed to the sacrum, and some children die from obstructed circulation, owing to the continued 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; and in the beginning of labour, the face itself does not present, but only the forehead: hence La Motte tells us, that although at first he thought the head presented properly, yet, when the membranes broke the face came down.

Some have advised that the child should be turned; others that the chin should be raised up, to make the upper part of the face come down: or that if the head be advanced, a finger should be inserted into the mouth, to bring down the jaw under the pubis. Others leave the whole process to nature; but many endeavour with the hand to rectify the position.

If the presentation be discovered early, there can be no doubt as to the propriety of rectifying the position, but if the labour be advanced, this is difficult; and then it only remains that we should endeavour, if the labour be severe and tedious, to make the face descend obliquely, by cautiously but firmly supporting with a finger, during the pains, the chin, or end which is highest, in order to favour the descent of the lower end. When the chin has advanced so far as to come near the arch of the pubis, we may follow a different method, and gently depress it, which assists the delivery, for generally the chin is first evolved. If, however, the process go on regularly and tolerably easy, we need not make these attempts. As the perineum is much stretched, we must support it, and avoid all hurry in the exit of the head.

When the chin is directed to the sacrum, the labour is sometimes so tedious as to require the application of instruments.

Sometimes the cord descends before, or along with the presenting 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, the best practice is to turn the child. 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 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. As soon as the os uteri will admit the introduction of the hand, the child should be turned, if it can be easily done. But if the presentation be advanced before we are called, and turning be difficult, then we must endeavour to keep the cord slack, or remove it to that part of the pelvis where it is least apt to be compressed; or it will be still better, to endeavour with two fingers to push the cord slowly past the head, and prevent it, for two or three pains, from coming down again. This is less violent, and safer, than attempts to turn in an advanced stage of labour. Should this not be practicable, and the pulsation suffer, or the circulation be endangered, we must accelerate labour by the forceps. If the pulsation be stopped, and the child dead, when we examine, then labour may be allowed to go on, without paying any attention to the cord. The sum of the practice then is, that when the os uteri is not dilated, so as to permit of turning,

* 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; why not also cut? Osiander, not certainly a theorist, proposes to lodge the cord in the midst of a spunge, and replace it; why not—if it can be done?

we must not attempt it; when turning is practicable, it is to be performed; when the head has descended into the pelvis, the cord is to be replaced, or secured as much as possible from pressure; but if the circulation be impeded, the woman must be encouraged to accelerate the labour by bearing down, or instruments must be employed. 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.

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. 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 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 after the first child is born, pains usually 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, rupture the membranes, if they have not given way, and ascertain the presentation. If it be such as require no alteration, he is to allow the labour to proceed according to the rules of art, and usually the expulsion is very speedily accomplished. If the first child present the head, the second generally pre-

* 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.

sents 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. 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 hemorrhage, or some other dangerous symptom, may supervene. The first rule to be observed is, that the accoucheur is upon no account to leave this 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 child ought to be delivered by turning. 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 to the vagina, and the expulsion afterwards left, if nothing forbid it, to nature.

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.

* 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 ?

In the event of hemorrhage, 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 observe, 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 hemorrhage 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 hemorrhage 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 hemorrhage 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 pubis before that of the first, which remained above it, and could not be extracted without great difficulty. There can be no hope of the child being born alive in this case, and as little expectation of our being able

to push up the head of the second child. It has therefore 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. If this be not adopted, still the patient may not die undelivered. Mr. Allan, who has proposed the plan just advised, has published a case, where both heads were expelled at once by a powerful pain.*

It is possible for two children to adhere, or for one child to have some additional organ belonging to a second, as, for example, an arm or a head. Such cases of monstrosity may produce considerable difficulty in the delivery; and the general principle of conduct must be, that when the impediment is very great, and does not yield to such force as can be safely exerted, by pulling that part which is protruded, a separation must be made, generally of that part which is protruded, and the child afterwards turned, if necessary.† Unless the pelvis be greatly deformed, it will be practicable to deliver, even a double child, by means of perforation of the cavities, or such separation as may be expedient, and the use of the hand, forceps, or crotchets, according to circumstances. A great degree of deformity may render the cæsarean operation necessary.

* Vide Med. and Phys. Journ. for February, 1824.

† In the seventh volume of the Nouv. Journal, p. 164, is a case where two children were born at the full time, united by the inferior part of the belly, from the centre of which came the cord. The vertebral columns almost touched at the lower part. The two children, who were of different sexes, lived, we are told, twelve days, but nothing is said of the labour. In the Bulletins for 1818, p. 2, two children, who were joined by the back at the sacrum, are stated to have been born, and lived till the ninth day. The first child presented the head, but the midwife could not well tell how the second got out. There is another case at page 32, of a woman who, after many days' labour, bore a monster double in the upper parts. The spinal column was united from the sacrum to the top of the dorsal vertebræ, there the cervical vertebræ divided to form two necks. The midwife, finding the head to present along with the cord and a hand, tried to turn, but could discover nothing but superior extremities. She therefore let her alone. The head was afterwards expelled, but neither nature nor art could deliver the body. M. Ratel, finding the head and two arms already almost separated from the body, cut these parts off, then introducing his hand, he found another head, turned the child, and brought away the whole mass.

With respect to children who are monstrous from deficiency of parts, I may take the present opportunity of observing, that no difficulty can arise, during the delivery, except in ascertaining the presentation, if the malformation be to a great extent, as, for instance, in acephalous children.

CHAP. V.

Of Tedious Labour.

ORDER FIRST.

If the expulsive force of the uterus be diminished, or the resistance to the passage of the child be increased, the labour must be protracted beyond the usual time, or a more than ordinary degree of pain must be endured.

Tedious labour may occur under three different circumstances:

First, The pains may be from the beginning weak or few, and the labour may be long of becoming brisk.

Second, The pains, during the first stage, may be sharp and frequent, but not effective; in consequence of which the power of the uterus is worn out before the head of the child have fully entered into the pubis, or come into a situation to be expelled.

Third, The pains, during the whole course, may be strong and brisk, but from some mechanical obstacle, the delivery may be long prevented, and it may even be necessary to have recourse to artificial force.

It is farther necessary for me to premise, that the same patient, in different labours, shall be delivered with varying celerity and ease, although the size of the children be the same. The protraction, therefore, cannot depend on purely mechanical causes, but is rather to be attributed to resistance afforded by the soft parts, as living organs, and the state of action of the uterine fibres. The delivery of the child depends on

contraction of the uterus, and relaxation of its orifice, and that of the vagina and muscles connected with the perineum; and these two processes are not only influenced by, but are also generally proportionate to each other. Easy and speedy relaxation is productive of rapid and great contraction, which is not to be measured or determined by the degree of pain or sensation, but of efficiency. Powerful contraction of the uterus, is attended with proportionally rapid relaxation of the opposing soft parts, or at least of the os uteri; and if the latter state do not take place, the former cannot easily exist. When mechanical assistance does stimulate to more frequent and violent action, it is often more in appearance than reality, at least so far as the uterus is concerned. The sensation may be greater, but the actual effort made by the uterus, is not always so great as the sensation would imply. The abdominal muscles act more 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 seated 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, referable 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 their 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. It is best employed by placing the flat hand over the region of the fundus uteri, and making the abdominal parietes move backward and forward over the uterus. 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, and different parts of the uterus 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. 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, 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; or premising venesection, if the state of the vas-

cular system indicate this. Laudanum in this case seems to have the effect of a stimulant on the uterine fibres. The ergot, or secale cornutum, has been recommended nearly half a century ago for this purpose, and lately its use has been revived by Dr. Dewees, in cases of tedious labour, arising from deficient pains. It is given in the doze of a scruple of the powder, every quarter of an hour. And he says that it is seldom necessary to give more than three dozes. 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 drank by the patient, and may be repeated if necessary in half an hour. We are cautioned, however, not to use this medicine, until the water have been discharged, and the os uteri completely dilated. Under these circumstances it is expected speedily to increase the pains and finish the delivery; but if given earlier, we are told that the child is destroyed. That this remedy is fully to be depended upon can hardly be admitted—otherwise it would not have fallen for so many years into neglect; but that it has occasionally a decided effect in accelerating the delivery, I am well satisfied of, by the trials made by my friends and myself of this substance, which was kindly furnished to me by Dr. Dewees. So far as my experience goes, it produces a feeling of increased heat, but the pulse becomes rather slower than quicker; whilst the pains, when any effect was produced upon them, become rapidly more severe and effective. If the doze be too large, sickness and vomiting are produced.* So far as my limited information goes, I am rather disposed to believe the assertion, that when given prematurely it is fatal to the child. Chemical analysis has detected morphium in the ergot, but whether its effects upon labour are to be attributed to this or some other principle, remains yet to be decided.

* Desgranges remarks that it often causes vomiting, and this aids farther the 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.

In favour of its effects depending upon morphium, it may be remarked, that the same benefit is frequently derived under similar circumstances from the administration of laudanum, 30 drops of which may be given with the effect of exciting the pains, when they have for a time been weak or inefficient. Experiments have been made on rabbits with ergot, and it was found that death was produced by injecting its infusion into the veins. An immediate effect was paralysis of the posterior extremities. Sixth, removing undue action from other parts which are acting in place of the uterus, and checking or subducting its action, on the principle of the sympathy of equilibrium, which I have alluded to in page 344, and more fully explained in another work. Seventh, 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 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, 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; the mildest drink is allowed; all fatiguing efforts are prohibited; and she is encouraged by the mental stimuli of cheerfulness and hope, rather than by wine and cordials. 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. In the first of these states, we have to consider whether there be heat of the skin, full pulse, with thirst and restlessness. If so, and especially if the os uteri be not relaxed, venesection will be of great benefit, by making the uterus act with more freedom, and its mouth yield with great readiness. We know that in most cases of uterine hemorrhage, the os uteri, even where 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 hemorrhage 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 our own observation 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 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.

If the woman be fatigued or debilitated, and the pulse weaker than in lingering labour, we shall derive advantage from the use of a smart clyster, followed by thirty drops of laudanum, or a proportional quantity in an injection. This does not suspend the pains, but rather excites them. A similar stimulus is sometimes given by a gentle purge, but this is more slow and uncertain in its effects.

When there is a strong tendency in the pains to remit, or keep off, we are to follow pretty nearly the same conduct with regard to venesection, in the circumstances which I have pointed out, as admitting of it; but it is much more rarely required in those cases, than where the pains are more frequent. When it is employed, it either procures a remission and sleep, followed by brisk action, or it excites more immediately the pains; for whatever diminishes the resistance or obstacle, whatever produces relaxation, speedily acts as a sti-

mulus to the uterus to contract: cordials and stimulants are more doubtful in their effect. If, however, blood-letting be improper, we give a clyster, and then forty drops of laudanum, which either makes the pains effective and brisk, or suspends them for a time, till the womb recruit.

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.

Premature rupture of the membranes is apt to occasion spasmodic action of the uterus, or irregular and inefficient pains; besides, 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 is seldom 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 is 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, then, 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. If, on the other hand, the os uteri be lax and thin, or soft, it is both safe and advantageous to dilate it gently with the finger during a pain. If this be done cautiously, it gives no additional uneasiness, whilst the stimulus seems to direct the action of the uterine fibres more efficiently towards the os uteri, which sometimes thus clears the head of the child very quickly, and the pains which formerly were severe, but, in the language of the patient, unnatural, and doing no good, become effective and less severe, though more useful. This advice, however, is not meant to sanction rash and unnecessary attempts to dilate the os uteri, which sometimes render labour more tedious, by interrupting the natural process, and also lay the foundation for inflammatory affections afterwards. When the pains are irregular, and are succeeded by aching of the back, if the state of the os uteri do not indicate venesection, a full dose of laudanum, not less than forty drops, may be given with advantage.

In the case I have just considered, I have spoken of the effects of dilating the os uteri, but I do not mean to say, that the practice is useful in such a case alone; for, in most cases of tedious labour, it is beneficial, and, as the subject is important, I shall explain my sentiments on it fully. Forcible and irritating dilatation of the os uteri, even when it is not productive of dangerous consequences, is apt to occasion irregular or spasmodic action of the uterus. Two circumstances are necessary to render it safe: the os uteri must be lax and dilatable, and the dilatation must be gradually and gently effected during the continuance of a natural pain. If attempted in the absence of pain, and especially if attempted so as to give pain, it is apt to excite partial or spasmodic action, and, under any circumstance, violent or forcible dilatation, besides injuring the uterine action, may lay the foundation of future disease. It is done best by pressing on the anterior edge of the os uteri, during a pain, with two fingers, with such moderate force as shall not give additional pain, and shall appear to excite the natural dilatation as much as to produce mechanical opening. By doing this for several pains in succession, or occasionally during a pain, at intervals, according to the effect produced and the disposition to yield, we shall soon have the os uteri completely dilated. This is an old principle, but it was rashly practised, and too universally adopted, which made it meet with just reprobation, and some knowing this, may be surprised at meeting with such an advice in modern times. Let not the principle suffer from its abuse, elsewhere is the plan which could stand its ground? It is perfectly clear, that when the process is going on well, interference is improper, but it is no less evident, that if a long time is to be spent in accomplishing the first stage of labour, or dilatation of the os uteri, the vigour of the uterus and strength of the patient may be impaired so much as to render the subsequent stage dangerously tedious, or to prevent its completion, at least consistently with safety; the first stage of labour ought always to be accomplished within a certain time, varying somewhat 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 pain 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 makes 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. 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 appli-

cations evidently pointed out by the nature of the pains which have formerly been considered.

If, again, in lingering labour, the membranes be entire, the os uteri soft, lax, and considerably dilated, and the presentation natural, it is allowable and beneficial to rupture the membranes; and this is more especially proper, if the uterus be unusually distended. The evacuation of the water is succeeded by more powerful action, a circumstance which, whilst it points out the advantage of the practice in the case under consideration, forbids its employment in natural labour, where the process is going on with a regularity and expedition, consistent with the views of nature, and the safety of the woman.

I have also already pointed out the injurious effects which frequently follow premature evacuation 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 be in cases of greater rigidity by venesection; for both excite labour by diminishing resistance. The more that the os uteri is dilated beyond the size of half-a-crown, the more beneficial, *ceteris paribus*, will the practice be: on the other hand, when the os uteri is firm and little dilated, and the other soft parts rigid, this practice, so far from being useful, is hurtful and dangerous.

An erect posture is another mean which operates in part on the same principle, for it calls in the aid of gravity, adding the pressure of the child to the action of the uterus. The water is allowed to run freely out, and the continued application of the presentation to the dilating os uteri, excites action. The child must be more easily propelled, surely, if it be in such a situation as to allow it to fall out by its own weight, were it not prevented by the soft parts, than if it rested on a horizontal surface, and required to be moved along that, by

muscular effort, as is the case in a recumbent posture. The difference of facility, then, becomes truly a stimulus. Besides, the muscular motion, or walking, which is employed in an erect position, does good, either by exciting the womb directly, or by removing sympathetic pains in the muscles.

Sometimes, after the first stage is 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 hemorrhage do not take place after delivery, or that it be promptly stopped.

If the head rest long on the perineum 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 misshapen, 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 fall soon to be considered.

An inefficient state of 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. We ascertain this by examining the sensations and state of the patient. If the stomach

be irritated, she is sick and oppressed, and probably despond-ing, and sometimes, almost at every pain, has an inclination to vomit. 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 harthorn, may be employed, or the epigastric region rubbed with some stimulant embrocation. Vomiting, without distressing sickness, and not dependant 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 seem 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 teazing 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 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 is similar to that recommended above for allaying general irritation.

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, but if the process be protracted, it is useful to give some light soup, and a little wine, if she desire it. 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 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. Many causes, and some of them obscure, may excite the spasmodic action; 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 where 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. Pre-

ternatural 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 viewed as 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. 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 generally in the former. The paroxysm of pain, is generally described by the patient as affecting 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, and the spirits are generally depressed. If this affection be slight, it may soon go off; but, if the spasm be strong, it sometimes continues for many hours. A smart clyster is often of great service. Blood-letting sometimes does good, but 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; 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 hemorrhage 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 debilitated action, or 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 premature rupture of the membranes. In the second case, the pains are lingering, short, and usually 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 prevented, 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 julap; at the same time that the mind is to be tranquillized. If these means do not immediately abate the heat, frequency of 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 peritoneum, or vagina. The first is discovered by

pain in the thorax, cough, and dyspnœa; 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 fœtus, but the woman dies in a few hours. On the first 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 is dilated, and the process is often both painful and protracted. 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 perineum.* If this cannot be done, the os uteri, if lax and yielding, must be gently further dilat-

* Vide Mem. of Med. Soc. Vol. I. p. 213.

ed, 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 descending into the pelvis, it rests long on the perineum, the pains are frequent, severe, and often at last very forcing, but the woman says they are doing no good.

* Vide Portal's 10th Obs.; and Decreux's case, in Mem. de l'Acad. de Chir. Tome 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.

Now this state requires both patience and discretion. The bowels should be opened with a laxative; the urine regularly expelled; 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 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. Much suffering may be avoided by attending to this cause, as the position is often rectified by pressure with the finger alone.

Another case 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 always 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 perineum. Some methods have been proposed for abating the rigidity; such as baths, fomentations, and oily applications; or digitalis and sickening medicines given internally; but these have no good effects, and some of them do harm. Blood-letting is the best remedy in such cases. Dr. Rush informed me, that in America it has been used with great advantage; and Dr. Dewees politely sent me a dissertation on this subject, containing very good cases of its efficacy, when pushed freely. In some instances, fifty ounces were taken before the parts relaxed. In determining on the use of blood-letting, we must attend to the state and habit of the patient. Debilitated women,* and those who are exhausted by fatigue, especially among the lower classes in large cities, are injured rather than benefited by this practice. Robust women, of a rigid fibre, in the middle class of society, or who live in the country, bear blood-letting better, and derive more benefit from it. In them it is especially proper, if any degree of fever attend the labour, and in whatever part the rigidity exists, if the patient be not previously reduced, or very delicate, blood should be detracted *pro viribus*. If, however, the state of the patient forbid this, then an opiate clyster is the appropriate remedy.

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 perineum, 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

* Dr. Dewees bleeds even delicate women, and those who are disposed to faint on being bled, but takes a smaller quantity from them.

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 sometimes becomes swelled, as if blood were effused into its interstices. 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 scirrhous, 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 are torn, but it is seldom necessary to perform any operation. If it should, they must be cut.

* A case of this kind occurred to Dr. Simson of St. Andrews, 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 antiversion. Other cases are to be met with in the Dict. des Sciences Medic. Art. Hystertomie.

† Vide Case by Campardon; in Recueil Period. 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 cesarian operation. In a subsequent pregnancy, in the 7th month, the cicatrix was ruptured, and, by 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.

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 either to be pushed up beyond the head, or extracted.

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 pressing the os uteri forward with the finger. 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. Some have advised that the cord should be divided, after applying the double ligature; but this is rarely necessary, for the child may be born, even although the cord remain about the neck.

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. 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 hemorrhage, 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 is 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 inva-

riably, 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 and 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 can even with difficulty, in many cases, be raised 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 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 peritoneum. 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 peritoneal inflammation may be excited previous to delivery, proving fatal in a few hours after labour is terminated; or hemorrhage 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 tumifies, 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. 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 calling in the aid of extraneous force.

When we talk of a case of impaction, we must not, however, suppose that the head is literally and entirely immoveable.

That it is, in the strict sense of the word, sometimes impacted, and cannot be moved, is no doubt true; but 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. 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 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, the stationary condition of the head;—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 pelvis measure, in its diameter, only three inches and a half, then we must have a painful and difficult labour, because, as the head measures as much in its lateral extent, it must be compressed more or less, in order to pass. If the brim, however, measure somewhat less, the head of the child, at the full time, cannot pass, until it have been pressed so long as to diminish its breadth, perhaps half an inch.* The more, then, 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 con-

* 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.

traction, 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, when the head is not impacted; the pelvis may even be of ample size. It is known under the name of the case of arrest, or by the French writers *la tête arretée au passage*. The head is not fixed or jammed, the finger can more readily be passed round it, the scalp may be swelled, but the bones are never misshapen, 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 actual obstruction offered by the pelvis to the delivery. 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, and it is much more frequent in its occurrence than the locked head. 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 hemorrhage 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 formidable affections, of an inflammatory nature, especially of the womb or peritoneum. 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 is not so apt to take place, that we meet with in locked head; yet, the patient is not exempted from risk even of that; by 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 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 partizans 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. 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 perineum. 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 case 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 on the obstacle afforded. When the head has arrived at a station rendering the application of the forceps practicable, no good can arise from delay; we only add unprofitably to the suffering in the meantime, or lay the foundation of a state which is to render the later application of the instrument more pain-

ful 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 ever have been 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.

Holding the opinion I have been laying down, it is not without astonishment and regret, that I find 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 present excellent Professor of Midwifery in Edinburgh, who has long seen the hurtful effect of the temporizing system, and of Dr. Osiander, the active and experienced Professor in Gottingen.*

* 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

To place the argument in a yet stronger light, I shall examine the result of delay, as deduced from the tables published by Dr. Breen of the cases occurring in the Dublin Hospital, because these are the latest I have beside me, and were 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 stillborn. 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 stillborn. 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 stillborn.

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 stillborn children was as one in $3\frac{1}{3}$.

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, how-

so far as delay is concerned, for the more modern calculations are 1 in from 158 to 188. One gentleman, for whom I have great respect, states, 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. Nägele has employed them once in about 53 cases, which corresponds very much with my own list. 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.

ever, 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.

Now, taking the proportion of deaths in the parturient state 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 one 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.

