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THE
PRINCIPLES
OF
MIDWIFERY;
INCLUDING THE
DISEASES
OF
WOMEN AND CHILDREN.

BY JOHN BURNS, M. D.

LECTURER ON MIDWIFERY, AND MEMBER OF THE FACULTY OF PHYSICIANS
AND SURGEONS, GLASGOW.

THE FIFTH AMERICAN, FROM THE THIRD LONDON EDITION,
GREATLY ENLARGED.

WITH IMPROVEMENTS AND NOTES,
BY THOMAS C. JAMES, M. D.

PROFESSOR OF MIDWIFERY IN THE UNIVERSITY OF PENNSYLVANIA.

VOL. I.

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DISTRICT OF PENNSYLVANIA, TO WIT:

Be it remembered, That on the seventh day of September, in the thirty-eighth year of the Independence of the United States of America, A. D. 1813, Benjamin and Thomas Kite, Johnson and Warner, Edward Parker, Kimber and Conrad, Mathew Carey, Moses Thomas, Anthony Finley, and Redwood Fisher, of the said District, have deposited in this office the title of a Book, the right whereof they claim as Proprietors, in the words following, to wit:

“The Principles of Midwifery; including the diseases of Women and Children. By John Burns, Lecturer on Midwifery, and Member of the faculty of Physicians and Surgeons, Glasgow. The third American, from the second London Edition, much enlarged. With Improvements and Notes, by Thomas C. James, M. D. Professor of Midwifery in the University of Pennsylvania.”

In conformity to the Act of the Congress of the United States, intituled, “An Act for the Encouragement of Learning, by securing the Copies of Maps, Charts and Books, to the Authors and Proprietors of such copies during the times therein mentioned.”—And also to the Act, entitled, “An Act supplementary to an Act, entitled ‘An Act for the Encouragement of Learning, by securing the Copies of Maps, Charts and Books, to the Authors and Proprietors of such copies during the times therein mentioned,’ and extending the benefits thereof to the Arts of designing, engraving, and etching historical and other Prints.”

D. CALDWELL,
Clerk of the District of Pennsylvania.

8

PREFACE OF THE AUTHOR.

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, this 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.

Whilst I thus state the plan on which I have proceeded, I acknowledge myself deeply sensible, that its execution does not bear an equal proportion to the impor-

tance of the subject. Should this work fall only into the hands of those, competent to judge on their profession, it would, if faulty or deficient, do little harm: but should it ever be circulated more 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 will, in general, be found agreeable to the experience and practice of our best teachers; 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 third edition for the press, I have carefully revised the whole work, and have made many additions, which I hope will prove useful.

Glasgow, October, 1814.

PREFACE OF THE EDITOR.

IT is not the intention of the present editor to incur the fault so sharply reprehended by Johnson, and “ retard the instruction” contained in the ensuing volumes, by an unnecessary and prolix preface. He will only briefly mention, that our author, “ equally experienced as a teacher and practitioner,” has, from the acknowledgment of the most competent judges,* “ by a judicious arrangement, by a faithful exposition of facts and observations, and by a methodical induction of the principles and practice of the art, accomplished in this work all that could be expected, in the present state of the science, to give a new interest to the subject.

“ The prominent advantage, that confers upon it a decided preference to all others, as a *System* or *Class-book*, is, that every subject, directly or indirectly connected with the practice of the accoucheur, is here brought into one connected view.

“ But what we are most disposed to recommend in this volume,† is the pathological department, and the descriptions and treatment of the diseases of puerperal women, and of children. A more copious, scientific, and judicious account of these diseases, is perhaps nowhere to be met with.” Thus far the editors of the *Edinburgh Medical and Surgical Journal*.

* Edin. Med. and Surg. Journal, for 1810.

† The work was originally published in one volume.

One great advantage of this work to the student solicitous of full and accurate information on the subjects of which it treats, is to be experienced in the very valuable notes and references of the author, to almost all that has been communicated by practitioners of deserved celebrity, on parallel subjects or cases. In this point of view, it may be considered as the *Commonplace Book* of an immense fund of the most useful practical knowledge, indispensable as a guide to the inexperience of the student, and earlier practitioner, and of no ordinary utility and aid, to the maturer acquisitions of advanced and established professional skill.

This edition has been considerably enlarged and improved by the author. The sections on abortion and uterine hemorrhage, will be found to have been very considerably extended, and rendered of far greater value;—indeed, they may now be considered, as containing the essence of his separate *Treatises* on those very interesting subjects, which have for some time enjoyed the approbation of the public.

The new articles, totally omitted in the former edition, but by the author introduced into this, are those on pneumonia, on ephemeral fever, on weed or intestinal fever, and on diarrhœa, as existing in the puerperal state, and on chorea, on bronchitis, and on peritonitis, as the diseases of the infantile age. These, it is presumed, will not fail to give additional interest to the work.

The editor has taken the liberty of introducing into the text, a section on the difference between the male and female pelvis; which as he conceived, the author ought not to have omitted; and Dr. Clarke's account of the cauliflower excrescence of the os uteri. Whether

this is only a variety of the spongioid tumour, he will leave to the reader to decide. It appears to assume some difference in its form and train of symptoms. The history is from the pen of an accurate observer of nature, and a judicious and experienced practitioner.

As Baudelocque has explained the mechanism of parturition, more fully and minutely than almost any other writer, and as his work on midwifery has obtained considerable reputation with the medical public of the United States, it has been judged proper occasionally, to give a general view of his divisions of labour, together with the several species of presentations, which it may be useful to keep in recollection in actual practice. Some tables, relative to this part of our subject, from the last edition of his valuable work that have not, as far as we know, been hitherto translated, will also be given in the appendix. These, it is hoped, will not be entirely devoid of interest, either to the student or practitioner.

The chief mass of the notes in Dr. Chapman's edition of our author's production, have been, by permission, retained in this; these are marked with the letter C. The notes added by the present editor have alphabetical references, and are thus sufficiently distinguished from those of the author, and of the intelligent editor of whose information we have availed ourselves, and to whom we have just alluded. These will be found to be altogether of a practical nature, and are intended solely to explain, or illustrate the text; as it has been found rarely necessary to differ in sentiment from one, whose opinions seem generally to be founded on the solid basis of practical truth. Any additions made to the text, or author's notes, are included between brackets.

The author has rendered this last edition more interesting, by some valuable additional matter, and the editor has subjoined a few notes, which he hopes will not be found entirely nugatory.

Philadelphia, July 1st, 1817.

CONTENTS.

BOOK I.

Of the Structure, Functions, and Diseases of the Pelvis and Uterine System, in the Unimpregnated state, and during Gestation.

CHAPTER I.

Of the Bones of the Pelvis.

Section 1. General view	- - - -	Page 1
Section 2. Ossa innominata	- - - -	2
Section 3. Sacrum and coccyx	- - - -	5

CHAPTER II.

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

Section 1. Of the symphysis pubis	- - -	7
Section 2. Sacro-iliac junction	- - -	8
Section 3. Vertebral junction, and obliquity of the pelvis	- - - -	9
Section 4. Separation of the bones	- - -	9
Section 5. Difference of female from male pelvis	- - -	14

CHAPTER III.

Of the soft parts which line the Pelvis.

Section 1. Muscles	- - - -	16
Section 2. Arteries	- - - -	17
Section 3. Nerves	- - - -	18
Section 4. Lymphatics	- - - -	19

CHAPTER IV.

Of the Dimensions of the Pelvis.

Section 1. Brim and outlet	- - -	Page 20
Section 2. Cavity	- - - - -	21
Section 3. Pelvis above the brim	- - - - -	23
Section 4. Axis of the brim and outlet	- - -	24

CHAPTER V.

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

Section 1. Bones of the head	- - - - -	24
Section 2. Size of the head	- - - - -	26
Section 3. Passage of the head	- - - - -	27

CHAPTER VI.

Of Diminished Capacity and Deformity of the Pelvis.

Section 1. Deformity from rickets	- - - - -	29
Section 2. Deformity from malacosteon	- - - - -	31
Section 3. Deformity from exostosis and tumours		33
Section 4. Means of ascertaining the dimensions and size of the head when broken down	- - -	35

CHAPTER VII.

Of Augmented Capacity of the Pelvis, 36

CHAPTER VIII.

Of the external Organs of Generation.

Section 1. General view	- - - - -	37
Section 2. Labia and nymphæ	- - - - -	38
Section 3. Clitoris	- - - - -	38
Section 4. Urethra	- - - - -	39
Section 5. Orifice of vagina and hymen	- - -	41

CHAPTER IX.

Of the Internal Organs of Generation.

Section 1. Vagina	- - - - -	42
-------------------	-----------	----

CHAPTER X.

Of the Diseases of the Organs of Generation.

Section 1.	Abscess in the labium	- - -	47
Section 2.	Ulceration of the labia	- - -	48
Section 3.	Excrescences on the labia	- - -	51
Section 4.	Scirrhus tumours	- - -	51
Section 5.	Polypous tumours	- - -	52
Section 6.	Œdema	- - -	53
Section 7.	Hernia, laceration, &c.	- - -	53
Section 8.	Diseases of the nymphæ	- - -	54
Section 9.	Diseases of the clitoris	- - -	55
Section 10.	Diseases of the hymen	- - -	56
Section 11.	Laceration of the perinæum	- - -	57
Section 12.	Imperfection of the vagina	- - -	59
Section 13.	Inflammation and gangrene of the vagina	- - -	59
Section 14.	Induration, ulceration, and polypi	- - -	60
Section 15.	Inversion	- - -	60
Section 16.	Watery tumour	- - -	61
Section 17.	Hernia	- - -	61
Section 18.	Encysted tumour and varices	- - -	62
Section 19.	Spongoid tumour	- - -	63
Section 20.	Erysipelatous inflammation	- - -	63
Section 21.	Fluor albus	- - -	65
Section 22.	Affections of the bladder	- - -	70
Section 23.	Excrescences in the urethra	- - -	74
Section 24.	Deficiency and mal-formation of uterus	- - -	76
Section 25.	Hysteritis	- - -	77
Section 26.	Ulceration of the uterus	- - -	78
Section 27.	Scirro-cancer	- - -	80
Section 28.	Tubercles	- - -	84
Section 29.	Spongoid tumour	- - -	86
Section 30.	Cauliflower excrescence from os uteri	- - -	87
Section 31.	Calculi	- - -	89
Section 32.	Polypi	- - -	90
Section 33.	Malignant polypi	- - -	95

Section 34. Moles	- - - - -	Page 96
Section 35. Hydatids	- - - - -	97
Section 36. Aqueous secretion	- - - - -	99
Section 37. Worms	- - - - -	100
Section 38. Tympanites	- - - - -	100
Section 39. Prolapsus uteri	- - - - -	101
Section 40. Hernia	- - - - -	107
Section 41. Dropsy of the ovarium	- - - - -	108
Section 42. Other diseases of the ovarium	- - - - -	114
Section 43. Deficiency	- - - - -	115
Section 44. Diseases of the tubes and ligaments	- - - - -	115

CHAPTER XI.

<i>Of Menstruation,</i>	- - - - -	116
-------------------------	-----------	-----

CHAPTER XII.

Of Diseased States of the Menstrual Action.

Section 1. Amenorrhœa	- - - - -	121
Section 2. Formation of an organized substance	- - - - -	129
Section 3. Dysmenorrhœa	- - - - -	129
Section 4. Copious Menstruation	- - - - -	131
Section 5. Menorrhagia	- - - - -	131

CHAPTER XIII.

<i>Of the Cessation of the Menses,</i>	- - - - -	137
--	-----------	-----

CHAPTER XIV.

<i>Of Conception, and the term of Gestation,</i>	- - - - -	139
--	-----------	-----

CHAPTER XV.

Of the Gravid Uterus.

Section 1. Size and position	- - - - -	143
Section 2. Developement of the uterus, and state of its cervix	- - - - -	144
Section 3. Muscular fibres	- - - - -	145
Section 4. Ligaments	- - - - -	146
Section 5. Vessels	- - - - -	147
Section 6. Of the fœtus	- - - - -	148
Section 7. Its peculiarities	- - - - -	153

Section 8.	Umbilical cord	- - - -	Page 157
Section 9.	Placenta	- - - -	160
Section 10.	Membranes and liquor amnii	-	163
Section 11.	Decidua	- - - -	164

CHAPTER XVI.

<i>Of Sterility,</i>	166
----------------------	-----

CHAPTER XVII.

Of Extra-uterine Pregnancy.

Section 1.	Symptoms, progress, and species	-	168
Section 2.	Treatment	- - - -	172

CHAPTER XVIII.

<i>Of the Signs of Pregnancy,</i>	173
-----------------------------------	-----

CHAPTER XIX.

Of the Diseases of Pregnant Women.

Section 1.	General effects	- - - -	177
Section 2.	Febrile state	- - - -	179
Section 3.	Vomiting	- - - -	181
Section 4.	Heartburn	- - - -	183
Section 5.	Fastidious taste	- - - -	183
Section 6.	Spasm of stomach and duodenum		184
Section 7.	Costiveness	- - - -	184
Section 8.	Diarrhœa	- - - -	186
Section 9.	Piles	- - - -	187
Section 10.	Affections of the bladder	- -	188
Section 11.	Jaundice	- - - -	190
Section 12.	Coloured spots	- - - -	190
Section 13.	Palpitation	- - - -	190
Section 14.	Syncope	- - - -	191
Section 15.	Dyspnœa and cough	- - - -	192
Section 16.	Hæmoptysis and hæmatemesis	-	193
Section 17.	Head-ache and convulsions	- -	193
Section 18.	Tooth-ache	- - - -	195
Section 19.	Salivation	- - - -	195
Section 20.	Mastodynia	- - - -	196

Section 21. Œdema	- - - -	<i>Page</i> 196
Section 22. Ascites	- - - -	197
Section 23. Redundance of liquor amnii	- - - -	199
Section 24. Watery discharge	- - - -	201
Section 25. Varicose veins	- - - -	203
Section 26. Muscular pain	- - - -	203
Section 27. Spasm of ureter	- - - -	204
Section 28. Cramp	- - - -	204
Section 29. Distention of the abdomen	- - - -	204
Section 30. Hernia	- - - -	205
Section 31. Despondency	- - - -	206
Section 32. Retroversion of uterus	- - - -	206
Section 33. Antiversion	- - - -	213
Section 34. Rupture of uterus	- - - -	214
Section 35. Abortion, and treatment of pregnant women	- - - -	217
Section 36. Uterine hemorrhage	- - - -	255
Section 37. False pains	- - - -	298
Notes	- - - -	301

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.

§ 1. GENERAL VIEW.

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 connection with the uterus and vagina, but also of its own immediate relation to the delivery of the child, and the obstacles which, in many instances, it opposes to its passage.

The pelvis consists, in the full grown female, of three large bones, two of which are very irregular, having no near resemblance to any other object; on which account they have been called the ossa innominata. These form the sides and front of the basin or pelvis. The back part consists of a triangular bone, called the os sacrum, to the inferior extremity or apex of which, is attached, by a moveable articulation, a small bone, which from its supposed resemblance to the beak of a cuckoo, has been named the os coccygis.

The os innominatum, in infancy, consists of three separate pieces: the upper portion is called the ilium, or haunch bone; the under, the ischium, or seat bone; and the anterior, which is the smallest of the three, is called the os pubis, or share bone. These all join together in the acetabulum, or socket, formed for receiving the os femoris, and are connected by a very firm gristle or cartilage. This, before the age of puberty, is converted into bone, so that the three different pieces are consolidated into one, though the names given to the bones originally are still applied to the different parts of the united os innominatum.

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.

§ 2. OSSA INNOMINATA.

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. 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 rough bump, called, the tuberosity of the ischium.

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

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

8th. The two bones, where they form the symphysis, are joined with each other for about an inch and a half; then they divaricate, forming an angle, the limbs of which extend all the way to the tuberosity of the ischium. This separation or divarication is called the arch of the pubis, which is principally constructed of the anterior boundary of the foramen thyroideum, consisting of a column or piece of bone, about half an inch broad, and one-fourth of an inch thick, formed by the union of the ramus of the pubis, and that of the ischium.

9th. At the upper part of the symphysis, or a very little from it, the os innominatum has a short obtuse projection, called the 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 innominatum, we find, that just after it has formed the plane of the

ischium, it extends backwards to join the sacrum; but in doing so, it forms a very considerable notch or curve, the concavity of which looks downwards. When the sacrum is joined to the bone, this notch is 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.

§ 3. SACRUM AND COCCYX.

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. (a) From this the bone is gently curved outward on each side, toward the sacroiliac 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 ankylosed with the sacrum, or at least moves with difficulty, but it almost always separates by maceration. In women it remains mobile, and, during labour, is pressed back

(a) But more commonly the projection of the sacrum.

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.

§ 1. OF THE SYMPHYSIS PUBIS.

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 part; but we often, in females, find that the intermediate fibrous substance, especially at the posterior part, is absorbed, and its place supplied with a more fluid substance; or, on the contrary, ankylosis may sometimes take place; a circumstance which Dr. Hunter says he never saw, but which I have met with. Besides this mode of connection, there is also in addition a very strong capsule to the articulation, the symphysis being covered on every side with

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

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

ligamentous fibres, which contribute greatly to the strength of the parts.

§ 2. SACRO-ILIAC JUNCTION.

The ossa innominata are joined to the sacrum by means of a thin layer of 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 connection 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 ankylosis. At the lower part, additional strength is obtained by two large and strong ligaments, which pass from the ischium to the sacrum, and therefore are called the sacro-sciatic ligaments. The innermost of these arises from the spine of the ischium, 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.

§ 3. VERTEBRAL JUNCTION AND OBLIQUITY OF THE PELVIS.

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 degrees. 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 react on the pelvis; and the heads of the thigh bones pressing on the two acetabula, force the ossa innominata more closely on each other at the symphysis, and more firmly on the sacrum behind. It is not possible, indeed, to separate the bones of the pelvis, unless the connecting ligaments be diseased, or external violence be applied, so as to act partially or unequally on the pelvis.

§ 4. SEPARATION OF THE BONES.

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.†

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 an uniform operation of nature, intended to facilitate the birth

* Phil. Trans. No. 484.

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

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. (*b*)

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

(*b*) There is an animal, however, in which this separation of the bones of the pelvis during pregnancy and parturition does really take place, and in whom it appears to be an operation of nature to facilitate the latter process.—This animal is the Guinea Pig.

Le Gallois says, that upon comparing the pelvis of the female of the Guinea Pig with the head of a full grown Fœtus, it appears utterly impossible, that the latter should pass through the former, if the pelvis constantly preserved the state and dimensions at any other time than that of gestation.

When the female Guinea Pig is alive, the diameter of the pelvis is asserted to be but about one-half of the head of the Fœtus; and nevertheless, Guinea Pigs are delivered with much ease.

The duration of gestation in these animals being about 65 days—About 3 weeks before delivery, the symphysis pubis is observed to acquire more thickness and a slight mobility; these are continually increasing. Eight or ten days before delivery, the two ossa pubis begin to separate from each other. This separation increases slowly at first, and only begins to go on rapidly for the three or four days which precede delivery.—At the moment of parturition, according to Le Gallois, it is such as readily to admit the middle finger, and sometimes both the middle and fore finger together.

The delivery being accomplished, the bones of the pubis soon close. Twelve hours after, the distance of the separation has lessened more than one half; and 24 hours after, they are in contact at their anterior extremity; and in less than three days they are perfectly so through the whole extent of their symphysis, which then only presents a slight thickness and mobility. A few days after, nothing is to be seen. But when the females are old or sick, the union takes place more slowly. Vide Le Gallois's experiments. Note at the end of the Vol.

the ligaments. In a diseased state, however, or in a case of separation of the bones, there is not the same obstacle to this motion: and hence, walking must give great pain, or be altogether impossible: even attempts to raise the one thigh above the other, in bed, must give more or less pain, according to the sensibility or laxity of the symphysis. Standing has also an effect on the symphysis, as I have mentioned; but sometimes the person can, by fixing one os innominatum, with all the muscles connected with it, and throwing the chief weight of the body to that side, stand, for a short time, easier on one leg than on both. This is the case when one os innominatum has been more acted on than the other, at the sacro-iliac junction. The person can stand easiest on the soundest side. The patient also, especially if the relaxation be accompanied with any degree of relaxation of uterine attachments, instinctively crosses her legs when standing, thereby obtaining relief.

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

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

When the accident happens during gestation, it sometimes takes 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 are 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.²

When it happens during parturition, it sometimes takes place in a pelvis apparently previously sound; but in most instances, we have, during some period of gestation, symptoms of disease about the symphysis; and so far from making labour easier, the woman often suffers more, when the symphysis is previously relaxed. The primary and immediate effects are the same as when the accident happens during pregnancy; but the subsequent symptoms are frequently

much more severe and dangerous, the tendency to inflammation being strong. The pain may be either trifling or excruciating at the moment, according to the sensibility of the parts. But even in the mildest case, great circumspection is required, violent inflammation having come on so late as a fortnight after the accident. The means used in the former case are to be rigidly employed, and the woman 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;² 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 ankylosis 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.³

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, consider-

able 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,⁴ especially with one of them, is more injured,⁵ and the person is lame in one or both sides, and has acute pain about the posterior ridge of the ilium,⁶ 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.

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 supervening, is to be obviated by suitable remedies.

§ 5. DIFFERENCE OF THE FEMALE FROM THE MALE PELVIS.

[A slight inspection is sufficient to show the difference in form and proportions, between the female and the male pelvis.

The cristæ, as well as the anterior and superior spinous processes of the ossa ilia, are farther separated in the female pelvis, hence affording a greater concavity to the iliac fossæ, and greater capacity to the large or superior pelvis. The two straits which terminate the cavity of the pelvis, differ also considerably in the two sexes. The circumference, or brim of the superior strait is larger and more rounded in the female, the sacro-vertebral projection is less prominent; the two tuberosities of the ischia are also less rough, less projecting, and farther separated, than in the male; and finally, the extremity of the os coccygis does not approach so near to the arch of the pubis, which affords to the inferior strait, greater extent from its anterior to its posterior termination.

With regard to the excavation of the pelvis, it is more

concave in the posterior part in the female, because the sacrum has greater height and curvature; the arch of the pubis is broader, (c) and its branches are also turned more outward and forward. The region of the pubis is less convex, and the cartilage, which forms the symphysis, is thicker and shorter, offering towards the interior of the pelvis a prominence more remarkable than in the male.

But in this very conformation, which nature appears to have intended to render labour more easy, there are certain circumstances exposing the female to peculiar inconveniences, which in men are more rarely observed; thus the superior spinous processes which anteriorly terminate the *cristæ*, or spine of the ilium, could not be separated to a greater distance, without increasing the length of Poupart's ligament, forming the crural arch; from thence it follows, that the intestine and epiploon, finding in this part less resistance and a larger aperture, must more frequently pass down and produce femoral hernia.

Again, women having their hips farther separated, must necessarily step with less firmness than men: for in progressing, when one leg is elevated, the centre of gravity of the body is less readily thrown upon the other, which rests on the ground; from hence results a species of claudication or vacillating gait, in which the trunk and the inferior extremities, instead of advancing directly or in a straight line, describe greater or smaller arches of circles.](d)

(c) Sæmmering observes, that the angle between the diverging branches of the pubis, is in the male an acute one; but in the female forms an angle of from 80 to 90 degrees, and hence approaches nearer to the figure of an arch, from which it receives its name.

