

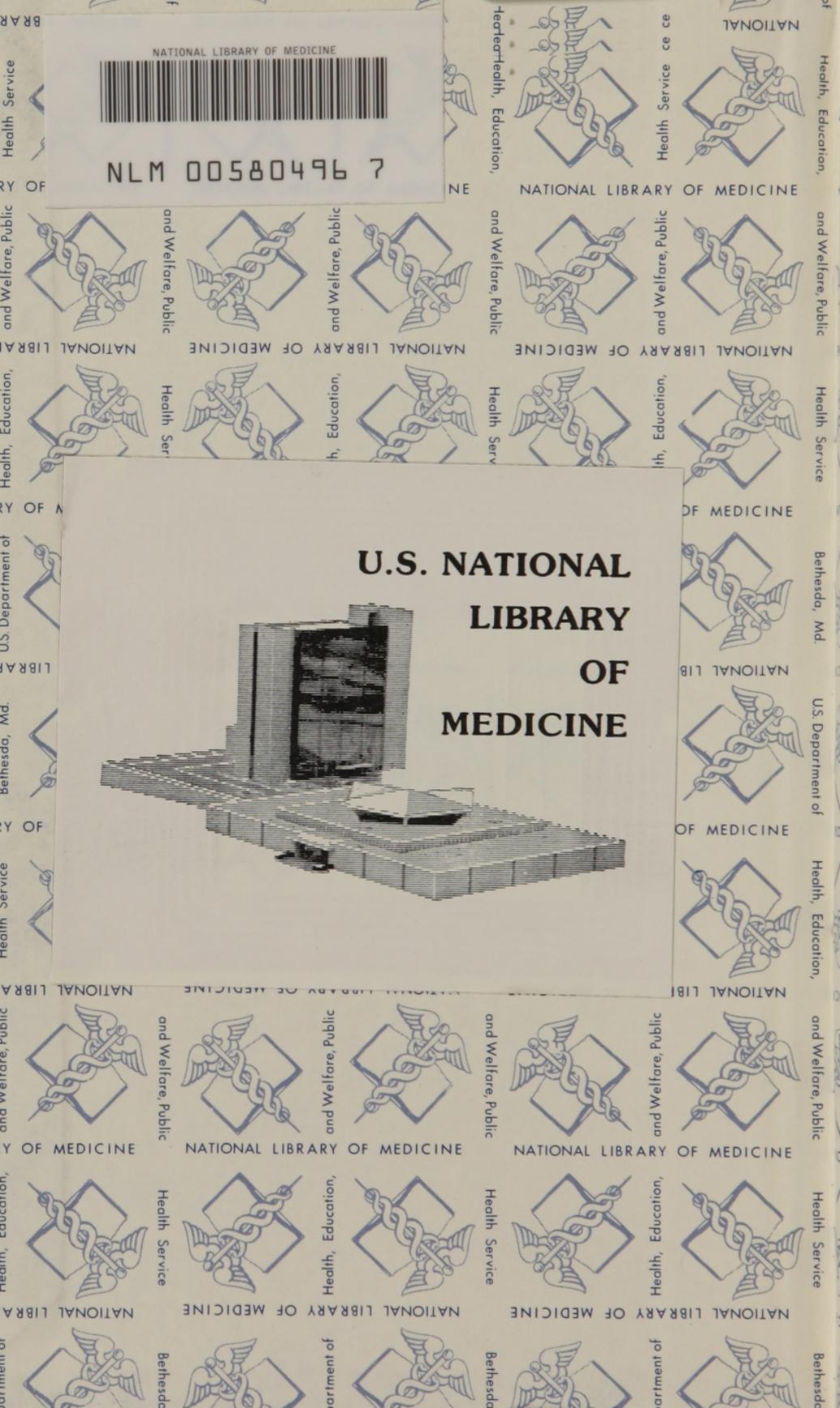
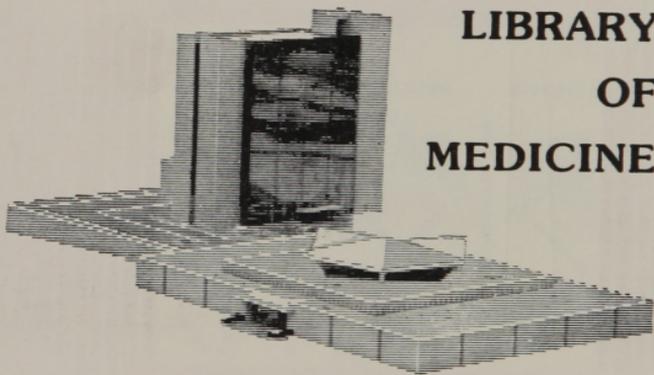