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, but more especially if there be 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 formerly pointed out for effecting its dilatation, within a limited time, generally twelve hours, ought to be resorted to.

Second, Whenever the os uteri is completely dilated, but not sooner, the forceps can be applied, if the case admit of relief by the use of that instrument. But the lower that the head has descended, the easier is the application, with the exception of those instances in which the head is very firmly impacted in the pelvis; for in such it may be necessary to press the head up a little, in order to be able to introduce the blades.

Third, It is ascertained that the head, at the full time, cannot, consistently with safety, bear to have its transverse diameter reduced, by pressure, to less than three inches. Most for-

ceps, therefore, are so constructed, that when joined, the blades at their most curved part, which is to contain the parietal bones, cannot come nearer to each other than three inches. The pelvis then must, after making an allowance for the soft parts, measure at least that space in its conjugate diameter, in every case where the forceps are applicable. It would, in a smaller pelvis, be dangerous, always difficult, and often impossible, to introduce the blades, and, when introduced, they never could be brought through it, and indeed could only be locked by being carried above the brim. This fact, then, fixes the limits of that deformity, which permits the application of the forceps. The blades might doubtless be made to approach nearer, and to squeeze the head more, but as the child would perish, it is better to employ another method safer for the mother.

Fourth, The forceps are merely small hands, and therefore, when the finger of the operator can be extended over the side of the head, one blade can be passed along that side, in whatever part the head is situated. This, it is indisputable, may be done, when very little, or even no part at all, of it has entered the brim of the pelvis. The possibility, however, of applying the corresponding blade, must depend on the dimensions of the conjugate diameter; and, if possible, it would be useless, unless there were space to deliver a living child, or to bring out the locked forceps enclosing the head. We shall presently see that, in this high situation, the forceps cannot be applied without great care and dexterity; and that no small danger attends the attempt.

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 pelvis, and the cranial bones touching the perineum. 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 *specially* 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 perineum, the forceps are applicable.

Sixth, It has been laid down as a rule, that the head should have rested on the perineum for 6 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 first stage of labour be not prolonged, and the vigour of the uterus diminished. 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 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 using the long forceps. The safest rule is, to deliver as early as delivery is easily practicable; but it may even be necessary to interfere before the head has come within reach of the common forceps, and when considerable difficulty attends the application of the instrument. This is the case when the head has partly entered the brim, but has not for some hours yielded farther to the pains; and at the same time its deformity is not so great as absolutely to require the crotchet.

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, with 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 efficient 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 inefficient, 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, the 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 for 36 hours, and in general it is safe and proper to interfere within 30. There may be cases where particular symptoms shall justify and call for aid, even within 24 hours, and an impacted head may demand it within that time; 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 12 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.

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 is 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 that 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 cesarean 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 quack as any of them; nor was 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; one of which 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 and lever,* but shall proceed to explain the manner of applying and using those instruments.

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 attempt, with the latter, than with the former; and, therefore, I give a decided preference to the forceps. It has been said, that we may operate with the lever earlier than with the forceps, but that can scarcely be the case, if the long forceps be used; and next, it has been maintained, that the lever might be fixed on the head, when both blades of the forceps could not be applied. I have never known such a case, but I am not prepared altogether to refute the assertion, and therefore conceive that the former instrument may, with propriety, be in the possession of every accoucheur.

When the lever is to be employed, we are to apply the extremity of the instrument on the mastoid process of the temporal bone,† or side of the occiput. The patient ought to be placed on her left side, in the usual posture; and we then, with the fore finger of the right hand, feel for that ear which

* Plates of the different forceps and levers at present in use may be seen in Savigny's engravings; and a very concise account of all the different improvements and alterations of these instruments, from their discovery to the present time, may be found in Mulder's Hist. Liter. et Critica Forcipium et Vectium Obstetricorum. I do not think it necessary to describe the forceps, nor do I consider the slight variations made by different practitioners as of great importance. A particular kind of forceps, with three blades, was employed by Dr. Leak, but it is never used. M. Asalini has altered the forceps somewhat, and I understand, makes the junction at the extremity of the part which is held by the operator, and not at the union of the blade and handle as we do. Some have made one of the handles to screw off, others to fold by a joint, at the commencement of the blade.

† This process is very indistinct in the fœtus, but the direction may still be retained, as it refers to a well known spot.

is next the pubis, and take it as our guide in passing the lever. Three directions must be particularly attended to. The first is, to keep the point of the instrument, during the introduction and operation, close to the head of the child, lest the bladder or urethra be injured. The second is, that the concavity of the instrument be kept in contact with the curvature of the head, by which it will be much more easily introduced, than if it be separated to an angle from the head. It will, therefore, be necessary to keep the handle back towards the perineum, in the beginning of the process; and it will be useful, especially to the young practitioner, to have more than one lever of different degrees of curvature, for he may sometimes be able to introduce one which is very little bent, when one more concave shall be applied with difficulty. It is a general remark, that within a certain range, the greater the curvature, the more is the difficulty of introducing it, but the greater is its power over the head. The third is, to attend to the axis of that part of the pelvis in which the head is placed, and pass the instrument in that course. In the usual position, the blade will be placed behind the symphysis pubis, or perhaps a little obliquely, and the handle will be directed back towards the perineum. As the blade is curved at its extremity, and as, in order to get it passed, its surface must be kept in contact with the head, it will be requisite to direct the handle more or less backward, according as the blade is more or less curved; and when it is introduced, the handle will be brought further forward.

When we act with the instrument, we must not make any part of the mother a fulcrum; and, indeed, whatever fulcrum be employed, we ought not to raise the handle much, or suddenly, in order to wrench down the head. Instead, at first, of raising the handle considerably, we rather attempt to draw down the head, as Mr. Gifford did with the single blade of his extractor, using the instrument more like a hook or tractor, than a lever. With the left hand placed upon the shank of the blade, we press it firmly against the head, which both prevents it from slipping, whilst we draw down with the right hand grasping the handle, and also serves as a defence to the

urethra, should the handle be a little too much raised like a lever. At first, we should pull or act with the instrument gently, to see that it is well fixed, or adapted to the head. Afterwards we act with more force, but not rashly or unsteadily. These attempts will renew the pains if they had gone off, and then they ought only to be made during the continuance of a pain : for every practitioner knows, that the co-operation of pains adds prodigiously to the utility of the instrument. The head being brought fully into the pelvis, and the face turned into the hollow of the sacrum, we must act in the direction of the outlet; and for this purpose, it will be useful to withdraw the instrument, and apply it cautiously over the chin, which, as less force is now necessary, will not suffer by the operation. Or the forceps may now successfully be applied, and should be used whenever there is necessity for a speedy delivery. Sometimes the natural pains will, without any further assistance, finish the delivery. We must be careful of the perineum.

The forceps with a single curve, may I believe be very safely and easily employed; but it is usual to prefer those which have the blades curved laterally also. In this case they must be so introduced, that the convex edge of the blades 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. Were the forceps with a single curve employed, it would be a matter of indifference which blade were first inserted.

The instrument is to be gently heated, by placing it in tepid water, and the blade first to be used is to be placed so as to prevent mistake. The bladder being emptied, the patient is now to lie 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 the patient to hold by her, if she wish it; whilst 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 introduces two fingers between the head and the pubis, in the same way as he would do in an examination: he feels for the ear, that he may know the part of the head on which he has his fingers; 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 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 perineum; but as the blade advances, the handle will come more downward and 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 inward; and the full introduction is sometimes succeeded by a gush of water, which may be fœtid, 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. The blade itself passes over the lateral part of the head, in a line, running from midway between the two fontanelles, over the ear, which lies in the open part of the blade. If the blade be not straight but have the lateral curve, the anterior edge of the rim at its curving part passes just behind the angle of the jaw, the extremity of the blade rests on the lower and anterior part of the occipital bone, whilst the end of the open portion, or fenestra, exposes that part where the mastoid process forms. I am not satisfied, however, that any material advantage belongs to the curved over the straight forceps. If straight forceps be employed the extremity of the blade, of course, will not extend so far backward. A fault of some of the present forceps is, that the blade for three fingers' breadth, from the beginning of the open part,

are a little too wide, so that the grasp is chiefly made by the ends; in this part, too, of the forceps, the anterior rim, in particular, is too wide, so that the posterior acts more than it. The anterior, or convex rim, acts too little on the parietal bone, near the stock of the blade, and too much at the last two fingers' breadth of the curve, about the angle of the jaw. Whether the forceps be straight or curved, I believe both rims ought to be equi-distant from each other; if curved, the very extremity might be bent a little more than it is. In most cases, the blades also might be somewhat shorter, so that when locked, the joining would be nearer the child's head, and a nearer resemblance would be obtained to the firm grasp of the head by a slender hand. But a cautious and dexterous operator may use any form of forceps.

In this introduction and application of the blade, however, we do not very nicely manœuvre to describe any given line; but are sure, if we introduce it directly behind the pubis, 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. If too far forward on the ear, and the blade traverse a line nearer the face than that described when introduced as directed, it slips. If too far back, it presses on the bulging part of the head, only with its anterior edge, and injures it; or holds so unsteadily, that it slips, as in the former case. If applied in the diagonal line from the vertex to the chin, the jaw is too much pressed, but indeed it would not be easy at first to get it in this direction.

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. The extremity is to be guided past the root of the first blade, into the

passage, by the finger; and directed, by it, between the perineum and the head. 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, and 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 generally 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; 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 would slip, when we began to act; and if a young practitioner, who tries 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 are 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 perineum.

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 other-

wise, 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 or lever, 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 to endeavour to raise it a little, in absence of a pain, before we can insinuate the forceps, so far 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, as 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 neither the lever nor forceps could be used.

The instrument being joined, we pull it 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 the instrument downward, and backward in the direction of the axis of the brim. Then we move the handle a little forward, toward the pubis ; and again, after halting a second, move it slowly back again, still pulling down. We must not carry the instrument rapidly or strongly forward or backward, against the pubis or perineum, but the chief direction of our force should be downward, in the direction of the axis of the brim. The motion of the pendulum kind is intended to facilitate this, but, if performed with a free, rapid, 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 ex-

amine, as we go on, the progress we are making, and also ascertain that the instrument is 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, correctly applied. In this event, we must stop and rectify the error; and, in every instance, must ascertain that the head is 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 perineum 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 perineum, and when the head does turn, the convex edge is apt to act so much on the perineum, as readily to tear it.

If the forceps or lever 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 camomile flowers.

If the fontanelle present, the blades of the forceps are to be placed directly over the ears, and we endeavour, as the head advances, to make the vertex, rather than the face, descend,

raising as much as possible the forehead. Indeed, if this can be effected before the forceps be applied, it will be so much the better, that we may have a natural presentation to act on. If the lever be used, its point will rest on, or near, one of the mastoid processes.

If the face present, the lever will rest on the back part of the temporal bone, or on the occipital bone, and may be used with advantage. The forceps are applied over the ears, and if we can with the hand so far change the position as to make the forehead descend, and the chin rise toward the breast, it will be an advantage. I have mentioned that a defect of some forceps is, that the blades, for three fingers' breadth from the beginning of the fenestra, are too wide, so that the grasp is made more by the ends and the convex rims being nearer each other than the concave in the curved forceps, toward the extremities of the blades, they act chiefly, if not solely, in face cases, and it may generally be said, that in whatever way the forceps be placed, whether with the junction toward the chin or toward the upper part of the face, the instrument, if of this construction, revolves on the head, and the junction, or locking of the blades, becomes opposite to the forehead where the hair begins. The ears are apt to be bent forward in forceps cases. If the forehead be the lowest end of the face, the blade is passed over the temple and the ear, and if curved the convex rim runs over the ear, and the concave rim above it, whilst the extremity winds on the occiput at its upper part. If the chin be lowest, and cannot be pressed up, the junction of the blades is lower, often between the chin and the nose. The connection of the blade is regulated by the position of the presentation, and the elevation or depression of the forehead.

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.

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, and the conjugate diameter is evidently under three inches, the forceps, even if the blades could be applied, could not, when joined, be brought through, if they do not approach nearer to each other than is compatible with the safety of the child; and therefore the head must be lessened. The blades of the forceps may be made with little curvature, so that, when joined, they shall not be above two inches and a half from each other; and, when applied, they may be, by force, brought perhaps to this proximity. But can the head be expected in general to bear this degree of pressure? 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 renders it difficult for the uterus to force the head so low, as in ordinary forceps cases, and dangerous to wait until time ascertain, practically and experimentally, the impossibility of accomplishing this. The more yielding parts of the cranium have entered, the scalp probably is swollen, but all the more solid and resisting part of the head is still above the brim. The finger must be carried high, to feel the ear, and ascertain the position, and the common forceps are too short, as part of their handle, it is said, would be buried 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 take 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 many 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, in any degree, endanger the mother. A third practice, and that which comes before us now for consideration, is the application of long forceps. It is vain to propose this, when the head possesses its usual firmness, and is of the ordinary size, if the pelvis do not, with the soft lining, measure three inches; for if this be not the case, the forceps, when joined, could not be brought through the pelvis, unless they were so shaped, as to permit of squeezing the head to a degree most probably incompatible with life. Can the blades be introduced when the conjugate diameter does measure three inches? They certainly may: but it is one thing to introduce them, and quite another thing to apply them over corresponding parts of the head, so as to be able to lock them, and obtain a secure fixture. The blade, at the pubis, may be applied in a proper direction, but the projection of the sacrum may turn the other blade more easily aside than an unexperienced man would suppose; and those who have most frequently tried it, will best know the difficulty of adjusting the blades. I have seen much want of dexterity in introducing the common forceps, and the practitioner repeatedly baffled, by the instrument slipping. The application of the long forceps requires more dexterity and experience; and as great danger may arise from the fruitless irritation which is given in those unsuccessful attempts, which, besides, end at last in the use of the perforator, and often in the loss of the mother, I cannot conscientiously advise any practitioner, until he have become well acquainted, practically, with the application of the common, to attempt the use of the long forceps. It is easy to say, let such a man send for another who has more dexterity. Such a person may not per-

haps be in his vicinity; and he must, therefore, act according to the best of his skill; and certainly ought not to make a painful and rash attempt to apply the long forceps, but had better lose the child, than destroy both parent and child. A sensible man will make cautious, and possibly successful, attempts to apply the forceps, without danger to the parent: he will satisfy himself whether he can succeed in this way. He will try early, and before the parts are in such a state as to be irritated by his trial; and if, after a well conducted attempt, he fail, he has not injured his patient, and can still use the crotchet successfully. It is not so with the man of inexperience, for too often his attempts only add to the danger; and it is still worse for the patient if two such practitioners meet; for both must try their skill, and double suffering be inflicted. My opinion, then, on this question, is, that a well instructed practitioner ought to make a cautious, steady, but gentle attempt, to employ the forceps, when the crotchet is not decidedly necessary, and the head is higher than it is in ordinary cases admitting the use of the forceps. I have spoken of the long forceps, but am not satisfied that they have even in this situation any superiority over the common ones. If these cannot be introduced and acted with, those which are longer are either unavailing or unsafe. The question is one resting on the height of the head at which it is prudent to apply extracting instruments of the nature of forceps, and not whether long or short ones are best; for in practicable cases, I believe the length of the blades to be no great advantage. It is of more importance to urge that the operator ought never to make reiterated and irritating efforts, which can only end in the production of fatal inflammation.* I cannot say that I have known the lever prove successful, when the forceps ailed,

* Smellie and Pudecomb first used the forceps in this high situation. Levret does not even notice such a case; succeeding writers have held various opinions. Baudelocque prefers turning, when that is practicable; Capuron joins with him, when the conformation of the pelvis is good; but when it is a little contracted, he prefers the forceps. In greater degrees, he looks on the instrument as murderous. Flamant and Gardien prefer it to turning. Dr. Hamilton and Dr Osiander both use it. Saxtorph and Plenk, again, positively forbid it.

although, *a priori*, a superiority might have been expected, as only one blade requires to be introduced.

When we are going to use the long forceps, in the ordinary position of the head, it may be sufficient to introduce two fingers, to guide the blade; but sometimes it is necessary, or useful, to introduce the hand into the vagina, as thereby the blade can be more safely and readily conducted over the head. The manner of application is the same as with the short forceps. De Leurie indeed advises the blades to be applied over the face and occiput, but Baudelocque well remarks, that although this may be the easiest way of introducing them, it is the most dangerous for the child. The blades being fixed and locked, we next pull a little, and with gradually increasing strength, to see that the hold is secure: being satisfied of this, we endeavour to bring down the head, by drawing, as has formerly been described, in the proper direction, that is, downward and backward. If the head be of full size, and firm, and the blades made to approach considerably nearer each other, than three inches, at their greatest curvature, the handles at first cannot touch each other, nor come quite in contact, till so much pressure have been applied, as shall diminish the size of the head sufficiently. This strong pressure it is always possible to employ, but not always safe; and therefore, if the blades are made to approach near each other, we never ought to make more pressure than is necessary. If it be often difficult to extract the head when it is impacted, within reach of the short, it must be still more so, to bring it down with the long forceps, for less has entered the brim, and the resistance is greater. In this attempt, it is not the child, only, that is at stake, but the mother is in jeopardy, from the pressure on the soft parts, and this pressure must, in spite of all our caution, and all the time we can take, often be great, but it never ought to be unprofitable. For instance, if the forceps be completely closed, showing that they cannot be made less, and if by the finger, we find that the blades are in a manner jammed in the conjugate diameter, and that the most curved part has not yet passed, is it not evident, that farther attempts must be fruitless, and inex-

pressibly dangerous? Is it not physically impossible, indeed, to deliver, unless the pelvis give way, or the blades be not tempered but yield, and come closer together? This danger may be avoided, it may be replied, by diminishing the curve, or distance of the blades. True: it is possible to crush the head, into a very small size; but is it not better, as this must destroy the child, to open the head, and deliver with safety at least to the mother.

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 even stated, by high authority, that if the dimensions were "certainly under three inches, a living child could not be born." This opinion is generally correct, and the few exceptions 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. There have been instances, where, even by the efforts of nature, living children have been expelled through a pelvis measuring only three inches; and there are similar examples of the delivery being, under the same conformation, accomplished by instrumental aid.* Every one knows, that, even at the full time, the child is sometimes very small; or the head, when not very diminutive, may be extremely 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

* M. Baudelocque relates a most interesting case, where there were decided marks of the fœtus being dead in utero, and yet these were delusive; for, by the forceps, the woman was delivered of a living child, although the pelvis measured 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, 15.—Similar instances have come within my own knowledge.

inform us to the contrary, to reason on the ordinary size and firmness of the cranium. We are not warranted, therefore, 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. 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.

We may, however, if the dimensions be much under three inches, be assured, that delivery cannot be accomplished 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. When this is the case, even in a small degree, we have no reason to expect that the head can pass, unless it be unusually soft and small, or burst,* or be artificially opened; and therefore it should, for the advantage of the mother, be perforated as soon as the os uteri is properly dilated; and this ought always to be effected in, at the farthest, the time formerly specified; but 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 diameter mea-

* 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.

sured from that to the front, do not extend to 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 risk of any 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 and injudicious delay.

But although it be thus laid down as a general rule, that the pelvis which measures fully three inches 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 above three inches. 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.† 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 equi-

* 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.

vocal. 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

* Vide Mauriceau, obs. 584.—La Motte, case CXC.—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. & 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, fœter 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. Most of the cases requiring the crotchet cannot be benefited by any marks characterizing the death of the child in the progress of gestation; and we well know, that the child may die during labour, without testifying this for a length of time by any sensible signs; and that those enumerated above are deceitful, I believe every attentive and unprejudiced practitioner will join with me in maintaining. Nothing but unequivocal marks of putrefaction

time when the forceps were undiscovered. But the signs are in general extremely equivocal, nor is this much to be regretted, for we do not operate because the child is dead, but because it is impossible for the woman to be otherwise delivered.

The steps of the operation are very simple: the rectum, but especially the bladder, being properly emptied, we place the fore-finger of one hand on the head of the child, and with the other hand convey the perforator to the spot on which the fingers rest. 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 perineum 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,

of the child itself can make us certain, and these cannot be discovered for some time. Fœter of the discharge is not a test of this. Vide Mauriceau, Obs. 281. 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.

it may be necessary to have it kept steady, by pressure above the pubis. It may be proper to add, that if the face present, we must perforate the forehead, just above the nose. If we have turned the child, and wish to open the head, the instrument must be introduced behind the ear.

The brain is next to be broken down, by turning the perforator round within the head. If part of the cranium have entered the pelvis, some of the brain will come out with a squirt, whenever the bones are opened ; and at all times we have more or less hemorrhage 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 may not 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 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, on the other hand, 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; and I question if it be 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.

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 if the deformity be greater, or the pains

weak, only the pliable part of the cranium will 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. 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, cooperate as much as possible with the pains. Sometimes an extractor, in the form of pincers is used in place of the crotchet, or different *tire-têtes* have been proposed. The pincers, or craniotomy forceps, at present used, are generally safer than these, and therefore preferable to the crotchet: one blade goes within the bone and scalp, and the other without.

But 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, 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, will determine us against this operation. It ought not to be forgotten, that it is one thing to extract, and another to extract safely in extreme deformity. Gardien mentions, that Boyer, and other judicious practitioners, had witnessed repeatedly, the mutilation and extraction of the child by eminent men, but the mother sunk immediately. In two of these cases the uterus was ruptured.

In this manner of operating, the face is drawn down first,

* 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. Whyte performed the latter operation.

† M. Baudelocque considers the crotchet as inadmissible, when the pelvis measures only an inch and two thirds.