(d) Vide Capuron. cours theorique et pratique, &c. Sæmmering Tabula Sceleti feminini juncta descriptione,

CHAP. III.

Of the soft Parts which line the Pelvis.

§ 1. MUSCLES.

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

1st. When we remove the peritoneum 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 at 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. Under the symphysis, it is pierced by the urethra and vagina; and during the passage of the child's head, those fibres which surround the vagina must be considerably distended; and this is more readily effected, as the anus is brought forwards when the perinæum is distended.

2d. Under this, 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 parturi-

tion, 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 we recede 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 lessen the cavity. These muscles afford a soft support to the intestines and gravid uterus.

§ 2. ARTERIES.(e)

Running parallel with the inner margin of the psoas muscle, and upon the brim of the pelvis, along the posterior half of the lineæ 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

(e) Consult Engravings of the Arteries by C. Bell. Finley's Philadelphia Edition.

the pelvis ; but the hypogastric vessels must be more or less compressed, according to the size or position of the head, but the circulation is never interrupted.

§ 3. NERVES.

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.

§ 4. LYMPHATICS.

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.

§ 1. BRIM AND OUTLET.

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 importance 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, 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 bone, 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.

§ 2. CAVITY.

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. (*f*)

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. (*g*)

(*f*) There may be some variation in dimensions, as stated by different writers; but it is probable, the above were given by our author, from actual measurement, of what he considered, a standard pelvis. A similar observation may be applied to the dimensions of the child's head, as stated in the succeeding chapter.

(*g*) The very ingenious and indefatigable Bichat has observed, that stature has no influence, or at least very little, on the dimensions of the pelvis; and that the individual differences which may occur, are totally independ-

§ 3. PELVIS ABOVE THE BRIM.

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

To conclude my observations on the dimensions of the pelvis, I remark, that the shape is different in the child and the adult. The dimensions of the brim are reversed in these two states; the long diameter of the foetal pelvis, extending from the pubis to the sacrum. By slow degrees, the shape changes; 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

ent of stature. It is acknowledged, continues he, that delivery is as easy in small as in large women, although the first may bring forth very bulky children, and who, indeed, may be disproportioned to the bulk of their mother's bodies, if a comparison of size should be instituted between the two.

early, become a mother, the shape of the pelvis may occasion a painful and tedious labour. (*h*)

§ 4. AXIS OF THE BRIM AND OUTLET.

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 small 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.

§ 1. BONES OF THE HEAD.

THE head of the child is made up of many different bones, and those of the cranium are very loosely connected together

(*h*) This remarkable difference in the comparative dimensions of the female pelvis before and after puberty, has been pointed out by analogy, and observed among the females of quadrupeds whose pelvis does not complete its development, nor acquire the form and proportions necessary for the expulsion of the fœtus until the period of puberty. *Vid. Capuron.*

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.

§ 2. SIZE OF THE HEAD.

The longest diameter of the head is from the vertex to the chin, and this is near five inches.⁽ⁱ⁾ From the root of the nose to the vertex, [which is called the long diameter,] and from the chin to the central portion of the sagittal suture, measures four inches. From the one parietal protuberance to the other, [which is called the transverse diameter,] 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, [and is called the perpendicular diameter.] 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-eighth or thirtieth part larger. It is a well established fact, that owing to the greater size of male children, women who have the pelvis in any measure contracted,

(i) This is termed the oblique diameter, to distinguish it from the next. When the vertex is stretched out in laborious births, it is sometimes extended to six or seven inches.

* Phil. Trans. Vol. LXXVI.

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.

§ 3. PASSAGE OF THE HEAD.

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 therefore, no obstacle or difficulty can arise from the size of the pelvis. There is so much space superabounding betwixt the pubis and sacrum, as to prevent all risk of injury from pressure on the bladder, urethra, or rectum; and as the long diameter of the head is descending obliquely, the sides of the brim of the pelvis are not pressed on. This is so certainly the case, that the head may, and actually often does pass, without any great additional pain or difficulty,

* Phil. Trans. Vol. LXXI.

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 has got entirely into the cavity of the pelvis. As the bason 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 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,

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

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.

§ 1. DEFORMITY FROM RICKETS.

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;¹ and the curvature of the bone may be either increased or diminished. If the sacrum project only a little, without any other change, the capacity of the brim alone is diminished: but if the curvature be at the same time smaller than usual, the cavity of the pelvis is lessened: but unless the ischia approach nearer together, or the lower part of the sacrum be bent forward, the outlet is unaffected; and in most cases of moderate deformity, the outlet is not materially changed. In greater degrees of the disease, the anterior part of the brim becomes more flattened, the linea iliopectinea 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 to² one side, rendering the shape of the brim more irregular and the dimensions smaller on one side than the other. In some in-

stances, 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.

§ 2. DEFORMITY FROM MALACOSTEON.

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,³ the acetabula are pushed backwards and inwards towards the sacrum and towards each other;⁴ 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 to 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.⁵ 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.*(k)

* 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.

(k) Deformity of the pelvis, from the above causes, may be considered as comparatively a rare disease in the United States. In the course of my obstetrical practice, I can at present recollect but four or five cases, where embryulcia and the employment of the crotchet became *indispensably* necessary; and what may be worthy of remark, these were in individuals natives of Europe, chiefly of Ireland. A deformed pelvis is scarcely known among the aborigines of our country. This subject shall again be taken up when embryulcia is treated of; an operation, which we fear, is frequently resorted to very *unnecessarily* at least, to make use of the mildest term.

§ 3. DEFORMITY FROM EXOSTOSIS AND TUMOURS.

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 the fracture of the acetabulum, from which I have seen extensive and pointed ossifications stretch for nearly two inches into the pelvis; or steatomatous or schirrous tumours may form in the pelvis, being attached to the bones or ligaments, of which I have known examples.⁶ An enlarged ovarium,⁷ or vaginal hernia,⁸ 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, poly-pous excrescences about the os uteri or vagina, schirrus 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 yield to pressure, and disappear until the child be born; others burst, and have their contents effused in the cellular substance. A large stone in the bladder may also be so situated during labour, as to diminish very much the cavity of the pelvis; and it may be even necessary to extract the stone before the child be delivered.

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 former kind are often moveable, the latter generally fixed; and they may consist of fatty, or fibrous substance, or fluid contained in a cyst. 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;⁹ other tumours are cartilaginous, and these, instead of being connected only by cellular matter, are attached to the pelvis firmly, or grow from

* In all cases of moveable tumours, as well as in stone in the bladder, it is evident, that they ought, in the very beginning of labour, to be pushed above the brim, and prevented from entering it before, or along with the head.

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 lately, the attachments were extensive, and the tumour so large as to fill the pelvis, and permit only one finger to be passed between it and the right side of the bason. It adhered from the symphysis pubis round to the sacrum, being attached to the urethra, obturator muscle and rectum, intimately adhering to the brim of the pelvis, and even overlapping it a little towards the left acetabulum. It was hard, somewhat irregular, and scarcely moveable. The patient was in the 9th month of pregnancy. There was no choice, except between the cesarean operation, and the extirpation of the tumour. The latter was agreed on, and with the assistance of Messrs. Cowper, Russel and Pattison, 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 divided, the tumour was then touched easily with the finger. A catheter was introduced into the urethra, and the tumour separated from its attachments in that quarter. 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 scissars, 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. On the 18th of April, when this was written to go to press, the wound was nearly healed. On examining *per vaginam*, the vagina is felt adhering as it ought to do, to the pelvis, rectum, &c. The side of the pelvis is smooth; and a person ignorant of the previous history of the case, or who did not see the external wound, would not be able to discover that any operation had been performed.

§ 4. MEANS OF ASCERTAINING THE SIZE OF THE HEAD, &c.

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 a certain number of inches for the thickness of the pubis, sacrum, and soft parts. 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 farther

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,¹ 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.

CHAP. VIII.

Of the External Organs of Generation.

§ 1. GENERAL VIEW.

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 perinæum. 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.

§ 2. LABIA AND NYMPHÆ.

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 inclosed in a duplicature of the skin. When injected by filling the pudic artery, each nymphæ is found to be made up of innumerable serpentine vessels, forming an oblong mass. This at the upper part joins the clitoris, to which, perhaps, it serves as an appendage; whilst the loose duplicature of skin in which it is lodged, by being unfolded, permits the labia to be more safely and easily distended, during the passage of the child.

§ 3. CLITORIS.

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.

§ 4. URETHRA.

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 up in preg-

nancy, 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 bason 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 female catheter, we may employ a male catheter, directing the concavity backwards. When the head of the child in labour has entered the pelvis, the urethra is pushed close to the symphysis of the pubis; then the flexible or flat catheter must be introduced parallel to the sym-

physis, 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.

§ 5. ORIFICE OF VAGINA AND HYMEN.

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 sphincture 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 semi-lunar 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*. (*l*)

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.

(*l*) Haller, in his *Elementa Physiologiæ*, asserts that the hymen is peculiar to the female of the human species; but Duverney, in a Memoir read before the Institute and the School of Medicine, at Paris, asserts, that it is common to others of the mammalia.

CHAP. IX.

Of the Internal Organs of Generation.

§ 1. VAGINA.

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 up behind than before, so that the posterior lip of the uterus is better felt than the anterior. In the infant, the vagina is attached still higher 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 connections 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.

§ 2. UTERUS AND ITS APPENDAGES.

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. 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,^(m) 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 up 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 arte-

(m) The reader is referred to a very interesting paper "on the muscularity of the uterus, by Charles Bell, Esq. F. R. S. Ed. &c." published in the 5th vol. of the Eclectic Repertory, p. 37, and § 9.

ries, 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 ilipectinea 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 lymphatic, 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. This is hollow, forming a canal 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 canal is plaited, the plicæ running longitudinally.

The ovaria¹ lie in the posterior pinion of the broad ligament. They are two oval flattened bodies, of a whitish colour, and grandular consistence. They are cellular, but not very vascular, although vessels run to their coat. After puberty, 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 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.

CHAP. X.

Of the Diseases of the Organs of Generation.

§ 1. ABSCESS IN THE LABIUM.

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 attacks in childbed, in consequence of the violence which the parts may have sustained in labour. It is marked by the usual symptoms of inflammation, namely, heat, pain, throbbing, and more or less swelling, not unfrequently attended with fever. The swelling is sometimes hard and moveable, like a gland, especially when the progress is slower than usual. In general, the course of the disease is rapid, the pain, and inflammation are at first very acute, and the part swells speedily. In a few hours, especially if a poultice have been applied, the abscess begins to point at the inside of the labium, and the nymphæ is either lost, or if it remain, appears 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 sometimes 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.

§ 2. ULCERATION OF THE LABIA.

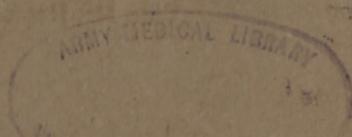
The internal surface of the labia is often the seat of ulceration and excoriation, which may generally be avoided by the daily use of the bidet. The general form under which excoriation appears, is that of a raw surface, as if the cuticle had been peeled from a blistered part. Most frequently these sores 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

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

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 of 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 chamomile 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.

§ 3. EXCRESCENCES ON THE LABIA.

Sometimes after a slight degree of inflammation, producing heat and itching of the parts, numerous excrescences 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 operation, 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 belladonna. Should there be ground for suspecting a syphilitic action, mercury must be given, at the same time that we make suitable local applications; but in doubtful cases, I have seen this medicine given without any benefit. These excrescences, from their appearance, their great pain, and foetid discharge, may suggest an opinion of their being cancerous; but they begin in a different way, and generally yield, though sometimes slowly, to proper applications.

§ 4. SCIRRHOUS TUMOURS.

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.(n)

§ 5. POLYPOUS TUMOURS.

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

(n) An immense tumour was successfully extirpated from the labia of a negro woman by Dr. Hartshorne at the Pennsylvania Hospital in December, 1815, said to be produced by the kick of a horse, and of upwards of ten years standing.

In this case, the labia were much enlarged, and almost as hard as cartilage. The hardness and enlargement of the integuments extended anteriorly three inches above the pubis, and posteriorly to within two inches of the anus. The patient walked with great difficulty, as the circumference of the middle of the tumour was at least twenty inches, and its lower part almost reached the knees. The weight of the tumour removed, was upwards of eleven pounds.

On the evening of the 3d day after the operation, unequivocal symptoms of Tetanus appearing, and the violence of the spasms increasing, caustic potash was freely applied to the neck, over the cervical vertebræ. The effect of this application in lessening the convulsive action of the muscles was very evident.

The woman was discharged well, on the 6th of April, ensuing.

In Larrey's Memoirs, vol. 1. p. 299, will be found a description of a similar tumour; and in plate X, an engraving.

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. A seton may be passed, or the cyst may be laid open.^(o)

§ 6. ŒDEMA.

Œdematous tumour of the labium is either a consequence of pregnancy, or a symptom of general dropsy. The tumour is variable in its size. When it depends on pregnancy, it is seldom necessary to do 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.

§ 7. HERNIA, LACERATION, &c.

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-band-

^(o) Would it not be more eligible, when practicable, to extirpate the cyst completely by the knife, to prevent the risk of its sloughing away?

age, 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.

§ 8. DISEASES OF THE NYMPHÆ.

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 loose blood, even *ad deliquium*. In some countries, this elongation of the nympha is very common.¹ In others, the nymphæ, together with the preputium clitoridis, are removed in infancy.² The nymphæ are subject to ulceration, tumour, and other diseases, in common with the labia.

Sometimes by falls, but oftener³ 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 labia, producing a black and very painful tumour.⁴ This may take place even before the child is expelled; and, in a case of this kind, the midwife, mistaking the swelling for the protruded membranes, actually perforated the labium, and caused a considerable discharge of blood.⁵ More frequently, however, the tumour appears immediately after delivery,⁶ 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,⁷ 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.⁸

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.⁹ 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. If inflammation run high, it is to be abated by the usual means.

§ 9. DISEASES OF THE CLITORIS.

The clitoris may become scirrhus, and even be affected with cancerous ulceration. In this disease, it is generally thickened, enlarged,¹⁰ 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,¹¹ 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 per-

son may pass for an hermaphrodite.¹² This is said to be most frequent in warm climates; and in these, extirpation is sometimes performed. Haller assigns a cause for the enlargement.

§ 10. DISEASES OF THE HYMEN.

The most frequent disease of the hymen is imperforation; in consequence of which the menses are retained,¹³ the uterus is distended, and the orifice of the vagina protruded, so as sometimes to resemble polypus, or a prolapsus uteri;¹⁴ or it becomes fretted and covered with scabs. Even the perinæum may be stretched, as if the head of a child rested on it.¹⁵ 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;¹⁶ such a case may, therefore, by inattention, be mistaken for parturition.¹⁷ The sufferings of the patient are, in some instances, increased by the addition of suppression of urine,¹⁸ or pain in passing the fæces,¹⁹ or convulsions.* Imperforated hymen is by no means uncommon, and the treatment is very simple, for the part is easily divided.²⁰ 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.²¹

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,²² or cut in the act of parturition. It is asserted that 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

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

† Vide Ambrose Pare, Hildanus, cent. III. ob. 60.—Ruysch, ob. 22.—Mauriceau, ob. 439.

to chastity, this test must be considered as altogether doubtful. When the hymen is ruptured, and there is an inflammation about the external parts, some have, in cases of alleged rape considered the crime as proven. But whoever attentively examines the subject must admit, that these are 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.*

§ 11. LACERATION OF THE PERINÆUM.

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

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

have been made to accelerate delivery. The most effectual way to prevent laceration is by supporting the perinæum 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 involuntarily, 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. 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 ought certainly to be had recourse to, if re-union cannot otherwise be effected.^(p) If necessary, the edges of the divided parts must 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 perinæum. When the sphincter ani remains entire, but the septum is torn, some have considered it necessary to divide that muscle; but others, with more reason, omit this practice. During the cure, some introduce a canula into the vagina, to support the parts, and others apply compresses dipped in balsams; but it is better to apply merely

(p) Sutures should be very rarely had recourse to, as they give great irritation, and are subject to be torn out.

a pledget, spread with simple ointment, to the part. If the radical cure fail, the patient must use a compress, retained with a T-bandage.²³

§ 12. IMPERFECTION OF THE VAGINA.

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 to delivery, for during labour, or even long before it, relaxation²⁴ 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 this²⁵ it may be necessary to divide. 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 rectum²⁶ may terminate in the vagina, &c. Malformation does not always prevent pregnancy.²⁷

§ 13. INFLAMMATION AND GANGRENE OF THE VAGINA.

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,²⁸ 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

* Vide Van Swieten Comment. in aph. 1290.

† Harvey, exercit. LXXIII. p. 492.

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 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.²⁹

§ 14. INDURATION, ULCERATION, AND POLYPL

The vagina may be contracted by scirrhus 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, scirrhus uterus, and requires the same treatment.

Foreign bodies in the vagina may produce ulceration, and fungous excrescences. 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*.

§ 15. INVERSION.

The vagina may be inverted or prolapsed, without any ma-

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

terial change in the state of the womb, and without symptoms of uterine irritation, farther than slight pain in the back, and 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, tonics, and, if these fail, by a globe pessary, or by pregnancy;* but it sometimes returns after delivery.³⁰

§ 16. WATERY TUMOUR.

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, sometime 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 piercing³¹ the tumour, which is to be rendered tense, by pressing it with the finger.

§ 17. HERNIA.

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

* Pechlin, lib. i. obs. 20.

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.

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

§ 18. ENCYSTED TUMOURS AND VARICES.

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 connections 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 the 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 pessary in the vagina.

§ 19. SPONGOID TUMOUR.

A very dreadful disease, which I have called spongoid tumour, may form either within the pelvis, or about the hip joint, or tuberosity of the ischium, and spread inwards, pressing on the bladder and rectum, sometimes so much as to require the use of the catheter. We recognize 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.

§ 20. ERYSIPELATOUS INFLAMMATION.

The orifice of the vagina, together with the labia, and indeed the whole vulva, may be affected by erysipelatoous

inflammation. This appears under two conditions: 1st, it may originate in the vulva, and spread inwards, even to the uterus; or, 2dly it may begin in the womb, and extend outwards. The parts are tumid, painful, and of a dark red colour. The second affection is most frequent after parturition; but the first may occur at any age, and under a variety of circumstances. It may be confined to the external parts alone, or it may quickly spread within the pelvis, and destroy the patient; for this disease generally terminates in gangrene. Vigarous* says, this state may be distinguished from 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, pledgets dipped in a weak solution of sulphate of zinc, with the addition of a tenth part of camphorated spirit of wine. When this application gives continued pain, fomentations with milk and water, or with decoction of chamomile flowers may be substituted.

A highly sensible or inflamed state of the parts may occur in nymphomania, or libidinous madness, either as a primary or secondary affection; and should the patient die under the disease, the parts are generally found black. The tepid bath and fomentations give relief, but sometimes spirituous applications are beneficial. If the patient be feverish she ought to be bled, 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.

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

§ 21. FLUOR ALBUS.

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, or leucorrhœa. Some confine the term strictly to a discharge from the inner surface of the womb; and in order to determine whether the secretion proceeds from the uterus or not, it has been proposed to stuff the vagina completely for some time, and then inspect the plug, to ascertain whether that part corresponding to the os uteri be moistened.* But this test is not satisfactory, and will seldom be submitted to.

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 menstrual period. If a woman, who has uterine leucorrhœa conceives, 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.

* Chambon *Malad. des Filles*, p. 164.

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

* Chambon Malad. des Filles, p. 104.

the vagina, and this may afterwards be exchanged for one of a more astringent quality.

If the disease occur in a weak habit, or if the plethoric state, though it existed at one time, has now been removed, the internal remedies must be more directly tonic, and injections of various astringents must be employed; of those the two best are solution of sulphate of alumin and decoction of oak bark. The action of cold and damp are 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.* 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. The diet is to be light and nourishing, and the patient ought not to indulge in too much sleep.

Various medicines have been proposed with a view of acting specifically on the secreting parts, such as cicuta, balm of gilead, diuretic salts, calomel, resins, cantharides, electricity, arnica, &c. have been proposed; but they have very little good effect, and sometimes do harm. Of all these the tincture of cantharides(*q*) and oil of turpentine, by exciting

* 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. section 3d.

‡ Stoll. Prælectiones, Tomus II. p. 385.

§ Vigarous, Malad. des Femmes, Tome I. p. 261.

(*q*) Mr. Robertson, a surgeon of Edinburgh, in a paper published in the London Medical and Physical Journal, vol. XV. and also in a distinct work on the Effects of Cantharides, when taken internally, strongly recommends

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 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. 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.

this powerful article of the materia medica, in obstinate cases of Leucorrhœa; and recites a number of instances, in which it appears to have produced the best effects. In his exhibition of this medicine, he generally begun with about $\mathfrak{z}ij$ or $\mathfrak{z}ijss$ of the tincture, in $\mathfrak{z}vj$ of water; a table spoonful of which was given thrice a day. He continued gradually increasing the dose, until his patient had taken $\mathfrak{z}iv$ of the tincture in 24 hours, $\mathfrak{z}j$ of the tincture being added to $\mathfrak{z}vj$ of water. It was generally given, until considerable pain, and a puriform discharge from the vagina was produced. I cannot say, that in the few trials I have made of it in this complaint, the beneficial effects have been so conspicuous.

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.

§ 22. AFFECTIONS OF THE BLADDER.

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 soda,^(r) the warm bath, and

(r) Our author has omitted to mention the efficacy of magnesia in calculous complaints, as recommended by Messrs. Brande and Hatchet. The result of the inquiries of these ingenious gentlemen, on this very interesting subject has been communicated to the scientific world in a paper printed in the Philosophical Transactions for the year 1810, entitled "Observations on the Effects of Magnesia, in preventing an increased formation of the Uric Acid, by William T. Brande." This gentleman (in a communication to Sir John Sinclair) says, that the best method of giving the magnesia, is in plain water, or milk, to be taken in the morning early, and at mid-day. If the stomach is weak, and this produces flatulency or uneasy sensations, some common bitters, such as gentian, may be taken with it; if it purges, a little opium may be added. He supposes its beneficial operation depends, on preventing the formation of acid in the stomach.

The dose of magnesia, he observes, must always depend upon the circumstances of the case;—*generally*, five grains twice or thrice a day to children ten years of age; fifteen or twenty grains to adults.

Mr. Brande has always given the common magnesia, although he remarks, that, the calcined may be occasionally used with advantage. For fuller information on this subject, the reader is referred to Brande's paper, above quoted, in the Phil. Trans. and to a letter from Sir John Sinclair, vide Eclectic Repertory, vol. III. p. 120.

Dr. Gilbert Blane, so well known in the medical world, has also written an interesting paper on the effects of large doses of mild vegetable alkali, or potassa carbonata in gravel, and the beneficial effects of opium combined with it.

opiates, much relief may be obtained, and very often the stone may be passed, for the urethra is short and lax. But when these means fail, an operation must be performed. 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 cannot promise certain relief from any one of these.³³ In process of time, the disease subsides and disappears. The use of a bougie may be of service.

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.⁶⁴ 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.

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

† Hildanus, cent. I. obs. 68 and 69.