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 on 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 peritoneum, 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 three in the eighth month. We know further, that there is no reason to expect that a full grown fœtus can be expelled alive, and very seldom, even after a severe labour, dead, through a pelvis whose dimensions are under three inches; and lastly, we have 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

* This practice was first adopted about the middle of the last century, by Dr Macauly in London, and was afterwards followed out 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. Merriman 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 mem-

man can say that it is worse for the child.* All the principles of morality, as well as 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 thereby irritating it, at the same time that a portion of the membranes is detached from the lower part of the womb. Second, By evacuating the liquor amnii, by piercing the membranes with a long probe, or rather a middle sized gum catheter, rendered sufficiently firm by having a wire within it. The point is guided by the finger to the os uteri, and moved cautiously inward to the membrane. Could the first always be depended on, it would be preferable to the second, as evacuation of the water is sometimes succeeded by spasmodic or partial contraction of the uterine fibres. It ought therefore always to be tried. 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, or sometimes it may be requisite to use the lever, even when labour has been prematurely brought on. There are cases, and these cases are not singular, 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

branes, 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.

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.

The interval which elapses between puncturing the membrane, and the accession of labour, varies from two to five or six days. If shivering come on before pain, an opiate is the best remedy.

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 will 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, doom the mother to a fate, for which, perhaps, she is very ill prepared.

There are, I think, histories of twenty-three cases, where this operation has been performed in Britain; out of these only one woman has been saved,* but eleven children have been preserved. On the continent, however, where the operation is performed more frequently, and often in more favourable circumstances, the number of fatal cases is much less.† If we confine our view to the success of the operation in this island, we must consider it as almost uniformly 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 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;

* Vide a case by Mr. Barlow, in Med. Records and Researches, p. 154.

† 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 exist. See also Sprengel, Hist. de Med.—In a case fatal to both mother and child, the operation was, on the 3d day of labour, lately 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 must be cut.

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 statement 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 is 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 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

* Vide Dr. Osborn's Essays, p. 203, and London Med. Journal, VII. p. 40.

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 inches or three inches, it is allowable to infer, that the cavity through which it passed may have been as 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 fœtus 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 is 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, 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 even questionable whether extrac-

* 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 to 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.

tion 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.

The operation itself, although 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. Perhaps the precise situation and direction of the wound must be regulated by the circumstances of the case, and the shape of the abdomen; but in general, I apprehend, that the transverse wound will be most eligible. The length of the incision, through the skin and muscles, ought to be about six inches; and if a vessel bleed, so as to require the ligature, it will be proper to take it up before proceeding further. 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. 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 pretty large vessels are divided, yet the hemorrhage 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 peritoneum. Adhesive plasters are to be placed carefully in the intervals; and a bandage with a soft compress being applied, 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 peritoneum. It has been proposed by Dr. Hull, to whose work I refer for more particular information, 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.

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 continues 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 month's 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.

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 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. Now, in a case where it is barely impracticable to use the lever or for-

* Vide case by Mr. Whelchman, in London Med. Jour. for 1790, p. 46.

ceps, and where it just becomes necessary to open the head the division may perhaps save the child, and with less 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.

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 hemorrhages 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 must 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 hemorrhage 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 will be finished before the hemorrhage 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 hemorrhage 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.

ORDER SECOND.

When hemorrhage 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 hemorrhage continue violent, or be increased by the pains of parturition, we must consider, whether artificial delivery, or a continuance of the natural process, will 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. It is scarcely necessary to add, that a complication of labour, with other diseases than hemorrhage, but which may be incurred by it to a dangerous or fatal degree, will equally justify interference.

ORDER THIRD.

Syncope may proceed from various causes, such as hemorrhage, 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, and from passions of the mind. 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 hemorrhage, 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 hemorrhage. This makes its attack without much warning, and generally alternates with deliquium, or great feeling of depression and debility;

he 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 hemorrhage, 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 assafœtida; 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 occur 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 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 rigours, 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, and the face is dreadfully distorted,* and often swol-

* 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.

len. The tongue is much agitated, and is very apt to be greatly injured by the teeth; foam issues from the mouth, and the convulsive inspiration often draws this in with a "hissing noise;" or she snores deeply, and cannot be roused during the fit. The skin 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 are not averted by art, they recur with the regularity of labour pains, becoming more and more frequent as they continue. The woman appears to have no labour pains, yet the os uteri is affected, and sometimes the child is expelled, 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 is not sensible of bearing the child, and is afterwards long of recollecting her delivery.

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. Leak 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 chronicus 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 permanent, 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 rigours, 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. Sometimes the child is unexpectedly born during a fit.

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. 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 convulsion, 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 irritation, especially when associated with irritation of the bowels, arising from long neglect, should produce tetanic, spasmodic, or even apoplectic affections, during labour? This sympathetic irritation is almost invariably accompanied by an affection of the vascular system, productive of great determination to the head, which aggravates the evil, and becomes, indeed, the chief source of danger.* I shall not, however, enter farther into the theory, but state the practice, which is of more consequence. The first object is, to prevent the patient from injuring the tongue, by inserting a piece of cork or wood into

* It has been supposed by Mr. Power, that convulsions depend on a translation of, what he calls, the parturient energy, from the uterus to the brain, or that there is a metastasis of action.

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 pregnancy.* 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 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 evidently 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 sanguiniferous system, 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 la-

* 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.

bour. We must also attend to the bladder, that it be emptied, for its distention alone has sometimes brought on convulsions.*

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 the 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 distinct labour pains, we must introduce the hand, and slowly dilate it, and deliver the child. I entirely agree with those who are against forcibly opening the os uteri;† but I also agree with those who advise the woman to be delivered as soon as we possibly can do it without violence.‡ There is, I am convinced, no rule of practice more plain or

* La Motte, 223, 224.—Leak relates a case where it produced *subsultus tendinum*, and excessive pain at the pubis, Vol. II. p. 344.

† Dr. Bland is rather against delivery, and for trusting to nature. Dr. Garthshore, Jour. VIII. 359, says, more women have recovered of this, who were not delivered, than of those who were violently delivered.—Dr. Denham concludes, that 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 Tome II. p. 424.

‡ Dr. Osburn, 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.

beneficial,* when evacuations fail to check the convulsions. It not only removes an original cause, but also puts 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 occurrence 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 belladona 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. In almost every instance, the forceps are applicable, and turning is rarely required. Indeed, if the water has been evacuated, it is very questionable how far the irritation attending it would be safe. But if the water be still retained, and the head not within reach of the forceps, we may with propriety turn.

Internal remedies have been advised, such as opium, and musk, and camphor; but experience does not establish the utility of the two last, and the first is highly dangerous, tending to 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 obsti-

* 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.

nate 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.

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 system, 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 headach, or any other symptoms indicating a tendency to convulsions, the lancet is necessary. Bloodletting can seldom do harm, it may do much good; it may be the only means of preserving life; and if this book serve only to impress that fact on the mind of one reader, I will not regret having written 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

* 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.

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 observations, say much respecting its virtues as a preventive. But when convulsions have continued after delivery, or when the recovery was not complete, I have found it of service, and recommend it to be always tried. In these circumstances, it is always proper to blister and shave the head.

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; and if the pulse do not expressly forbid it, a vein is to be opened, and afterwards, the bowels purged.

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; but, 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. 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, before it,

for the mother cannot suffer in such circumstances, being moribund.

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. Sometimes the uterus is entire, and the vagina alone is torn. It 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.†

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 Dr. Douglass, (p. 50.) the head of the child was resting on the perineum, 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. Monro's patient (Works, p. 677.) was sitting in a chair, when she suddenly screamed,

* 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. 253.

and the uterus was lacerated; she was not delivered, but lived from Tuesday till Friday. 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 has partly descended into the pelvis, and the pelvis be large. In this case the liquor amnii has been discharged before the rupture takes place. The most frequent cause, however, 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 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 gives way. Another way in which the cervix may be lacerated, is by the linea iliopectinea 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, and give way, having a sphacelated appearance.‡ In some cases the rectum, but much more frequently the bladder, is opened. Preternatural presentations, from the obstacle afforded to delivery, becomes also a cause of rupture.

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

* Perfect's Cases, Vol. II. p. 439.—Hamilton's Cases, p. 138.

† 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.

‡ Mr. Scott of Norwich has 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.

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 eight part of an inch thick, and tearing like paper.

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.

When this accident does happen, the woman feels something give way within her, and usually suffers, at that time, an increase of the pain. 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.† The 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 gradually decline. The passage of the child into the abdominal cavity is attended with a sensation of strong motion of the belly, and is sometimes productive of convulsions. 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

* Annals of Med. Vol. III. p. 277.

† Haller's Disput. Tom. III. p. 477.

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 hemorrhage, fainting, nor bad symptoms took place; and the child being delivered, the woman recovered.

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 generally, whether the patient be delivered or not, she 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. Garthshore's patient lived till the twenty-sixth day; and in the Coll. Soc. Havn. Vol. II. p. 326. there is the case of a woman, who after being delivered, lingered for three months.

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, 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 takes 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. When the placenta is extracted, 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. When it is higher, there is often 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. It sometimes happens, that when attempts are made to carry the hand through the cavity of the uterus to the rent, the fibres contract over the hand, and the contraction may be 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.

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, 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 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 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, when the child is yet alive, and before the abdominal viscera have been much irritated by the presence of the fœtus, we are warranted to extract the child by a small incision.* If many hours, however,

* 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

have elapsed, then such irritation is often produced, as renders it doubtful if the additional injury of the operation could be sustained. On the other hand, if little irritation be yet excited, and the woman is 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 this case, I am inclined to extract by a small incision, which I conceive to be less dangerous than by the rent, when such a time has elapsed, as must have rendered the uterus very tender and easily irritated. 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 rupture of the uterus,† provided the bladder be not injured. I do not think

lately in one of the French Journals, where the cæsarean operation was performed twelve hours after the rupture, with success.

* 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 Societé 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 lived for many years, and after her death the rent was visible. Phil. Trans. Vol. XLI. 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.

† 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.

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.

When the head is engaged in the pelvis, and cannot recede after the womb is torn, we have other symptoms, indicating rupture of the uterus, or at least the necessity of using instruments. The strength sinks, the pains become useless or go off, the patient vomits, &c.

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

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 in the foot of the child, he succeeded in turning and delivering it, when he found the uterus extensively 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 3d 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 protrusion of a yard and a half of intestine. It could not be reduced, and sloughed off. The patient recovered, but voided stools by the vagina. 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. Coffiners gives a memoir on this subject, in the Recueil Period. 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 peritoneum 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.

be dangerous, in such circumstances, after the water has been evacuated, and before that, there can seldom be 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 mucus, 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 cup full 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 very little water 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 causes 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 perineum or recto-vaginal septum be not torn, and that the uterus be not inverted.

Then, if the woman 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 general, in civilized life, it is useful, if not absolutely necessary. For the abdominal muscles do not readily 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, and is introduced and pinned like the bandage. A warm napkin is then to be applied to the vulva, and the woman laid in an easy posture, having just so many bed-clothes as make her comfortable. If she desire it, she may now have a little panado, 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 hemorrhage, and that the after-pains are not coming on severely. It is also proper to mark the state of the

pulse, and to leave strict directions with the nurse, that every exertion, and all stimulants be avoided.

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, hemorrhage or syncope may be produced. The pretext for this is generally to make the patient comfortable; and, indeed, if the clothes be wet with perspiration or discharge, there may be some inducement to shift her. 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, such as brandy, wine, or cordial waters. I do not deny, that these, in certain cases of exhaustion, are salutary; but I certainly maintain, that generally they are both unnecessary and hurtful, tending to prevent sleep, to promote hemorrhage, and excite fever and inflammation. A third practice, no less injurious, is, keeping the room warm with a fire, drawing the bed-curtains close, increasing the bed-clothes, and giving every thing warm 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. 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, and ascertain that the pulse be not frequent, that the after pains have not been severe, nor the discharge copious. 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 cloth dipped in warm water, and wrung pretty dry, should be applied to the pubis. If this fail, the urine will of-

ten 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 are 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 is 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 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 are not to give suck, liquids should be avoided, the food must be of the dry kind, and thirst should be quenched rather with fruit than with drink. If they are to nurse,

the diet for the first two days, should consist of tea and cold toasted bread for breakfast, beef or 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 the first two 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 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 dressed, and sit a little; but even in the best recovery, and during summer, the woman ought not to leave her room within a week. She ought not to go out for an airing, in general, till the third week. 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 smart purgative once in the three or four days, to bathe the external parts with rose water, 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 Hemorrhage.

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, however, 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 to the ovum, 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 will continue until syncope check it, a state too often only the prelude to death.

It is evident that the cause of flooding is the torpor of the uterus.* The fibres may become inactive, or have their tonic contraction impaired immediately after the pain which expels the child. This will more especially happen if the woman be weakly, if the labour have been tedious, and the child at last expelled suddenly by a strong, but perhaps only momentary contraction.

The hemorrhage, therefore, appears very soon after delivery, and before the placenta has come away. It is profuse, and produces the usual effects of hemorrhage on the system, and these effects are greater and more speedy than those which follow from hemorrhage before delivery, for the loss is instant and extensive. The first gush indeed does not produce great debility, because it consists chiefly of blood, which

* 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.

formerly circulated in the uterus, and is not taken directly from the general system; and the separation of the placenta not being wholly effected at once, the loss at first is more slow. But immediately after this the effect appears in all its danger; and it is not unusual for the woman, if not assisted, to die within ten minutes after the birth of the child.*

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 countenance 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 restless, 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 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 convulsion. In this case, the first symptom is pain of the stomach, and the patient may die before any farther effect is produced. Great difficulty of breathing, and most alarming, if not fatal syncope may take place, from the mere emptying of the uterus, if an adequate suppor 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 in such a case, with a little warm wine or brandy.

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.

The torpor 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 middle of the uterus, inclosing the placenta above it, whilst the rest of the fibres become relaxed. This has not inaptly been called the hour-glass 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 scarcely ever 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 or recognised, I must suspect that it is owing to an almost moribund state of the womb, and must be a very bad symptom.

From this view it is evident, that flooding is to be prevented by preserving the action of the uterus, and avoiding whatever can increase the force of the circulation. A powerful means of keeping upthe 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 hemorrhage 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 hemorrhage.

Another mean of 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. The circulation is also to be moderated by the free admission of cool air, by lessening the quantity of bed-clothes, 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 hemorrhage 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 hemorrhage, 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 some instances 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 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. 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 hemorrhage, we ought not to leave the bed-side, but should examine frequently, to ascertain that there is no unusual discharge.

The instant a woman is seized with hemorrhage after delivery, we ought to take steps for exciting the contraction of

* During pregnancy, there is sometimes a scorbutic or hemorrhagic diathesis induced, marked by vibices, spongy gums, bleeding from these or from the nose, or from a small wound, or after 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 hemorrhage of an obstinate description may take place after delivery. Dry diet and laxatives have been proposed, for those who were liable to hemorrhage; but the most effectual preventive, is due regulation of the labour and exciting the uterine action after delivery.

the uterus, upon which alone we place our hopes of safety.* Some powerful means are at all times within our reach. Friction, the application of cold, and the introduction of the hand into the cavity of the uterus. These are aided by the instant exhibition of fifty drops of laudanum.

The retention of the placenta is not in general the cause of the hemorrhage, but a joint effect, together with it, of the torpor of the uterus. Our primary object, therefore, is not to extract the placenta, but to excite the uterus to brisker action. How improper and dangerous then 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 forciblyat the umbilical cord. By the first practice, we are apt to injure the uterus, and certainly cannot rely upon it for checking the hemorrhage. 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 excited by the introduction of the hand to lay hold of it, 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 la-

* It is a fatal error to wait until dangerous symptoms appear: many weeks of suffering, perhaps death itself, may be the consequence. I cannot therefore agree with the ingenious M. Le Roy, in the following directions respecting hemorrhage after the birth of the child. "Quand la femme n'est pas delivrée, et qu'il survient une perte, il faut attendre patiement s'il ne se manifest aucun symptome alarmant, parce que cette perte cesse quelquefois d'elle-même. Mais quand les symptomes sont alarmans, et qu'on craint pour la vie de la femme, lorsque la matrice s'engorge et se degorge alternativement, lorsqu'enfin la femme se plaint d'eblouissemens dans les yeux, deviennent convulsifs, que le pouls devient trop petit, que les extremités sont froid, le visage d'une paleur mortelle, que le sang traverse le lit, qu'on entend dans le ventre des gemissemens qui annoncent la resolution des forces vitales, *alors* il faut employer des moyens propre à redonner du ressort à la matrice." Leçons. p. 50.

bour. Hence the manual abstraction of coagula, if hemorrhage 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, we conduct it to the placenta, using the cord only as a director. We do not attempt to bring it away, but press upon it with the back of the hand, to excite the uterus to separate it; or if it be already detached, and lying loose in the cavity of the womb, we move the hand gently to stimulate the uterus, but do not withdraw it, nor extract the placenta, until we have, by gentle motion or pressure, excited the uterus, and feel it contracting, or until we are satisfied that the pressure of the hand is not effecting this purpose. In this case, on the principle just noticed, we ought to remove both the hand and the placenta at once, and several coagula are often propelled along with these, the uterus contracting so as to put an immediate end to all farther anxiety.

Friction is of evident advantage, in exciting the uterus. It is effected by placing the hand firmly on the abdominal parietes, and moving these briskly, but not rudely over the uterus, and occasionally grasping that viscus gently. This remedy has been often employed with success, and is very properly recommended strongly by Gardien and Power.

The contraction of the uterus will be powerfully assisted by the application of cold. The quantity of clothes should be lessened; but our principal object is to apply cold as a topical remedy; which should be done if the other means fail, but only in that case. Cloths dipped in cold water should be laid suddenly upon the belly, or cold water may be thrown upon it. In obstinate cases it has been found useful to project it forcibly with a syringe. We may in desperate cases 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, with happy effects, been introduced into the womb.* In general, however, the external

* Saxtorph uses injections of vinegar and cold water. Pasta has the hardihood to use alcohol and acids, to cauterize, as it were, the mouths of the uterine ves-

application of cold will be sufficient to save the patient. I feel confident in advising it, when requisite, and can say, without reserve, that I have never known any bad consequence result from it.

The uterus, in such cases, generally contracts spasmodically, at the upper part of the cervix like an hour-glass, either before or after the expulsion of the placenta.* This spasm of the uterus is an almost invariable attendant on hemorrhage, and is accompanied with pain in the back, sometimes severe, great depression of strength, and a very feeble pulse, sickness, and paleness, and last of all, uterine hemorrhage, which occurs early, and is often profuse; but it is not the sole cause of the sinking and debility, for these often precede even internal hemorrhage, 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 spinal affection of the 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 hemorrhage, 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. We are immediately to give a full

sels, 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.

* 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. Trans. vol. 6th.

dose of laudanum. We must also, without loss of time, introduce the hand into the uterus, and slowly and cautiously dilate the stricture, so as to get the hand into the upper cyst of the uterus, thus stimulating to universal and regular contraction; and, in doing so, we shall be greatly assisted, should the ordinary means fail, by applying cold water to the abdomen, or dashing water smartly on it from a cloth. If the placenta be still retained, it is to be slowly detached, and after keeping it and the hand, for some time, in the under part of the womb, both may be withdrawn. No remedy whatever can, in my opinion, be depended on so certainly as the introduction of the hand, and in no case ought it ever to be neglected. I will not go the length of saying, that it is infallible in its effects; but I can say, that if it fail, I believe nothing could succeed. I have met with most obstinate and alarming cases, but I never yet have lost a patient, from uterine hemorrhage after delivery, when I attended from the first; and I attribute this entirely to the prompt introduction of 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, but should remember that there can be no danger in being deliberate. 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

are on 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. The hand is to be immediately introduced into the womb, and must be kept there, moving it gently, until the fibres contract; and until this take place, neither the hand nor the placenta should be withdrawn. But the moment that we find the uterus beginning to contract, the placenta is to be removed, even if the hand should require to be reintroduced, as emptying the uterus under these circumstances promotes farther contraction. A cloth moistened with cold water is to be applied suddenly on the abdomen, pressure, along with friction, is to be made by the hand on the region of the uterus, and the whole belly firmly supported with a bandage, provided that can be applied without moving the patient much. But, 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.

The state of the stomach is to be watched, preventing, as far as we can, that feeling of sinking which is apt to take place in all floodings. This is to be done by keeping up the action of that important organ with soup, properly seasoned, and given in small quantity, but pretty frequently repeated. Cordials, as, for instance, Madeira, diluted or pure, should be given in small doses regularly 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 greater service in all cases of uterine hemorrhage 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

solid 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 the place of wine, and are infinitely safer. 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.

We must be careful neither to give nourishment nor cordials so frequently as to load the stomach, which produces sickness and anxiety, until vomiting remedy our error. This last symptom, 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. Solid opium is the most effectual remedy against repeated vomiting. It must be given in the dose of from one to two grains.

When the hemorrhage 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 that twenty times, in the course of the night. She is to be preserved in a state of the most perfect rest, the face is to be smartly sprinkled with cold water, and a little wine or brandy, or spiritus ammoniæ aromaticus, given after the opiate already exhibited, 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 may be useful. I need not add, that the patient must, in these awful circumstances, be carefully watch-

ed; 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 hemorrhage, and that the syncope itself is useful, by checking the circulation. But no man of observation can suppose syncope to be safe, in hemorrhage after delivery, or hesitate, by opium and brandy, or wine, to recall his patient to animation, or prevent a renewal of the fainting fits.

It was at one time the practice to prevent the patient from sleeping, or indulging that propensity to drowsiness which often follows hemorrhage. But we can surely, at short intervals, give whatever may be necessary to the patient, 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.