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

Chronic inflammation of the mucous membrane of the bladder, produces frequent desire to void urine, and the discharge of viscid mucus which sometimes has a puriform appearance. Cicuta and balsam of copaiba seem to be the best remedies.

Polypous tumours³⁵ 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 distension 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. If this have been neglected, it will be proper to make the edges of the opening raw by paring, if it be large, or by caustic if it be small, and afterwards use the catheter. When an incurable opening is left, we must, by introducing a sponge, or some soft, but pretty large substance, like a pessary, into the vagina, close it up, at least so far as to make the woman more comfortable. In a curious case I met with, there was an attempt by nature, to plug up the opening.³⁶ 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

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

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 the woman 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 try the effect of tincture of cantharides.

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.³⁷ When the prolapsus vesicæ takes place as a temporary occurrence during labour, or antecedent to parturition, we must be careful not to mistake the bladder for the membranes, for thus irreparable mischief has been done to the woman. The bladder when protruded, is felt to be connected with the pubis. It retires 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 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 navel, and some suffer little or no inconvenience, except pain about the bladder when it is distended. If the disease has continued long, or if the prociden-

tia 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 voided, and by pressure, the urine may be forced through the urethra. The hernia vesicalis is to be remedied by the use of a globe pessary. 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.

§ 23. EXCRESCENCES IN THE URETHRA.

Excrescences may, notwithstanding the opinion of Morgagni, form in the course, or about the orifice of the urethra,³⁸ 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 sufferings

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

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 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.³⁹ 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.⁴⁰ The daily use of the bougie, for some time after extirpation, is of service.⁴¹

Sometimes the urethra is partially, or totally inverted,⁴² forming a tumour at 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 must 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. Sometimes the urethra is preternaturally dilated,⁴³ 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 or 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

* Morbid Anatomy, p. 321.

† Broomfield's Surgery, Vol. II. p. 296.

part bathed with an astringent lotion, and gentle pressure made with a thick bougie.

§ 24. DEFICIENCY AND MAL-FORMATION OF THE UTERUS.

The uterus may be larger than usual, or uncommonly small,⁴⁴ or it may be altogether wanting.⁴⁵ Unless these circumstances 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 are certain that a uterus really exists.*

The uterus may be double:⁴⁶ in this case there is sometimes a double vagina, but generally only one ovarium and tube to each uterus. This conformation does not prevent impregnation.

The uterus is sometimes divided into two, by a septum stretching across at the upper part of the cervix;† or the os uteri is almost, or altogether shut up,⁴⁷ 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

* 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.

† Baillie's Morbid Anatomy, chap. xix.

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 varicosé, in an old woman who had been subject to piles; but I do not know that any particular inconvenience results from the venous enlargement.

§ 25. HYSTERITIS.

The uterus is subject to inflammation; but in the unimpregnated state, it is not common for the womb to be the original seat of acute inflammation. After parturition, it is very frequently inflamed, and this will hereafter be considered. Inflammation is discovered by pain in the hypogastric region, accompanied with tension, and the part is tender to the touch; there is acute pain stretching to the back and groins; the bladder is rendered irritable; and acute fever accompanies these symptoms. Blood-letting, purges, fomentations, and blisters are to be used, as in other cases of peritoneal inflammation. 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. The cervix is not materially affected in size or hardness. 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 generally complains more of pain in some distant part of the abdomen, not unfrequently near the liver. There is no fever, but the patient becomes weak from discharge, irritation, and those hysterical affections which may accompany the complaint.

The warm sea-water hip-bath, gentle saline purgatives,

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

† 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.

injection of decoction of hemlock, mild diet, and the use of cicuta as an anodyne are useful at first; and afterwards when the symptoms are so far subdued, the use of the cold sea-bath, bark combined with bitters, and mild injections of vegetable astringents are proper. In obstinate cases mercury ought to be tried, with a view of altering the action of the parts.

§ 26. ULCERATION OF THE UTERUS.

The uterus may, from irritation become ulcerated like any other part; purulent matter is discharged, the woman 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, 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. This disease is marked by excruciating pain of the burning kind, in the region of the uterus, 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.

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, or even to check its progress. Sometimes mercury has effected a cure, either by itself, or combined with cicuta; or hyocyamus, or other narcotics, have been given alone. Nitrous acid occasionally gives relief, and, when greatly diluted, 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 very frequently 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. Although this disease be very different in its nature from the former, yet the mode of treatment is very much the same. Material benefit may be derived from the warm salt-water bath, and the regular use of a solution of some saline purgative, or a laxative mineral water, such as that of Harrowgate or of Cheltenham. 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. Some

may consider this disease as a species of cancer, but the ulcer is never fungous.

Excrescences of a firm structure, and broader at the extremity than at the attachment, may spring from the os uteri, and generally, I apprehend, originate from a lobulated or fissured state of the parts. It bleeds readily and profusely, but when it is 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 cannot be done we can only palliate symptoms.

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, foetid purulent 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.*

§ 27. SCIRRO-CANCER.

Scirro-cancer generally, if not 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 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-

* Vide Med. Comment. Vol. XIX. p. 257.—Pearson on Cancer, p. 119.

down, together with dysuria and mucous discharge with the urine ; glowing heat, or sometimes stinging pain betwixt the pubis and sacrum, with itchinness of the vulva. There is from the first, a leucorrhœal discharge. The patient is troubled with flatulence, heartburn, and sometimes with vomiting, and cutaneous eruptions from sympathy with the stomach. The general health suffers, the countenance becomes sallow, the pulse quickens, the strength declines, and the body wastes. If the menses have not entirely ceased, they become irregular and profuse. 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. 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 thickened, and the os uteri hard, open, irregular, and more sensible to the touch, a circumstance which causes pain in coitu. The cervix is either totally indurated, or has imbedded in it a hard tumour, which may acquire considerable size. A little blood is often observed on the finger after an examination. In some time after this, the os uteri is turgid, as if it contained a small cyst, 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 considerably enlarged before ulceration takes place ; but, in other cases, the augmentation is much greater after ulceration, than before it.⁴⁸ If the disease originally formed a distinct tumour in the cervix, that tumour may become as large as the first, 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. 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 bladder⁴⁹ 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, is of a light olive colour. In proportion as the disease advances, some of the cysts enlarge, and thicken still more; and, when opened, are found to contain a bloody lymph, and to have the inner surface covered with a spongy vascular substance, similar to that which fills the small cysts, but rather more resembling fungus. Presently some of these cysts augment so much as to resemble abscesses, though they are not properly speaking abscesses, and soon afterwards they burst.

It is 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.

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

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

† 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.

early and carefully per vaginam. Much harm is done by the use of astringent injections meant to cure the supposed fluor albus.

This is a very hopeless disease, but still much may be done to check its progress, or mitigate its symptoms. When uneasy sensations, about the cessation of the menses, indicate a tendency to uterine disease, we find advantage from the insertion of an issue in the arm or leg, the use of laxative waters,* and spare diet,⁶⁰ and flannel dress. If by examination we discover any alteration in the shape, size, or sensibility of the womb, the most effectual treatment we can have recourse to, is the daily use of from two to three drachms of sulphas potassæ cum sulphure; and if this lose its laxative effect, one or more aloetic pills may be added. The warm sea-water bath every night is likewise of great service. When there is much sense of throbbing, heat, or pain about the pelvis, cupping glasses applied to the back are 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 chamomile with hemlock or opium; allay pain by anodynes; attend to the state of the bowels; and correct stomachic affections by bitters, and other suitable remedies. Mercury, iron, arsenic, sarsaparilla, aconitum, cicuta, &c. have been given internally, but have seldom a good effect. It has been proposed to produce, with an extracting instrument, a prolapsus uteri, and then cut off the protruded womb; but this operation is not likely to be resorted to.

* Ræderer relates a case where scirrhus swelling was cured by keeping the bowels open, and giving every third evening, from ten to twenty grains of calomel.—Haller, Disp. Med. Tomus IV. p. 670.

§ 28. TUBERCLES.

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 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. 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.‡ I have never seen the tubercle end in ulceration, nor the substance of the uterus, although thickened, have abscess formed in it. The effects of this disease are chiefly mechanical and often altogether trifling: at other times, we have a pain in the back, and sometimes in the hypogastrium, which is swelled, hard, and irregular, if there be much enlargement of the womb, dyspeptic symptoms, leucorrhœa, and at length feverishness and gradual loss of strength. 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. Sometimes one or more tubercles are thrown off, with pains like those of labour.

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

† 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 tubercles.—Peyer has a similar case, *Pæreg. Anat.* p. 131.

Menstruation may be rendered irregular, but sometimes continues unaffected. In the very last case I saw, 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.

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.

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 irregular surface; or it may be enlarged and ossified,⁵¹ 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.

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

† Vide *Rhodus*, cent. III. ob. 46.—*Böhmer 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.

§ *Beader, Obs. Med.* ob. 29. p. 170.

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.

§ 29. SPONGOID TUMOUR.

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 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 connection 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 connection 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 results from pressure on the bladder, causing strangury

or suppression of urine, attended with fits of considerable pain, like those excited by a stone. 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 fœtid bloody discharge, or sometimes considerable hemorrhage, and ultimately the bladder or rectum are 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.

[§ 30. CAULIFLOWER EXCRESCENCE FROM THE OS UTERI.

Dr. John Clarke of London, considers himself as the first writer who has taken notice of this disease.

The cauliflower excrescence, according to him, arises always from some part of the os uteri. As several of the early symptoms are not very distressing to the patient, the tumour in the beginning is rarely the subject of medical attention. The first changes of structure have therefore not been observed. In general the tumour is not less than the size of a blackbird's egg. At this period it makes an irregular projection, and has a base as broad as any other part of it, attached to some part of the os uteri. The surface has a granulated feel, considerable pressure on handling it, does not occasion any sense of pain. The remainder of the os uteri, will at this period, be found to have no sensible alteration of structure. By degrees more and more of the circle of the os uteri, and the external part of the cervix uteri, become

affected with the same morbid alteration of structure, till at length the whole is involved in the disease.

The growth is in some cases slow, but in others rapid, so that in the course of nine months, it will sometimes entirely fill up the cavity of the pelvis, and block up the entrance of the vagina.

As the bulk of the tumour increases, the granulated structure becomes more evident, and is found to resemble very much the structure of the cauliflower, when it begins to run to seed. In most cases it is of a brittle consistence, so that small parts of it will come away, if it be touched too rudely; and such pieces appear to be very white. Sometimes, though no violence has been used, small portions of a white substance come away with the urine of the patient, and in the discharge from the vagina.

When the tumour has arrived at a size greater than that of the os uteri, it spreads very much, and as the base is the smallest part of the tumour, persons not conversant with the disease, have often mistaken it for polypus. A little attention, however, to the feel of the tumour, and the breadth of its base, will be sufficient to distinguish them.

In the very early state of the cauliflower excrescence, a discharge from the vagina takes place like fluor albus; it very soon becomes thin and watery, and is sometimes tinged with blood. In most cases upon coming away, it is apparently as thin and transparent as pure water; but the linen on which it is received, when dry becomes stiff, as if it had been starched. The quantity of the discharge when the excrescence is large, will sometimes be sufficient to wet thoroughly, ten or twelve napkins in a day. Now and then a discharge of pure blood occurs. When this ceases the discharge of thin transparent fluid re-appears. An offensive odour generally accompanies the discharge, which is greatest when there has lately been an evacuation of pure blood, or of the catamenia. Mucus has sometimes been found in the fluid discharged, but puss never.

Patients labouring under this disorder, are variously affected with regard to pain. In the commencement none is

felt; but during its progress pain is in some cases experienced. Generally in the advanced stage, the patient feels pain in the back, and in the direction of the round ligaments of the uterus. The pain is not described to be lancinating, as in cancer, and is without any sensible aggravation by paroxysms; but on the whole, it is most felt after the patient has been in a perpendicular attitude.

The disease attacks indiscriminately women of all ages. The patient is destroyed by the debility occasioned by the profuse discharge; and in the course of the disease, she always becomes extremely emaciated from the above cause. It always terminates fatally. Respecting the treatment of this disease, nothing satisfactory can be offered. All stimulating-substances either in diet or medicine, seem to aggravate it, by increasing the discharge; and no astringents internally given appear to lessen it. The only means from which any benefit has been derived, is the injecting into the vagina three times a day, a strong decoction of cortex granati, or of cortex quercus, in which alum is dissolved in the proportion of eight or ten grains to every ounce of it. This has the double effect of lessening the quantity of the discharge, and rendering it less offensive. The use of anodynes must be resorted to for the mitigation of pain, and the occasional symptoms of suppression of urine, and costiveness, are to be relieved by the use of a catheter and mild laxatives.(s)]

§ 31. CALCULI.

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

(s) Vide a paper on the Cauliflower excrescence from the os uteri, &c. by John Clarke, M. D. *Transact. of a society for the improvement of Medical and Chirurgical knowledge*, 1812. And *new Medical and Physical Journal*, July, 1812.

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,⁵² 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.

§ 32. POLYPL.

Polypus 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, tenesmus, and a dragging sensation at the groins. When these symptoms have continued some time, 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, or sometimes 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

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

body of which passes into the vagina,⁵³ and sometimes occasions retention of urine.⁵⁴ The pedicle remains in utero, and the bad consequences formerly produced still continue, except in a few cases, where the tumour has dropped off,* and the patient got well. In such cases, it has been supposed that the os uteri acted as a ligature; and to the same cause is attributed the bursting of the veins, which 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 been observed, that there is less tendency to hemorrhage, when they are attached to the cervix, than either higher up, or to the os uteri itself. If there be an 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 semicartilaginous 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 mem-

* Mem. de l'Acad. de Chir. Tom. III. p. 552.

† Vide case by Goulard, in Hist. de l'Acad. de 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.

brane, and a slow subsequent enlargement of the diseased portion; for the substance of the uterus itself is not necessarily affected. The enlargement is generally greatest at the farthest extremity of the tumour, and least near the womb; so that there is a kind of pedicle formed, which sometimes contains pretty large blood-vessels, and the tumour is pyriform. 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.

The vessels are considerable, especially the veins, which sometimes 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.*

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 only method now 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

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

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 close together, and no loop is to be left at the middle. They are then to be carried up along the tumour, gene-

* M. Baudelocque observes, "Nous regardions ce renversement nécessaire pour obtenir la guérison 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 indolents du tissu cellulaire de la matrice et du vagin.*(*t*)

(*t*) For a plate and description of this instrument, the reader is referred to *Cooper's Surgery*, Philadelphia edition.

rally 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 up 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.⁵⁵ In some instances, however, the womb has been included without a fatal effect.⁵⁶

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

(u) The reader is referred to the following interesting paper on the subject of the preceding article, viz. "Memoir sur l'organisation des Polypes Uterins

§ 33. MALIGNANT POLYPE.

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,⁵⁷ 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. 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.

et l'application de cette connoissance á la pratique chirurgicale, par P. J. Roux, in tome 3ieme des Œuvres chirurgicales de P. J. Desault, par Xav. Bichat, p. 370.

* Vide Mem. de l'Acad. de Chir. Tome III. p. 588.—Herbiniaux Observations, Tome I. ob. 39.—Baillie's Morbid Anatomy, chap. xix.—Vigarous de Malad. des Femmes, Tome I. p. 425.

§ 34. MOLES.

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.⁵³ They may form in women who have not borne children,† or they may succeed a natural delivery,‡ or follow an abortion, or take place in a diseased state of the uterus.§ It is the opinion of many, that these substances are never formed in the virgin state, 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,

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

† *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.*

§ 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.*

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 importance, as a weak state of the uterine system predisposes to more formidable diseases, and may be followed by scirrhus of the womb or of the breast.

§ 35. HYDATIDS.

Hydatids may also enlarge the womb, and these frequently are formed in consequence of the destruction of the ovum at an early period,⁵⁹ or of the retention of some part of 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

always 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 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 sometime 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. (x)

(x) Ruysch in the first volume of his valuable works, has given two very curious and accurate plates of these hydatids of the placenta or uterus. There is also a representation of these vesicles in Baillie's plates of *Morbid Anatomy*, executed with great truth and elegance. It is now generally considered by naturalists, that the hydatids found in the human body, are a sort of imperfect animals; and as Dr. Baillie has observed, although there may be some difference between them in simplicity of organization, this need be no considerable objection to the opinion, as life may be conceived to be attached to the most simple form of organization.

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 are 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. The neck of the womb is small, and the case much resembles ovarian dropsy, except that the tumour occupies the region of the uterus. The duration of this complaint is uncertain; but the water is at last discharged suddenly, and after making some exertion. The bag afterwards comes away, and the process is not attended with much pain.* It is most prudent to be patient; but if the symptoms be troublesome, the fluid can be drawn off by the os uteri. This disease, a solitary hydatid, is oftener combined with pregnancy, or with a mole, than met with alone. The first combination⁶⁰ 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.

§ 36. AQUEOUS SECRETION.

A different disease from that described in the last section, is an increased secretion from the uterus itself, accompanied generally with symptoms of uterine irritation; and if the woman menstruate, the menses are pale and watery. There may

For further information on the subject of hydatids, particularly those of the uterus, the student is referred to a paper by the editor, inserted in the Eclectic Repertory, Vol. I. p. 499, and seq. Also to Monro's Morbid Anatomy of the human gullet, stomach and intestines. Edin. 1811, p. 255.

* 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.

be a constant stillicidium of water,* or from some obstructing cause the fluid may be for a time retained,⁶¹ 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 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.†

§ 37. WORMS.

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.

§ 38. TYMPANITES.

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

* Hoffman mentions a woman who had a constant stillicidium, a pint being discharged daily. It at last proved fatal. Opera, Tom. III. p. 326, and Tom. I. p. 330.

† Vesalius, Tom. I. p. 438, says, that he found an uterus containing 180 pints of fluid, and its sides in many places scirrhus. 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 chamomile flowers. Med. Comment. Vol. III. p. 86.

§ Vide Vigarous' Maladies, Tome I. p. 401.

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 tympanites of the uterus.

§ 39. PROLAPSUS UTERI.

The prolapsus, or descent of the uterus, takes place in various degrees.* The slightest degree, or first stage, has been called a relaxation; a greater degree, a prolapsus; and the protrusion from the external parts, a procidentia. It is necessary 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. 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 leucorrhœal 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 toward 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 woman have been recently delivered, there is less likelihood of the practitioner being misled. She feels a weight and uneasiness about the pubis and hypogastric region, with an irritation about the urethra and bladder; and

* Vide Memoir by Sabbatier, in 3d. Vol. of the Memoirs of the Academy of Surgery.

sometimes a tenderness in the course of the urethra, or about the vulva. A dull dragging pain is felt at the groins, and when she stands or walks, she says she feels exactly as she did before the child was born, or as if there were something full and pressing. Pains are felt in the thighs, and the back is generally either hot or aches. 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 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 descend⁶² lower into 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 perinæum, 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 scirrhus, or distended with a calculus of large size, is carried down into the protruded parts;⁶³ and a catheter passed into it, must be directed downwards and backwards. 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. Sometimes the tumour inflames, indurates, and then ulceration or sloughing takes place. This procidentia may occur in consequence of ne-

glecting 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, and even during parturition. Sometimes it is complicated with stone in the bladder,⁶⁴ or with polypus in the uterus.*

Some have, from theory, denied the existence of prolapsus,⁶⁵ 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 phtisical. 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 connection 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. 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.⁶⁶ 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 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. 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

* 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.

cold bath, at the same time that the bowels are kept regular, all exertion avoided, and a recumbent posture much observed. If these things 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 perinæum, 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. In recent cases, or where the relaxation is not great, a perseverance in the use of the pessary, topical astringents and general tonics may accomplish a cure. Fatigue or exertion must always be avoided.

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^(y) 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. Whatever be employed, it ought to be taken out frequently, and cleaned.⁶⁷ By diminishing gradually the size of the pessary, and using astringents, we may often 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

(y) The oval form is nevertheless preferred by many, and apparently not without reason.

by continued rest, laxatives, and occasional fomentations, the morbid sensibility of the parts within the pelvis be got rid of.

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, or a firm T-bandage must be employed with a globe pessary, where the perineum is greatly lacerated. (z)

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 are abated,

(z) In my own practice, I have generally preferred the oval pessary of elastic gum, by being applied transversely; as regards the vagina, there is less danger of impeding the evacuation of the feces and urine, by pressure on the rectum and neck of the bladder, or urethra. Where this cannot be procured, pessaries may be made of silver, of the oval form and hollow, and with care may be found to answer. But it is probable, that the sponge pessary, under proper management, will be found to answer every intention. This kind of pessary, appears first to have been publicly recommended by Dr. Haighton, of London, and has since been approved and adopted by several practitioners of respectability. See a paper on this subject, by Mr. Dawson, in the 13th Vol. of Lond. Med. Physl. Journal.

a pessary must be introduced,* and the woman may rise for a little, to ascertain how it fits; but, as in other cases, she ought for some time to keep much in a horizontal posture, and avoid for a still longer period every exertion. If there have existed inflammation of the displaced bowels, during the continuance of the procidentia, serious consequences may result from the reduction, owing to the adhesions which have formed. Should there be much difficulty and pain attending the attempt to reduce, it ought not to be persisted in.

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 are abated, by a recumbent posture, fomentations, saturnine applications, laxatives, and perhaps even blood-letting.† After some days we may attempt the reduction, and will find it useful previously to empty the bladder. The reduction, in general, causes for a time, abdominal uneasiness. If the uterus cannot be reduced, and is much diseased, it has been proposed to extirpate the tumour. This has been done, it is true, with success,⁶⁸ but it is extremely dangerous; for the bladder is apt to be tied‡ by the ligature, which is put round the part; and as the intestines fall down above the uterus into the sac, formed by the inverted vagina, they also are apt to be cut§ or constricted.

A prolapsus uteri does not prevent the woman from becoming pregnant;⁶⁹ 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.

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

† M. Hoin succeeded in reducing a very large, hard, and even ulcerated procidentia, by fomentations, rest, and low diet. Mem. de l'Acad. de Chir. Tome III. p. 365.

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

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

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

Sometimes, especially if the person receive a fall,⁷⁰ 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,⁷¹ lest fatal suppression of urine⁷² take place. Our next object is to replace the uterus, and retain it by rest, and a pessary. If it cannot be reduced,* the uterus must be supported by a bandage,† until, by delivery, it be emptied of its contents. It is then to be reduced. 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 ligation.

§ 40. HERNIA.

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 unimpregnated state, and the woman afterwards conceive; or it may take place when pregnancy is somewhat advanced. If it be possible to reduce the uterus, this must be done; and

* See a remarkable case in prolapsus in the gravid state, where the whole uterus protruded, and reduction was not accomplished till after delivery. By P. C. Fabricius, in Haller, Disp. Chir. Tomus III. p. 434.

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

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 must be made into the uterus whenever pains come on, and the child must be thus extracted.

§ 41. DROPSY OF THE OVARIUM.

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 more akin to encysted tumours, 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, 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

* Le Dran says, this dropsy always begins 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 scirrhus 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 dozen of large tumours. M. Morand notices two cases, in which a similar structure obtained.

tumour has been seen made up entirely, or in part, of hydatids.⁷³

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.⁷⁴ But generally the symptoms are at first slight, or chiefly dependent on the pressure of the parts within the pelvis. The patient is costive, and subject to piles, has a degree of strangury, which in a few instances, may end in a complete retention of urine; and sometimes one of the feet swells. By examining per verginam, 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 some time after this, the tumour, in general, rises out of the pelvis,⁷⁵ 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.⁷⁶ 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

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

† Case by Sir Hans Sloane, in Phil. Trans. No. 252.—Dr. Pulteny's patient,

augments in size, and carries up the uterus with it;* so that the vagina is elongated: and this is especially the case, if both ovaria be enlarged.⁷⁷ 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 several 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; 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 distention. By this time, the constitution becomes 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

whose ovarium weighed fifty-six 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. Voisin, in the *Recueil Period.* Tome 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.

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

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 disease has sometimes appeared to be occasioned by injury done to the uterus in parturition, as, for instance, by hasty extraction of the placenta; or by blows, falls, violent passions, frights, or the application of cold; but very often, no evident exciting cause can be assigned.

In 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; and stools are to be procured. It may be considered, how far, at this period, it is proper to tap the tumour from the vagina, and by injections or other means, endeavour to promote a radical cure. When the woman is pregnant, and the tumour opposes delivery, there can be no doubt of the propriety of making a puncture,⁷⁸ which is preferable to the use of the crotchet.^(a) 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 ovary 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 treat-

(a) Where the tumour in the vagina occupies a large space, Dr. Merriman thinks it a warrantable practice to remove it by excision if it consisted of a solid substance, and certainly to puncture it if it contained a fluid. Vide *Medico-Chirurgical Transactions*, Vol. III. p. 47.

ment. 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 as long as the exciting cause remains. General uneasiness or restlessness, occasionally produced by abdominal irritation, may be lessened by the warm bath, saline julep, 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. Upon the supposition of this disease being a dropsy, diuretics have been prescribed, but not with much success,⁷⁹ 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 acmé, 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 the power 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. In one case, fomentations and poultices appear to have discussed a tumefied ovarium.*

Having palliated symptoms until the distention 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.⁸⁰ As the uterus may be carried up by the tumour, it is proper to

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

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 produced; or by introducing a tent, or throwing in a stimulating injection. Some of these methods have, it is true, been successful,⁸¹ but occasionally they have been fatal;⁸² 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.

It has happened, that a cyst has adhered to the intestine,⁸³ and burst into it, the patient discharging glary or foetid matter by stool.⁸⁴ Such instances as I have known, have only

* In a case of this kind related by M. Voisin, 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.

been palliated, but not cured, by this circumstance. Sometimes the fluid has been evacuated per vaginam,⁸⁵ 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.⁸⁶ The sac, in which these are contained, is sometimes large, and generally is filled with watery or gelatinous fluid. The bony substance, and teeth, usually adhere to the inner surface of the cyst. This disease produces no inconvenience, except from pressure. It has been deemed by some, to be merely an ovarian conception; but it may undoubtedly take place without impregnation, nay similar tumours have been found in the male sex.⁸⁷ It is to be treated as the former disease.

§ 42. OTHER DISEASES OF THE OVARIUM.

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.

The ovarium may also be enlarged, and become hard and stony,⁸⁸ or converted into a fatty substance.⁸⁹ 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.

§ 43. DEFICIENCY.

The ovaria may be wanting on one or both sides, *(b)* 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.

§ 44. DISEASES OF THE TUBES AND LIGAMENTS.

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

The round ligaments may partake of the diseases 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.

(b) See a case of deficiency of the ovaria, by Charles Pears, F. L. S. in the Phil. Trans. for 1805. This woman died at the age of twenty-nine. She had never menstruated. She ceased to grow at the age of ten years.

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 indivi-

duals, 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.

* Linnæus and others have said that the women of Lapland do not menstruate more than once or twice in the year. C.

† Menstruation commences about the same age in the United States, and continues to the fortieth or forty-fifth year. C.

‡ This is a point still debated. The weight of authority is, however, decidedly against menstruation continuing during pregnancy. By Baudelocque, Denman, and almost all the modern writers, it is denied. Those who maintain the contrary opinion, have very probably mistaken a hemorrhage from the vagina, which sometimes recurs with considerable periodical regularity, for the menstrual flux. Several cases of this kind have come under my own observation, where I had an opportunity of examining the discharge accurately. In every instance, I found it pure *coagulable blood*.

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. (c) In many instances, a great quantity has been retained for some months in the uterus and vagina, but it has never 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

By adverting to the state of the pregnant uterus, this is exactly what we should be led to expect. Contemporary with conception, we know that the uterine cavity is lined with the *membrana decidua*, and that soon afterwards the *os tinæ* is completely sealed with impacted mucus. Were an effusion therefore to take place, especially in the early months of gestation, it would destroy the attachment of the membrane, and produce all the consequences of uterine hemorrhage.

It would seem, moreover, that the action which the vessels of the uterus take on to fabricate and support this membrane, is totally incompatible with the menstrual secretion. The two actions cannot co-exist. This is proved not only by the alleged cessation of the menses during pregnancy, but still more clearly by the fact which has not been sufficiently attended to, that in a large proportion of cases of obstinate amenorrhœa, the *membrana decidua* exists, and that the first symptom of the return of the discharge is the coming away of the membrane. Of the identity of the two membranes there can be no doubt. It has been ascertained by Br. Baillie and many other competent judges. C.

(c) The celebrated John Hunter was, perhaps, the first physiologist who took notice publicly of this fact, at least in Great Britain. In his *Lectures on the Theory and Practice of Surgery*, (as quoted by Dr. R. W. Johnson, *System of Midwifery*, 2d edition, 4to, p. 34 and 35) he observes, that "the blood discharged in menstruation, is neither similar to blood taken from a vein of the same person, nor to that extravasated by an accident in any other part of the body; but is a species of blood changed, separated, or thrown off from the common mass, by an action of the vessels of the uterus, in a process *similar to secretion*; by which action the blood having lost its living principle, it does not afterwards coagulate." In his *Treatise on the Blood*, vol. 1. p. 24, Philadelphia edition, he says, "in healthy menstruation, the blood which is discharged does *not coagulate*; in the irregular, or unhealthy, it does. The healthy menses, therefore, (he continues) shew a *peculiar action* of the constitution; and it is most probably in this action, that its salubrious purposes consist."

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

* I am too, very much inclined to believe, that menstruation results from a secretory action of the uterus. Every other theory on the subject is indeed totally irreconcilable with facts. I will briefly enumerate the leading arguments by which the doctrine may be defended.

1. That the uterus in its villous and vascular structure resembles in some degree a gland, and also, in its diseases, being equally liable to scirrhus, cancer, &c. &c.

2. That, like other secretory organs, blood is very copiously diffused through it.

3. That by the arrangement of its vessels, it is evidently designed that the circulation should be retarded for the purpose of secretion. The arteries are not only exceedingly convoluted, but they are larger and with thinner coats than their corresponding veins. Thus, Haller says, "the blood is brought to the womb in greater quantity, and more quickly through its lax and ample arteries, and on account of the rigidity and narrowness of the veins, it returns with difficulty."

4. That, in common with other secretions, menstruation is often, at first, imperfectly done, and is subject afterwards to vitiation and derangement. At its commencement the discharge is commonly thin, colourless, and deficient, and recurs at protracted and irregular intervals with pain and difficulty.

5. That, in many of the inferior animals, during the season of venereal incalescence, there is an uterine discharge which is undoubtedly a secretion. This answers seemingly the same end as menstruation, namely, giving to the uterus an aptitude to conception. Though this fluid generally differs from the menses in complexion, yet in some instances they are precisely similar. Whenever the venereal desire suffers a violent exacerbation from restraint, or other causes, the discharge in these animals becomes red. This has been more especially remarked in bitches kept from the male.

6. That the menses are a fluid *sui generis*, or at least, varying very essentially from the blood, having neither its colour nor odour, nor coagulability, and on chemical analysis present different results. These last circumstances are enough alone to establish the theory.

7. To the objection that the uterus is not sufficiently glandular for the function of secretion, it has been, I think, very satisfactorily replied, that there is hardly a viscus or surface of the body which is not competent to the secretion of a fluid. It would really seem that no operation of the animal economy requires a less complex apparatus. Of what indeed does a gland consist, except a congeries of vessels? Even the most perfect of the secretions are affected by this simple contrivance. If a few vessels, "creeping over the coats of the stomach," can secrete the gastric liquor, why may not the infinitely more glandular organization of the uterus elaborate the menstrual fluid?(d) C.

(d) Saunders has been presumed by some, to have been the first who con-

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 neglecting these precautions, the action may either be suddenly stopped, or spasmodic and troublesome affections may be excited.

sidered the catamenia as a secretion; but Bordeu, a French physiologist of great merit and of earlier date, treats of the uterus as a gland; and of course, it is to be presumed, must have viewed the menses as a secreted fluid. Haller also, in his Notes on the Prelectiones Academicæ of Boerhaave, [Amsterdam, A. D. 1744,] speaks of the menses as a secretion. His words are, "*Sed facile ipsa fabrica partium demonstrat utrum naturale organum esse hujus secretionis.*" Vol. VI. p. 72. Dr. Chapman says, that Dr. Craven supported this opinion, in a Thesis published at Edinburgh in the year 1778.

CHAP. XII.

Of Diseased States of the Menstrual Action.

§ 1. AMENORRHŒA.

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, cathectic 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 palpitations, 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. 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 chillness, head-ach, and languor. 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;

* There is much reason to believe, that an influence somehow derived from the ovaries, excites the uterus to the menstrual effort.—Certain it is, that in several instances, a permanent suppression of the menses has followed the loss of these organs. May not amenorrhœa, oftener than we suspect, be occasioned by a diseased state of the ovaries? This, at least, was the opinion of the celebrated Cullen. Cases have also occurred, where, from original deficiency of the ovaries, menstruation never took place. C.

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 pulmonary 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 worse 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 horse-back, 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 do without producing fatigue.

Suppression of the menses may take place under two circumstances. The discharge may be suddenly checked during its flow, or it may be prevented from taking place at the proper period, by the operation of certain causes previous to its expected return. The first may be called checked menstruation, and it is produced chiefly by such causes as are capable of operating powerfully and speedily, on either the nervous or vascular systems. The most frequent of these causes are violent passions of the mind, and the application of cold to the surface of the body. 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, some blood should be taken from the arm. If laudanum cannot be retained in the stomach, it must be given as a clyster, with some asafoetida, 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 recognised, by its peculiar effects. 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 condi-

tion of individual organs,* which, if already disposed to disease, may thus be excited more speedily into a morbid action. In many cases, nausea, tumour of the belly, and other indications of pregnancy are produced.

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

When suppression of the menses takes place in consequence of some chronic and obstinate disease, such as consumption or dropsy, it would be both useless and hurtful to attempt, by stimulating drugs, to restore menstruation. But in those cases, where the menses are suppressed in consequence of some removable cause, which we conclude, if there be no symptoms of 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 horse-back, 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 head-ach, chillness, or langour. 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 medi-

* 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.*

cines, such as savin,* hellebore,† madder, myrrh, mustard, nitrous acid; and of these, the three first are the most active.‡(e) About the time when the menses are expected to ap-

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

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

‡ In suppression of the menses, evidently connected with atony of the uterus, I have had some success with the tinct. cantharid. I give it in the dose of ten drops, morning, noon, and night, gradually increasing the quantity till it amounts to two or three drachms in the day. The most obvious effects of this medicine, which I have observed, are an increase in the force of the pulse, and a very copious flow of urine.

From the sp. terebinth. I have also, under similar circumstances derived some advantage.

In one case of this complaint, in which there was general torpor of the system accompanied with a low degree of temperature, I administered a phosphorus, but its use was interrupted too soon, by the prejudices of the patient, to judge of its efficacy. The phosphorus is a most powerful medicine, and requires great care in its administration. I gave of it, a tenth of a grain intimately blended with olive oil. Even in this small dose, it produced a universal glow and excitement. When properly regulated, phosphorus is both a safe, and I believe, an eminently useful remedy. In the armies of France, it has recently been employed, I am told, with extraordinary success in typhus fever, gangrene, &c.

Does it not also promise to do good in many other diseases, such as paralysis, epilepsy, chronic mania, &c. &c. C.

(e) To the above list of emmenagogue medicines, may be added the polygala senega, first used in this complaint, as far as I know, by Dr. Hartshorne of this city, and introduced to the notice of practitioners generally, by Dr. Chapman, in a paper on this subject inserted in the Eclectic Repertory for October, 1811; in which some interesting cases and remarks, in illustration of the use of this powerful article of the materia medica are given.

The mode in which it is prepared and used, is as follows. In making the decoction, a pint of boiling water is added to an ounce of the senega bruised, in a close vessel; and it is suffered to simmer over the fire, till the quantity is reduced one-third; to prevent nausea, it is best to make the addition of an aromatic, such as the orange peel or cassia. Four ounces of this decoction at a medium, is to be given during the day. But at the time when the menstrual effort is expected to be made, and till the discharge is actually induced, the dose is to be pushed as far as the stomach will allow. In the intervals of the menstrual periods, the medicine is directed to be laid aside for a week or two; as without these intermissions it becomes nauseous and disgusting to the patient. While under a course of the senega, it is recommended to keep the general system properly regulated; and it is observed, that excessive excitement or debility is to be equally obviated by the use of the appropriate

pear, 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.*

When along with suppression of the menses, there is a plethoric condition, and more especially, if there be a febrile state, marked by heat of the skin, frequent pulse, flushing of the face, and irregular pains in the chest or abdomen, stimulating medicines are hurtful. It is, in this state, of advantage, to keep the bowels open, by the daily use of some saline purgative, dissolved in a considerable quantity of water: and should there be 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

remedies. For fuller information on this subject than can be compressed into the limits of a note, the reader is referred to the interesting paper by Dr. Chapman, above alluded to.

* Blisters applied to the region of the uterus, at this time, are exceedingly useful. C.

† In chlorosis, and indeed, in all the forms of amenorrhœa, I have found purges, I think, very beneficial. Calomel and aloes combined, I have preferred in these cases. To be useful it is necessary to continue this plan of treatment for weeks.

Professor Hamilton of Edinburgh, who is a most skilful practitioner in female complaints, advises very strenuously, a mixture of digitalis and the spæther. nitros. in chlorosis. The former, he directs in large doses, as much as ten drops of the tincture every hour. It would seem that digitalis is only applicable to those cases of the disease, which are attended with œdematous swellings, but he does not thus restrict its administration. I have never had occasion to try the medicine. But certain it is, that among the best of the emmenagogues, are the active diuretics. C.

steel, with regular exercise, and frequent friction of the whole body, are the proper remedies of a general nature. (*f*)

§ 2. FORMATION OF AN ORGANIZED SUBSTANCE.

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. (*g*)

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, removes 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.

§ 3. DYSMENORRHŒA.

Some women menstruate with great pain, and the dis-

(*f*) In these cases blisters are strongly recommended. Vide a paper "On the connexion that subsists in certain cases, between amenorrhœa and phthisis pulmonalis, as Cause and Effect, by William Shearman, M. D." Eclectic Repository, Vol. I. p. 453.

* Vide Epist. XLVIII. Art. 12.

(*g*) For the purpose of expelling this membrane, the volatile tincture of gum guaiacum has been recommended, but in general it has failed in affording relief, as far as my experience goes. It is in cases of this description, that Dr. Chapman particularly recommends the polygala senega; and thinks that its use is theoretically supported, by the analogy of its peculiar power in detaching the membrane of the croup.

charge 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.*

This state of the womb sometimes produces, besides uterine pain, spasmodic affection of the bowels, or violent bearing-down efforts of the abdominal muscles, as if it were intended to expel the womb itself. Such efforts are also sometimes made periodically, when the menses are altogether or nearly obstructed. Under such circumstances, we must examine carefully into the state of the womb, and the appearance of the discharge, or whether fibrous shreds 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. Some women though

* Nothing I have found to afford more relief in painful menstruation than large doses of opium and camphor. This medicine, however, will often fail. The extracts of hyoscyamus has been highly extolled. But it is certainly inferior to opium. It would be well, I think, to try the datura stramonium, not only in this, but in amenorrhœa generally.

Blisters, in those cases, should not be omitted. When applied to the sacrum, or the lowest of the lumbar vertebra, they will sometimes remove the pain and bring on a free discharge of the menses. There is, however, unfortunately in private practice a great repugnance to the application of blisters to these parts. C.

they menstruate abundantly, suffer much pain, not only in the uterine region, but also in the belly, like colic, accompanied with violent vomiting and head-ach. This is relieved by bitters, tincture of hellebore, and especially laxatives during the interval, and by opiates during the attack of pain.

§ 4. COPIOUS MENSTRUATION.

Some women menstruate more copiously, or more frequently than they ought to do, by the general laws of the female system. 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.

§ 5. MENORRHAGIA.

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.

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 mentioned, the excitement produced by excessive venery ; irritation of the neighbouring organs ; torpor of the veins, produced by costiveness ; 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, and 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 if 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 is, or is 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(*h*) 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 restrain the action of the uterine vessels, cloths wet with cold water are to be applied to the vulva, or to the back and pubis. If these do not check the discharge, the vagina must be stuffed with a soft cloth, to retain the blood and promote coagulation.(*i*)

(*h*) Digitalis must be used with great caution and discrimination in uterine hemorrhages. Where it has been injudiciously exhibited, it has been known to increase the flow; particularly where the inordinate discharge depends upon a topical relaxation of the vessels, which this medicine must necessarily tend to aggravate.

(*i*) This by the French physicians is termed *le tampon*. It is, perhaps, most readily effected, by taking a pretty large piece of soft cloth, dipping it in oil, and then wringing it gently. It is to be introduced by the finger, portion after portion, until the lower part of the vagina is well filled. The remainder is then to be pressed firmly on the orifice, and held there for some time.

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 debilitating effects are not considerable, we are satisfied with a horizontal posture, avoiding the stimulating effects of heat, stuffing the vagina 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. 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 is removed, it is only for the purpose of injecting a strong solution of sulphate of alumin. The strength is to be supported by liberal doses of opium; 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 pre-

This acts by giving the effused blood time to coagulate. It gives no pain, and produces no irritation. It is strongly recommended by Osborne and Burns. In obstinate cases, before introducing the *tampon*, it has been recommended to insert a little powdered ice, tied up in a rag. Vide Burns's Observations on Abortion, p. 102.

vent the body becoming cold ; and by the use of aromatic cordials, such as aromatic spirit of ammonia, mixed with cinnamon water.

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 dry 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. 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 supertartrate of potash, ethereal spirit of nitre, and other mild diuretics. 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. Every exciting cause must be avoided. After the plethoric condition is obviated, the cold-bath is excellent.

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, such as that of Tunbridge, and bitters; of the last, the uva ursi in doses of half a drachm, three times a day, is often of use; at the same time, to either of those medicines, may be added such doses of squills, as shall direct moderately to the kidneys. 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 flushing. 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.

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. XIII.

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 preg-

* Hitherto, those uterine hemorrhagies which observe a periodical regularity in their recurrence, have been, very commonly, confounded with an increased flow of the menses. To this error we are, perhaps, to impute, in some degree, the uncertainty of our practice in these complaints. My own experience confirms the observation of Mr. Burns, "that all profuse discharges from the uterus are hemorrhagies." These are often to an extent to threaten immediate danger. Menorrhagia, on the contrary, even when most copious, is never alarming, except in its remoter consequences. The former complaints may be commonly checked, like other hemorrhagies, by the acetate of lead, by combinations of opium and ipecacuanha, by bleeding where the pulse is full and excited, &c. But the latter, as resulting from a natural secretory action of the uterus, will run on to the usual period of its termination, whatever may be done, unless the discharge be suppressed by some rash and violent interference. In *menorrhagia proper*, little else is required during the flow than rest, a cool room, some acidulated drink, as cremor tartar: to open the bowels, and occasionally, if there be pain or irritation, an anodyne. But, in the intervals of menstruation, we should endeavour by various means to make such an impression on the system as will restore to the uterus its healthy actions. The remedies, in these cases, are well known. Before dismissing this subject, it may, however, be useful to mention, that professor Hamilton, of Edinburgh, urges the most intrepid employment of opium in periodical hemorrhagies. He says, that he has given, in a case, as much as twelve grains of it in twenty-four hours with singular advantage. Though it is difficult with me to reconcile the efficacy of such doses of opium in hemorrhagy with the views I have adopted of the mode of operation of the medicine, yet from my faith in the judgment of Dr. Hamilton, I would, if necessary, not hesitate to make the experiment. C.

nancy: 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 as 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. (k)

(k) For some very interesting practical remarks on this subject, the student is referred to a paper by the justly celebrated Dr. John Fothergill, on "The Management proper at the Cessation of the Menses," in *Medical Observations and Inquiries*, vol. V. Also in the collection of his Works.

CHAP. XIV.

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. (*l*) In consequence of this, an ovum is excited into action; it enlarges; the peritoneal covering becomes more vascular, and is made to protrude a little. Then that part which covers the vesicle is absorbed, whilst the vesicle itself escapes into the fallopian tube, which had, at the time of impregnation, embraced the ovarium; and thus it is conveyed into the uterus. When the ovum is received into the tube, and either carried into the womb, or brought a certain way along the canal, the tube loosens from the ovarium, and the absorbed spot on the surface of the ovarium is perceptible. This afterwards forms a corpus luteum.*

It would appear, that although an ovum be impregnated,

(*l*) A collection of cases of this kind, will be found in a work entitled *Speculations on Impregnation*, by R. Couper, M. D., &c. They are however of doubtful accuracy. In all the cases of this kind which have been investigated by the Editor, it would appear that minute foramina have existed in the membrane called Hymen.

* Amid the uncertainty which exists on the subject of generation, there seem to be some points very accurately ascertained. Thus, from the experiments of De Graaf on rabbits, we long since learned—

1. That the ovaries are the seat of conception.
2. That one or more of their vesicles become changed.
3. That the alteration consists in an enlargement of them, together with a loss of transparency in their contained fluid, and a change of it to an opaque and reddish hue.
4. That the number of vesicles thus altered, corresponds with the number of fetuses, and from the former are formed the true ova.
5. That these changed vesicles, at a certain period after they have received the stimulus of the male, discharge a substance, which, being laid hold of by the fimbriated extremity of the fallopian tube, and conveyed into the uterus, soon assumes a visible vascular form, and is called an ovum.
6. That these rudiments of the new animal, which, for a time, manifested no arrangement of parts, afterwards begin to elaborate and evolve the different organs of which the new animal is composed. To these facts we may add, that the calyx, or capsule, which

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.*

formed the parietes of the vesicles, thickens, by which the cavity is diminished. This cavity, together with the opening through which the fœtal rudiments escaped, becomes obliterated, and from the parietes of the vesicles having acquired a yellowish hue, they are called corpora lutea. Such was pretty nearly the extent of our information respecting this mysterious function, when the celebrated Mr. Haighton some few years ago, engaged in an experimental investigation of the subject, and established, among others, the following additional points.

1. That the existence of the corpora lutea, as was previously alleged by De Graaf, is incontestible proof of impregnation having preceded.

2. That contrary to the opinions of most physiologists, neither the vesicle of the ovary is ruptured, nor the fallopian tube applied to the ovary during the act of coition; but, that several days elapse before the vesicle arrives at sufficient maturity to discharge its contents, till which time, the fallopian tube does not change its ordinary position.