When the placenta is rashly extracted, immediately after the delivery of the child, or suddenly taken away upon the accession of hemorrhage, then we 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 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 hemorrhage 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, hemorrhage may come on, and most frequently it, in this case, proceeds from rash exertion, or much motion. In an uncivilized state of society, we find that almost immediately after delivery, the parent is able to walk about; but women brought up in the European modes of life, cannot use the

same freedom. Motion not only disorders the action of the uterus, and impairs its contraction, but also powerfully excites the circulation.

The continued application of a great degree of heat, mental agitation, and the use of stimulants, may also contribute to the production or renewal of hemorrhage.

A partial or complete inversion of the uterus is another cause of hemorrhage, and which can only be discovered by examination.

Sometimes a partial or irregular contraction of the uterine fibres takes place, and the person is tormented by grinding pains, accompanied by repeated hemorrhage.*

The retention of a small portion of the placenta, which has firmly adhered to the uterus, is also a cause of hemorrhage, 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 stationary, for a considerable time, and the coagula be successively expelled, with slight pains, and no small degree of hemorrhage. 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.

* 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 hemorrhage is produced. Relief is obtained by slackening the bandage; by giving an anodyne; and, if there be no hemorrhage, 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.

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 hemorrhage, whether external or internal, takes place in moderate quantity, immediately after the expulsion of the placenta, and when the system does not seem to suffer materially, we may be satisfied with firmly supporting the uterus by external pressure, and applying a dry cloth closely to the orifice of the vagina. The blood thus coagulates in the uterus, which, being supported by the external pressure or bandage, does not distend, and the action of its fibres is soon excited. After-pains are to be expected, but the fear of hemorrhage is removed. In some instances, when we have had no external hemorrhage, and the blood has been slowly poured into the uterine cavity, little inconvenience is produced for some time. But presently, by the pressure of the womb on the neck of the bladder, a retention of urine is caused, attended with much pain in the belly. This is in general instantly removed, by introducing the finger into the vagina, and raising up the uterus. If it should not, the catheter must be employed.

But whenever hemorrhage takes place to such an extent as to endanger the patient, and produce the effects I have already mentioned, then we must interfere more actively: and I need not attempt to prove, that the only security consists in uterine contraction. This is to be excited by the application of cold, and by the introduction of the hand, not simply to extract the coagula, but to stimulate the uterus, and rather make it expel them. It in general will be found that the uterus is affected with spasm. Nothing is so useful as retaining the hand for some time in the lower part of the uterus, and occasionally gently dilating the contracted spot above, at the same time that we rub externally. The extraction of coagula from the cavity is of signal benefit, and if necessary this must be

done oftener than once. Gardien has made a practical remark, which perfectly agrees with my experience, that the successive emptying of the uterus is the best remedy, yet this must not be done too rapidly. What good can accrue from allowing coagula to remain? It cannot prevent the farther flow, for no vessels of such size as the uterine can be stopped in this way. No harm can arise from their removal; for if the womb do not contract, and the flow continue, we re-introduce the hand, and are at least as well as we were before. We must also proceed with opiates, cordials, and nourishment, upon the rules formerly stated for recovery; and we shall do well, not to be in a hurry to quit our patient, for the hemorrhage may be renewed, and she may be lost before we can see her.

When the hemorrhage 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.

If the placenta have been torn, and a portion of it remain attached to the uterus, the hemorrhage 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 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 attack of hemorrhage. 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 some cold and astringent fluid for the same purpose, or throw a full stream of cold water into the uterus, from a large syringe, by way of washing out the portion of placenta, if it have become nearly detached. 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 hemorrhage 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 cold and astringent fluids into the womb—by the exhibition of a gentle emetic—and by clapping, if other means fail, a cloth wet with cold water suddenly upon the abdomen, when the womb is expelling the coagulum. We also check the hemorrhage, 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 uterus. 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 will be of advantage. Pain in the back generally attends this disease, and is sometimes so severe 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 palpitation, beating in the head, and headach, with anomalous nervous affections which often follow hemorrhage, are best relieved by the regular and steady use

of laxatives, which may be conjoined with asafœtida or tonics, according to circumstances.

CHAP. III.

Of Inversion 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 it has been divided accordingly 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 resembled the uterus after delivery, only the mouth turned upward. The vagina is, in this case, also partly reversed or inverted, so that the tumour is of considerable length. When it is 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 hemorrhage very generally attends the accident, and often is most profuse. But it is worthy of notice, that

* Mr. 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, II. p. 351.

Mangetus, lib. IV. p. 1019, relates a fatal case, where the tumour was taken for 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.

frequently complete inversion is not accompanied with hemorrhage,* whilst a very partial inversion may be attended with a fatal discharge; although there be little hemorrhage, 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 hemorrhage have been trifling. Inversion is suspected to exist from the symptoms mentioned, and on examination, the womb is 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 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 ac-

* This was the case, in the instance related by Dr. Hamilton. Med. Com. Vol. XVI. p. 315.—In the case by Mr. Brown, the hemorrhage was considerable. Annals of Med. Vol. II. p. 277. I have seldom seen much hemorrhage attend complete inversion.

† Chapman relates a case of inversion, where the midwife pulled forcibly at the uterus, and excited convulsions, fainting, and death. Case 29, p. 123.

count for those cases which have apparently recured many days after delivery, and where either with or without hemorrhage, the uterus has suddenly come down. It would appear, however, that this depression of the fundus, ending at last in complete inversion, may take place some time after delivery. There is one case of this kind recorded, when, on account of hemorrhage, 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, And, might not have attended minutely to this circumstance, not expecting it. An incomplete inversion may remain for life, and occasion incurable fluor albus and hemorrhage. Some, however, speculate on a cure being affected 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 hemorrhage; 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 hemorrhage, 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.

* La Motte, 383, mentions a woman who had inversion for above thirty years. Dr. Cleghorn, Med. Commun. II. 226, relates a case where the uterus slowly returned to its natural size. This woman still menstruates, and enjoys tolerable health; it has been of twenty years' standing. The womb is smooth, moist, and gives little pain. Menstruation also continued in Dr. Hamilton's case, Com. XVI. p. 315.

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. If this be physically possible, it must at least be exceedingly rare.

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 to return it within the os uteri, by cautiously grasping the tumour in the hand and pushing it upwards, within the os uteri. This may be facilitated by pressing up the most prominent part of the fundus in the direction of the axis of the uterus, 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.† It is sometimes long before the pulse becomes 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

* Gardien Traité, Tom. III. p. 335.

† In a case related in Memoirs of Med. Soc. Vol. V. 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, but although he did it without detriment, yet he acknowledges he would not follow the same course in future.

‡ Case by Dr. Duffield, in Trans. of Coll. at Phil. 167.

§ Case by Dr. Albers. Annals of Med. Vol. V. 390.

‖ Mr. White's case, Med. Comment. Vol. XX. 247.

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 convulsions, &c. Soon after becoming inverted; the uterus 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 the bladder, support the strength, allay irritation by anodynes, and the troublesome bearing-down by a proper pessary; the bad effects of neglecting or removing this are to be seen in La Motte's 385th case. A spring bandage is also useful. If inflammation come on, as is usually the case, we must prescribe blood-letting, laxatives, &c. In this way, the uterus contracts to its natural size, and the woman menstruates as usual, but generally the health is delicate. Sometimes the uterus becomes scirrhous, or gangrenous sloughs take place.*

If the uterus discharge fœtid matter, and hemorrhage take

* 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.

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 extirpation of the uterus to certain death. This operation has been repeatedly successful,* and is performed by applying a ligature high up,

* 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. Jour. vol. XXV. and by Mr. Chevalier, related in Dr. Merriman's Synopsis, p. 286. Petit of Dÿon 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. Mr. Hunter of Dumbarton gives a successful case, in Annals of Med. Vol. IV. p. 366. I have 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 came down, with pains. It was replaced, but again came down. 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, 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 mammæ are firm, and of good size, and she has not lost the sexual desire. She is subject to dyspepsia. From the preparation in the possession of Dr. Jeffray, there can be little doubt that part of the uterus was extirpated.

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 13th 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

and cutting of the tumour below. But it must also be remembered, that in some cases where the inverted uterus has been either intentionally extirpated, or mistaken for a polypus,* death has followed.

Inversion, when long continued, 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. In complete inversion, there may be a rugous state or corrugation at the top, but can be no distinct orifice, as in polypus. A polypus is more moveable, especially more capable of being rolled. It is generally of a different shape, being more bulging at the extremity and having a smaller pedicle, and the finger can be carried as far as it can reach within the os uteri, which embraces it more like a ring than a mouth with projecting lips. It is quite insensible, yet we must remember, that pressing it may press the uterus and cause sensation; but scratching or irritating it does not give pain. Still there may be cases where some doubt remains.†

An incomplete inversion is more apt to be mistaken, for the finger can be passed within the os uteri, and along what appears to be the stalk or pedicle of a polypus; but this root is thicker than in the polypus, and the os uteri is somewhat thickened and projecting. The tumour itself is not very sen-

6th of May, the tumour dropped off and she got well. As the finger could be passed within the os uteri, and around the tumour, the inversion must have been 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. Windsore. 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 scirrhous; 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.

* In a case related in Recueil des Actes de la Societé de Santé de Lyon, the uterus was taken for polypus, and the ligature applied. The mistake being discovered, it was instantly withdrawn, but the woman died in a few days.

† 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.

sible, but nevertheless may be distinguished from polypus by scratching it gently with a sharp probe, which will cause some sensation, whilst in the polypus it causes none unless we move it, and thereby move the womb.

CHAP. IV.

Of After-pains.

Few women proceed through the early part of the puerperal state, without feeling attacks of pain in the belly, which are called after-pains. 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 peritoneum, 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 if any other bad symptom appear, we must be prompt in our practice. After-pains may also be caused by flatulence and costiveness, which we know by the usual symptoms; but a combination of this state with uterine after-pains 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 after-pains 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 effectually removed, by a purgative than by opium. This fact

I first learned by accident. If the pulse be frequent this is indispensible. 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 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 fullness of the belly, and the patient is troubled with flatulence. It requires laxatives, antispasmodics, anodyne clysters, and friction with camphorated spirits. Oil of turpentine acts both as a laxative and antispasmodic. In doses of half an ounce, it often relieves spasmodic pain in the stomach or bowels; but in this case, it is better to combine it with castor oil, giving two drams of the former and four of the latter. Blood drawn in this disease, after it has continued for some hours, even when the woman is not in childbed, is sizey; and it is always so in the puerperal as well as the pregnant state, although the woman be well. The external application of oil of turpentine is also useful.

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 fore-runner 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 frictions, 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. Dr. Baird, of this city, has favoured me with a paper on the malposition of the uterus, productive of great pain and also tenderness on pressure. This, he says, is 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 the 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 vo-

mits, and is seized with violent pain in the lower part of the belly, or between the navel and 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. It is possible, however, for this state, especially if it be neglected, to 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 turpentine clyster to open the bowels. Then the belly is to be fomented, and if speedy relief be not obtained by these means, an anodyne injection is to be given, and the saline julap is to be taken freely, with the addition of a little antimonial wine, in order to excite a free perspiration. If the symptoms continue, I strongly advise the detraction of blood. Purgatives are useful, and a cloth soaked in oil of turpentine must be applied to the pained part of the belly, to prevent inflammation.

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. Hemorrhage is not the only risk, for in many cases severe head-ach, 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 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 an attack of hemorrhage.

These symptoms have a very indefinite duration, for sometimes the patient dies in a very few days; in other instances they are protracted for two or three weeks.† Sometimes no hemorrhage takes place during the whole course of the disease, but occasionally, repeated hemorrhages do occur, adding greatly to the debility of the patient. In several cases,

* In a case related by Mr. Whyte, the secundines, after a clyster, came away in a putrid state on the fifth day. On the sixth, the patient was much oppressed, had fœtid breath, &c. on the twelfth an irruption 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 *subsultus 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.

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 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.

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.

It may be proper to examine, with the finger introduced into the os uteri, whether any portion of the placenta can be felt and 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, such attempts are still more necessary, and likely to succeed. The os uteri often 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, and sometimes it yields very easily, or is not at all contracted. If, however, it be rigid and unyielding, we must not use violence; but this condition is rarely conjoined with retention of the entire placenta.

* Similar symptoms have been produced by the head of the child being left in utero. Perfect, Vol. II. p. 80.

When a portion of the placenta is retained, we may derive advantage from injecting, frequently, warm water, or warm infusion of camomile flowers, or water with a very little muriatic acid added to it. 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.

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. Bark, in small doses, has been given, but I cannot place much confidence in it. When there is a fulness about the abdomen, and tendency to inflammation, purgatives are of service. When the nervous system is 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 fomentations. 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 toward 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 digitalis given freely, and 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.

Hysteric fits, hiccup, syncope, and dyspnœa, are to be treated upon general principles, by full doses of opium, and other antispasmodics, and clearing out the bowels with purgatives. When a patient is known to be subject to syncope, it will be proper to give her, the instant the child is born, a draught containing spiritus ammoniæ aromaticus, and laudanum, and to have the abdomen firmly supported by a bandage.

There is a species of dyspnœa, that depends upon exertion of the muscles of respiration during labour, or distention of the abdominal muscles. When the abdominal muscles are affected, the person often feels the difficulty of breathing, chiefly during expiration. It is relieved, by tightening a little the compress round the belly, and giving thirty drops of laudanum. When the diaphragm is affected, the uneasiness is usually greatest during inspiration; and there is often a pain in the side, or in the back, or about the pit of the stomach, which may be very severe. It is attended, sometimes, with a sense of stuffing in the breast; in other cases, with an acute feeling of suffocation, or very sharp pain across the lower part of the thorax, with deadly paleness, and the pulse is extremely rapid. A very large dose of laudanum, with ether or volatile tincture of valerian, removes the spasm; if not, a sinapism must be applied. These affections come on within a few hours after delivery. The spasm of the diaphragm is to be distinguished from pleurisy, by its coming on suddenly, and being very acute; whereas, inflammation comes on more slowly, and is often preceded by a shivering fit; there is more cough, and the pulse at first is not so frequent, but is sharp.

Dyspnœa is also occasionally produced by the roller being too tight.

Colic may occur within a few days after delivery. It attacks suddenly, and generally in the evening. It is not preceded

by shivering, but is sometimes accompanied with sickness. The pulse may at first be either slow or of the natural frequency, but soon becomes frequent. The pain is subject to exacerbation and remission, but sometimes does not entirely go off for several hours. The chief risk of this disease, is the induction of inflammation, if the irritation be not soon removed. A good remedy is, from two drams to half an ounce of oil of turpentine, with some other laxative, such as half an ounce of castor oil, or tincture of senna. I was led to employ this remedy in painful affections of the stomach and bowels, not dependent on inflammation, from witnessing its excellent effects in the hands of veterinary practitioners, and from observing its safe and purgative quality in the human bowels, when given as a cure for tenia. If the turpentine fail, a large dose of laudanum is to be given in a clyster, and fomentations are to be used at the same time. It is generally beneficial to precede the anodyne by a saline clyster. If the symptoms do not go entirely off, the saline julap with laudanum is of service. If there be much flatulence, tincture of asafœtida 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.

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 at 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 hemorrhage. The clothes are not wetter than usual; there is no pain indicating spasm of the uterus; and even if the hand be introduced into the vagina, 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 too 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 the 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 end in puerperal mania, but, if neglected, they are more likely to end in the patient continuing to complain of her head, her 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 in a few days expires, apparently from the mere failure of the functions of respiration and circulation. The mind remains clear till the very last. The only useful practice here, 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 fully 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 Weed.

The increased irritability 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 irritability 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 weed, as it has been called, is a fever usually of short duration; the paroxysm being completed generally within twenty-four, 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-operation of additional causes, a continued and very troublesome fever is produced.

This disease, which in its simplest form is very much of a nervous nature, generally makes its attack within a week after delivery. It may be excited by exposure to cold, irregularities of diet, fatigue, exhaustion, passions of the mind, or want of rest. It is sometimes directly ushered in with 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 two first 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 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 frequently, 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. When this disease is not combined with any local injury, it is less dangerous than most fevers occurring in child-bed; but if it recur very frequently, and be attended with much debility, the danger increases in proportion to the continuance of the disease. Local derangement may take place very suddenly in the course of this ailment; the breasts are peculiarly liable to become inflamed; but more frequently, these local affections are rather causes than effects of the febrile state; and in all cases, where the paroxysms are repeated, it is necessary to examine carefully into the state of every organ, especially that of the breasts. It may also be occasioned by irritation of the abdomen, arising either from the state of the bowels, or some condition of the uterus, or its appendages, not distinct enough to produce pain or any permanent local symptom, or by a direct or sympathetic affection of the base of the brain or

medulla spinalis. A fatal termination 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.

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 filled with warm water to the stomach, or a warm flannel to the back, on the commencement of the chilness; or, if the patient be sick, and have a foul tongue, a gentle emetic of ipecacuanha will be useful. If this be not required, we give a smart dose of calomel and jalap, or some other laxative amongst the first acts of our practice. Having hastened on the hot stage, we lessen very cautiously the number of the bed-clothes, and give saline julap with diluents, to bring on the sweeting 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 is exhausted, a little wine may be given. In the whole paroxysm, we must watch against the sudden application of cold, which, in the two last stages, renews the shivering. When the fits recur 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 chilness is felt. It is of great consequence to keep the bowels open, by such medicine as agreesbest with

the patient, for the paroxysms often are repeated, from intestinal irritation alone. Tonic medicines, such as infusion of bark, sulphuric acid, or solution of arsenic, are useful; and in some cases valerian may be joined to these with advantage. Sleep is to be procured by opiates. During the whole time, the strength must be supported by suitable diet; 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.

If derangement of an yorgan should take place during the recurrence of this disease, it must be treated on general principles; and it is to be recollected, that the nature of the complaint is now changed, and the organ which is disordered claims our chief attention. Very frequently the breasts suffer, or the womb itself may be attacked. But we must be careful to distinguish such a modification of weed, from a symptomatic fever, beginning like weed, but altogether arising from the state of the womb, or other organs. The distinction is important, that no time be lost in combating the disease; which in the one case does not at first exist, in the other, is present *ab origine*. When the local affection is acute, the diagnosis is easy; but I wish it to be impressed on the mind of my reader, that it may also be mild, and require attentive inquiry to ascertain it satisfactorily.

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 chilliness, 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 pustules 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 pustules 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 pustules may come out in the same fever. Burserius, and others, divide the pustules 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 child-bed 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 pustules 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 child-bed, as a symptom connected with puerperal diseases. It often accompanies the milk-fever, or the weed, 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 peritoneum 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 bed-clothes, or making the bed-room 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, makes its appearance suddenly. The same holds true with regard to women in child-bed, who, either from previous torpor or costiveness of the bowels 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 weed.

After an attack of shivering and chilliness, 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 complains 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 cos-

tive or loose; but in either case, the stools are fœtid and dark coloured; and, in general, 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 on passing the fæces. The duration of this fever varies from a few days to a fortnight.*

On the first appearance of this fever, a gentle emetic of ipecacuanha should be administered; and afterwards, when the operation is over, we determine to the surface, by giving the saline julap 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, 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

* 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.

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 must be very light, such as beef-tea, calves' feet jelly, arrow root, &c., and if there be no diarrhœa, ripe fruit may be given. Ginger wine and water forms 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 julap is proper.

CHAP. XIV.

Of Inflammation of the Uterus.

Inflammation of the womb may appear under two forms, the slight and the extensive. 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 weed. 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 after-pains. 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 90 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 fœtid. 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 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 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 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 is 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 exciting early a free and pretty copious perspiration, fomenting the belly, and opening the bowels with a smart purge. If the pains be more permanent, blisters may be necessary, and blood-letting, early employed, is useful, but most cases of this partial nature recover without the use of the lan-

cet, merely by cuticular and intestinal evacuation. Nevertheless, I believe that venesection, to a moderate extent, is generally proper, and more effectually prevents chronic disease afterwards.

The more 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 fifth day after delivery, but it may take place at a later period. It is pointed out by a pain in the lower part of the belly, which gradually increases in violence, and continues without intermission, though it is subject to occasional aggravations. 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, no 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. There is also pain felt in the back, which shoots to the 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 lochial discharge is very early suppressed, and the secretion of milk diminished or destroyed. Nearly about the same time that the local symptoms appear, the system becomes affected. The patient has head-ach, often is sick, vomits bilious fluid, and generally feels chilly. The pulse very early becomes frequent, and somewhat hard, and the skin is felt to be hot. The tongue is white and dry, the urine high coloured and turbid, and if the bladder be affected, it may be suppressed .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.

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 diarrhœa, or a uterine hemorrhage; 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. Pus is contained often in the ovaria and tubes, and sinuses of the uterus. Mortification is an extremely rare termination. This is a fact of which my dissections convince me, and it is farther confirmed by the opinion of Dr. Clarke. Little or no serous effusion takes place into the abdomen. In some cases the veins participate very extensively in the disease, and become inflamed to a great distance. Thus inflammation may spread toward the heart or liver, or down along the veins of one or both thighs. This is attended with great and debilitating fever, and much pain in the course of the affected veins, which, after death, are found inflamed, thickened, or filled with pus. The treatment

of this complication must be conducted on the antiphlogistic plan, and a knowledge of the nature of the disease will call for early attention to local pain attended with fever.

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 exposure to cold. It, as well as peritoneal inflammation, is also peculiarly apt to affect those who have suffered from uterine hemorrhage.

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. Mild laxatives are also highly proper. Fomentations, or a cloth soaked in oil of turpentine, are useful. 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 julap, with the addition of antimonial wine and laudanum. This is the best internal remedy I think we can employ. 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 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. Fever attends this disease, and sometimes the stomach becomes irritable. It is often caused by

* 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.

hasty extraction of the placenta. It requires the early use of laxatives; and if the symptoms are 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. Anodynes should be given to allay irritation, and the strength must be supported under the fever, which resembles hectic.

CHAP. XV.

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 hemorrhage 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 commences on the second day, and earlier than inflammation of the womb; and it may often be observed, that the pulse continues frequent from the time of delivery. It is preceded or attended by a 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 are obstructed. These symptoms often come on very acutely, but it ought to be deeply impressed on the mind of the stu-

dent, that they may also approach insidiously. Wandering pain is felt in the belly, neither acute nor altogether constant. It passes for after-pains, 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 bed-clothes 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 has *delirium mite*, but she may also remain sensible till the last The disease usually proves fatal within five 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. 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 apprehend that some serious mischief is about to happen; and therefore, unless the frequency depend decidedly on debility, produced by great hemorrhage, &c. we ought to open the bowels freely, and give a 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. 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 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 the error is safer than the contrary extreme, for of two evils debility is more easily removed than inflammation. 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 freely, so long as he is 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 unless the beneficial result of his practice confirm its propriety. 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. After the lancet has been freely used, if pain continue, leeches, or the scarificator, should be applied to the most painful part. A large dose of opium, that is three grains, are to be administered after the bleeding, and repeated according to circumstances, in smaller doses. 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 practice safe, provided we regulate the dose by the constitution and habits of the patient. In an advanced state of the disease, after effusion has taken place, we must employ purges alone, rather than blood-letting. Sinapisms and blisters are also proper. Digitalis has been given, either to abate inflammation, or promote absorption, after effusion has taken place; but I have not found it useful. After effusion has taken place, 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.

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 much 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 blood-letting, 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, 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 always 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 the 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 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.

CHAP. XVI.

Of Puerperal Fever.

Puerperal fever begins sometimes in an insidious manner, without that shivering which usually gives intimation of the approach of a serious malady. In other cases, the 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 bed-clothes is productive of distress. A general fulness of the belly accompanies this from the first, and it 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 occasionally 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 fœtid. This is a symptom, which, so far as I have observed, always, if it do not proceed from a morbid structure, indicates, in what-

ever disease it occurs, an entire loss of tone of that organ. But to proceed with the history. There is 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 is often 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, fœtid, 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 re-appearance of the lochia, if they had been suppressed, is not critical. The secretion of milk stops, aud 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 involuntary; hiccup sometimes takes place; and the patient usually dies about the fifth day of the disease, but in some cases not until the fourteenth; in others 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.

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 dependant on these, but on that inflation of the bowels which results from the 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.

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 been a very prevailing epidemic, in this city. In some instances it was easy to trace the contagion from one woman to another. In hospitals, it has conspicuously appeared as a contagious disease. There has been much dispute whether the contagion was 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 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 hemorrhage 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.

It is important to distinguish this disease from simple peritonitis, which may generally be done by attention. In puerperal fever, the abdominal pain is seldom the most prominent symptom, unless it begin like severe after-pains, with distinct remissions. There is more despondency, debility, and headach; less heat of the skin, less thirst, and less flushing of the face. In the peritoneal inflammation, the pain in the belly usually increases rapidly after it begins, and the swelling increases along with it. Pressure gives very great pain. The fever is inflammatory. Inflammation of the uterus has its proper symptoms.

This disease is dangerous, in proportion to the malignancy of the cause, and the situation of the patient. All writers agree, 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

* 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. Leak, Vol. II. trusts much to blood-letting; 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 blood-letting, taking

partly depends on giving the name of puerperal fever to different disorders. I am sorry that I find it much easier to

at first from 20 to 24 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 ʒii 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 he pain in the hypogastrium, accompanied with violent stitches, and a resisting pulse. Even then he bleeds sparingly.

M. Doulcet advises repeated emetics, followed by oily potions, and bark, combined with camphor.

Mr. Whyte is against blood-letting. 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.

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, laxatives, and saline julap. 2d, The putrid bilious. This is occasioned by bleeding, or neglecting evacuants 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

say, what remedies have failed, than what have done good. I have stated, that in peritoneal inflammation, bloodletting and

hypogastrium, with sharp pain and putrid symptoms, aphthæ, 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 or frequency it has on the former species, the heat in general not increased, anxiety, weight, and vertigo, rather than pain of head, often miliary spots, and the usual symptoms of pain in the belly, and subsidence of 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. Of late, he seems, from meeting with other constitutions, to trust more to bleeding, followed by the use of full doses of opium.

Dr. Brenan has published a pamphlet, recommending, in place of bloodletting, the free use of the 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 6 species. 1st, Puerperal fever, complicated with la fievre angiotenique, 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 fievre adenomeningée, 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 fievre 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 fievre 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

laxatives are the principal remedies; but in this disease blood-letting must be employed with greater caution. It must be

bark, but rather a kind of negative plan, giving lemonade and cream of tartar, or perhaps camphor. 5th, With la fievre antaxique, or nervous symptoms, as hiccup, convulsions, &c. 6th, With other local phlegmasiæ, as of the brain, lungs, &c.

Dr. Campbell and Dr. Mackintosh have both published on puerperal fever, and 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 Report, 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 opinion 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 has of late been epidemic in this city, and more especially in the suburbs, particularly toward the east side of the city. I have 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 find to be in favour of the lancet, at the same time that its too general failure is fully admitted. Mr. J. Watson informs 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 to-day, 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 a third part recovered by the other, if used early and boldly in constitutions previously sound. Dr. Baird, another intelligent practitioner, seems to think that, in every instance, the disease arises from some malposition of the uterus, and may be cured, if we early remedy that, by pressing with the hand externally, as I have stated at hysteralgia.

resorted to very early, and ought not to be pushed very 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 quite convinced that, in simple peritonitis, the lancet is the anchor of hope; but in contagious or puerperal fever, it must be used with more circumspection, and is less to be depended on. I am fully aware, from experience, of the good effects of bleeding early in typhus or contagious fever; and, therefore, I have no prejudice against the 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, and that it cannot be too soon employed. 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 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 all 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 most of my private patients were delicate females, and they were less able to bear copious bleeding than the more robust; yet in consultation

I have also attended the more robust, as well as the delicate, and have too often seen the lancet fail—but what succeeds? Were full and free depletion the proper and indispensible remedy in this disease, and were no mistake committed by its advocates, in looking on hysteritis or peritonitis as puerperal fever, the lancet ought to be more uniformly beneficial. It ought not, indeed, to be more useful than in simple peritonitis or enteritis, but if early and vigorously employed, it should not be much less so. Is this the case? Many cases of hysteritis and simple peritonitis I have seen alone, and in consultation, and of the benefit of the lancet in these never entertained a doubt; but there is a malignancy in puerperal fever which seems, as yet, in most cases, to baffle every remedy.

On the appearance of the disease, it will be proper immediately to give a smart dose of some purgative medicine, such as infusion of senna, with the addition of Epsom salts, or calomel, succeeded by Epsom salts; afterwards we begin the use of bark, giving it as liberally as the stomach will bear, or administering it in the form of a clyster; at the same time we repeat occasionally the aperient medicine. Opiates given after purgatives, have the effect of abating irritation and pain, and of restraining immoderate dairrhœa, 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 fæces 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 brisk 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 rubifacient em-

brocations, sometimes abate the pain in the abdomen. The repeated application of blisters has been extolled by some, but I am much 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. They are generally more advantageous than fomentations. The strength should be supported by light nourishment, and ultimately by a moderate proportion of wine, or other cordials. 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. Most authors have laid down distinct and formal indications to be fulfilled; but it is much to be doubted, if the means proposed be adequate to the effect intended to be produced; or if all the parade of science has done more than show, that, with the addition of remedies for removing particular symptoms, one class of practitioners have trusted to the lancet as the chief engine of cure, and another to the use of bark and cordials. Peritonitis is much more frequent than puerperal fever.

CHAP. XVII.

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. About a fortnight after delivery, sometimes a little earlier, or even so late as the fifth 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, and these two symptoms may proceed gradually down the limb; but more frequently, pain is felt suddenly in 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. 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; in most cases, it is first perceptible about the calf of the leg, and proceeds upwards. It generally procures an abatement of the pain, but does not remove it. On the contrary, the patient cannot move the leg, and it is tender to the touch. The inability to move it, however, does not depend altogether on the pain, but also on a want of command over the muscles. The pulse is 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 acmé 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 go off entirely, for a length of time. 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 are not glands; some consider them as indurated lymph, others as muscular contractions. 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 one or two instances, suppuration has taken place: mortification has also happened.

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 com-

plaint has completed its course there, the other may become diseased; and this has no influence on the progress of the first. The second attack is sometimes the worst of the two, owing, perhaps, to the previous debility. A 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 hemorrhage, 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.

This is not generally a fatal disease, but it is tedious, and is 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 from exertion made by the patient, which has sometimes proved suddenly fatal.

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, and a slight degree of it has followed abdominal pain, attendant on menstruation, and been repeated for one or two periods.

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 a 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 the disease as proceeding from a depot of the milk. Some modern writers attribute it to an affection of the lymphatics, which are ruptured, or have their circulation interrupted by swelling of the inguinal glands. Dr. Hull considers the disease as an inflammatory affection, suddenly succeeded by effusion. I refer, for a view of the different opinions, to his Treatise on Phlegmatia Dolens.

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 the extremity. 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. The inflammation of lymphatic vessels, or of veins, I look on rather as an accidental participation of these parts in the surrounding disease, than as a cause or essential part of the complaint. Dr. Davis is of opinion, that a violent inflammation of one or more of the large veins within the pelvis or in its neighbourhood, so as to diminish the diameter of the vessels, or obstruct the return of blood from the contributory branches, is the chief cause. Dr. Caspar, on the other hand, found the vessels without disease, but the orifice of the uterus and the vagina in a highly inflamed state. The disease

seems to consist in that species of inflammation which, affecting the cellular texture, is connected with nervous irritation, and it is less apt to end in suppuration than in effusion of serum, or albumenous fluid. 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 to the groin, and we should immediately open the bowels with a purgative. A small blister should then be applied to the groin, or sinapisms may be applied to the groin, inside of the thigh, and near the knee on the leg, and afterwards cloths, wet with tepid solution of acetate of lead, or with warm vinegar. These means may prevent the swelling, or render it milder. If the disease have already taken place in the limb, gentle friction, with warm oil, anodyne balsam, or camphorated oil will be useful, and should be frequently repeated. Fomentations sometimes give relief, but also in other cases, are rather disagreeable. 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 sometimes a bath of warm sea-water.

Besides these means, we must also employ remedies for abating the fever, and constitutional affection. We never derive advantage from venesection in this disease, 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 bark, 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 fœtid, it is proper to inject tepid water, or infusion of camomile flowers into the vagina. Exposure to cold, during the first stage of recovery, may cause a relapse. The treatment thus consists chiefly in palliating symptoms, and supporting the strength. I cannot, however, 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 light and nutritious.

CHAP. XVIII.

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. XIX.

Of Puerperal Mania and Phrenitis.

All women, in the puerperal state, are more irritable, 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 it 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 in some degree 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 sometimes rather hot, the tongue white; the secretion of milk is often, but not always, diminished; and the bowels are usually costive.

There is seldom permanent headach; but this symptom is

sometimes produced pretty severely by attempts to go to stool, if accompanied by tenesmus, or by efforts to void urine in strangury. In some instances the patient recovers in a few hours, in others the mania remains for several weeks, or even some months; but I believe it never becomes permanent, nor does it prove fatal, unless dependent on phrenitis. Venesection has been advised in this disease; and its propriety will depend on the presence of symptoms of determination to the head, indicated by pain or heaviness, and by the state of the vascular system, with regard to increased action, and the evolution of heat. Where there is little febrile affection, I agree with those who consider it as hurtful, or at least as useless.* In every case we may apply leeches to the temples, open the bowels with a smart purgative, keep the surface gently moist, by means of saline julap, and afterwards allay irritation with liberal doses of camphor. 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. 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 productive of great benefit. A good, although I will not say the only good form, is Battley's liquor opii. There is sometimes considerable difficulty in keeping the patient in bed, and making her take either

* M. Esquirol says, puerperal mania is generally attended by suppression of the lochia and milk. He thinks venesection should be employed, only with great caution, and that leeches applied to the thigh and pudenda are more useful. Sinapisms he also uses, laid on the nape of the neck, or legs and thighs. Blisters he has not found serviceable at first, but thinks them so in the sequel. Clysters are to be given.

M. Georget proposes clysters of milk and water, the use of the tepid bath, and in congestion, local bleeding, adding that venesection has been much abused. Dr. Gooch, in the 6th vol. of Med. Trans. of Coll. says that venesection is seldom safe, but if the pulse be full and strong, and not brought right by purging and applying cold to the head, blood may be taken from the scalp or neck by cupping or leeches. When the pulse is only frequent, without evidence of determination to the head, he forbids even topical bleeding. The best soporific, he says, is the tepid bath, with camphor and extract of hyoscyamus, each in the dose of ten grains.

food or medicine. It is therefore in such instances of great advantage to have early recourse to the strait waistcoat, which not only commands the patient, but tends to make her exercise self-control. In the whole course of the disease, the greatest attention must be paid to the bowels. 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 reading, music, and afterwards by daily walking and change of scene.

Some are peculiarly liable to this disease after delivery,* in consequence of the irritable state of the nervous system at that time. In such cases, the patient ought to be bled occasionally during pregnancy, and particularly toward its conclusion; unremitting attention should especially be paid to the state of the alvine discharge, which I am disposed to consider as of the utmost importance. She must be carefully watched after parturition. Every irritation must be removed, every source of alarm or agitation obviated, and the camphorated julap with laxatives will be proper remedies, these being the most powerful means of diminishing the excessive irritability of the nervous system. It is impossible to be too vigilant of the state of the bowels, either in a prophylactic or curative view. The diet is also to be regulated. If the patient do not sleep well, hyoscyamus should be given. It is often of service to get the patient up as soon as can be done with safety, and have the mind occupied with such amusements and pursuits as keep it equally exercised, without risking irritation.

There is a variety of this disease, in which we find the

* Gardien denies that this disease depends on the puerperal state, but says it is to be attributed to moral causes, as jealousy, fright, &c. He advises a blister to be applied to the neck; or, if the lochia be obstructed, leeches to be applied to the vulva. A scruple of colocynth mixed with some bland substance, as lard, has been recommended, to be rubbed on the abdomen three times a day, to little purpose I fear.

patient, very soon after delivery, complains of restlessness, or rather inability to sleep. The head is slightly pained, there 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, and 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 intimately connected with a particular state of excitement in some part of the spinal cord. 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 full 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.

Melancholy usually comes on later than furious delirium. The disease differs nothing in appearance and symptoms from melancholy madness occurring at other times. It is obstinate, but generally goes off after the child is weaned, and the strength returns. It is therefore proper to remove the child, and send the patient to the country as soon as possible. In some instances, both kinds of madness seem to be dependent on a morbid irritation, such as inflammation of the mamma, &c. Here our attention must be directed to the cause.

Inflammation of the brain usually appears still earlier than delirium, from irritation. It may be caused by determination of blood to the head or preternatural irritability of the sensorium, or may occur in consequence of a constitutional tendency to mania. It must be distinguished from puerperal delirium which is seldom dangerous, whilst this is a most fatal disease. In 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. She soon 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 she is able to describe her feelings. 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 its 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. 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 lit-

tle 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.

CHAP. XX.

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 spunge, 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, always remembering, however, that the effect of the iodine must be watched, as it is a dangerous and active agent. 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. If there be a tendency to suppuration, it ought to be encouraged, and treated on general principles.

CHAP. XXI.

Of Diarrhœa.

If the patient have been costive before delivery, large masses of fæces may come down afterwards, producing violent pains in the belly, piles, tenesmus, or uterine hemorrhage; 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 hemorrhage, 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. XXII.

Of Inflammation of the Mamma, and Excoriation of the Nipples.

Inflammation of the mamma may take place at any period of nursing, but is most readily excited within a month after delivery. It may be caused by the direct application of cold, retention of the milk in consequence of sore nipples, mechanical injury, mental causes, or it may occur in that febrile state, called weed. In general, the inflammation, however extensive it may afterwards become, is at first confined to a small spot. It may take place in the cellular substance alone, or it may affect the gland; it may be attended with much general swelling of the breast, or the tumour may be very circumscribed; it may run its course rapidly, or very slowly; and when abscess forms, and the integuments burst, we may have matter alone discharged, or there may be a slough of considerable magnitude found within the abscess. This proceeds from the destruction of one or more of the glands, which, if the inflammation run high, do not suppurate but die. 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 was ever useful, it was only in slight cases, where it was adopted early, and the disease was 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. When the pain becomes throbbing, a warm bread and milk poultice is proper to assist the suppurating process. After 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 prevents insinuation of matter in the cellular substance 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 hemorrhage 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 aperture, 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 escharotic.

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 scrophulous, 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 spasm in the breast. She loses her appetite, and 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 gland suppurates, the same operation is to be performed. If this be neglected, numerous sinuses form, slowly discharging fœtid 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 these 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 gland 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.

The diet must be as nourishing as possible, and a liberal allowance 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. It ought to be impressed on the mind of every practi-

tioner, 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 allowed 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. Induration with sinuses yields to laying the sinuses open, and then employing gentle friction. This even holds true often with regard to simple induration occurring after an operation for cancer.

Sometimes, although the abscess heal readily, and have been small, an induration remains, which either may continue long indolent, and cause apprehension respecting future 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 some-

times 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 scirrhous or scrophulous 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 ulcer 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 aphthous 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, fifteen 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.

It is often useful to apply a tin case over the nipple, to de-

fend 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, but it does not always succeed; and some children cannot suck through it. The artificial nipple is preferable to the cow's teat. It is made of elastic gum; but a small polished case or nipple, made of wood, covered with any soft substance to defend the gum, will serve the purpose. 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.

Venereal 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. 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 bed time, to procure sleep, and the bowels are to be kept open. Many women, after delivery, are subject to disorders of the alimentary canal, especially diarrhœa 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 breast 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. XXIII.

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 it causes acidity and other 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 inflammation of the bowels. Nevertheless it is in many cases connected with some degree of inflammation, which also lays the foundation of 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. This supervenes soon after delivery; there is a great degree of fever, increasing weakness, and a puffy swollen state of the belly, sometimes with, sometimes without pain in the belly, but pain in the back is seldom absent. It may be produced by rashly drinking small beer, or similar causes. On dissection I have found the uterus and its appendages inflamed, and also the intestines, though in a slight degree. The lancet should be early employed, and afterwards purgatives.

CHAP. XXIV.

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. The uterus is enlarged, and has neither the shape of the gravid nor unimpregnated uterus; the cervix is indistinct, and the os uteri is nearly circular, and will admit two or more fingers. The abdomen is prominent, and the integuments relaxed, wrinkled, and covered with light-coloured broken streaks. The breasts are enlarged, have the areola very distinct, and contain milk. It is possible for this secretion to take place independently of pregnancy, but not with the appearances just described.

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 hydatids certainly may produce the same effects with gestation, because they do generally spring from conception. It is, however, very rare for the belly to be enlarged to the same degree as in the end of pregnancy, and when the mass is expelled, as it is soft, the perineum 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 perineum 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 it to 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 hemorrhage, or from any cause destroying her, soon after delivery, the uterus is found like a large flattened pouch, from nine to twelve inches long. 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 to be gangrenous, by those who are not aware of the circumstance. The surface being cleaned, the sound substance of the womb is seen. The vessels are extremely 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 has returned to its unimpregnated state.

A week after delivery, the womb is as large as two fists. At the end of a fortnight, it will be found about six inches long, generally lying obliquely to one side. The inner surface is still bloody, and covered partially with a pulpy substance, like decidua. The muscularity is distinct, and the orbicular direction of the fibres round the orifice of the tubes very evident. The substance is whitish. The intestines have not yet assumed the same order as usual, but the distended cæcum is often more prominent than the rest.

It is a month at least before the uterus return to its unimpregnated state, but the os uteri rarely, if ever, closes to the same degree as in the virgin state. 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 nemorrhage, although no new impregnation have taken place. Such rupture during lactation, is not always referrible to an extra-uterine conception.

We know that the 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 the woman die, the womb is found enlarged, its inner surface covered with the decidua, or maternal portion of the placenta. The vessels are enlarged, the tubes and ligaments very vascular; the calyx of the ovum is bloody.

The appearances during life, or after death, which occur from a miscarriage, may also arise from the expulsion of hydatids, which 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 scissars. 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 practitioners; but it has sometimes been found, that when the ligature had become slack, a considerable quantity of blood was lost, and even fatal hemorrhage 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

* 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.

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 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 still-born, 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 are seldom made to breathe.

In determining on our treatment of still-born 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 fœtal 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 in the throat; and then, of a sudden, respiration becomes perfect. In the second case, respiration, after it begins, continues longer 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 fœtal 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 fœtal 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 scissars 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 blowing either through the barrel of a quill, or applying the mouth directly to the child's mouth, at the same time that the nostrils are held, and the cartilages of the trachea pressed gently back to obstruct the œsophagus. The attempt at inflation is to be alternated with pressure on the thorax, 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 put in warm water, and the artificial respiration sedulously continued. An injection is also to be administered, and if electricity could be employed, there is ground for thinking that it would 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 quantity 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, but is slow and oppressed, with stupor, indicating affection of the brain.

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 cannot speak from my own experience. In footling cases, it has been supposed, that extention of the spine was a cause of death, but this, I apprehend, is seldom the case.