3. That, in contradiction to the observation of De Graaf, Malpighi, and Cruikshank, the substance which passes from the ovary is merely a gelatinous fluid, which assumes nothing of the circumscribed vesicular character of the ovum till a considerable period after it is deposited in the uterus.

4. That the semen masculinum is applied to the ovary neither by the fallopian tubes, nor by absorption, nor in the form of aura seminalis.

He concludes, therefore, that fecundation is performed by that "law of the animal system termed sympathy, or consent of parts." The doctrine is thus stated:

The semen first stimulates the vagina, os uteri, cavity of the uterus, or all of them.

By sympathy the ovarian vesicles enlarge, project, and burst.

By sympathy the tubes incline to the ovaries, and having embraced them, convey the rudiments of the fœtus to the uterus.

By sympathy the uterus makes the necessary preparations for perfecting the formation and growth of the fœtus: and finally,

By sympathy the breasts furnish milk for its support after birth. C.

* 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.

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.*

From the experiments of Mr. Hunter,† it is probable, 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 Marsailles, 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.

* Vide Med. and Phys. Journ. Vol. XVII. p. 439.

† Vide Phil. Trans. Vol. LXXVII.

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 that the woman will 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;^(m) 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.

(m) The ancient laws of France allowed that a legitimate birth might take place ten months after the connexion of the sexes: in Scotland, the law considers a child born six months after the marriage of the mother, or ten months after the death of the father, as legitimate. The English law, which has been adopted in the United States, considers all children as legitimate, who are *born* in lawful matrimony, or within about forty weeks after the dissolution of the marriage by the death of the husband. It endeavours to avoid enquiring when, or by whom the child may have been begotten; the general rule being *presumitur pro legitimatione*.

CHAP. XV.

Of the Gravid Uterus.

§ 1. SIZE AND POSITION.

WHEN we compare the unimpregnated with the gravid uterus at the full time, we must be astonished at the change which has taken place during gestation, in its magnitude alone.

In the ninth month, the size of the womb is so much increased, that it extends almost to the ensiform cartilage of the sternum; and this augmentation it receives gradually, but not equally, in given times; for it is found to enlarge much faster in the latter, than in the earlier months of pregnancy. This is true, however, only with regard to the absolute increase, for in the first month the uterus perhaps doubles its original size, but it does not go on in the same ratio. It is not twice as large in the ninth as in the eighth month.

In the 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 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 borne 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 down in the pelvis, and thus project farther into the vagina. In this situation the uterus will remain, until it becomes so large as to rise out of the pelvis. This ascent takes place towards the end of the second quarter of pregnancy, if the pelvis be well-formed, and the uterus increase in the usual ratio.

§ 2. DEVELOPEMENT OF THE UTERUS AND STATE OF ITS CERVIX.

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 completely 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 is closed, except at the very margins, at the same time that it gradually becomes softer. In proportion as pregnancy advances, and the cervix stretches, the lips shorten, until they sometimes totally disappear; but more frequently they continue to project a little, until labour commences. 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.

§ 3. MUSCULAR FIBRES.

Vesalius describes three strata of muscular fibres, transverse, perpendicular, and oblique. Malpighi describes them

as forming a kind of net-work; whilst Ruysch maintains, that they appear at the fundus, in concentric planes, forming an orbicular muscle. Dr. Hunter paints them as transverse in the body of the uterus, but, at the fundus describing concentric circles around each of the fallopian tubes. These contradictions of anatomists serve to show, what may readily be seen by examining the uterus, that the fibres are not very regular and distinct in their course, but 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 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.⁽ⁿ⁾ From examination, it appears, that although the whole uterus does not grow thinner in proportion to its increase, it yet 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.

§ 4. LIGAMENTS.

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

(n) See a paper already referred to, on the Muscularity of the Uterus, by Charles Bell, Esq. F. R. S. Edin. published in the 5th vol. of the Eclectic Repertory, p. 37.

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 flat upon its surface, and bound down by the stretched peritoneum. This description applies only to the state of the uterus in 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 something like a gland, divisable into cortical and medullary matter, placed immediately under the membrane of the ovarium, and adhering to the ovarium by cellular substance. By separating this, it can be turned out. It is of a yellowish colour, and is largest soon after conception. There is a corpus luteum for every fœtus.

§ 5. VESSELS.

The origin, and distribution of the blood-vessels of the uterus have been already noticed; I have only to add, that in pregnancy, they become prodigiously enlarged. Even before the ovum enters the uterus, 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.

§ 6. OF THE FÆTUS.

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, and these generally are not accomplished in less than twenty or thirty days. 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 about the same period, 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 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. Haigh-ton; 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.

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

† Dr. Comb 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, Tome II. p. 434.

The ovum, at first, contains no visible embryo; 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 embryo 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.

When the human foetus is first distinctly visible through the membrane, 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 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 foetus, and are placed low down. The face itself is small, compared to the cranium. The nose does not appear until the end of the second month; but somewhat sooner, we may observe two apertures in the situation of the nostrils. The mouth, at first, is a round hole, but by degrees lips appear; and after the third month, they are closed, but do not cohere. The external ear is not formed at once, but in parts, and is not completed before the fifth month; even then, it differs in its shape from the ear after birth. It is at first like a gently depressed circle.

The extremities early appear like the buds of a plant. The

arms are directed obliquely forward, toward the face, and are larger than the inferior extremities. The genitals, for a time, are scarcely to be observed; but in a 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,^(o) 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.

The proportion between the weight of the fœtus and its involucre, is reversed at the beginning and the end of gestation. When the embryo does not weigh more than a scruple, the membranes are 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 about five inches long. In the fifth month, it measures six or seven inches. In the sixth month, the fœtus is perfect and well-formed, measures eight or nine inches, and weighs about one pound troy; whilst the placenta and membranes weigh about half a pound, exclusive of the liquor amnii. The fœtus

(o) The student is particularly requested, where that most valuable work is within his reach, to compare this description of the fœtus in its different stages of progressive development and growth, with the most accurate and elegant plates of Soemmering, entitled, *Icones Embryonum Humanorum*. Dr. Hunter's plates of the gravid uterus, are also highly worthy of inspection. These invaluable works may be almost said to supply the place of anatomical preparations; so closely and minutely has nature been copied by the faithful pencil and graver of the artist.

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 about fifteen inches, and weigh four, or sometimes five pounds, whilst the involucre weighs scarcely one. These calculations vary according to the sex of the child, and also the conformation of the parents. Male children generally weigh more than females. Dr. Røederer* concludes, from his examinations, that the average length of a male, at the full time, is twenty inches and a third, whilst that of a female is nineteen inches and seventeen-eighteenths. Dr. Joseph 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. 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 chil-

* Comment. Gottin. 1753.

dren 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 woman 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, 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. (*p*) In the Dublin hospital, triplets have

(*p*) In the lying-in hospital, called l'Hospice de la Maternité, at Paris, about one in eighty-nine had twins, as appears from Baudelocque's Tableau des Accouchemens.

In the lying-in ward of the Philadelphia alms-house, as appears from a regular record kept for 19 years, ending 1815, one woman in about 52 had twins. The proportion of males to females, born within the above period, was about 10 males to 8 females.

not occurred above once in five thousand and fifty times.(*q*) 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.(*r*)

§ 7. ITS PECULIARITIES.

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

A different average, particularly as it regards the proportion of twin cases, was stated in the former edition of this work, but that was taken from the result of five years only, in which twin cases had very rarely occurred.

(*q*) In l'Hospice de la Maternité at Paris, triplets occurred but twice in 12,605 women.

(*r*) Of 12,751 infants born in the lying-in hospital at Paris, above alluded to, 6,524 were males, and 6,227 females.

from the placenta, and the right side is supplied with a mixture of pure and impure blood, which does not form perfect bile. After birth, as the circulation from the placenta is stopped, the branches of the umbilical vein, which supplied the left side, 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 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 salts. 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 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

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

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 sometime 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 some months, adhere together.

The skin is covered with a white substance, which, though unctuous to the feel, does not melt, but dries and crackles by heat. It is miscible with spirits, or with water, through the medium of soap or of oil.

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 form the ends of the distinct ellipse. The extremities are at first small and slender, and bend loosely toward the trunk.

§ 8. UMBILICAL CORD.

The umbilical cord is an essential part of the ovum, connecting the foetus 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 frequently 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 foetus 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 a bag, which is placed betwixt the chorion and amnion. The bag is called the *allantois*, and the duct the *urachus*.

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

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 foetal and maternal vessels should communicate, the mother is weakened, and may even faint; and, in every instance, the child suffers, but does not always die.|| Delivery must be resorted to, either on account of the effects produced on the mother, or to prevent the destruction of the child.

The cord may by a fall, or violent concussion of the body, be torn at a very early period of gestation. In this case, the child dies, but is not always immediately expelled. It may be retained for several weeks; afterwards the ovum is thrown

* 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.

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 placentaë belonging to one child. In other instances, the vessels are supernumerary or deficient. Stories have been told of the cord being altogether wanting, but these are incompatible with the fœtal economy.

§ 9. PLACENTA.

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, inclosed in the membrane of the vitellus, is taken within the abdomen, and covered with the abdominal integuments.¹

In many quadrupeds we find, that, after impregnation, cer-

* 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. 345.

tain portions of the inner surface of the uterus enlarge, and form protuberances, having many hollows or foramina, from which a milky fluid can be squeezed. From the chorion, corresponding vascular efflorescences arise, which shoot into these apertures; and thus an union is effected betwixt the mother and fœtus.

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 connection 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 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.

§ 10. MEMBRANES AND LIQUOR AMNII.

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, which is 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, mucus, 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. When the ovum first de-

scends, the chorion is 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.

§ 11. DECIDUA.

The last coat to be described, is one yielded entirely by the uterus, and serves to connect the uterus with the foetal vessels of the chorion. This, as Harvey observes, is not a covering of the foetus, 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 broader 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 pro-

ceed 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.(s)

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.

CHAP. XVI.

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 organs small, or they partake of the male structure, and the sexual desire is inconsiderable.

In a great majority of instances, however, the organs of generation seem to be well-formed, but their action is imperfect or disordered. The menses are either obstructed or sparing, or they are profuse or too frequent, and the causes of these morbid conditions have been already noticed.

It is extremely rare for a woman to conceive, who does not

(s) By others it is thus explained, viz. That after the cavity of the uterus is completely lined with the secreted decidua, the ovum passes into it from the fallopian tube, and in passing along its parietes, involves and covers itself completely over every point of its surface with a coat of the decidua, which at that period may be compared to a coat of white paint; as the ovum increases in size, the decidua immediately covering it, (called decidua reflexa) ultimately comes into intimate contact with that portion of the decidua, which continues to line the cavity of the uterus, and forms apparently but one membrane.

menstruate regularly; and, on the contrary, correct menstruation generally indicates a capability of impregnation on the part of the 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 contra-indicated by the state of menstruation; local stimulants, which act more directly on the uterus or its vicinity, as the semicupium, can-

tharides, 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. XVII.

Of Extra-uterine Pregnancy.

§ 1. SYMPTOMS, PROGRESS AND SPECIES.

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. Of all these species of extra-uterine pregnancy, the tubal is the most frequent.

The symptoms of extra-uterine pregnancy are not, at first, very definite; 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

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

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,¹ 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, pains² resembling those of colic are felt, and these are often so severe as to excite syncope,³ or convulsions; † and it has happened, that 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, we generally find, that at the end of eight, nine, or ten months from the commencement of gestation, appearances of labour⁴ 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 cimeties*, whilst the sac which contains it becomes indurated. More frequently, however, considerable irritation is produced, || inflammatory symptoms supervene, and hectic takes place. The sac adheres to the peritoneum, or intestines; and after an uncertain period, varying from a few weeks or months to several years, it either opens externally, or communicates with the abdominal viscera. Very fœtid

* Vide Mr. Tucker's case, Med. and Phys. Journ. xxix. 448.

† Vide Dr. Fern's case, and a case by Mr. Jacob, in Lond. Med. Jour. Vol. VIII. p. 147.

‡ 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.

matter, together with putrid flesh, bones, and coagula are discharged through the abdominal integuments,* or by the rectum,⁵ vagina,⁶ or bladder.⁷ Sometimes even an entire fœtus has been brought away from the umbilicus,⁸ or by the rectum.⁹ It is worthy of notice, that the placenta, in this process, always is ultimately destroyed,¹⁰ 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.

Thus it appears, that there are different terminations of the extra-uterine pregnancy. The sac may burst, and the person die speedily of hemorrhage;¹¹ 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,¹² and the parts become hard; notwithstanding this, the menses may return, and the woman conceive again.¹³ 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 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 retroversion¹⁴ of the uterus.‡ In such cases, the sac inflames, and bursts into the rectum or vagina. Dr. Merri-man§ is of opinion, that all these cases are instances of retroverted uterus, and not of extra-uterine pregnancy; but, for the present, this must rest entirely on supposition. The

* This termination is noticed so long ago as by Albucasis, lib. II. c. 76.

† Vide a case by La Croix, in La Med. Eclairée, Tome IV. p. 349.

‡ Vide Mr. Mainwarring's case, in Trans. of a Society, &c. Vol. II. p. 287.

§ Vide Dissert. on Retroversion, &c. 1810.

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. (*t*)

It is curious to observe, that generally the uterus enlarges somewhat,¹⁵ and in most instances, I imagine, decidua¹⁶ is formed. In a remarkable case, related by the ingenious Mr. Hay* of Leeds, the placenta was formed in the uterus, while the foetus 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 a great majority of 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 little difference, at the full time, between this and common pregnancy.

Ovarian¹⁷ is much more rare than tubal pregnancy, and it is seldom that the ovarium acquires a great size. It either bursts early,¹⁸ or inflammation and abscess take place; or the foetus dies, and is converted into a confused mass; or it excites dropsy of the ovarium.¹⁹ The ovarian pregnancy, until inflammation has taken place, produces a circumscribed moveable tumour, like dropsy of the ovarium.

(*t*) It is very probable that some of these cases have in reality originated from retroversions of the uterus, which, as Merriman has proved, may even continue in that state until the full period of utero-gestation. This subject shall be more fully explained, when retroversion of the uterus comes to be treated of. In the meantime the student is referred to a review of Dr. Merriman's Work, in the Eclectic Repertory, Vol. I. p. 338.

* 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 the Trans. of a Society, &c. Vol. II. p. 1.

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.²⁰ It has been 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.

§ 2. TREATMENT.

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, 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;

* In a case, probably of this kind, related by Lauerjat, and quoted by Sabatier, the child was extracted by an incision through the vagina, and the woman recovered. *De la Med. Opérat.* Tome I. p. 136.

† M. Colomb performed the cæsarean operation, but it ended fatally. *Recueil des Actes de la Société de Lyon.*

but there is not only great danger from the womb, 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. 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.²¹ 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.²²

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. XVIII.

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 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. The woman loses her looks, becomes paler, and the under part of the lower eyelid 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-ache, jaundice, &c. In other cases, very little disturbance is produced, and the woman is not certain of her condition, until the period of quickening.

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 soon becomes rather prominent.

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, at this time, 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: (u) and, in some cases, a few drops of blood flow

(u) Professor Ræderer kept a correct account of one hundred women, noting the time when it was presumed they were impregnated, the period at which they quickened, and again, the time when they were delivered. Out of this number we are informed, that eighty quickened at the fourth month,

from the uterus at this period. 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 borne 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

a portion of the remainder quickened at the third month, and the rest went on to the fifth. Therefore, we may with great propriety consider four months as the general time of quickening; and upon finding that a woman has quickened, within a day or two, we may with great confidence calculate that she has five months to go.

The term quickening, is certainly not the most accurate phrase that could be selected, to express the simple fact of the uterus rising above the brim or cavity of the pelvis.

It is well known, that the impregnated uterus generally remains in the pelvis, as we have just observed, until the latter part of the fourth month; and that after this period, as it enlarges, it necessarily rises above that cavity into the abdomen: but it is to be remarked—

1. The ascent of the impregnated uterus from its position in the pelvis to its subsequent station, is sometimes gradual and unobserved; of course, the sensation of quickening is not then felt.

2. The uterus is sometimes so impacted in the cavity of the pelvis, as not to reach its final station within the abdomen without the assistance of art, producing the disease called retroverted uterus, during which, quickening is never felt.

3. At other times, and those frequent, though not constant, there exists some slight impediment to the ascent of the uterus, *which being suddenly overcome, this viscus rises at once into the abdominal cavity, constituting what has been referred to the fetus, under the term quickening.*

The sudden intrusion, therefore, of the volume of the uterus among the abdominal viscera, accompanied by as sudden a removal of pressure from the iliac vessels, is supposed to be equal to produce the sensation we have above noticed.

We may then state, "That the sensation of quickening is felt in transitu, at the moment when the uterus, removing from the pelvis, enters the abdominal cavity." Vide Eclectic Repertory, Vol. III. p. 30. October. No. IX.

felt to move till after the ascent of the uterus out of the pelvis. Does this arise from any change in the phenomena of life at that time in the child itself, or from the muscular power becoming stronger, or from the uterus now being in a situation, where there being more sensibility, the motion is better felt? All of these probably contribute to the sensation which becomes stronger, as the child acquires more vigour, and as the relative proportion of liquor amnii decreases. This 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. 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 sizzly; 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. 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.

CHAP. XIX.

Of the Diseases of Pregnant Women.

§ 1. GENERAL EFFECTS.

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 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, if necessary, by blood-letting, and allaying the increased irritability of the system by the regular use of laxatives, which remove that particular state of the bowels, which is so apt to cause restlessness and nervous irritation. If these are not altogether successful, the camphorated julap is a useful medicine.* Besides this general plan, we must diminish

* 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.

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.

§ 2. FEBRILE STATE.

In many cases, the pulse becomes somewhat quicker soon after impregnation, and the heat of the skin is at the same time a little increased, especially in the evenings. In the later 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 the 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.

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 woman 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.

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 woman 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 cold 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.

§ 3. VOMITING.

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 glary 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

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

pulse. Of the utility of this practice, the general testimony of practitioners, and my own observation fully convince me. Narcotic substances, such as opium or hyoscyamus, have been tried internally, either without blood-letting or subsequent to it, but uniformly with little 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 effervescent 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; for if the medicine be given freely, it produces much debility, or abortion, and sometimes 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.

§ 4. HEARTBURN.

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 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. (x) When these fail, soda water, 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, but they may sometimes cause abortion. 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 or rhubarb and magnesia, and rubbing the epigastric region with anodyne balsam.

§ 5. FASTIDIOUS TASTE.

Women, during gestation, are subject to many *bizarrieries* in their appetite, and often have a desire to eat things they did

(x) The late much regretted Dr. Young, of Maryland, in his ingenious experiments on the digestive process, has almost reduced it to a certainty, that the acid which exists in the stomach is to be referred to the liquor gastricus; that it is the phosphoric acid, and that the acidity of dyspeptic and pregnant women, is owing to the morbid quantity of this acid. Hence, as he justly remarks, the superiority of lime water as a corrector, from its great affinity to phosphoric acid.

The following formula is also recommended by experienced practitioners for the same purpose. I have used it with advantage.

R. Magnesia ustæ	ʒj.
Aquæ puræ	ʒvss.
Sp. Cinnamon	ʒiij.
Aquæ Ammonia puræ	ʒj m.

Two or three spoonfuls to be taken either occasionally, or when the symptoms are more continual, immediately after every meal.

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 was not removed, the infant would 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.

§ 6. SPASM OF THE STOMACH AND DUODENUM.

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 promptly, not only because the pain is severe, but also because it may excite abortion, or kill the child. A full dose of laudanum, with ether, followed immediately by a saline clyster, is almost always successful; but when the attacks are renewed, then we must endeavour to prevent them by tonics, such as colomba, oxyde of bismuth, or preparations of steel. It is at the same time, essential that the bowels be kept open. Blood-letting is of service.

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. This remedy 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.

§ 7. COSTIVENESS.

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, 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 some such instrument.^(y) 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

(y) The reader is referred, for a very interesting case of alvine concretion, where it became necessary to introduce a long flexible catheter through the hardened and impacted fæces, occupying the superior part of the pelvis, for the purpose of injecting an enema, to Hey's Practical Observations on Surgery, chap. XVIII. case 3.

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 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, blood-letting will be necessary. If this costive state be neglected near the time of delivery, the labour is often protracted; and after delivery masses of indurated fæces come down from the colon, 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.

§ 8. DIARRHŒA.

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.

§ 9. PILES.

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 hemorrhoidal 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 belladonna. If these means fail, it will be proper to give an anodyne clyster, and apply fomentations or emollient poultices to the tumour, but every practitioner can tell how often all topical applications have disappointed him. In some cases, the tumour becomes slack, and subsides gradually; in other instances it bursts, and more or less blood is discharged. If the 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.

§ 10. AFFECTIONS OF THE BLADDER.

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

* Dr. Johnson advises the following ointment to be applied, and then a poultice to be laid over the tumour. R. Ol. Amygd. \mathfrak{z} i. Ol. Succini \mathfrak{z} ss. Tr. Opü. \mathfrak{z} ii. M. *System*, p. 125.

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 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 light 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 involuntarily, whenever the woman coughs or moves quickly; or at least she cannot retain much of it, being obliged to void it frequently, but without strangury. For this complaint there is no cure; and many consider it as a favourable omen, that the child's head is resting on the os uteri. When the uterus is very pendulous, some advantage may be obtained, by supporting the belly with a proper bandage attached to the shoulders.

§ 11. JAUNDICE.

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.

§ 12. COLOURED SPOTS.

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.

§ 13. PALPITATION.

The thoracic viscera not unfrequently suffer during preg-

nancy. 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, it is sometimes 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 blood-letting, the use of laxatives, and camphor, or fœtids. Opiates are only to be given for the immediate relief of urgent symptoms.

§ 14. SYNCOPE.

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 oc-

casioned by tooth-ache. 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.

§ 15. DYSPNŒA AND COUGH.

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. Should abortion take place, and the cough continue, tonics, such as myrrh and oxyde of zinc, ought to be administered.

§ 16. HÆMOPTYSIS AND HÆMATEMESIS.

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.

§ 17. HEAD-ACHE AND CONVULSIONS.

Head-ache 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 person stoops or lies down, with a sense of heaviness over the eyes, or within the skull, great danger is to be apprehended, particularly if the woman be far advanced in her pregnancy. This is still more the case, if she complain of ringing in the ears, and flashing of fire in the eyes, or indistinct vision. In such circumstances, she is seized either with apoplexy or epilepsy. These diseases are to be prevented by having immediate recourse to blood-letting and purga-

tives; 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 evacuations; but, generally, moderate evacuation will prevent, whilst very copious depletion is requisite to cure these diseases. If the head-ache be accompanied with œdema, the digitalis is a useful addition to the practice. I shall not at present enter more minutely into the treatment of epilepsy. 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 patient is 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 epilepsy, 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 rules hereafter to be noticed. In some instances, palsy either succeeds an apoplectic attack, or follows head-ache 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 head-aches, 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 giddiness or slight sickness, with bitter taste in the mouth.

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

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.

§ 18. TOOTH-ACHE.

Tooth-ache 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.

§ 19. SALIVATION.

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 re-

jected 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.

§ 20. MASTODYNIA.

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. 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.

§ 21. ŒDEMA.