It often is desirable to know, whether a child have been born alive, and destroyed afterwards; but the signs are not without ambiguity. When, therefore, the life of the mother is at stake, we must be very circumspect in forming our opinion. If the lungs be 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. If the head be much mis-shapen, there is additional ground for

* It is occasionally of service, in weakly performed respiration, to give some gentle cordials or stimulants.

believing the child to have been still-born, 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, and has been recently born, the lungs swim in water, and their air-cells universally contain some air, giving 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 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.

Physicians are much divided in opinion as to the importance to be attached to the circumstance of the lungs, with

* If the child have not breathed, the lungs are dense, and so contracted, as to leave the greater part of the heart exposed. If respiration have been established, they are paler in colour, redder, they cause the diaphragm to descend lower, and they cover in a great degree the heart. Respiration expands the lungs gradually, not only one portion of lung becomes filled with air before the rest, but one lung expands or fills with air before the other. The time required for the complete expansion of the air cells is various, and differs in individuals.

If the child have the cord soft and spongy, and the stomach contain only a little mucus, or bloody fluid, and the great intestine be filled with meconium, whilst the body have lost its firmness, the cuticle peels off, and leaves 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 of a deep red colour, there is evidence that the child has died in utero. 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 the child have not been starved, there may be remains of aliment found in the stomach. If the child have a full eye, be stiff, and the skin of natural colour, it has died very recently. We cannot depend on the conclusion drawn from the skin being free from the white spermaceti coating it usuall is covered with at birth, for some children have little or none of it.

the heart attached, 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 fully inflating the lungs. In this, I think him wrong. Again it has been stated, that although the child was born dead, yet artificial attempts having been made to inflate the lungs, they will swim, even if the child has never breathed. But, in reply to this, it is with great justice 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. Putrefaction, it is also said, 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 still-born child than most other parts of the body, and maintain that this process does not, even in summer, take place in less than six days, and in winter, in less than as many weeks. 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 that of the latest writer on medical jurisprudence, M. Foderé, who observes, " La supernation du cœur avec les poumons est une preuve que la respiration a eté tres prononcée." If the lungs have been fully inflated by respiration, they require, 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.

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. 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 may, with propriety, be attended to. By calling in the aid of all these tests, we can seldom be at a loss to decide, and our opinion will be confirmed, if we observe signs of injury.*

SECTION SECOND.

After the child is separated from the placenta, it is to be 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 retains 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.

* There are some very good papers on infanticide by Mr. Hutcheson, in the Med. and Phys. Journ. No. 254. et seq. See also La Medicine Legale of Capuron, and a very useful view of the subject in the Edin. Med. Jour. Vol. XIX. p. 449.

The only purpose to be derived from 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 bason. 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 is 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, perhaps, in this country, for some weeks, rather 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 bed-clothes, 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 pains, 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 em-

* Van Helmot, and after him, Browzet and others, have advised, that children

ploy another 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

should not be brought up on the breast, but fed on ass's and goat's milk, or a panado made of bread boiled in small beer, and sweetened with honey.

* 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. 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.

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. Woman's milk contains more cream than cow's milk, yet no butter can be made from it. It contains much whey, and yet it 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 new made whey, a sixth part of fresh cream, or less if it be rich, and a little sugar. Some dilute the milk with water gruel. 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. This diet may be occasionally alternated with a little weak veal or beef soup. 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 and light soup, give occasionally a little spoon meat, such as panado made with the crust of fine bread, and a little salt, which is better than sugar, care being taken to break down the lumps completely. This is to be mixed with milk. Arrow-root, 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 easy, and the bowels be correct. But when it does not suit, as is too often the case, he is either dull and heavy, or cries much, and often the bowels are either bound or too loose; and in both states the stools are fœtid, 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, will 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 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 developement 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 light soup, eggs, bread and milk. In Ireland, potatoes form a principal part of the diet. In Scotland, oat-meal porridge is a common diet,

* 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.

and with many agrees very well; but it is, notwithstanding, apt to be heavy and binding, unless it have an admixture of barley-meal, which corrects it. 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 nurses; 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.

CHAP. II.

Of Congenite and Surgical Diseases.

SECTION FIRST.

When a child is born, it is necessary to ascertain that it have no congenite imperfection, or have met with no accident during birth. I can here only make a few short remarks on some of the most frequent and important imperfections. The first I shall notice, is the hare-lip, which may exist in different degrees, and be accompanied with a vacancy in the palate. Sometimes an operation has been performed soon after birth,

but it often fails, and occasionally the child dies. It is better to delay it for ten or twelve months, or even longer. In the mean time, the child must be brought up on the spoon, unless the defect be so trifling, as to permit him to suck a large nipple.

SECTION SECOND.

Imperforated anus may exist in different degrees. There may be an appearance of anus, but an obliteration a little higher up. This is discovered, by introducing a bit of oiled paper rolled up, which ought always to be done when the child is long of voiding the meconium. If the paper be soiled with fæces, we may be sure that the rectum is pervious. A blunt probe, cautiously introduced, will also ascertain the state of the gut. Sometimes the anus is covered with a thin membrane only. In other cases, a great part of the rectum is wanting, or it terminates in the bladder of the male, or vagina of the female, which last is not a fatal deviation. It is proper always to make an incision at the anus, or at the spot where it ought to open, if there be no mark of it; and this is to be carried about half an inch or an inch deep. If no intestine be found, a trocar or lancet may be passed a little deeper in the proper course of the rectum. If, by any of these means, the bowel be opened, a tent should be employed to keep the aperture from closing.* But if it be not thus found, we are not to prosecute the dissection farther, but must form an artificial anus.† This can be done by making an incision immediately above, and parallel to, the ilium, beginning about midway between the anterior and posterior spinous processes. The incision is to be deepened in the same direction, or rather

* In a case operated on by M. Cervenon, where the incision was obliged to be carried an inch high, it was necessary to use a bougie for a year. The child was enabled to retain the fæces, but the anus appeared as if it were sunk an inch deeper than usual. Recueil Period. Tom. I. p. 36.

† Vide Observations on this subject, by Dumas and Allan, in the Recueil Period. Tom. III. p. 46. and 123. and a case in point by Duret, in Tom. IV. p. 45.

downward than upward, for directed in the latter course, we come on the end of the kidney. The colon is thus exposed at a portion exterior to the peritoneum. It is to be laid hold of by a pair of dissecting forceps and opened. 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.

Imperforated urethra is rare, for generally the canal opens in supposed cases of imperforation, about midway, between the scrotum and glans penis. There is seldom occasion to do any thing instantly, but, in due time, an operation may be performed to carry on the urethra to the point. 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.

Imperforated meatus auditorius is very rare, and can seldom be remedied, except there be merely a membrane stretched across the canal. Adhesion of the eye-lid is often complicated with a defect in the eye-ball itself; but when this is not the case, an operation will be advisable.

SECTION THIRD.

Sometimes the umbilicus is peculiarly large, and hernia takes place soon after birth, but still more frequently betwixt the second and fourth month. 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. Sometimes, a very great portion of the intestines is found protruded at birth, into the sheath of the cord. This may be complicated with an imper-

fect 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 and the spinal marrow. The bone is deficient generally about the lumbar vertebræ: a tumour is formed externally, which contains a fluid, and the skin is usually livid. The marrow stops at the commencement of the tumour, but sometimes begins again below it; or small nervous twigs arise from the inner surface of the sac, and pass out to form the nerves of the inferior part of the body. This is a fatal disease, and death is generally preceded by inflammation or gangrene of the tumour. In some instances the sac is open at the time of birth. The tumour may either be or not be connected with hydrocephalus internus. If the head be enlarged, there can be no doubt of the existence of the latter disease, and nothing ought to be done to the tumour of the spine. If the urine or fæces be expelled involuntarily, or the inferior extremities be paralytic, or the tumour have burst, or sloughed, no attempt need be made for relief. Where these unfavourable circumstances are absent, then two modes of treatment offer for consideration, palliative and radical. The first consists in treating the tumour as a hernia, that is, gradually getting the contents to retire within the vertebral sheath, if they are 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, or hollow piece of plaster of Paris, may be applied, at least in the first instance. This plan is only palliative, and never cures the complaint, but it prevents increase. The second exposes the patient to great danger from constitutional irritation, but if it succeed, the cure is radical. 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.*

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. Second, elevated discoloured marks, which are of a purple hue and very vascular. These are apt to increase, and at last bursting, great hemorrhages make take place. They may be seated on the face, or in the lip, eye-lid, &c. or on the spine, resembling spina bifida, but are more solid or spongy, and the bone is not deficient. These ought to be extirpated as soon as they begin in the smallest degree to increase. Small marks have occasionally been removed by raising the skin with a blister, and then applying mild escharotics, or by means of caustic.

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

* Vide case by Sir A. Cooper, in Med. Chir. Trans. Vol. II. p. 324.

was deficient. It requires no particular treatment. By applying cloths dipped in brandy, the effused fluid is soon absorbed. This which is called hematocele is generally on the parietal bone. Encephalocele, as Naigel 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, applied with 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 cured by a good mechanic.*

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 scissars. If the artery be imprudently cut, the hemorrhage is to be checked by compression or cautery.

SECTION NINTH.

Imperfection or malformation of the heart is a very frequent occurrence; or the fœtal 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 fœtal structure, they may not come on till the child begin to walk, or get teeth, or even

* For the anatomy of the club-foot vide Scarpa.

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 naval 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 ulceration. 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, the inflammation may become ery-

sipelatous, and end in gangrene. If this be threatened, gentle laxatives, a good nurse, and mild dressings, poultices, or spirituous applications, according to their effects, can alone save the child.

Sometimes, a day or two after the cord separates, or at the time of separation, hemorrhage 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 on 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. 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 arteries, should they bleed, are exposed by cutting directly down from the umbilicus.

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. When it continues long, the cold bath is proper.

Scalds and burns are best cured, by applying instantly clothes 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 of vinegar, alone or diluted. This, if the injury be slight, prevents the part from blistering, or only a very slight vesication takes place. After a few hours, the vinegar may be discontinued, and the part 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.

If vesications have formed, they are to be opened with a very small puncture, to let out the fluid, and then the above liniment is to be applied; or if this 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, and then the old formula of equal parts of lime water and linseed oil. 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. In all cases pain is to be allayed by opiates, and the bowels are to be kept open.

Ear-ach 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 fœtid 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, 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 fœtid, so that it is disagreeable to come near the child. The mucus dries, and comes away in thin pieces. Astringent injections, 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 fœtor sometimes spontaneously ceases.

Fœtid 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.

SECTION TWELFTH.

Infants are subject to inflammation of the eye, which is most frequently of the kind called purulent ophthalmy. This begins with redness of the eyelids, which soon swell so much as to prevent their being opened. Then a copious and constant discharge of thick yellow matter takes place. This is found also spread over the eye. If the disease continue, and increase, slough is apt to take place. In bad cases, the eye-lids are also turned out, especially when the child cries. Both eyes are generally affected. This disease is too well marked to be ever mistaken. The cause is sometimes obscure, but frequently it is evidently owing to the application, during birth, of leucorrhœal matter. The treatment which I have found most effectual, and which has always produced a perfect, although not a rapid cure, is the application of a leech to the temple, or root of the nose, and repeating this according to the degree of inflammation; the administration of regular laxatives; the injection, by means of a small syringe, of tepid milk and water into the eyes to wash out the matter, and then throwing in a syringeful of some astringent solution. This is to be done three or four times a day. But what appears to be of most decided advantage, is the application of a small blister to the back of the head, to be kept open by savine ointment. Amongst the topical applications, none seem to claim a decided preference. Solution of sulphate of zinc, or copper, in the proportion of two, and afterwards three grains to the ounce, or nitrate of silver, in the proportion of one grain to the ounce, or muriate of mercury, in half that strength, have all been occasionally useful. The eye-lashes

may be anointed every night with lard, containing a very little red precipitate, or a little ung. hyd. nit.

SECTION THIRTEENTH.

Children are subject to spongoid disease of the eye. The ball becomes slowly diseased, and its structure changed, so that all the parts are confounded, and the optic nerve becomes black or brown. The tumour bursts, and a fungus shoots out. The bones become carious, the disease spreads to the brain, and the patient dies, after much suffering. This has been improperly called cancer. It admits of no cure, except by very early extirpation. Every operation that I have seen has been too long delayed, and the patients have all had a relapse.

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 langour 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. Sea-bathing is useful. When the glands are swelled, or other parts are enlarged, it is of service to rub them gently with oil for half an hour three times a-day, and apply, in the intervals, pledgits dipped in a solution of cerussa acetata. Electricity or galvanism are sometimes of service, in promoting absorption or hastening suppuration. When the tumours tend to suppurate, that process should be assisted by poultices, blisters, and electricity. 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. 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 has of late been much praised; but it must be given with circumspection, and as yet we have few proofs of its efficacy. 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.

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 ancles 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 second year, but it has been known to affect even the fœtus 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 fœtus leave the uterus. It is carried on slowly, and is not completed for 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 bags consist of two lamina, both of which, especially the outer one, are vascular. These sacs adhere firmly to the gum, so that if it be pulled away from the jaw, the sacs come 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 fœtal 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 bursts 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 two first 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 month, 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 two first 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 increased: 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 complaints, 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. 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 something 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 exposing the child freely to cool air. The cold bath is also useful every morning, 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 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 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, purgatives, antispasmodics, and the general treatment which will hereafter be pointed out. And 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 continue, 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, and are only admissible 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 asafœtida 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.

In the following short account of cutaneous diseases, I may perhaps have committed some errors respecting the names of eruptions.* Nosological writers, unfortunately, do not agree in giving uniformly the same name to the same disease, and perhaps it is not always easy to give a perfect definition by words alone. I have, however, endeavoured to detail faithfully, 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.

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 intertrinctus, 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 much 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

* I adopt the terms of Dr. Willan, not that I 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 introducing, as part of their improvement, an arrangement of those 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 exhibiting the composition.

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. This eruption appears generally on the face and superior extremities, but sometimes it spreads 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 application 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

* Sometimes a few spots of this kind may be observed on the forehead of children, at the time of birth.

† 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.

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 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 justly considered as a very 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 resemble often the papulæ in 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 fore-arm, 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, or 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. Afterward 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 acuminated 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 ecthyma 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 a similar eruption of the 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.

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 critones. 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 furuncules, 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 sometimes with aphthæ, is more serious. The vesicles, at first small, presently become pretty large and oval, and their contents turgid. 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.

Sennertus describes, under the name of sudamina, an eruption like millet seed, fretting the skin, and affecting children about the neck, arms, &c. Plenk defines it in the following terms: *Sunt vesiculæ granis milii magnitudine et similis, 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 head-ach 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 afflorescences, 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 fre-

quently with tepid water and a little soap, or lemon juice; but if neglected, it requires the application of sulphur.

A variety of this disease consists of minute red acuminated 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 fore-part 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

* 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 remedi es used for the itch.

like papulæ, but really consists of small pointed inflamed 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 toward the scab. These pustules are most frequently situated between the thumb and fore-finger, 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.

Sometimes the friction excites an eruption different from

* 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.

itch, and kept up by the remedies intended to cure it. M. Burdin remarks respecting this, that it consists of small round pustules, " qui se remplissent quelquefois de serosité, et dont la cicatrice laisse le plus souvent une tache d'un rouge brun, le prurit qu'elle occasione 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.

* 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.

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 Bateman, 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, 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 inflammatiom 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.

* Under this name Alibert describes an eruption, to which young girls, near

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 ringworm, 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 shooting 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 fre-

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.

quently 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. When crusts are formed, the application of a little ung. 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.*

SECTION THIRTEENTH.

Children are sometimes affected with ichthiosis, 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. This 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

* 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 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. Hemlock has not maintained its reputation. Only mild local applications should be prescribed.

pick off the scales. Their regeneration is to be prevented by friction, and repeated bathing. Sometimes children have this disease conjoined with boils.

SECTION FOURTEENTH.

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. 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. The spots on children generally begin like papulæ, of small size, and 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 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. Different species of this have been enumerated by Dr. Willan, which however may perhaps be viewed rather as varieties. I do not mean to notice all those here, as it does not consist with the object of this work. 1st, Psoriasis guttata 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 irritable. 2d, Psoriasis diffusa, forming in large patches, which sometimes becomes confluent and possess the general character of the disease. A more severe variety is termed inveterata, and others are named from their situation.

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 justly observes, that all other marks are absent. The syphilitic form of this disease is attended with hoarseness, and the patches are of a livid colour, with a slighter degree of scaliness, and the margin is sometimes higher than the centre.

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. The application of preparations of sulphur, and ointment of nitrated mercury, with the use of the tepid bath, especially made with sea-water,

daily, will often cure this disease; but, in obstinate cases, we must give some sudorific, such as antimonials, or decoction of sarsaparilla, or have recourse to the Harrowgate or Moffat waters, which have great efficacy. They should be used both externally and internally. The internal use of arsenic, as in lepra, will also be proper, if the other means fail. Solutions of soap, or of alkali, or of sulphuret of potash, form very useful baths. Decoctions of helebore, or solution of muriate of ammonia, or of oxymuriate of mercury, are also proper, as external applications. The application of cloths wet with butter-milk, or of a poultice of butter-milk and oat-meal, sometimes facilitates the cure, and indeed when there is much irritation, only the mildest application can be borne. Mercury internally does more harm than good; when it is beneficial, it has been in the form of oxymuriate, in such small doses as have kept the bowels regular. In adult females, whose chylopoetic viscera had been defective in action, I have known the disease very severe and obstinate, and, though mitigated by laxatives, seem to be removed only by time.

SECTION FIFTEENTH.

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 removed 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 the 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 procured.

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 application 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, the frequent use of the tepid bath, gentle friction with ung. hyd. nit.; the exhibition of some diaphoretics, such as decoction of sarsaparilla, with a little antimonial wine, arsenic, sulphureous waters, internally and externally.

SECTION SIXTEENTH.

Lepra is a very common disease amongst children, and is vulgarly known under the name of scurvy spots; others commonly call it ring-worm, or herpes farinosus. 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 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. This, however, is oftener the case with some of the other scaly diseases already noticed. They also, much more rarely, become confluent. The causes of this obstinate disease are obscure. The treatment which I have found most useful, consists in the constant application of ung. hyd. nit., frequent ablution, or rather the tepid bath, mild diet, 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, but we must not abandon it too hastily on that account.

SECTION SEVENTEENTH.

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, those concentric and enlarging circles of pustules, successively appear as in ring-worm, and this variety has been called impetigenous 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 psydraceous 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, 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 EIGHTEENTH.

Porrigo, or tinea, is a collection of achores, 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 on distant parts of the body, or on 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 furfuraceous patches, and with papulous eruption, like porrigo. 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

* An analysis of this has been published, but it throws little light on the treatment.

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 volaticus. 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 longer. It usually begins 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 those cases, the health does not suffer, farther, 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 by 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. 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,* or ung. hyd. nit. 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

* 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.

quick-lime and sulphur have been boiled, or a weak solution of muriate of mercury, or solution of acetate of lead. 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 have been also bathed with a weak solution of sulphate of zinc. Some have proposed to establish a counter-irritation elsewhere, by a small blister or issue, but this is not always safe, in such a state of the skin.

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 ptyriasis, 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 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 achores form, and produce crusts or scabs, about the size of a sixpence. Those 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 encrustation 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: R. kali sulph. ʒiii., sap. alb. ʒiss., aq. calcis ℥vii ss., spt. vini ℥ii., 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 achores, which break and form thin scabs, covering the original patch, which is somewhat of a circular shape. The base of each little achor is red. The clusters are thickest at the margin, and the pustules fewest toward 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 presently at the central parts fall 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 achores, 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 modification 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 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.

* R. cerus. lbss. litharg. aur. ℥ii. alum. ust. ℥iss. mer. sublim. cor. ana ℥iss. axungiæ lbii. terebinth. venet. lbss. m. fiat ung. ad scabiem.

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 ointment, 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 occupies 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.

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 fœtid 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 beforethespots 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 hemorrhage from the nose, mouth, alimentary canal, or vagina, and sometimes even from the toes. This species occasionally proves fatal, but it is often cured by the use of bark,

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.

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 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

* 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 sublivid inflammatory patches, and ichorous vesications, about the belly and thighs; but by the use of bark, and especially the mother's milk, it recovered.

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 formed.

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 smart purgative, and keeping the child cool. 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 washing 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. 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 advance-

ment 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. If sloughs form and the child still survive, a bread and milk poultice, with charcoal, will be proper. 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. Bark 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. The sulphate of quinine has of late been given in doses of half a grain twice or three times a day, and is a very good form for infants. 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 diarrhœa. 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 œdematous swelling, appear about the joints, eye-lids, 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, orbathed with vinegar. Calomel is of service, and should be given pretty freely.

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 chin, 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 pustules, 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

* 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.

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, and apply a little lint spread with spermaceti ointment, mixed with the white oxyde of mercury. If the part be very itchy, and not healed by this application, it may be bathed with rose water, containing a little tincture of opium, or 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 discharging 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, 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.

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 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 fœtid 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.