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 accession; but a greater and more universal effusion indicates a dangerous degree of irritation, and may be followed by epilepsy. 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, it may be attended with unpleasant or dangerous effects, such as convulsions; or, it may predispose to puerperal diseases; we must therefore lessen it by means of those agents which alleviate the other diseases of pregnancy, namely, blood-letting and purgatives. These means are always proper, unless the strength be much reduced; in which case, we only employ the purgatives and cordials prudently, with acetate of potash, 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.

§ 22. ASCITES.

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, and seldom comes on until the

woman has been at least three months pregnant. If it be not attended with other bad symptoms, such as head-ache, feverishness, drowsiness, &c. it abates and goes off, a little before, or soon after delivery, which is often premature. 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.

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.(z)

(z) Instances have occurred, where in cases of ascites combined with pregnancy, the operation of paracentesis has been performed, although this is a practice by no means to be commended. In the eighth Vol. of the London Med. Facts and Observations, there is a case related by Mr. Simmons, of a pregnant woman with symptoms of ascites being twice tapped, first, in the second month of pregnancy, when fourteen quarts of water were drawn off, and the second time, when five months advanced, when only a few ounces of blood followed the withdrawing of the trocar; at the full time she was delivered of a healthy child, having suffered no inconvenience from the operation.

Another case is related in the seventh Vol. of the London Med. and Phys. Journal, by Dr. Vieusseux, of Geneva, where a woman in the fifth month of pregnancy was tapped, but it appears that the consequence of this opera-

§ 23. REDUNDANCE OF LIQUOR AMNII.

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 dropsy; 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

tion was an abortion, although the patient soon recovered. Both these cases are related by the gentlemen under whose observation they fell, to prove that the paracentesis has been performed, and even the uterus perforated, [which they suppose was the case in both these instances,] without material injury to the patient.

In the same work is related a case of a woman, who was tapped no less than five times during pregnancy: at the full period she was, notwithstanding, delivered of a fine child, and recovered completely from the puerperal state.

These cases prove, how much the system will sometimes suffer with impunity, but at the same time we must acknowledge, that it is best not to presume too far on the preservative energies of nature.

Sometimes pregnancy has been, from gross inaccuracy, mistaken for dropsy, and the paracentesis been performed with a fatal effect; the patient in one instance fainting, and expiring almost instantaneously. Upon examination after death, it was found that the trocar had not only perforated the uterus, but had also penetrated the fetus!

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.

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 venesection, 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.

§ 24. WATERY DISCHARGE.

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 quantity discharged be great;† and if the uterus can resist this, it may also be unaffected by the evacuation of liquor amnii. I have known instances, where after a fright or exertion, a

* Vide case by Noel Desmarais, in *Recueil Period.* Tom. VI. p. 349. M. Baudelocque gives a memoir on this subject in the same volume.

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

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 heal, 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 vessel 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.

It sometimes happens, that a large hydatid is lodged between the ovum and the os uteri, and it may be expelled several weeks before parturition. If care be not taken, this may be followed by hemorrhage.

* 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.

§ 25. VARICOSE VEINS.

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.

§ 26. MUSCULAR PAIN.

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.

§ 27. SPASM OF THE URETER.

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 loins, and if these means fail, blood must be taken away.

§ 28. CRAMP.

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.

§ 29. DISTENTION OF THE ABDOMEN.

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 woman 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.

§ 30. HERNIA.

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 applied 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.

§ 31. DESPONDENCY.

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 mind, dependent on gestation. Some, who at other times enjoy good spirits, become always melancholy during pregnancy, whilst others suffer chiefly during lactation. Little can be done by medicine, except to obviate all cause of disease or uneasiness of the body; the mind is to be cheered and supported by those who have most influence with the patient.

§ 32. RETROVERSION OF UTERUS.

Retroversion of the uterus was described by Gregoire and Levret, but was in this country first accurately explained 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; (a) 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.¹ 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. These are much connected also with the state of the bladder, being most severe when it is distended, and abating 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 woman to the disease; and when we come to examine her, we find a tumour betwixt the rectum and vagina.² This 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

(a) A suppression of urine from retroversion of the uterus, may arise at other periods, as well as during a state of pregnancy, and generally from the same cause, viz. over-distention of the bladder. Thus, *after delivery*, the uterus sometimes becomes retroverted, occasioning an entire suppression of urine, and excessive pain; and the same thing, not uncommonly, takes place when the uterus is in a state of disease; and sometimes at the period of life when the catamenia usually cease. At this period the uterus is apt to enlarge and grow heavy, without manifesting any other indications of disease; and in this state more than one instance have occurred of its becoming retroverted.

Dr. Merriman says, that the cases of retroversion of the uterus after delivery, which have fallen under his observation, have principally occurred on the second day after the birth of the child; probably because the degree of contraction, which the womb has by that time undergone, has reduced it to a size the most fit to suffer such a *displacement*. It has happened after easy labours, and notwithstanding the patients had passed their urine once or twice. The second day after delivery has not, however, been invariably the period of this occurrence; for a case occurred to Dr. Merriman, where the patient was attacked with a suppression of urine from this cause on the *ninth* day after delivery. "Vide Merriman's Dissertation on Retroversion of the Womb," p. p. 19, 20.

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 indication in such instances must be the same, namely, to draw off the urine, and procure stools.

Retroversion may take place slowly, and it has been said that its progress could be ascertained from day to day;³ but in most instances, and in every case that I have seen, it has taken place 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 involuntarily, 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 pains about the loins, tenderness in the lower belly when it is touched, and a severe bearing-down sensation. The great danger proceeds from the distention⁴ of the bladder, which either bursts⁵ or inflames,⁶ and an opening takes place, in consequence of gangrene; or the bladder adheres to the abdominal parietes, its coats becoming thickened and diseased.⁷ If the urine cannot be drawn off, of which I have never yet met with an instance, death is preceded by abdominal pain, vomiting, hiccup, and sometimes convulsions. These effects are chiefly produced by mistaking the nature of the complaint. Their duration is variable.† Inflammation and gangrene of the vagina and external parts have also been produced. If the disease do not prove rapidly fatal, so much urine escaping as to prevent a speedy termination, it occasionally happens, that hectic fever is produced. The pulse becomes frequent, the body

* Vide Mr. Giffard's case, in *Phil. Trans.* Vol. XXXVI. p. 435, and Mr. White's very instructive case, in *Med. Comment.* Vol. XX. p. 254.

† Dr. Perfect's patient died thus on the sixth day. *Cases in Midwifery*, Vol. I. p. 394.

wastes, and purulent urine is voided;⁸ or the person may become œdematous, and the disease pass for dropsy;⁹ occasionally the water is not quite obstructed, but it is voided with difficulty for a week or two, and then the symptoms become more acute, and forcing pains are excited.

Our first object is to relieve the bladder, by introducing a catheter,¹⁰ 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.¹¹ If the catheter cannot be introduced, we have been advised to tap the bladder;¹² but this, fortunately, is never requisite.

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 has 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 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. 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;¹³ and the retroversion is seldom continued for more than a week, unless the displacement has been very complete. The precise time, however, required for the ascent of the womb will be determined *cæteris 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 shall seldom succeed, and that more harm than good is generally 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 forever in its malposition, and give rise to great difficulty in labour, or to the same event as in extra-uterine pregnancy. I can only reply, that in 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 two fingers of one hand into the rectum, and a sufficient number of those of the other hand, or the whole hand itself, 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 foetus 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,¹⁴ followed by vomiting of dark-coloured stuff. Abortion will generally take place if the liquor amnii have been discharged.

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.¹⁵ 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 will be very long of being felt, and will be first perceived at the pubis.(b) We

* M. Roger's case, in Act. Havn. Tom. II. art. 17.

(b) The first case of this kind that has been accurately stated as such, is to be met with in a small, but judicious work, by Dr. H. S. Jackson, entitled, "Cautions to Women respecting the State of Pregnancy. London, 1798," and was attended by several of the most respectable practitioners of London; the next case which has been made public, was that which fell under the immediate notice of Dr. Merriman, and by him minutely detailed in the London Medical and Physical Journal, for 1806; and afterwards published in a distinct and separate work, entitled, "A Dissertation on Retroversion of

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,

the Womb, including some Observations on Extra-uterine Gestation. London, 1810.”

It will be found by consulting Dr. Merriman's paper and work above alluded to, that he considers, and with some appearance of probability, that certain of those cases of difficult labour, which by Deventer have been referred to his supposed obliquity of the uterus, and others, which have by different authors, been considered as cases of extra-uterine conception, were, in fact, cases of retroversions of the uterus continuing, in a certain degree, until the full period of utero-gestation, and then impeding delivery. He likewise observes, that it is not unlikely, that some of those cases which are found in Smellie's and other collections, where the os uteri is described as grown together and impervious, were actually retroversions of the uterus. In these cases incisions have been frequently made within the vagina, into the uterus. [Vide Sabatier, *Medicine Operatoire*, Vol. I. p. 310.]

There is also another class of cases, of which many are recorded by writers on Midwifery, which may probably owe their origin and cause to a retroverted state of the uterus. We here allude to those cases of extra-uterine fœtuses discharged per anum, or through an ulcerated opening in the vagina, after having remained for many years in the abdomen of the mother. [Vide Mainwarring, in 2d vol. of *Transactions of the Society for the Improvement of Med. and Chirurg. Knowledge*, and Coleman, in 2d vol. of *Med. and Phys. Journal*, and Giffard, in *Eclectic Repertory*, vol. I. p. 346, and seq.]

When fœtuses have been found in the cavity of the abdomen entirely disengaged from the uterus, it is probable that a rupture of this viscus, or an ulcerated opening through its parietes, in consequence of its deranged situation, had permitted the escape of the fœtus after it had ceased to live, and not that the conception had advanced to maturity, in a part apparently so illy adapted to such a purpose.

By this explanation, we may solve what has hitherto been to many a difficulty in the history of these cases. It has, for instance, been observed in every case of fœtus, carried, as it was supposed, in the abdomen beyond the period of nine months, that near the usual time of parturition, the pains of labour have regularly come on, and strong efforts appear to have been made by the uterus, as if for the expulsion of the child.

Now, as it has been well observed, it is difficult to assign any reasons for these contractions of the uterus, if the fœtus has no connection with that organ; but if the fœtus is contained in the partially retroverted uterus, or in any of the appendages of the uterus, the occurrence of these contractions might naturally be expected. Vide Dr. Merriman's paper and work above referred to.

namely, by suppuration. A case of this kind, well marked in all respects, except suppression of urine, is related by Dr. Barnum* as an instance of extra-uterine gestation. In the fifth month, after some imprudence, the patient had pain accompanied with a discharge of water and some blood, a mark that the ovum was in the uterus. She got relief at this time; but next month, (Nov.) she had a return of pain, and the os uteri was felt directed to the pubis, and the fundus to the sacrum. All attempts to reduce it failed, as they generally do, suppuration took place, and foetal 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. The os uteri is thus 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,¹⁶ may cause this state to take place more readily than would otherwise happen; but whether concussions, or other circumstances, can produce retroversion, without some previous distention of the bladder, is not positively proved, though some facts favour the supposition.

The same woman has been known to have the uterus retroverted in two successive pregnancies.†

§ 33. ANTIVERSION.

The uterus is also said to be sometimes antiverted; that is, the fundus is thrown forward, so as to compress the neck of

* Vide New York Med. Rep. V. 40.

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

the bladder, and its mouth is turned to the sacrum.¹⁷ Of this accident I have never seen an instance, and, from the nature of the case, it must be very rare. The urine should be evacuated, and the fundus raised up.

§ 34. RUPTURE OF UTERUS.

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 blood¹⁸ 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.¹⁹ The tumour of the belly generally²⁰ 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 cyst; or inflammation and abscess take place, and the child is discharged piece-meal.²¹

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

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

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

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 survives, the womb slowly decreases in size, and returns to the unimpregnated state,²² which will assist 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 is to prove fatal, the pulse becomes quick and small, the belly painful, the strength sinks, and sometimes continued vomiting ushers in dissolution.²³

Rupture of the uterus may be the consequence of mental agitation,† but in most cases it is owing to external violence.²⁴‡

Three modes of treatment present themselves. 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 would live till the delivery were accomplished. The cæsarean operation is safer, and in every

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

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

‡ The uterus may be ruptured by a variety of causes—

1. By external violence, as by blows, falls, pressure, &c.
2. By rude attempts to turn the child, and especially, after the waters are discharged. This has often happened.

3. By convulsions.

4. By the inordinate action of the uterus, constituting what is termed *spontaneous rupture*. This last is, by much, the most common cause. But when rupture is thus produced, we may suspect that an improper treatment has been pursued. We can, undoubtedly, by copious bleeding, and the subsequent administration of opium, so far overcome the *resistance*, and mitigate the *violence of the pains*, as to prevent its occurrence. The same remedies will, moreover, obviate, in most instances, rupture from convulsions; and should never be neglected as precautionary means, where there are any apprehensions of the accident from turning the child. C.

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. 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 woman 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.*

* This *negative sort of practice* has, undoubtedly, met with many very respectable advocates. There are, at the present day, several eminent practitioners, besides Mr. Burns, who strenuously recommend it. Notwithstanding, however, the weight of authority in its favour, I cannot believe it to be right. The powers of nature seem to me to be totally incompetent in such cases. By prompt delivery only we can hope to do good. This, then, we should always attempt. In some cases the forceps may be used, but they are few, as the rupture commonly takes place before labour is sufficiently advanced to admit of their application. We, therefore, turn the child, and bring it away by the feet. Delivery in this manner has been more than once effected, and the woman preserved, even where the child had escaped through the rupture of the uterus into the abdominal cavity. I allude now, more particularly, to the case recorded by Dr. Douglass, and to one which occurred to Dr. J. Hamilton. To these, I may also add, as showing, at least, the practicability of delivery under such circumstances, a case, related by my friend Dr. James, in the Medical Repository of New York.

Were the rupture to happen in the earliest stage of labour, I should nevertheless not be deterred from adopting this practice. I would forcibly, but not violently, dilate the uterus. It does not strike me that the attempt would be "rash and hazardous." We often in other emergencies do it with advantage, as in labour attended with hemorrhage or convulsions. Why may it not also be done in lacerated uterus?

But if, by deformity of the pelvis, or contraction of the uterus, (the child being in the cavity of the abdomen) or indeed from any other circumstances, there exists insuperable impediments to delivery *per vias naturales*, I would, without hesitation, resort to the *caesarean section*. In deliberating on the expediency of adopting this dreadful alternative, we should constantly bear in recollection that we are not without examples of the success of the operation.

§ 35. ABORTION AND TREATMENT OF PREGNANT WOMEN.

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, 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

Two cases with favourable results are related, one by Dr. Barlow, and the other by Dr. J. Hamilton. In the latter case, the bones of the pelvis were so mashed by the wheel of a cart as altogether to prevent delivery by the natural passages. On opening the abdomen, the child was found in the cavity, and the uterus considerably lacerated. But notwithstanding the extent and severity of the injury, the woman entirely recovered.

Let it not, however, be understood that I am at all sanguine as regards the two remedies which I have proposed. I am, on the contrary, persuaded that in most instances, they will wholly fail. But what else can be done in these tremendous cases? To leave them to nature, "*like an extra-uterine conception,*" would be, either to consign the woman to immediate death, or what is still worse, to death from protracted and torturing illness. C.

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 primary 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 discharge does not cease when the primary vessels are destroyed, but generally continues until the small vesicle passes out of the fallopian tube. Then it stops, and an oozing of serous fluid finishes the process.

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 vesicle have descended into the uterus, 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 displaces them. Often the membranes give way, and the foetus escapes with the liquor amnii, whilst the rest of the ovum is retained for some hours or even days,* when it is expelled with coagulated blood separating and confounding its different parts or layers. At other times the foetal and maternal portions separate, and the first is expelled before the second, forming a very beautiful preparation. In some rare instances we find the whole ovum expelled entire, and in high preservation. After the expulsion, the 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

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

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, pain and irregular action in the neighbouring parts, which give warning of its approach, before either discharge or contraction take place;* unless when it proceeds from violence, in which case the discharge may instantly appear. This is the period at which we can most effectually interfere for the prevention of abortion. I need not be particular in adding, that we are not to confound these symptoms with the more chronic ailments which accompany pregnancy.

A great diversity obtains in different instances with regard to the symptoms and duration of abortion. In some cases the pains are very severe and long continued; in others, short and trifling; nor is the degree of pain always a correct index of the force of contraction. Sometimes the 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.

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

† Those who are plethoric generally lose much blood, unless the contraction have been brisk. In some cases six or seven pounds of blood have been lost in a few hours.

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 takes place.

In some cases the child appears to be dead for a considerable time before the symptoms which accompany expulsion occur. But in a great majority of cases it is living, when the first signs of abortion are perceived, and in some instances is born alive. The signs by which we judge that the child in utero is dead, are the sudden cessation of the morning sickness, or of any other sympathetic symptom which may have been present. The breasts become flaccid. If milk had been formerly secreted, it sometimes disappears, but in other instances the contrary happens, and no evident secretion takes place until the action of gestation, or at least the life of the child be lost. In almost every case, however, the breasts will be found to have lost their firmness. If the pregnancy had advanced beyond the period of quickening, the motion of the child will be lost, and a feeling of heaviness will be felt about the pelvis. When all these signs are observed, and when they are followed by discharge, and especially when this is attended with pain, there can be no doubt that expulsion will take place, and it would be improper to prevent it. We are not, however, to conclude that the child is dead, merely because it does not move; and when abortion is threatened before the term of quickening, this sign cannot enter into our consideration.

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 remains after the

child dies, it is converted either into a mole or hydatid ; 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 supply the necessities of the substance attached to the inner surface of the womb ; for there is a communication between them, and a discharge of blood attends the expulsion of either a mole or hydatid ; whereas, on the other hand, if the ovum has 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 general, be easily detected ; those giving rise to the second are often more obscure ; and, without great attention, the woman will go on to miscarry, until either sterility, or some fatal disease, be induced.

In many cases there can be no peculiar 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

borne children when older than forty ; from which it may be inferred, that the organs of generation lose their power of acting properly sooner, if not employed, than in the connubial state. The same cause which tends to induce abortion at a certain age in those who have remained until that time single, will also, at a period somewhat later, induce it in those who have been younger married ; for in them we find, that, after bearing several children, it is not uncommon to conclude with an abortion ; or, sometimes after this incomplete action, the uterus, in a considerable time, recruits, as it were, and the woman carries a child to the full time, after which she ceases to conceive.

In the next place, I mention that one abortion paves the way for another ; because, setting other circumstances aside, it gives the uterus a tendency to stop its action of gestation at an early period after conception, and therefore it is difficult to make a woman go to the full time, after she has miscarried frequently. This fact has also been explained upon the principle of repeated abortion weakening the uterus,* and this certainly may have some influence. The renewed operation of those causes which formerly induced abortion, may likewise account in many cases for its repetition. But I am also inclined to attribute the recurrence, sometimes, to habit alone, by which I understand that tendency which a part has to repeat or continue those modes of acting which it has frequently performed, as we see in many diseases of the stomach and windpipe ; spasmodic affections of these and other organs, being apt to return at the same hour, for a long time. With regard to the uterus, one remarkable instance is related by Schulzius, of a woman, who, in spite of every remedy, miscarried twenty-three times at the third month. In this, and similar cases, slighter causes applied at the period when abortion formerly happened, will be sufficient to induce it, than would be required at another time.

We also find that an excessive or indiscriminate use of ve-

* 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.

nery, 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 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 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 sub-

ject 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, upon 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 induced 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 pains 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 gradually 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 are 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.

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 kind 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 are 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 com-

mence. 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 painful 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

* 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. This 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.

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, and 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 mentioned; for the nerves of the loins conveying less energy, in many instances, though not always, to the muscles, they are really weaker than formerly, and are sooner wearied, producing pain, and prolonged feeling of fatigue for many days, after an exertion which may be considered as moderate. This feeling must not be confounded with a tendency to abortion, though it may sometimes be combined with it, for generally by rest the sensation goes off. Neither must we suppose that the child is dead, from its being 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 aneu-

* 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.

ism, 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.(c) In these and similar cases, when the muscular action is commencing, the discharge is trifling, like menstruation, until the contraction becomes greater, and more of the ovum be separated. When symptoms of abortion proceed from this cause, it is not possible to prevent its completion; and it would be hurtful even if it were possible. When, therefore, after great fatigue, profuse evacuations in delicate habits, violent colic, or other causes, the motion of the child ceases, the breasts become flaccid, and the signs of gestation disappear, we need not attempt to retard expulsion, but should direct our principal attention to conduct the woman safely through the process.

* It has ever 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.

(c) In one instance that fell under my notice, a lady who had suffered several previous abortions, but who had also borne two healthy living children, was overturned in a carriage before the completion of the third month of gestation. She was extremely bruised, and was, in consequence, confined to her bed for several days; yet upon getting about again, she fancied, after the period of quickening, that she felt the motion of the child, with all the other symptoms of favourable and healthy pregnancy. She thus went on to the full period of utero-gestation; and on the very day she calculated, was delivered of a fœtus that certainly had lost the principle of vitality for several months, not appearing larger than an embryo of five months. The placenta was also almost exanguinous, and appeared as if it might have been detached from the uterine parietes for some time. Indeed, the whole appeared like a preparation that had been preserved in *sp. vini*, or *sp. terebinth*. The lady had a speedy recovery, and at no distant period bore a healthy living child.

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.

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, 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

* It is an old observation, that those purgatives, which produce much tenesmus, will excite abortion; and this is certainly true, if their operation be carried to a considerable extent, and continue long violent. Hence, dysentery is also apt to bring on a miscarriage. Those strong purges which are sometimes taken to promote premature expulsion, not only act by exciting tenesmus, but likewise by inflaming the stomach and bowels, and thus affect the uterus in two ways. It cannot be too generally known, that when these medicines do produce abortion, the mother can seldom survive their effect. It is a mistaken notion, that abortion can be most readily excited by drastic purges, frequent and copious bleeding, &c. immediately after the woman discovers herself to be pregnant; on the contrary, the action of the uterus is then more independent of that of other organs, and therefore not 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.

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 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 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

* 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.

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, promising venesection if the pulse indicate it, and conjoining gentle laxatives. There is just so much probability of gestation going on, as to encourage us to use endeavours to continue it. In those instances where the discharge is small, and the oozing pretty constant, we conclude that it is yielded chiefly by the glands about the os uteri, and may derive advantage from injecting three or four times a-day a strong infusion of galls, or solution of alum. The woman ought to use no exertion, as the membranes are apt to give way.

It is sometimes necessary to lay down rules for the management of pregnant women, even although they may not have been liable to abortion. These are to be drawn from the remarks already delivered, and it is only requisite to add, that in all cases it is proper to attend to the effects of utero-gestation, or the diseases of pregnancy, which are to be mitigated when severe by suitable remedies.

The danger of abortion is to be estimated by considering the previous state of the health, by attending to the violence of the discharge, and the difficulty of checking it; to its duration, and the disposition to expulsion which accompanies it; to the effects which it has produced in weakening the system, and to its combination with hysterical or spasmodic affections. In general, we say that abortion is not dangerous, yet in some cases it does prove fatal very speedily, either from loss of blood, or spasm of the stomach, or convulsions. It is satisfactory, however, to know, 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 producing 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 constitution, as this may be productive of permanent mischief, and occasion the diseases which proceed from a broken habit. Whenever the strength is diminished, the appetite impaired, or any other bad effect is produced, we have gone too great length.