If neglected, the ulceration becomes either fungous, and is

called scorbutic;* or sometimes of the kind which resembles sloughing phagedena, that is, a foul, fœtid, 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 fœtid 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 fœtid. Good diet, the internal use of acids, and great attention to cleanliness, at the same time that we use mildly acid or spirituous applications locally, 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 hemorrhage 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, and vegetable acids, bark, or sulphate of quinine in half grain dozes, 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 on the

* 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 cautery. Solution of common salt has also been recommended.

cheek which becomes larger than the other, and the upper lip becomes rigid, swollen, and glossy. On some part of the tumified skin, generally on the cheek, we observe presently a livid spot, which ulcerates and spreads, but 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 ulcer 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 cicatrise, or the patient recovers after an exfoliation of part of the jaw-bone. This ulcer is best managed with stimulants, such as diluted muriatic acid, solution of nitrate of silver, camphorated spirit of wine, tincture of opium, &c. but sometimes it is necessary to give these up for a carrot or a fermenting poultice. Whatever gives pain, particularly prolonged pain, is hurtful. The bowels are to be kept open, the strength supported by milk, soups, and wine; and acids, with ripe fruit, given liberally. Before ulceration takes place, the best application is camphorated spirit of wine, or, if the part be swollen and hard but not red, we employ slight friction, with camphorated linament. 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 with-

out 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 with saturnine applications, or a fermenting poultice, whilst opium and wine are given internally, with or without bark, 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 tumified, 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 more 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. The labia, particularly within, are inflamed and livid, and vesicated, and yield as in the former case a thin muco-purulent discharge; and there is great pain in passing the urine. Very speedily the internal surface of the labia, the nymphæ, and clitoris, are covered with ulcerations, succeeded by brown fœtid sloughs. There are, from the first, languor, paleness, and debility, with small, frequent pulse, and depraved action of the bowels. As the disease advances, the debility increases: sloughing and ulceration spread, and the patient gradually sinks. 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 try the sulphate of quinine. The parts must be kept very clean, bathed frequently with solution of acetate of lead, and dressed with salves, containing oxyde of lead, or of zinc. If the slough be deep, or extensive, the fermenting poultice is proper. The actual cautery has been employed on the continent, but never 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 vesicles, appearing on the tongue, inside of the cheeks, and the fauces. They are extremely common, and almost every child has at one period or other an attack. This disease appears under two forms. The 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 curds 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

* 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.

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 with difficulty, if the crusts become hard, 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.

* Dr. Underwood is of opinion, that fever very rarely attends aphthæ, when it appears 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.

There are two sources of danger, in bad cases of aphthæ: the 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 are 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

* Sometimes mortification takes place, and even the palate bones have been known to suffer.

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 impared, aphthæ are produced, especially during 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 aphthous, 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 aphthæ, 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 aphthous 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 aphthæ, 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 an 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. Gentle laxatives are highly proper, such as manna, cassia fistularis, or a little magnesia; indeed, Dr. Underwood seems to trust chiefly to absorbents. A small proportion of rhubarb may, together with an aromatic, be occasionally added to the magnesia. Small doses of calomel may be given with advantage. The remedy I chiefly recommend is laxatives, 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 likewise 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 diarrhœa. 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 must be administered twice a-day. Where the debility is considerable, the strength must be supported by cordials, such as white-wine posset. Bark has been recommended when the debility is great, and especially when the mouth has a sloughy gangrenous appearance, or tendency thereto. Children, however,

cannot take it so as to do good; and therefore, when it is employed, it should be in the form of clyster mixed with starch* or mucilage, but I cannot speak decidedly as to its benefit. Small doses of calomel, with opiates, are useful.

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, as Dr. Bisset observes, be expected to remove the aphthæ until they are about to separate, when it ought to be employed, and may prevent a renewal. Until this period, a little veal soup, or white of egg beat up with water, may be given. 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. A solution of the sulphate of zinc, or diluted 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.

* From a scruple to a drachm of bark may be given to a young child, mixed with half an ounce of fluid. Sometimes a little laudanum may be added to the clyster, to make it be retained.

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 the putrid sore throat, which is quite different from the scarlatina maligna, in as much as there is no efflorescence, but rather a deadly paleness of the surface; unless in those cases where purpura or vibices appear. 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 vesications 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 is fœtor of the breath, hoarse cough, and stridulous breathing as in croup. In every bad case this affection of the larynx takes place, and few, if any, recover, who are thus seized, for it runs the same course as croup; there is 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. 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; nor do I know any plan which can be depended on with the least confidence after the croupy symptoms have de-

cidedly appeared. If these have not taken place, or are only slightly threatened, the practice I have found most useful, consists in the administration of gentle purgatives, and the instant use of bark by the mouth, or in clysters, with such nourishment and cordials as the child can swallow or retain; as auxiliaries, we may endeavour to have the throat and mouth cleared by washing, 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. In desperate cases, would tracheotomy be of any avail? It has been tried here with success in a case apparently of this nature.

SECTION TWENTY-NINTH.

About the time of dentition, the tongue, gums, and inside of 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, seem 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 well established facts.

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 scarcely 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 apparent-

ly 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 skin, 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 or 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 decrepid 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 take up our judgment slowly, and with deliberation.

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 irritation, 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 depended on. 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 are 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 Uzembozius; 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 best 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 ap-

pearance 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 instances, 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.

* 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 the nail or a 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.

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. No light is thrown on the nature of this complaint by dissection, which simply discovers a deficiency of oil in the cellular substance, with induration, or infiltration of thin albumenous fluid, tinged with bile. In the acute species, the liver has been found enlarged, and the gall bladder distended. Camper says, there is always, or at least very frequently, a little hard tubercle found in the cheek, under the malar bone. 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; but seldom with any advantage. 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 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. A gentle course of calomel has appeared to do good, when the affection is confined to the extremities. Decoction of sarsaparilla, with the frequent use of the warm bath, decoction of mezerion, 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 might be worth while to try the effects of mercury, and some other medicines, on the parents.

SECTION THIRTY-SECOND.

The small-pox begins with a febrile attack, which com-

mences generally about mid-day. It is marked by chilness, 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 contents 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 breast, 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 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 under 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 typhoid 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, are often 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. Bark 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 diarrhœa, 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 subsides, 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 incision. 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 vesi-

* Inoculation, even after exposure to infection, is capable of producing a *mild* disease.

cle 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 flatted 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 observing 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 inflammatory 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; or 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 security against the small-pox is not procured 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 these, Dr. Willan has characterised 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 puru-

lent, 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, though very seldom, 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 are most probably secure; 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 a complete change induced by the inoculation. 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 totally unattended with constitutional affection; but sometimes, even although the constitution have been changed by the vaccine inoculation, a

slight febrile affection may be excited, either without any secondary pustules, or attended by an efflorescence on the skin, or an eruption of small hard 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 pustules are papulous, or tuberculated, and do not suppurate, but end 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; and I believe that the proportion will increase as we recede from the date of vaccination, and augment the activity of the infection. Many will escape, who are merely exposed to the casual company of those who have small-pox, who would take the disease if inoculated with virus. This much, at least, I know, that a great majority of those whom I have inoculated, have taken a mild small-pox. The eruption has been more papular 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 pustules maturate, and leave for a time distinct blanes. Variola occuring 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 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 maturate, 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.

It only remains to take notice of two objections to vaccination. The first is, that it is apt to be followed by a very sore arm. This, however, applies in a greater degree to small-pox; and in general, the vaccine sore heals, by being dusted with chalk or hair powder; and even when tedious, seldom requires any other application. The second is, that it is followed by cutaneous diseases. But these occur seldomer, than when the variolous inoculation was performed; for then inflamed pustules and boils, with leprous aud impetiginous eruptions, frequently succeeded the disease. Doubtless, children, after vaccination, may have crusta lactea, lepra, &c. but it does not thence follow, that these are the consequences of inoculation; and it is not unworthy of remark, that no new cutaneous disease has been produced by the introduction of the cow-pox.

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 tremours 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 would have been at a loss to decide on the nature of the disease, had not the rest of the chidren 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 pukered at their margin. Few are entire on the fifth day. On the sixth day, small thin brown scabs appear universally, in place of the vesicle. 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 conoi-

dal. The vesicles rise suddenly, and have a hard inflamed border. On the first day, they are acuminated, 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 often 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 spunged 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 was 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

* Dr. Willan notices five different species of this disease; but for the present purpose, this simple division is sufficient.

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 eye-lids. 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 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, espe-

cially 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 acids and sea-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 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.

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 typhoid fever, and is very malignant. The first species admits of a farther 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, chilliness, 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 eye-lids turgid and red on the inside. Sometimes, but not often, convulsions 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. The inside of the eye-lids, nostrils, cheeks, and fauces, are of a deep red colour, and the tongue participates in the appearance. 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 commence, 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 some-

times 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 days, 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 ulcerated. 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, headach, 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, anasarcous 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 have not witnessed. 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, aud 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 fœtid 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 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 tracheæ, 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. Although I have had many opportunities of attending to this disease, I cannot form a decided opinion on this important point; but I am inclined to adopt the same conclusion. 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. When there is a considerable appearance of inflammation, venesection has been recommended; but this is very seldom necessary, often hurtful, and may almost uniformly be superseded by other means. In adults or children, however, who have a determination to the head, marked by 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-ache, 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. Emetics, given early, are said to be attended with advantage, and supposed to render the subsequent disease milder. But of the truth of this opinion, I have not been able to convince myself. Laxatives are still 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 others, and in those cases the laxa-

tive must be stronger. Even when there is a tendency to diarrhœa, if the stools be fœtid and unnatural in their appearance, purgatives are equally necessary as in the opposite state. The best medicine, to be given at first, is calomel in a brisk dose, which often, even at the commencement of the disease, brings away fœtid stools. This medicine cannot be used too early; and if an emetic have been given, calomel ought rapidly to succeed it. After the operation of the first dose of calomel the bowels must be kept open, or even rather loose, by the daily use of infusion of senna with an aromatic. This is 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 of great importance, is affusion with cold water. From careful observation, and repeated trials, I can with confidence recommend this remedy, which by no means prevents the exhibition of purgatives at the same time. It is of consequence to use this early, and whenever the patient feels steadily hot, the shivering having gone off, and the skin feels very warm to the hand of another person, it is time to put him into an empty tub, and dash over him a large pail-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 it produces. 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: one application is sometimes sufficient, but it often is necessary the first day to use it three times, and next day once in the morning, and again in the evening. It is seldom requisite afterwards: for although the disease may continue, it is mild, and laxatives complete the cure. If the affusion be not employed, we ought to have the surface cooled frequently with a sponge dipped in cold water. Even an advanced state of the disease, if the bath have not been previously employed, and the skin

be hot, does not preclude its use, though at this period, it is generally better to employ the sponge. On the contrary, it revives the patient. The use of cold is generally beneficial when it is not succeeded by chilness or languor; in such cases it must be abandoned. These two remedies do not only mitigate the disease, but lessen the risk of dropsical swelling taking place afterwards.* Gargles are often useful, when they can be employed. Water, acidulated pretty sharply with muriatic acid, or mixed with capsicum vinegars forms a very good gargle. Acid fruits are proper. The diet should be light and nourishing. In mild cases, it is not necessary to give wine; but if the debility be considerable, small doses of wine may, toward the end of the disease, be administered. Should anasarca take place, laxatives and diuretics, such as digitalis, are proper. 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, may be previously applied. 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, 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 ren-

* Dr. Hieglitz 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.

ders 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. Bark has certainly, in many cases, been of service; but in general, children do not take it in such doses as to do much good; or they loathe it, or reject it by vomiting. Even when taken freely, it is not a medicine that can be depended on, in the cynanche maligna of children, but at present I know of nothing better to propose. When it is prescribed, it may be combined with ammonia or capsicum. But in general, it is better to give it in clysters made of beef tea without salt, or to use the sulphate of quinine. 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, may be employed; but as children often cannot, or will not use gargles, their utility must be limited. They might be thrown on the tonsils with a syringe, but are apt to go into the windpipe if they get so far back as the fauces. It is also proper to touch the sloughs and tonsils frequently, with a pencil dipped in the tincture of myrrh or camphorated spirit of wine. Fumigations, made by pouring sulphuric acid on nitre, placed in a vessel in the bed-room, have also 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 I really cannot say that they do good, and decidedly they add greatly to the irritation of the child. In bad cases, there is risk of their being followed by mortification of the part. Sometimes, in the course of this disease,

apoplexy succeeded by hemiphlegia, 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 the vapour of oxygenated muriatic acid. 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 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 dyspnœa, 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 throat, 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 an oval or irregular figure, slightly elevated, but flat, resembling a flea-bite. 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. 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

* 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.

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 diarrhœa 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 hooping-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 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, bronchiæ, 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.

Rubeola, in general, is not a fatal disease, when stimulants

* 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 twenty years ago, were more prevalent than any practitioner I have met with remembers 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.

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 may be briefly explained. During the eruptive fever, 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 some 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 should be put in 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 julap. 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 are urgent, either the lancet must be early used, or leeches may be applied at 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. Diarrhœa 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 bed-time, 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 mistaken for measles ‡ The first species, roseola æstiva, has no small resemblance to rubeola. It is often preceded by chilness, 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 sometimes in a crescentic form, and of a colour seldom deeper than bright scarlet, often much paler.

* During the epidemic, some years ago, ophthalmia was extremely prevalent amongst young and old.

† This he defines to be rose-coloured rash, without scales or papulæ, 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 æstiva is extremely well expressd by Dr. Willan in his plate.

‡ Lichen simplex is also apt to be at first mistaken for measles. From its itchiness, 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.

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 arm 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 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 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.

The action of the brain and spinal marrow may be affected in different ways. Certain parts of the animal system sympathise 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 these are not the only modes, and some others seem also to assist those. 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, must 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 excited in it 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 frost-bitten 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 the origins of these nerves are not only 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 from the very base of the brain, from the medulla oblongata, and corpora olivaria. 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 pair 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. It originates from filaments from the 5th and 6th pair, and in its progress forms ganglia, and communicates, by means of twigs, with the 8th, and 9th, and cervical nerves. The first ganglion, called the cavernose, is formed in the carotid canal, whereby a direct intercourse is established between the artery and the nerve, which now, as a distinct nerve, issues from the foramen, whatever account may be given of its precise origin. Along the front of the carotid also descends the ner. sup. cord., and the vertebral artery also has twigs loosely surrounding it. We will do well in pathology also to remember that arteries seem to have a distinct coating of nerves, forming one of their tunics.* At each intercostal space, it receives addition from the dorsal nerves.

* The reader may consult the late description of the sympathetic nerve, by Lobstein.

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 these causes, may, perhaps, be referred to the following heads. 1st, A moderate degree of excitement, or irritation, 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 irritation, inducing inflammation. 4th, A loss of vigour or action in part of the brain or its appendages, producing a corresponding injury in the parts dependent thereon, such as weakness, anæthesia, 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.

The visible 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, and digest what they eat, unless the nerves be in a particular state, as we see in some patients who have certain varieties of insanity. 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 in nerves which communicate directly with the brain, and not through the medium of 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 glysters 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, glysters, 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.

Cough is another affection of a spasmodic nature which cannot be noticed here. In some cases, in young females, I

* 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 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.

have known almost incessant cough continue for weeks during the day, and resist both laxatives, antispasmodics, and opiates. 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. 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. 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 irritation; and this 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 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 any thing can be done in these cases, it is by free topical bleeding, and the 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.

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 here. 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 appear 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 writing on 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 bled that her head is *now* easy. The eye-lids 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, the face and its bones feel swelled and painful, 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 shoulder, 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 caus tic 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 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 astate of coma; 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 state of syncope; 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 paroxysms, 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 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

* These strong and apparently convulsive contractions of the muscles, are greatly, and in some instances altogether, dependent on transient paralysis of their antagonists.

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 of the cellular membrane, particularly of the 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 may be retained in the stomach, and after a length of time vomited. 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. 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. 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.

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, &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. Another variety of this, is attended with violent pains 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 for the 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 plaints 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, aud 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 for a heavy load on it. The body soon feels as if dead, and she says she has no command over it. Then she has a tremour 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, he has long a swelled appearance of the face, and walks like a gouty man. 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 varia-

ble, 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 steady, frequent, and appearances of hectic take place, with increasing paralysis of the lower extremities. Issues generally effect a complete cure, but it requires much care often 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 early attend 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, perhaps nothing is found except patches of steatomatous depositions on the basilary artery. The connection 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

* 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

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 observable that often the appetite is voracious, during those 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.

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 dif-

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.

* In many of the modifications of this disease, whether the mind be affected or not, every exacerbation is attended with increased appetite.

ficulty, 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 he 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 discovers nothing unusual in any of the cavities, or in the spine. A very fatal modification of this disease ends in pulmonary consumption, but 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.

With children the case is a little different; for in general they complain for some days, perhaps, for a week or two, of slight and varying fever. The pulse is frequent, there is some headach, the nights are restless, there are thirst and anorexia. 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. Then, all at once, without any material increase of the complaint, nay even when the patient has seemed to be better, and appeared to have a return of appetite, he has been seized with a convulsion, and suddenly expired; or repeated fits, with rapid motion of the eye-lids, 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. 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, 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 irritation, in whatever way that may be excited. 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 irritation, 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 sometimes 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

* In the early stage of hydrocephalus, the pulse is more irregular, and often beats alternately quick and slow, for two or three pulsations.

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 julap, 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, the head ought to be blistered. 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.

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, mitigate 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 use of the lancet. 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 infants 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 much 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

* This is commonly called a worm fever, although worms are not necessarily passed in this disease.

regular hours. The exacerbation, which usually occurs in the 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 fœtid, 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 bed-clothes, and though he does 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, or 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 producing 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 take place, and often prove 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 irremoveable 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.

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.

This bears a strong resemblance to hydrocephalus, and it cannot be otherwise, for in both, in many cases, the cause and the effect are exactly the same. 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 af-

fection of the stomach. There is screaming and strabismus, and often a more constant delirium, from which the patient cannot be roused, 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 fœtid 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 would be 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 already been 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 irritation, 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 irritation 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 irritation, and to obviate particular symptoms. In the very commencement of the disease, more especially if there be still some degree of chilness, 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 began 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 slight-

ly moist state by saline julap 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 rubifacients or anodyne balsam, requires a small blister. The tepid bath sometimes allays general irritation. When there is continued pain in

* Dr. Pemberton judiciously remarks, that if strong purges 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 remark, that dissection often discovers nothing but great inflation of the intestines.

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 head or nape of the neck, are requisite; at the same time that 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 antimonium calcareo-phosphoratum may be conjoined. By these means most unexpected recoveries have taken place, where the symptoms 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.

CHAP. VI.

Of Hydrocephalus.

Hydrocephalus is one of the most dangerous and 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.

Acute hydrocephalus begins very like a common fever, but there is more frequent vomiting, and 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 a little more minutely. Very often the patient, for some time previous to the attack, is languid, peevish, and uncomfortable, without any particular complaint. The appetite is impaired, he has frequent sick fits, or vomits bile, and the bowels are generally very costive, though sometimes he purges fœtid dark-coloured, or green fæces, and he complains occasionally of his head. Towards evening, the face is a little flushed, and the skin is hot, and very soon the disease becomes formed. In other instances, however, and these by no means unfrequent, the disease invades more sud-

denly, 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; but, 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. Convulsions sometimes appear as one of the first symptoms, but, more frequently, they do not come on till an advanced stage. From the commencement, the patient can seldom keep out of bed, his eyes are usually very sensible to the light, and when examined, 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. Spasmodic cough and pains in distant parts occasionally supervene. 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 for some days he vomits bile, and whatever he swallows; 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 fœtid; infants are generally purged, older children usually the reverse at first; pain is felt in the belly, and occasionally in other parts of the body. 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 sometimes 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 the 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 till 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. In the course of this malady, the cheeks are alternately flushed and pallid; and after the second stage, one side is more or less paralytic, whilst the other in many cases is convulsed; indeed convulsions may come on at any period of the disease, even in its commencement. The symptoms are generally aggravated during the night. When the patient sleeps, the eye-lids are often only half closed, and the eyes turned up. 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 fourth or fifth.

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 diognostic 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.†

Infants cannot give an 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, it must however be confessed, is very 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 fœtid smell, have been considered as peculiar to the disease, by one very respectable writer, whilst others assert, that this appearance depends on the use of calomel. This state of the stools is not to be disregarded,

* 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.

‡ 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.

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, 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 late 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 suppossed, for prudence dictates, even in the mildest disease of the two, the prompt use of vigorous remedies.

Dissection shows that the vessels of the brain are full of blood, some of them very turgid, the membranes and brain in some places seem inflamed, and covered with coagulable lymph; whilst betwixt the dura mater and the brain,* but still more frequently in the ventricles of the brain, there is an accumulation of water, sometimes to the extent of several ounces, and it is generally of a very pure and transparent quality. 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

* 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 scalp.

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 overaction 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 chylopoetic viscera. 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 in many cases where the bowels appear first to be in fault, and are looked on as exciting diseases of the nervous system, the diseases really are at first indirect in the brain or spinal cord, but the earliest symptoms exhibited were the effect of this state, manifested by the altered function of the bowels.

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. 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 irritation, 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, in as much 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 these 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. 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 inflammatory irritation, 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 would otherwise have been lost; or, in different terms, many are prevented from having the disease or stage properly called hydrocephalus, who otherwise would fall victims to effusion. The most efficacious means consist in the detraction of blood by venesection, or leeches, or both, according to the age of the patient, and the severity of the disease.* In no instance ought leeches to be neglected, and they cannot too early be applied. Evacuations of this kind, carried promptly as far as prudence dictates, ought instantly to be followed by the administration of smart purgatives; and I wish it could be impressed sufficient-

* Dr. Maxwell, of Dumfries, proposes bleeding nearly to the extinction of life; and could we always be sure in our diagnosis, it may be urged that if the patient sink under the evacuation, he would have done so as certainly under the disease. But much prudence is to be exercised in wielding so formidable a weapon.

ly 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 early venesection, or leeching, or both, if not carried the length of great 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. The affusion of cold water on the head, I have some doubt of, as 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. Blisters, I am confident, are useful; although some, whose judgment I respect, place little reliance on them.