There is, in plethoric habits, a weakness of many, if not all of the functions; but this is not to be cured by tonics, but by continued and very gradually increased exercise, laxatives, and light diet, consisting chiefly of vegetables. This plan,

however, must not be carried to an imprudent length, nor established too suddenly; but regard is to be had to the previous habits. It is a general rule, that exercise should not be carried the length of fatigue, and that it should be taken, if possible, in the country; whilst late hours, and many of the modes of fashionable life, must be departed from. We may also derive such 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 head-ache, 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

* The acetate of lead has been recommended by the 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 informs me, that in his hands it has been attended with great success.

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 farther 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, and 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 connected with sparing menstruation. This is often the case with women whose appearance indicates good health, and who have a robust look. This is not often to be rectified by medicine, but it may by regimen, &c. Here, as in the former case, we find it useful to make the greatest part of the diet consist of vegetables; but it is not necessary to restrict the quantity.

When, on the other hand, the patient has a weakly, deli-

cate appearance, it will be proper to give a greater proportion of animal food, and two or three glasses of wine, in the afternoon, with some bitter laxative, twice a-day, 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 drachm 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. Immediate relief is given by venesection; and afterwards we may, for some time, give every night half a grain or a grain of digitalis, with two grains of the extract of hyoscyamus.

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 relieves this; a little of the compound tincture of bark, taken three or four times a-day, is serviceable; or a few drops of the tincture of muriated iron, in a tumbler glassful of aerated water. At other times, the bowels yield, and the patient is obstinately costive. This is cured by aloetic pills, or manna, with the tartarite of potash. When the muscular system yields, producing a feeling of langour 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 abortion; and upon this I have already made some remarks. I have here only to add, that the use of the cold-bath, the exhibition of the Peruvian bark, and wearing flannel next the skin, constitute the most successful practice.

Syphilis is likewise a cause of abortion. When it occurs in the mother, it often unfits the uterus for going on with its actions. At other times, more especially when the father labours under venereal hectic, or has not been completely cured, the child is evidently affected, and often dies before

the process of gestation can be completed. In these cases, a course of mercury alone can effect a cure. But we are not to suppose that every child, born without the cuticle in an early stage of pregnancy, has suffered from this cause; on the contrary, as some of these instances depend on causes already mentioned, and which cannot be cured by mercury, I wish to caution the student against too hastily concluding that one of the parents has been diseased, because the child is born dead or putrid at an early period. It is not always easy to form a correct judgment; but we may be assisted by finding that the other causes which I have mentioned are absent; that we have appearances of ulceration on the child, and that there are some suspicious circumstances in the former history and present health of the parents. A child may be born dead, and even putrid, not only in consequence of syphilis, but also of some malformation of the 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 obviate palpable pre-disposing 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 aborts 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 very 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 with a state of absolute rest in a recumbent posture for some days, will often be sufficient to prevent farther 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 apartments. 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.

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

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 attends it, I conclude that our attempts to prevent bleeding can never do harm ; if they succeed in checking abortion, we gain our object ; if they fail, they do not increase, but diminish the danger.

It should be carefully remembered, that the more we can save blood, the more do we serve our patient. As the means for checked 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 af-

ter 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, and the frequent injection of saturated solution of the sulphate of alumine, or decoction of oak bark.

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, head-ache, 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

* I have in a preceding note, advised some caution in the use of digitalis in uterine floodings. I would here, also, recommend the same degree of circumspection. When given in sufficient quantity to make any very sensible impression on the system generally, it seems, in a very peculiar manner, to relax and debilitate the vessels of the uterus, disposing them, thereby, to *passive* hemorrhage. When, however, it is administered with proper restrictions, I have no doubt it may prove both a safe and a useful medicine. But still, I would greatly prefer to bleed in the above cases. C.

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. 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 teasing to find, that sometimes, after all our care and exertions, one rash act destroys in a single day the effect of the whole.

When we cannot prevent abortion, the next thing is to conduct 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. Instead of this, we may rather use the digitalis, but in ordinary cases, where the contraction is brisk, and the process quick, it is not at this stage absolutely necessary ; and I shall afterwards mention that, when the stomachic affection is urgent, and the pulse much affected by it, the use of this medicine is improper. When, however, the case is tedious, and the discharge long continued, at the same time that the sickness is not considerable, the digitalis will be of essential service, and it may be

very properly combined with the sulphuric acid. Nauseating doses of emetic medicines act in the same way with the digitalis, but are much less effectual, and more disagreeable, as well as uncertain in their operation. Internal astringents have been proposed, but they have no effect, unless they excite sickness, which is a different operation from that which is expected from them.

The application of cloths dipped in cold water to the back and external parts will have a much better effect than internal astringents, and 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 mouths of the vessels, and also diminish the vascular action. It will likewise show the impropriety of using injections at this time; for, by washing out the coagula, we do more harm than can be compensated 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: 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 hemorrhagia. 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. Now, we never can consider the patient as secure from he-

morrhage 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 separate them. By stuffing the vagina, we shall often find that the discharge is safely stopped, and the womb excited to act in a short time. 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 farther, 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 part of the ovum is left, or the whole of the secundines are retained, then 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 is 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 some-

* 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.

times 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. 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 it 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 pro-

duce greater and more immediately hurtful effects than if this were absent.

The best method of abating this sinking and feebleness, is to keep the body perfectly at rest, and the head low. If necessary, we give small quantities of stomachic cordials, such as a little tincture of cinnamon, or a few drops of ether in a glass of aerated water; or we may give a little peppermint water, with 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. Large 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 desert-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 the 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.

§ 36. UTERINE HEMORRHAGE.

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 impetuosity, 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 expul-

sion 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 de-

tached, 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 ac-

* 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.

count 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 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 is produced, and the separation is 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 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

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

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 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 appearance 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 woman 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 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 separa-

* In those cases where the contraction becomes universal and effective, we have little discharge, and the patient is merely said to have a premature labour; but if the contraction be partial, and do not soon become effective, then we have considerable discharge, and the patient is said to have a flooding.

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

tion, 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.

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.†

* 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 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

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, that hemorrhage from the uterus is not merely arterial, but also venous, and the orifices of these latter vessels are extremely large. Almost immediately after conception, the veins enlarge and dilate, contributing greatly to give to the uterus the doughy feel which it possesses. In the end of gestation the sinuses are of immense size, and their extremities so large that in many places 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 venous 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

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.

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 allowable, move in an inferior sphere. In this state, very slight additional injury will sink the system irreparably—very trifling causes will unbinge 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 vascular 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 is dangerous, both as it exhausts still more a system 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 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 hemorrhagies 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 hemorrhagies, 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,

* 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.

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 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 is to prove fatal, the debility increases—the pulse flutters—the whole body becomes cold and clammy—the breathing is performed with a sigh—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 quan-

tity, 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 hemorrhagies 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 confirmed. 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 consideration of gain and of 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 for his own honour and happiness. Procrastination, irresolution, or timidity, have hurried innumerable victims to the grave; whilst the rash precipitation of unfeeling men has only been less fatal, because negligence is more common than activity.

I shall endeavour to point out the proper treatment in the commencement of uterine 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 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. Whatever lessens materially or suddenly the quan-

* 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.

tity 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 pain 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 hemorrhagies, whatever their case may have been, or from whatever vessels 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 cau-

tiously use heat to preserve what remains, not rashly and speedily to increase action beyond the present state of power.

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.

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 of 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

* 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.

more unfavourable shall delivery, when it comes to be performed, prove to her and to the child. It is of consequence to shorten the paroxysm as much as possible; and, therefore, when circumstances will permit, we should make it a rule to have from the first a careful nurse, who may be instructed in our absence to use the napkin without delay, should the 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 fatal and deceitful 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

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

we have waited until a dangerous relaxation has taken place in the uterine fibres; and if, on the other hand, we have delivery in contemplation, it is our object to confine the liquor amnii as much as possible, until we turn the child.

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,^(d) in order to allay irritation; and this is often attended with a very happy effect.

Such are the most effectual methods of speedily or immediately stopping the violence of 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 are formed in the vagina—if the under part of the uterus has its usual feel, showing that the placenta is not attached there, and that no large coagula are retained within the os uteri—if the child be still alive—if there be no indication of the accession of labour—and if the slight discharge which is still coming away be chiefly watery, we may in these circumstances conclude that the vessels which have given way are

(d) In the exhibition of opiates in uterine hemorrhagies generally, we would advise their combination with ipecacuanha, in the proportion of half a grain of the latter to about two grains of opium; to be repeated more or less frequently, according to the circumstances of the case. Vide Barton's Edit. of Cullen's Mat. Med. Vol. ii. p. 334, and Chapman's Edit. of Burns.

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 these 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 hemorrhagies 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 actions 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 flooding, 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 farther sinking, than by cramming the patient, that we promote recovery; and I beg it to be remembered, that although I talk of the management of those who are much reduced, yet I am not to be understood as in any degree en-

* 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 has 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?

couraging 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 enable us in hemorrhage to cure our patient with less expense of blood than we could otherwise do. The digitalis is of this class, and may often be given with much advantage in flooding, where the pulse indicates increased vascular action, and when we do not mean to proceed directly to delivery. But when the discharge has been trifling, and the pulse is slow, and perhaps feeble, the digitalis is unnecessary even from the first; and if, in the progress of the disease, the stomach have become affected, and the patient is sick, inclined to vomit, or faintish, or the pulse feeble and small, it is likewise improper.

In those cases which demand it, when the pulse is sharp, and throbbing, and frequent, it may be given either in the form of powder or of tincture; half a grain of the dried leaves may be given every two hours, until the pulse be affected, and afterwards at longer intervals, so as to keep the circulation moderate. The tincture may also be employed with the same advantage. Two drachms may be added to a four-ounce mixture, and a table-spoonful given every two hours, watching the effect, and diminishing the dose when necessary. The addition of a little well-prepared hepatised ammonia sometimes makes the effect be more speedily produced, but not more than five drops should be added to each dose. (e)

(e) Our author has here omitted to mention, the powerful effects of the acetate of lead in restraining uterine hemorrhage.

The dose must depend upon the circumstances of the case, and the judgment of the practitioner. In a general way we may say, that two or three grains may be given at a time, and repeated more or less frequently, accord-

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

ing to the urgency of the symptoms. It should be combined with a portion of opium.

Professor Barton, who has called the attention of American practitioners to this powerful article of the materia medica, in restraining internal hemorrhage, recommends the combining with it a portion of ipecacuanha. For his opinion on this subject, we must refer the student to the Professor's edition of Cullen's *Materia Medica*, vol. ii. p. 20, 21, and 334. Other practitioners, among whom is Dr. Chapman, in these cases place considerable confidence in a combination of opium and ipecacuanha, in the proportion of two grains of the former to half a grain of the latter, to be repeated every two hours.

From my own experience, I should be induced to decide in favour of the acetate of lead, when combined as above directed.

Dr. Kuhn informs me that the late Dr. Glentworth of this city, placed the greatest reliance on yarrow-tea, or a strong decoction of yarrow (*Achillea Millefolium*, L.) in uterine hemorrhage, and said that he never was disappointed in his expectations of a cure after the proper use of this article of the materia medica. Instances of its good effects in hemorrhagies are mentioned by several of the German physicians, particularly by Stahl and Hoffman.

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.

But although anodynes be in many instances, and especially in first attacks, of great benefit, yet they are not to be indiscriminately employed nor exhibited when the circumstances of the patient require delivery, unless the strength be much impaired; and then, a full dose is to be given as a cordial, previous to delivery.

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. When it is more dependent on absolute loss of blood, we may find it necessary to give small quantities of wine, warmed with aromatics; but our cordials 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

* 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.

immediate steps by the use of the plug, &c. for restraining the discharge. This I may observe once for all. (*f*)

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, for although faintness be a natural mean of checking hemorrhage, yet absolute and prolonged syncope is hazardous. But we are not to exhibit large doses of cordials for its removal. 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 some hartshorn, or a spoonful of warm wine internally.

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

(*f*) In restraining uterine hemorrhage, we should not forget that injections thrown up the vagina, and if possible into the uterus, may have a considerable effect in repressing the discharge. In this way I have known solutions of the acetate of lead, of the sulphate of alumine, and a strong decoction or infusion of galls, produce salutary effects. A solution of the acetate of lead in cold water combined with laudanum may be also thrown up by enema, as recommended by Dr. Dewees.

had a drink. It in this case is commonly preceded by sickness and oppression, which are most distressing, and threaten syncope, until relief is obtained by vomiting. Sometimes it is rather connected with an hysterical state, or with uterine irritation. 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. 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

* 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.

speaking 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 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. The hand, previously lubricated, is 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 has 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 will succeed best when he rather acts so as to stimulate the uterus, and make it dilate its mouth, than directly 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 is soft and pliable, and has 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 has scarcely been affected before by pains, and is 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 two knuckles 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 contraction. But if the patient be neglected, then I grant that long before a tendency to labour or contraction be introduced, she may perish. I am not, however, consider-

ing 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 are 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 has suffered much from 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, and without disposition to open, we shall generally find that the sinking is temporary: we may still trust for some time to the plug.

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 has 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 takes 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 in-

* We are not to confine our attention to the quantity which has been lost, but to the effect it has produced; and this will, *cæteris paribus*, be great in proportion as the hemorrhage has been sudden.

duced; 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 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 consequence 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 propo-

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

† 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 conseillant assez hardiment de percer les eax, n'avoit d'autres vues que la

sal of M. Puzos then is, I apprehend, inadmissible before this time. If after this, there be occasion to interfere, it is evident that we must desire some interference which can be depended on, both with respect to time and degree. This method can be relied on in neither; for we know not how long it may be of exciting contraction, nor whether it may be able to excite effective contraction after any lapse of time. If it fail, we render delivery more painful, and consequently more dangerous to the mother, and bring the child into hazard. It has been observed, in objection to this, by Dr. Denman,* that if turning be 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.

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; after which it is speedily concluded. Here, then, interference is not required; but if, after going on in a brisk way for some time, the pains abate a little, which often happens even in a natural labour, it will be proper to rupture the membranes, 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 is disposed to return, I should

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 qui arrivent avant terme. Mais un grand nombre de femmes sont peries par l'effect de cette même pratique." Leçons sur les pertes de sang, p. 45.

* Introduction to the Practice of Midwifery, vol. ii. p. 310.

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 is just, be very limited in its utility. Its simplicity gave me at first a strong partiality in its favour; and if I now have changed my opinion, I have given my reasons.

But 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, and on the most favourable supposition, it would require many days before it could be brought into a state capable of contracting. The general system is completely exhausted, and

* 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.

† 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.

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 to excite the action of the uterus, 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 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 to be given previous to delivery.

The remarks upon the subsequent management of the patient, I shall reserve until I consider the treatment of flooding, after delivery.

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 Deventer 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. Giffard and M. Levret* were among the first

* 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

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.

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 woman never gets the better of the first attack. It indeed

va joindre l'intérieur de ce viscere, & 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.

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 begins 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 *dilatibility*; (g) we may safely deli-

(g) Rigby, a respectable surgeon of Norwich, in England, is entitled, as we believe, to the credit of first promulgating this distinction, which is of

ver 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 soften, and in any degree more open than in its usual state, and it admits 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 state of pains, 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 becomes 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 begun sensibly to open

great importance to be attended to in practice; his words are, "We should be as much influenced (as respects the period of introducing the hand) by the os uteri being in a state *capable of dilatation* without violence, as by its being really open; when this is the case, therefore, if the woman's situation demand speedy assistance, we should not hesitate to attempt delivery." His Essay on this subject, was published in the year 1777, and is in every respect a valuable work, rendered more so by the number of interesting cases appended to it. It has been republished in this city, and is highly worthy of the perusal of every Student and Practitioner of Midwifery. Its title is "An Essay on the Uterine Hemorrhage, which precedes the delivery of the full grown Fœtus: illustrated with cases by Edward Rigby, member of the Corporation of Surgeons in London."

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 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 has had one or two attacks, and been reduced to great danger. We find her with feeble pulse, ghastly countenance, frequently vomiting, and occasionally complaining of slight grinding pains. On examination, the vagina is so filled with clotted blood which adheres so 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 will 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.

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 dan-

* 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.

ger 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 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

* The greatest number of profuse or alarming hemorrhagies 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.

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 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.

§ 37. FALSE PAINS.

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 chiefly 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 diarrhoea; or nephritic affections, often accompanied with strangury. A sudden motion of the back, or unusual degree of fatigue, may cause a remitting pain in the back and loins: or getting suddenly out of bed when warm, and placing the feet on the cold floor, may have the same effect. A slight degree of lumbago may also resemble the parturient pains. Agitation of mind, or a febrile state of the body, or some irritation in the neighbourhood of the uterus, or some unusual motion of the child, may produce an uneasy sensation in the uterus; and sometimes this is accompanied by a discharge of watery fluid from the vagina.

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 seldom affect the os uteri, that part not being dilated during their continuance. It is necessary however to observe, that a dilated state of the os uteri does not always prove that the pains are those of labour; for it may be found prematurely dilated, to a slight degree, before the proper term of labour, without any pain. In this case, if the pains proceed from affections of the bowels, no effect is produced during the pain, in rendering the os uteri tense, or making it larger. On the other hand, it sometimes happens, that the fibres about the os uteri are prematurely irritated; and this state may be accompanied with pain, and with a perceptible change in 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. In all such cases, it is best to proceed on the supposition, that the woman is not actually in labour; for 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, the woman 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.

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.

NOTES.

BOOK I.

CHAP. II.

NOTE 1, Page 12.—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.*

NOTE 2, p. 13.—In one case, where the symphysis was divided, the patient was able to walk on the 15th day.—In Dr. Smollet's case, although in the 8th month of gestation, the bones were found to rise above each other, yet the woman recovered in two months after delivery. *Smellie, Vol. II. col. 1, n. i. c. 2.*

NOTE 3, p. 13.—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 the belly, greatly increased by every change of posture; and along with this she complained of strangury. She was bled, and purged, and kept at rest, by which means, especially 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 timeous 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.

NOTE 4, p. 14.—Dr. Laurence shewed Dr. Smellie a pelvis, where all the bones were separated to the extent of an inch.

NOTE 5, p. 14.—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.

NOTE 6, p. 14.—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 means of the cold-bath. *Coll. l. n. i. c. 1.*

CHAP. VI.

NOTE 1, p. 30.—It is not necessary to give examples of every degree of deformity; but it will be useful to select some specimens of the different kinds. The slighter degrees do not require to be particularized. I shall first of all give the dimensions of a dried pelvis, so contracted, as to prevent a child at the full time from passing without assistance. From the pubis to the sacrum, it measures three inches; from the acetabulum to the sacrum, on the right side, two and a half inches; on the left, two inches and seven-eighths; from the brim above the foramen thyroideum, to the opposite sacro-iliac junction, five inches; from the same part of the brim on one side, to the same on the opposite, three inches and a half; transverse diameter, four inches and seven-eighths; from the arch of the pubis to the hollow of the sacrum, five inches; from one tuberosity of the ischium to the other, four inches and a half; from one spine to another, four inches and a half; the arch of the pubis is natural. The distance from the face of the third lumbar 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.

NOTE 2, p. 30.—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 that 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.

NOTE 3, p. 31.—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.

NOTE 4, p. 31.—The following are the dimensions of a pelvis of this kind, which I select as a specimen. From the spinous process of the ilium on one side to the other, is eight inches and three-fourths. From the lumbar vertebræ to the spinous process of the ilium on the right side, six inches; on the left side, one inch and seven-eighths. From the spinous process of the ilium back to its ridge, two inches and a half. From the symphysis pubis to the sacrum, one inch and three-fourths. From the right acetabulum to the sacrum, six-tenths of an inch; from the left, seven-eighths of an inch. From the brim above the foramen thyroideum to the same point on the opposite side, seven-eighths of an inch. From the same part of the brim to the opposite sacro-iliac junction, three inches and a half on both sides. From the tuberosity of one ischium to that of the other, two inches and a half. From the tuberosity to the coccyx, three inches. From the spine of one ischium to that of the other, three inches and a half. From the lower part of the symphysis pubis to the hollow of the sacrum, four inches; distance of the rami of the pubis, five-eighths of an inch.

This pelvis has a triangular brim; for it will be observed, that the brim above the foramen thyroideum measures nearly an inch across, and therefore there is a considerable space betwixt the two ossapubis, 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-eighths 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 stand-

ing 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.

NOTE 5, p. 31.—This is the case in a pelvis where the distance from the part of the brim above the foramen thyroideum on one side, across to the same part on the opposite side, is only five-eighths of an inch. From the right acetabulum to the sacrum is an inch and three-eighths. From the left is one inch. This pelvis at the brim is externally 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.

NOTE 6, p. 33.—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 *Introductio*. Vol. II. p. 72.—Baudelocque, in the 5th vol. of *Recueil Periodique*, relates a case, where, in consequence of a scirrhus tumour adhering to the pelvis the crotchet was necessary. In a subsequent labour, the cæsarean operation was performed, and proved fatal to the mother.—Dr. Drew records an instance where the tumour adhered to the sacro-sciatic ligament, and was successfully extirpated during labour. It was 14 inches in circumference. Vide *Edin. Journal*. Vol. I. p. 23.

NOTE 7, p. 33.—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.

NOTE 8, p. 33.—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.

NOTE 9, p. 33.—M. Pelletin 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 scissars. *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.

CHAP. VII.

NOTE 1, p. 36.—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. IX.

NOTE 1, p. 46.—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 glary fluid. In the slug we find both testicles and ovaria. The ovarium is a grape-like tissue, containing numerous small grains, or ova, attached by pedicles, which are canals that lead into the oviduct. This is a serpentine canal, that after having adhered to the testicle, opens in the common cavity of generation, in which also the penis or duct from the testicle opens, and during copulation, the two individuals mutually impregnate each other. The ovaria of the adder are like strings of beads.

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.

CHAP. X.

NOTE 1, p. 54.—The females amongst the Bosjesmans have the nymphæ sometimes five inches long. Their colour is a livid blue, like the excrescence of a turkey. Vide Barrow's Travels in Africa, Vol. I. p. 279.

NOTE 2, p. 54.—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. Winterbotham, in his account of Sierra Leone, Vol. II. p. 239, says it is practised among the Mandingo, Foola, and Soosoo women.

NOTE 3, p. 54.—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 in 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.

NOTE 4, p. 54.—In a case related by Mr. Reeve, the tumour which I suspect proceeded from the rupture of the nymphæ, was perceived first in perineo, but soon occupied all the left labium, which was enormously distended. The pain at first was so great as to cause syncope. The parts sloughed, and discharged pus and clotted blood. Bark was given, and she got well. Lond. Med. Journ. Vol. IX. p. 119.

NOTE 5, p. 54.—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 Plenck Elementa, p. 111.—Case by M. Sedillot, in Recueil Period. Tom. I. p. 260.

NOTE 6, p. 54.—Vide cases by Dr. Macbride in Med. Obs. and Inq. Vol. V. p. 89.

NOTE 7, p. 55.—In Mr. Blagden's case, related by Dr. Baillie, the woman soon after delivery had violent bearing-down pains, as if another child were to be born. A monstrous swelling appeared in the right labium, extending to the perinæum. A large incision was made, which did not heal till the 21st day. Med. and Physical Journal, Vol. II. p. 42.