Hoping that these means have given a check to the disease, our next object is to prevent a relapse or keep up and improve our ground, and this is done by strict attention to the bowels. The purging system ought therefore to be maintained, and that even although the child have a diarrhœa, if the stools be green, fœtid, or contain lumps. 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, however, must not be often given, as it weakens the bowels; but soon we must substitute the blue pill, dissolved in a little warm water, and having the addition of some other laxative. Two pills, for instance, may be given for a dose, to a child of eighteen months old, with the addition of six grains of jalap, or a little infusion of senna. 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

they sometimes succeed, they ought invariably to be tried as sedulously as if we expected certain success. They consist in a continuation of blisters, the use of purgatives, and the exhibition of mercury, by friction or internally, so as to affect the system, or act on the brain. Antimonials have been used, in conjunction with mercury, but I do not know with advantage.

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; and whilst it has not been attended with any injury, it has as certainly failed to do good.*

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.

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. If the child be plethoric, or have momentary fits of insensibility, or the slightest and most transient paralytic affections or eclampsia, the bowels should be kept loose, and a small issue must be kept open 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.

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

* Mr. Brown relates a case where water was repeatedly drawn off by puncture, and always with advantage, and temporary retention of the sight, and a faculty of attention, but it ultimately ended fatally. Med. Phys. Journal, Vol. xli. p. 102.

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 headach, 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 headach 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 unhealthy look of the child, the frequent ap-

plication 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, and other symptoms, indicate the disease more decidedly.

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, 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.

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 of 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 savine ointment; or a more general irritation may be kept up, by rubbing with garlic ointment, or ointment with tartarite 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 or 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 cured a child by puncturing three times with a couching needle.†

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

* In a case attended by my brother, he succeeded so far with the 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.

to shave the head, and apply a small blister upon it. Calomel purges are of great utility.

CHAP. VII.

Of Convulsions and Eclampsia.

Convulsions proceed from various causes during infancy. They very frequently arise from irritation in the bowels, from dentition, or in the course of eruptive fevers. Sometimes they proceed from immediate affections of the brain itself, and very often they occur in hydrocephalus. They may be distinguished into those proceeding from a primary affection of the brain, and those occasioned by sympathy, with some other organ in a state of irritation. 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.

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 at least nine cases out of ten, 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 cholic, 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.

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 a wake.

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.

When a child is seized with convulsions, a very great alarm prevails; and it is expected, that if the practitioner arrive before the child is carried off, or has 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 face 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. If the bath do not give speedy relief, I have seldom found much advantage in 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. 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 diarrhœa, if the stools be not natural in appearance, laxatives will still be proper, according to the directions given in considering diarrhœa.* Emetics have also been employed during the fits; but unless we have reason to suspect that some indigestible or improper substance has been taken, they are not so beneficial as laxatives. But when fits are only apprehended in dentition, from starting, feverishness, and circumstances ascertained by former experience to precede convulsions, a gentle emetic is rather of service, and 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. When it is deemed proper to exhibit emetics during the fit, a few spoonfuls of a solution of sulphate of zinc may be given in quick succession, as operating speedily and safely; or ipecacuanha may be employed, and the fauces tickled with a feather, to hasten its operation.

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, and avoid stimulants. 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

* The propriety of giving purgatives in convulsions, when the bowels are costive, or the stools unnatural, is confirmed by experience, and the effects of course in chorea.

considerable irritation about the bowels, or from the gums. 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, musk, or other antispasmodics. The spine should, in such cases, be repeatedly rubbed with some stimulant embrocation; or oil of amber, and a blister should be applied to the head, after it has been bathed for a time with cold water. I have also found advantage in pouring cold water on the head; at the same time I must observe, that it may, and often does produce paleness, and appearance of alarming collapse, but from this the child has recovered. Nevertheless I am not disposed to advise pouring cold water on the head. Smart aspersion of the face with cold water also tends to shorten the fit. When it is 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, purgatives should be given, and a blister applied either to the occiput or nape of the neck. Even after the apparent danger is over, it is useful for some time to keep an issue on the back of the head. 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 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 bath, 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 out 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 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; asafœtida or camphor, given by the mouth, or in clysters, have also been useful. 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 fatuitous, a state sometimes preceded by morbid perversity of disposition.

* 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.

This condition of the brain is more apt to take place, if suitable evacuations have not been made early. Bleeding and purging, timeously 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.

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. These are often almost constant; even when the patient is asleep, the limbs are in motion, and the rest 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 coutenance 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 generally originates from the state of the alimentary canal, which is irritated by bad or indigested fæces, and thus the extremities of the nerves are acted on. Other irritants have the same effect, and hence chorea has followed the exhibition of strong saline or poisonous substances.

A variety of remedies have 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 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 is 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. Dr. Underwood recommends aloetic and mercurial purges. By these means,

* "Having described the nerves, I now come to the symptoms, which are easily explained by their connexion. I will begin with tremour 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 rigours 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.

chorea is perhaps cured in a fortnight, or, in obstinate cases, within two months. Boys are said to be more readily cured than girls. 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, or the mere removal of irritation of fæces, although that may at first have brought on the disease, can infallibly cure it. In obstinate cases, we must take the assistance of tonics, arsenic, nitrate of silver, 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 small dose of the cuprum ammon. ; if the patient be very young, a pill should be given twice a day, if the bowels bear it. The food should be light and nourishing, and due exercise taken in the open air.

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. 6th, 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. Sometimes one arm appears to be either powerless or weak for many days, and yet otherwise the child is in health. This 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, nux vomica, 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.*

* A case which occurred in this city is described by Dr. Watt, Med. Chir. Trans. v. 2., and another by Mr. Wood. Ibid. vii. 337.

CHAP. IX.

Of Croup.

The croup is divided by some writers into two species, the inflammatory and spasmodic; 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. The 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 sounding through a trumpet. This 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 suffocation, 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 or purple col-

our, 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.

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 in a day or two. 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. 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.

Dissection has always discovered on the inside of the larynx, a lymphatic incrustation, or layer of membranous-looking 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. 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 most frequent cause is the application of cold and damp. Infants under six months are not often seized with this complaint, but from that period to the age of puberty are obnoxious to it. They are peculiarly liable to it soon after being weaned.

From the nature of the disease, blood-letting evidently is the appropriate remedy, and the most ample experience has now convinced me, that it is the only one on which, in such cases, dependence can be placed. There are two facts, how-

* 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.

ever, 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 very 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 aquiesces in this application is guilty of a great crime. 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 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 do much service, appearing mechanically to remove the lymphatic membrane. 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.

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 are sometimes useful, and should not be neglected. But, on the other hand, we must remember that 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 ap-

plied, or not at all. It can only do harm in the end of the disease. The warm bath is of service in slight cases.

Calomel would appear to be a powerful remedy in this disease, and, if given early, it will frequently save the child. 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. 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, are given in this disease. Salivation is not produced in children.

That excellent and experienced practitioner, Dr. James Hamilton, jun. 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, is 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 high 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, I have known it fail; and deem it my duty most earnestly to caution the reader against trusting to it exclusively: at the same time I must add, that I have known it procure recovery from very desperate cases, 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 have any power in positively diminishing inflammation, or act 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. 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 either of the medicines would have done singly.

In cases otherwise hopeless, it has been proposed to perform the operation of bronchotomy, and it is 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 it is as improper to delay too long. 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 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, would do no good. But if it proceed not altogether from this source, but in a great measure from the effect produced on respiration, and the organs concerned in that function, rational hopes 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. This seems to be the state of the case; and if it be not early adopted, the risk is increased by the tendency which exists to the induction of inflammation of the lungs; and, independently of this, by the debility produced by the continuance of the disease. 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, they at least have done all that skill could suggest or art accomplish. One of the earliest successful cases of trachotomy, 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

* Med. Chir. Trans. Vol. III. p. 335. † Ibid. Vol. VI. p. 151.

make this remark with a view to blame the operator, who is strongly to be praised for performing it at all, with so 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 probable alternative but that of death. There is no occasion for employing a tube after this operation.

Spasmodic croup, or acute asthma, 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 relieved by sneezing, vomiting, or eructation. It differs, then, from the inflammatory croup, in the suddenness of its attack, in there being 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 this disease, is in infants, very readily 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 perhaps from direct affections of the origin of the eighth pair of nerves, but much more frequently, almost always, 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 probably are often wrong; its nature being, in many instances, rather 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. The drowsiness which often attends this complaint, is owing to the affection of the base of the brain, which is thereby produced, and which might prove fatal independently either of laryngeal spasm or of the inflammation. Sometimes this disease is excited by dentition, or, if the patient be older, by passions of the mind. Not unfrequently a renewal of the disease 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 spasm suddenly abating, and very soon going entirely off, after a certain quantity of blood has

* 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, for 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. Where the recurrent is cut, the rima closes, and the animal dies.

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. When the paroxysms return every night, or every second night, 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. Asafœtida * has been strongly recommended in this disease, and has sometimes a very good effect. The warm bath is also useful. 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, 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 requires constant attention, as it is often the prelude to in-

* 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: R. G. asafœtidæ, ʒ ii, Spt. Mindereri, ℥i, Ap. puleg. ʒiii 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.

curable disease in the head or spinal sheath. 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.

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.

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.

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. 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

* Journ. General, Avril, 1819.

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, and the whole frame is much agitated. 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 renewed appetite. A fit of crying will, at times, even after the disease has 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. Convulsions may also occur, and carry off the child.

Many remedies have been employed in this disease, which it will be proper to divide into those intended to abate the fe-

ver, 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. The most generally useful remedies are laxatives and the saline julap, 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.

For the relief of the cough, nothing is so beneficial as 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. 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, or the thorax and the stomach, have a good effect; and similar applications to the soles of the feet have certainly in some cases done much good. Antispasmodics, such as asafœtida, ol. succini, musk, &c., have been recommended, and in some cases are successful. 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 it cannot be relied on. Lactuca virosa, has 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, 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. 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. 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.

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. Blisters should be applied to the breast, if there be fixed pain or dyspnœa. If there be anasarcous swelling, digitalis, conjoined with squills and cordials, will be useful.

Convulsions sometimes are excited by the fits, or occur at the same time with them, and immediately suspend the cough. They are very alarming, and may suddenly carry off the infant, especially if he be very young. The child should instantly be put into a warm bath, which is to be repeated as often as the convulsions come on. The bowels should be opened, the head shaved and blistered. If the fits be repeated, and if the child be plethoric, leeches ought to be applied to the temples. 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.

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, bark and tonics are useful to re-establish the health.

There is 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, blisters, antimonials, and, if the fever be considerable, leeches applied to the

breast. 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. It sometimes takes place very early after birth; in other instances not for several weeks. It begins with 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 is of a stifled sound, and somewhat hoarse, or occasionally even shrill, from slight inflammation at the top of the windpipe. The breathing is oppressed or rattling, but not permanently so. Vomiting is also not an uncommon attendant, the epigastrium 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. 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. 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, in other instances more solid.

This is a very obstinate disease, but it does not prove very rapidly fatal. In the commencement it resembles common catarrh, and requires the same treatment, purgatives, venesection, and a blister, which ought to be promptly employed. In the advanced stage, and under various circumstances, I have tried emetics, blisters, calomel, and expectorants, but without decided benefit. Blisters, with calomel, combined with ipecacuanha, to act both on the bowels, and also as an expectorant, together with 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 a clyster, which brought off the purgative.

Inflammation of the pleura is more frequent with children than many suppose. 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 difficult, with short cough, and frothy expectoration, which oozes from the mouth. On inspecting the chest, the inflammation is sometimes found to have terminated in hydrothorax, oftener in adhesions. This disease requires venesection, or the early application of leeches to the sternum, according to the age and constitution of the child; the use of blisters, calomel purges, and the tepid bath. Antimonials and digitalis are also sometimes of service. In the last stage, diuretics are proper, especially a combination of squills 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 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 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, a 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

* 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.

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 undissolved.

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 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 exa-

* Dr. Armstrong mentions a case of this kind, where the upper part of the stomach was thus diseased, but the pylorous 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.

cerbation 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 diarrhœa. 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 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 rubifacient should be applied to the belly, and if the symptoms be very urgent, this should be preceded by the application of one 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 has taken place near the pelvis, or about the rectum, the child cries much on going to stool, seems afraid to pass the fæces, a nd may at the time be seized with spasm or convulsions

The fæces are very offensive, and occasionally purulent matter is discharged. In such cases I have found magnesia useful as a laxative, and hyoscyamus with oil of anise of great benefit as an anodyne. If the appetite be not lost, there is hope of a cure, and I have known desperate cases recover. 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.

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.

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. XII.

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 are 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 julap, and removing the primary disease. 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 examine 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 tend to 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 exhalents 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

* Both the smell and the colour of the fæces 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.

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 fæces, 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 fæces 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 secretion, 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 diarrhœa varies according to the violence of the disease. In slight cases, where the action of

* Vauquelin has ascertained, that the stools are always more or less acid. When exposed to the air, they become more acid, and soon afterwards exhale ammonia, which they do till destroyed. The greatest part of the gas extricated in the bowels consists of carbonic acid, with carbonated and sulphurated hydrogen, more or less fœtid. In indigestion, the greatest part of the gas is inflammable. Fourcroy's System, &c. Tom. X. p. 75.

† The decomposition of bile by acids, which combine with its soda, furnished a precipitate, which is thick, viscid, very bitter, and inflammable. This is probably the origin of pitchy-looking stools in some cases, though in others they may proceed from effused blood.

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 contain more acid than usual, 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-susception. When the secretion of bile is diminished, the stools have a cineritious appearance; but this state is not often met with in diarrhœa. 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.

Diarrhœa may be injurious in different ways. The increased peristaltic motion of so great a tract of sensible muscular substance, must, like other great muscular exertion,

* All acids decompose bile, and in general produce a green precipitate. Either an unusual quantity of bile, or of acid in the bowels of children, will produce green stools; and stools which are not at first green, often become so in a short time after they are passed.

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 accompanies 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-susception, 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 is considerable pain, and marks of local irritation; such as slimy stools, with or with-

out 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 stretchings and cryings, as in colic, with occasional attacks of great paleness, like syncope; the belly is tender to the touch, and sometimes in infants the pulse 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.

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. If not attacked early by bleeding 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 ap-

petite is more or less impaired, and in bad cases the aliment quickly passes off, and every time the child drinks it 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 the 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 eyes sunk, and the expression anxious: the strength gradually sinks, the eyes become covered with a glossy crust, 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 be cured, and the second prevented from running its fatal course, by 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 reme-

dies, especially as we find, that if it be neglected in its commencement, it is apt to end in a very obstinate or 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 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 the diarrhœa come on quickly, and the stools are 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. 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 laxa-

* 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.

tive,* should be given morning and evening. These carry off the morbid feculent matter, and excite a better action of the bowels. The calomel is usually a most effectual remedy, and it may be given even to infants a few days old. To them a quarter or half a grain, rubbed up with sugar, is a proper dose, and may be given morning and evening. To older children we give a grain. 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 leeches to the belly, and use fomentations. It is also immediately necessary, even although 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 have often a bad effect on the child, and never are equal in benefit to clysters. Cretaceous substances, joined with aromatics, are useful when there appears to be a redundancy of acid; but 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;

* Cold drawn castor oil may be given in the following form: ℞. Ol. Ricini, ʒiii; Mannæ, ℥ss; Spt. ammon. Arom. ʒi; Aq. Cassiæ, ℥ss; aq. Font. ℥iss. fiat emulsio. Of this a tea spoonful may be given as often as necessary.

or if given in great quantity, they may perhaps excite to invagination of the intestines. In obstinate cases, small doses of calomel, or 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. 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 astrophia ablactatorum, 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 julap, 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 the application of an anodyne plaster,* to the whole abdomen, which is better. Small blisters applied to the belly are highly useful, if they do not give much irritation. It is also proper to bandage

* Such as the following: R. Saponis, ʒi; Empl. Lytharg. ʒvi; Ext. Cicutæ, ʒii: Ol. Menth. pip. ʒss; Fiat. empl. Or R Empl. resinos. ʒvi, Pulv. opii, ʒi; Camph. ʒii; Ol. Junip. ʒss; Fiat empl. Or if there be much spasm, we may use the empl. asafœtidæ Pharm. Edin. with the addition of opium.

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, arrow-root 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 strength 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 arrow-root 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 aphthous, 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 aphthæ 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

by a gentle emetic; but particularly to remove irritating fæces, and excite a better action of the intestinal surface, by small doses of calomel 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 use of calomel, or hydrargyrus cum creta.

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.

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 regular 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, which may be given in a suitable 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, infusion of senna, or two or three grains of aloes may be given. A quarter of a grain of ipecacuanha, mixed with sugar, may also be tried. It is also proper to change the nurse, or alter the diet of the child, giving barley-meal porridge, veal soup, ale-berry. I wish explicitly to say, 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 even 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 sud-

denly, and is known by violent screaming, induced without any warning, 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 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 are useful, 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 diarrhœa, in which the stools are fœtid, or unnatural in appearance. It begins with lassitude and debility, loss of appetite or depraved appetite, fœtid breath and fœtid 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 disease of the origin of the sympathetic nerve, occurring 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. In this state there is a very languid pulse, it is small and nearly imperceptible, the skin is often cold, and there is either little or voracious appetite. This may also affect adults, and is attended with almost paralytic weakness of the legs. It is relieved by rubifacients applied to the spine, or issues, if any one spot can be discovered to be tender on pressure. Laxatives are useful, and the copper pill I have known of great benefit.

This disease may, in the commencement, and before the appearance of fever, be arrested by a course of active purges, given at proper intervals; at the same time we may 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, especially calomel; and here it is necessary to remark, that the stools are not always hard; they are often fluid, but generally fœtid, and dark in the colour, or appear to contain indigested food. A course of purgatives, however, by degrees, procures discharge of fæces 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 or other tonics, provided these are 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. Sea-bathing is likewise of advantage.*

* Those who wish to know what other remedies are employed, though without much benefit, may consult Baumes de l'amaigrissement des infans.

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.

CHAP. XVII.

Of Tabes Mesenterica.

Tabes mesenterica, or hectic from disease of the mesenteric glands, is a very frequent disease. It is not often met with before the time of weaning, nor after puberty, seldom after the age of eight or ten years. 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 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

* 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 sometimes do good.

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 diarrhœa, with vomiting. 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, and a short cough supervenes. 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 calomel, conjoined with some light bitter infusion, decoction of bark, tonic medicines, and

* 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.

gentle friction over the belly continued for a considerable length of time, morning and evening, would appear to 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 calomel 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. We must, however, take care that the mercury does not excite much effect on the constitution, lest debility be increased; it is therefore prudent, sometimes, to combine the calomel 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 bitters and chalybeates, especially in the form of mineral waters. But the last are to be used cautiously, if there be marks of inflammation existing in the glands; and in such cases, some light bitter infusion is pre-

ferable to chalybeates. In such circumstances, the laxatives are to be used more freely, the tepid bath is to be employed, and the belly rubbed freely with anodyne balsam. 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.

Cicuta, burnt sponge, and some other medicines, have been advised in this disease, but I cannot say that they have been employed with advantage. Electricity is sometimes of service.

CHAP. XVIII.

Of Worms.

Worms exist in the bowels, perhaps of every child,* but

* Worms rarely appear in the bowels, till after the child is weaned.

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 teniæ being rarely met with until children are four or five years old. We also sometimes meet with some uncommon species of worm, which are ejected by vomiting, and some lususes have been passed by stool; thus, for instance, I have seen a worm about three inches long, having two large flat heads, with two bodies, separated for a little, and then united into a common trunk, ending in a tapering tail. 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 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 worms is removed by injections of aloes mixed with water, or decoction 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.

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 intestina 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,* pains in the belly, frequent attacks of diarrhœa, 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 awaking 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, in as much 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, dolichus pruriens, the gœffrea, worm seed, tin powder, filings of steel, &c. have all at times a good effect; but in general, calomel purges given repeatedly and liberally, provided the constitution of the patient will bear them, will be found very effectual: or these may be alternated with saline purgatives, oil of turpentine, or suitable doses of aloes or jalap.

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 usefel to strengthen the bowels, or these may even be employed whilst we are using the purgatives.

The trichurus, or long thread worm, is about two inches long, and two-tihrds of this form a tail like a hair. The

* 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.

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 usual symptoms are produced. The best remedies are smart purges of calomel, alternating with doses of oil of turpentine proportioned to the age; a dessert spoonful may be given to a child of four years of age. 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 con-

tinue 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 chepatic 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 viscidity 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 gentle emetics, given very 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 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 and inflammation of the liver are not uncommon in infancy and childhood, but the first is most common in infancy. 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 and blisters are chiefly to be relied on.

Hepatitis in infancy is marked with the symptoms attending enlargement of the liver; but there is more fever, and sometimes pain, when the liver is pressed on. The disease often begins wish 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 chang-

* On examining the liver, it is sometimes found soft, and not much altered in structure, sometimes hard, and almost cartilaginous, with the pori biliari 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.

ed in its colour. In some instances of chronic inflammation, the liver is somewhat enlarged, of a dark colour, and the veins turgid. Leeches, blisters, and a gentle laxative course of mercury, are the means of cure. 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 chilness, 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 fœtid 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. Blisters are always proper. The bowels should be freely opened, and afterwards a gentle course of mercury employed. 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 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 trochar, 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 peripneumony, 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 feels 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 cholic, 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 blisters, laxatives, and mercurial inunction are the remedies, with 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. Mercurial 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. 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 fœtid, and the urine thick. It requires the early use of emetics in the cold stage, succeeded by saline julap. If the hot stage, however, be fully established, and the heat considerable, the affusion will be of advantage, succeeded by calomel purges and saline julap, 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 bed clothes, 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 blisters to the breast, with squill vinegar.

THE END.

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