NOTE 8, p. 55.—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.

NOTE 9, p. 55.—Le Dran relates a case, where above 20 ounces of blood were evacuated by incision. Consultations, p. 413.

NOTE 10, p. 55.—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.

NOTE 11, p. 55.—Schmucker's Miscel. Surg. Essays, art. XXIII.

NOTE 12, p. 56.—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 corresponding size; one of them lay on the *psaos* 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 cavernosa*, and the urethra opens between the labia formed by the scrotum.

NOTE 13, p. 56.—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.

NOTE 14, p. 56.—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.

NOTE 15, p. 56.—Case by Mr. Sherwin, in *Med. Records, &c.* p. 279.

NOTE 16, p. 56.—Case by Mr. Kaeymer, 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.

NOTE 17, p. 56.—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. Col I. n. i. c. 6.

NOTE 18, p. 56.—In a case related by Benevoli, the belly was very much swelled, and the urine suppressed. He attempted to pass the catheter, but without success. Next day he repeated his endeavour, and pushing with more force than prudence, considering his object, he ruptured the hymen, and immediately a great quantity of dark matter was evacuated, even to the extent of 33 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.

NOTE 19, p. 56.—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.

NOTE 20, p. 56.—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 imperious. Med. Comment. Vol. II. p. 188.—In general the membrane is thin.

NOTE 21, p. 56.—Vide Mr. Niven's case, in Med. Comment. Vol. IX. p. 330. The symptoms gradually abated.

NOTE 22, p. 56.—M. Baudelocque mentions an instance where the hymen resisted, for half an hour, the strong action of the uterus. Note to Section 341.

NOTE 23, p. 59.—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*. Dr Denman mentions an instance where the perinæum was not torn up, but perforated by the head.

NOTE 24, p. 59.—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.

NOTE 25, p. 59.—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.

NOTE 26, p. 59.—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.

NOTE 27, p. 59.—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.

NOTE 28, p. 59.—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 tremors 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.

NOTE 29, p. 60.—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.

NOTE 30, p. 61.—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.

NOTE 31, p. 61.—Mr. Henry Watson, in the *Med. Communications*, Vol. I. p. 162, called the attention of practitioners to this disease. In a case he relates, he drew off in the month of June, four gallons of fluid, by tapping the vagina; and immediately after this she passed the urine freely, which she could not do before. She required again to be tapped in two months, and died in November. The left ovarium was found to be converted into a cyst, about the size of a sow's bladder, but it had not been touched by the trocar. In one case, he punctured with a lancet instead of a trocar, but this was succeeded by troublesome 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 per-

formed. On the fourth day after her delivery, after a few loose stools, she expired. *Introd. Vol. I. p. 150.*

NOTE 33, p. 71.—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. 360.* The use of the bougie may be proper.

NOTE 34, p. 71.—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 scirrhus, with two large bodies in the cervix, preventing the urine from being retained. The uterus was diseased only in consequence of its vicinity to the bladder. *Epist. XXXIX. art. 31.*

NOTE 35, p. 72.—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.*

NOTE 36, p. 72.—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.

NOTE 37, p. 73.—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.*

NOTE 38, p. 74.—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.*

NOTE 39, p. 75.—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 scissars. *Cases, p. 309.*

NOTE 40, p. 75.—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. Fact. and Obs.*; Vol. III. p. 26.

NOTE 41, p. 75.—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.

NOTE 42, p. 75.—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.*

NOTE 43, p. 75.—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.

NOTE 44, p. 76.—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.

NOTE 45, p. 76.—Columbus dissected a woman who always complained of great pain 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 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.

NOTE 46, p. 76.—*Vide Hist. de l'Acad. de Sciences*, 1705, p. 47.—Haller *Opusc. path.* 60. Acrell's cases.—Purcel 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.

NOTE 47, p. 76.—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.

NOTE to Section 26, p. 80.—A peculiar growth is described by Dr. Clark under the name of cauliflower excrescence, which is probably of the nature of that I speak of, but I never have seen it after death, and therefore cannot be certain. It springs from the os uteri, the base is broad, the surface granulated, the substance brittle, and the fragments broken off, white; pressure does not cause much pain, but the patient has more or less pain at times, but not of the lancinating kind. The discharge is at first like fluor albus, but frequently becomes watery and transparent, but stiffens the linen. When the excrescence is large, the discharge is so great as to wet 10 or 12 napkins daily, and occasion fatal debility. The progress is variable, sometimes it is so rapid that in 9 months the cavity of the pelvis is filled by it. The only treatment that bids fair to give relief, is the application of a ligature, but the peculiarity is, that when the vessels are constricted by this during life, or collapse after death, the solidity of the tumour is lost, and it resembles merely a glary substance. Trans. of a Society, &c. Vol. III. p. 321.

NOTE 48, p. 81.—Vide Stalpart Vander Wiel, obs. 87.—Segerus in Mis. Cur. 1671, obs. 121. Notwithstanding these cancerous excrescences about the os uteri, a woman may conceive. Dr. Denman relates a case where there was a large excrescence in the gravid state, with profuse bleeding. The head of the child was lessened, but the woman died undelivered. Vol. II. p. 65. When the os uteri has been affected with scirrhus, and the woman has conceived, the uterus has sometimes been ruptured, or the woman died undelivered. Hildanus, cent. I. obs. 67 Hortsius Opera, Tom. II. lib. 2, obs. 5. Blancard Anat. p. 233. Hist. de l'Acad. de Sciences, 1705, p. 52.

NOTE 49, p. 82.—Le Dran attended a patient who had all the symptoms of scirrhus uterus, and, by examination, fungous excrescences were found shooting down into the vagina. The pain was continual, and could only be mitigated by the constant use of opium. Urine was discharged by the vagina, and after death the bladder was found to be perforated. The fundus and body of the uterus were not much diseased.

NOTE 50, p. 83.—Absolute abstinence has been recommended by Pouteau, Œuvres Post. Tom. 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.

NOTE 51, p. 85.—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.

NOTE 52, p. 90.—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.

NOTE 53, p. 91.—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 Schenknius.—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.*

NOTE 54, p. 91.—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.*

NOTE 55, p. 94.—Dr. Denman, 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.

NOTE 56, p. 94.—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 least 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.*

NOTE 57, p. 95.—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.*

NOTE 58, p. 96.—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.*

NOTE 59, p. 97.—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 the 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 become flaccid.

Dr. Denman gives an engraving of a diseased ovum: and Mr. Home relates a case, where the patient, after being attacked with flooding, 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 a 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 Mulier. 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.* *Ruysch, Obs. Anat. Chir. p. 25.* *Albinus, Anat. 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 heads of pins. *Wrisberg* describes a more advanced stage in *Nov. comment. Gotting. Tom. IV. p. 73*; and *Sandifort*, in his *Obs.*

Anat. Path. lib. II. c. 3, tab. VI. fig. 5, has a case extremely distinct. See also Haller, Opusc. Path. ob. 48.

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

When the mass is expelled, it is found either to consist entirely of small vesicles, or partly of vesicles, and partly of more solid remains of the ovum, or coagulum of blood.

NOTE 60, p. 99.—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.

NOTE 61, p. 100.—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. Eclairé, Tom. 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.

NOTE 62, p. 102.—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.

NOTE 63, p. 102.—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, 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 small size. Some parts of the bladder were an inch thick; a catheter could not be introduced. Med. and Phys. Journal, Vol. VI. p. 391.

NOTE 64, p. 103.—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.

NOTE 65, p. 103.—Kirkringius says, *nemo vidit, nemo sensit, decepti omnes imagine falsa, alios decipiunt; luxitas quædam colli quæ extra pudendum prominēt 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*.

NOTE 66, p. 103.—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.

NOTE 67, p. 104.—Morand relates the case of a woman, who had fætid 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 thus 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.

NOTE 68, p. 106.—See Rossuet, Plater, and Platner, *Inst. Chir. section 1447*. Wedelius de *Procid. Uteri*, c. 4. Volkamer, in *Miscel. Cur. an. 2. ob. 226*. Another case may be seen in *Journal de Med. Tom. LXVIII. p. 195*. Paré, *Œuvres*, p. 970.—Carpus extirpated it with success. Vide Longii, *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. Eclairé, par Fourcroy*, Tom. IV. p. 33. M. Baudelocque, however, says, that the uterus was only partially extirpated. Vide *Recueil Period. Tom. V. p. 332*.

NOTE 69, p. 106.—Harvey 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 fætus was expelled, *spithama longitudine*. Opera, p. 558. See also a case by Mr. Antrobus, in *Med. Museum*, Vol. I. p. 227.

NOTE 70, p. 107.—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.

NOTE 71, p. 107.—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.

NOTE 72, p. 107.—Reink mentions a woman, who was pregnant of twins. In the fourth month the womb prolapsed, and caused a fatal suppression of urine. The vagina, at the upper part, was corrugated and inverted. Haller, Disp. Chir. Tom. III. p. 585.

NOTE 73, p. 109.—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.

NOTE 74, p. 109.—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, 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.

NOTE 75, p. 109.—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.

NOTE 76, p. 109.—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.

NOTE 77, p. 110.—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 tumefied, and could be felt on each side of the navel, whilst immediately beneath that, they seemed to be united by a flat hard substance; and when the urine was long retained, a fluctuation could be perceived before that part. Upon dissection, a firm thick substance was found, extending from the pubis to the navel, betwixt the ovaria. This was the uterus and vagina. The uterus itself was lengthened, the cervix was three inches long, and all appearance of os tinca 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, and presently another appeared in the left side. She was tapped 16 times.

NOTE 78, p. 111.—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.

NOTE 79, p. 112.—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 Inqu. 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. 451.*

NOTE 80, p. 112.—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 the London Medico-chirurgical Transactions, Vol. III. p. 40, et seq. may be found the history of a remarkable case of ovarian dropsy, by Thomas Chevalier, Esq. F. L. S. &c. The abdomen in this case measured $63\frac{1}{2}$ inches in circumference, and 38 inches from the point of the ensiform cartilage to the top of the pubis. The navel, when she sat, was on a line with the knee. The quantity of fluid drawn off amounted to 17 gallons. The patient died.]

NOTE 81, p. 113.—Le Dran relates two cases in the *Mem. de l'Acad. de Chir. Tom. III.* In the first, the cyst was opened, and the woman cured of the dropsy, but a fistulous opening remained, p. 431. In the second, he made a pretty large incision, and introduced a canula into the sac. The operation was followed by fever, delirium, and vomiting; the woman retained nothing but a little Spanish wine for three weeks. She discharged daily 8 or 10 ounces of red fluid. At length, all of a sudden, 15 ounces of white pus were

evacuated, and then the symptoms abated; but a fistula remained for two years; then it healed, p. 442.

[Dr. M'Dowell, of Danville, Kentucky, relates three cases of extirpation of diseased ovaria, in *Eclectic Repertory*, for April, 1817. Vol. VII. p. 242. The patients recovered.]

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 13 years. It was attended with violent pains. *Phil. Trans.* XXXIII. p. 5.

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

NOTE 82, p. 113.—De La Porte tapped a woman who had a large tumour in the belly, but nothing came through the canula. He made an incision of considerable length, and, in the course of two hours and a half, extracted 35 lbs. of jelly. The lips of the wounds were then brought together. Next day, 15 lbs. of jelly were evacuated, but presently vomiting and fever took place; and she died on the thirtieth day, having discharged altogether 67 lbs. of fluid. This disease was of sixteen months standing, and was attributed to hemorrhage. *Mem. de l'Acad. de Chir.* Tom. III. p. 452.

Dr. Denman notices the case of a patient, who died the sixth day after injecting the ovarium. Vol. I. p. 122.

NOTE 83, p. 113.—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.

NOTE 84, p. 113.—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.

NOTE 85, p. 114.—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.

NOTE 86, p. 114.—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, teeth, and other gelatinous fluid. *Trans. of Royal Irish Acad. Vol. I. p. 80.* In *Essays Phys. and Literary, Vol. II. p. 300*, a case is mentioned, in which the one ovarium contained many vesicles; the other contained a mass like brain, with bones and teeth. In the Museum attached to the hospital at Vienna, there is a large ovarium, the inner surface of which is covered with hair. Horstius met with an ovarium, containing hair, purulent-looking and oily matter. *Opera, p. 249.* Schenkius met with fat and hair, *p. 556*; and Schacher relates a similar case in *Haller's Disp. Med. Tom. IV. p. 477.* Ruysch, in his *Adversaria*, says he met with bones and hair; and Le Rich, in the *Hist. de l'Acad. de Sciences, 1743*, met with hair and oil, in cells, together with bones and teeth. See also *Recueil Period. Tome XVII. p. 462.*

NOTE 87, p. 114.—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.

NOTE 88, p. 114.—Schlencker mentions a woman, who, soon after delivery, felt obtuse pains in the left side, and presently a swelling appeared in the belly. She had bad appetite, swelled feet, prolapsed uterus, and suppression of urine and fœces. The left ovarium was hard and stony, and weighed 3 ounces. *Haller, Disp. Med. Tom. IV. p. 419.* In this case the tumefaction of the belly could not be caused by the presence of the ovarium, but rather by the pressure on the intestines.

NOTE 89, p. 114.—Vide case by Fontaine, in *Haller, Disp. Med. Tom. IV. p. 485.* The patient had tumour of the abdomen, with lancinating 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.*

CHAP. XII.

NOTE 1. §. 1. p. 121.—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 falls 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 pathognomic symptom of hysteria. Head-ache 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 head-ache, 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.

During an 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. But it is further useful to 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 sometimes yield more speedily to emetics than to antispasmodics, or may even require the use of the lancet, but this mode of evacuation is to be avoided as much as possible, as it increases a disposition to the disease; 3d, that irregular action of the heart, besides requiring powerful antispasmodics, demands, more than any other symptom, during the attack, a state of rest, and the removal of every thing which can agitate the mind; 4th, continued insensibility, or coma, is a very dangerous symptom, as it may end

fatally; the lancet ought to be early, but not largely used, the bowels should be emptied, and the head covered with a blister.

The prevention of regular hysteric fits, or of individual symptoms, is to be attempted by a tonic plan, especially by the use of the cold-bath, moderate exercise, preserving a *correct* state of the bowels, or even giving pretty powerful purges, and the administration of preparations of steel; 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.

If particular symptoms should be frequently repeated, or the fits occur often, it may be useful to conjoin along with this plan, the exhibition of some antispasmodic medicine, such as valerian, asafœtida, or camphor.

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. XV.

NOTE 1, p. 160.—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 corticlé. 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 entochlorilyme. 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 amnion. 5th, During incubation, the vitellus becomes specifically lighter than the albumen, and rises toward the folliculus aëris. Two arteries and two veins go from the messoraic 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 connection 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 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.

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 termi-

nations; 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 connection 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 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 glary 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 ovoviviparous, such as cartilaginous fishes, as the shark, skate, and 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, Tom. 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 hippocampus* 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 opossum 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 perform 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 embryo 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 kernal 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 parenchymatous 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.

CHAP. XVII.

NOTE 1, p. 169.—In Dr. Clark'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. Mainwarring's case, in the same work, p. 287, the patient suffered much from morning sickness, and pain at the groins.

NOTE 2, p. 169.—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.*

NOTE 3, p. 169.—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. Vitioso 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 eighth month, was subject to convulsions and syncope. *Phil. Trans. Vol. XXI. p. 121.*

NOTE 4, p. 169.—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 pains in the hypogastric region, attended with fever, and finally sunk under marasmus. *Cases in Midwifery, Vol. II. p. 164.*

NOTE 5, p. 170.—Vide cases by Longius, 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 Périodique*, Tom. XIV. p. 289.

NOTE 6, p. 170.—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 fœces 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.

NOTE 7, p. 170.—Vide Stalpart Vander 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. *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.

NOTE 8, p. 170.—Vide case of Mrs. Stag, in *Lond. Med. Obs. and Inquiries*, Vol. II. p. 369; and cases by Mr. Jacob, Dr. Maclarty, and others.

NOTE 9, p. 170.—In Mr. Giffard'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.

NOTE 10, p. 170.—In Dr. McKnight'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.

NOTE 11, p. 170.—In Dr. Clark'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.

NOTE 12, p. 170.—I have known the fœtus retained for twenty years; and there are some instances, where it has been retained 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. Mounsay'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 cimetières*. *System*, Tom. X. p. 83. Sandifort relates a case, where, after attempts at labour, no further inconvenience was sustained, but the child was found after twenty-

two years to be indurated. *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.

NOTE 13, p. 170.—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.

NOTE 14, p. 170.—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 till 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.

NOTE 15, p. 171.—Boehmer long ago observed this; and Dr. Baillie, in the 79th Vol. of the *Phil. Trans.* mentions, that Dr. Hunter had a preparation of tubal pregnancy, in which the uterus was found enlarged to double its natural size, and containing decidua. He also states, that in an ovarian case, the uterus was enlarged, thick, and spongy, and its vessels enlarged. Dr. Clarke found the uterus, in the second month of an extra-uterine pregnancy, exactly of the same size as if the embryo had been lodged within it. The decidua was formed, and the cervix filled with gelatinous matter. *Transactions of a Society*, Vol. I. p. 216. See also a case by Saviard, in *Phil. Trans.* No. 222, p. 314. A case similar to Dr. Clarke's is related by Mr. T. Blizard, in the *Edin. Phil. Trans.* Vol. V. p. 189. See also *Annals of Med.* Vol. III. p. 379.

NOTE 16, p. 171.—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.

NOTE 17, p. 171.—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'Eveille, the fœtus was apparently betwixt three and four months old. Rapport de la Societ  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 Societ  de Lyon.

NOTE 18, p. 171.—Vide Chambon, Malad. de la Grossesse, Tom. II. p. 373. Case by St. Maurice, in Phil. Trans. No. 150, p. 285. In the case related by La Rocque, the ovarium was found ruptured, and the abdomen full of blood. Journ. de Med. 1683. Boehmer found the ovarium ruptured, and the fœtus half expelled. Obs. Anat. fasc. prim. Dr. Forrestier'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.

NOTE 19, p. 171.—Vide R ederer, Elemens, c. 15. § 758. In Mr. Dumas' case, a fluid like chocolate was drawn off by tapping, which was twice performed. The ovarium contained hair, bones, &c. La Med. Eclair e, Tom. IV. p. 65. Mr. Bell's tubal case excited ascites.

NOTE 20, p. 172.—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. 197. In the Mem. of the Acad. of Sciences, there is a case related, where the placenta adhered to the lumbar vertebr . In the history by La Coste, it was placed under the stomach and colon. Vide Œuvres de Duverney, Tom. II. p. 363. In Mr. Turnbull's case, it was very thin, and adhered to the intestines. Mem. of Med. Society, Vol. III. p. 176. A case of ventral pregnancy, complicated with hernia, is related by M. Martin, in the Recueil des Actes de la Societ  de Sant  de Lyon. Courtial found it adhering to the stomach and colon.

NOTE 21, p. 173.—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. 357. Cyprianus gives an instance of the child being removed, after having been retained twenty-one months. Histor. Fœtus Hum. Salva Matre, ex Tuba Excisi. Mr. Brodie enlarged the navel with a lancet. Phil. Trans. Vol. XIX. p. 580. See also M. 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 operation, did recover. No placenta was found. *Mem. of Med. Society*, Vol. IV., p. 342.

NOTE 22, p. 173.—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.

CHAPTER XIX.

NOTE 1, p. 207.—Mr. Pearson relates a case, where the uterus was retroverted, in consequence of being scirrhus. *Vide Pearson on Cancer*, p. 113. Dr. Marcet gives an instance where the uterus was retroverted, without pregnancy, producing constipation and vomiting. *Vide Cooper on Hernia*, part. II. p. 60.

NOTE 2, p. 207.—M. Baudelocque relates a case, where the fundus uteri protruded at the os externum, the patient at the same time having violent inclination to expel something. He was, however, able speedily to reduce the womb to the proper state. *Vide l'Art, &c.* § 125. In Dr. Bell's case, a portion of the rectum was protruded by the uterus. *Med. Facts*, Vol. VIII. p. 32.

NOTE 3, p. 208.—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.

NOTE 4, p. 208.—In the case described by Dr. Hunter, *Med. Obs. and Inq.* Vol. IV. p. 400, the bladder after death was found to be amazingly distended, but not ruptured.

NOTE 5, p. 208.—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. Squire relates an instance in which the bladder also gave way. *Med. Review* for 1801.

NOTE 6, p. 208.—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.

NOTE 7, p. 208.—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.

NOTE 8, p. 209.—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.

NOTE 9, p. 209.—In Mr. Croft's case, the disease was of a month's standing, the woman was œdematous, and she was supposed to have dropsy; but by introducing the catheter, seven quarts of urine were drawn off. The introduction was daily repeated for some time, and then occasionally, as circumstances required, for three weeks. The swelling of the legs went off, and the uterus gradually rose. *Med. Jour.* Vol. XI. p. 381.

NOTE 10, p. 209.—A case is related by Mr. Ford, in which the catheter being allowed to slip into the bladder, produced a sinuous ulcer. *Med. Facts*, Vol. I. p. 96.

NOTE 11, p. 209.—In Mr. Cooper'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.

NOTE 12, p. 209.—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.

NOTE 13, p. 210.—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.

NOTE 14, p. 211.—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.

NOTE 15, p. 211.—This circumstance has been mentioned by different writers, and a distinct case is related by Mr. 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 perinæum. The pains brought on fever,

and at last delirium and convulsions. She was bled, and had a clyster, after which she got some sleep, and the pains continued moderate, though regular, for two or three days, and she passed both urine and stools. On the 20th, nothing like os uteri could be felt; but on the 21st, there was perceived a thick flattened fleshy substance descending into the vagina, and very soon the uterus was restored to its natural situation. The substance was found to be the scalp of the child, containing loose bones. The child and placenta were delivered, and the mother recovered.

NOTE 16, p. 213.—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. Mr. Merriman's patient first complained after being suddenly terrified; and Mr. Wilmer's patient had the uterus retroverted, after being fatigued with weeding.

NOTE 17, p. 214.—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.

NOTE 18, p. 214.—Sometimes the hemorrhage proves fatal. A singular case is to be met with in the *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.

NOTE 19, p. 214.—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.

NOTE 20, p. 214.—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.

NOTE 21, p. 214.—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 1746, 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.

NOTE 22, p. 215.—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 ago, being then in the ninth month of her first pregnancy. She felt at the time as if something had burst near the navel, and perceived more fluttering of the child than usual. This continued in a certain degree for two days, after which, she felt no more motion. In the course of two or three days after the accident, she was seized with irregular pains, chiefly about the belly, and these are rather increasing than diminishing in severity. The belly has subsided considerably in size, is hard, particularly above the navel, toward the stomach. The umbilicus itself is soft and prominent. The bowels are regular, urine proper, tongue clean, heat natural, 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 between 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.

NOTE 23, p. 215.—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 a carriage, and had the uterus ruptured. She instantly felt violent pain in the belly, and a discharge took place, from the vagina, which continued in variable quantity for six weeks. The strength gradually sunk, and in June she began to vomit, and continued to do so for several days, when she died. The abdomen was found inflamed, and contained the remains of a putrid child. The rent was visible in the womb.

NOTE 24, p. 215.—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.