NATIONAL LIBRARY OF MEDICINE



NLM 00580496 7

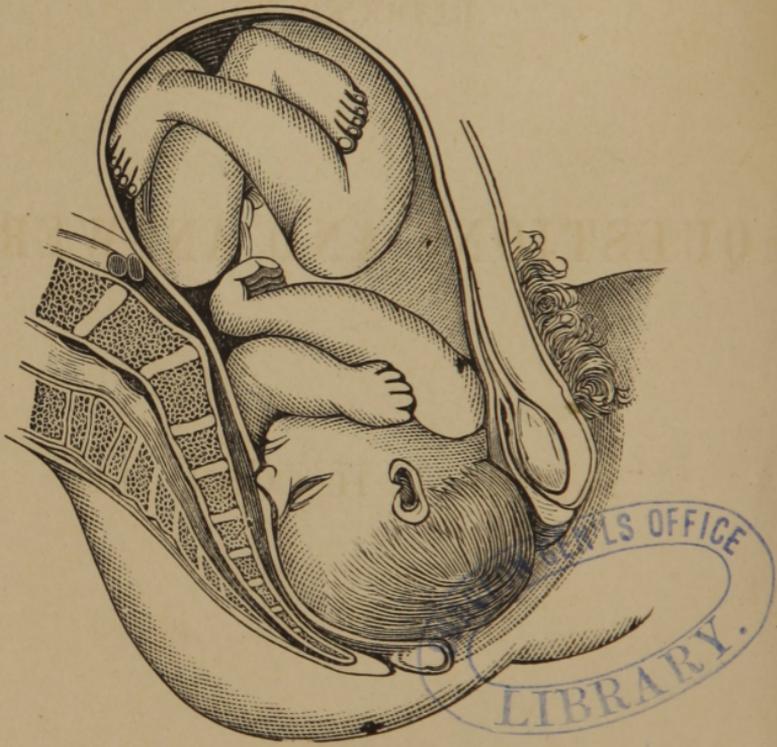
# U.S. NATIONAL LIBRARY OF MEDICINE







138



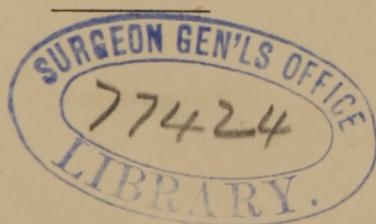
FRONTISPIECE.

# OBSTETRICS,

REDUCED TO

## QUESTIONS AND ANSWERS.

By MRS. L. H. CORR, M.D.



CHICAGO:  
D. B. COOKE & CO.  
1878.

WQ

C8230

1878

COPYRIGHT,  
By DAVID B. COOKE,  
A. D. 1877.

## PREFACE.

---

The need of a condensed form of The Theory and Practice of Obstetrics was felt by the author when in college; and the same need being felt and expressed by others, after consulting with authors and teachers relative to the plan to be pursued in its preparation, this book is now offered to the student of obstetrics, whether in college or in active practice.

The author gratefully acknowledges her obligation to Professor W. H. Byford, Dr. Sarah Hackett Stevenson, and Dr. Edward Warren Sawyer, for valuable aid in preparing this work for the press.

---

[From William H. Byford, A.M., M.D.]

CHICAGO, October 22, 1877.

D. B. COOKE & Co.:

*Gentlemen:* In accordance with your request, I have examined the advance sheets of the work on Obstetrics from the pen of Lucinda H. Corr, M.D., now in the course of publication by your house.

I think it is admirably adapted to the wants of students in this branch of practical medicine.

It is a *complete treatise on obstetrics*, and yet rendered in such a concise manner as to justify the application to it of the epithet, *multum in parvo*.

I shall be greatly surprised if it does not meet with a ready and extensive sale.

Respectfully, Yours, etc.,

WM. H. BYFORD.

# CONTENTS.

---

The Pelvis .....	9
The Fœtal Head .....	19
Measurements of Pelvis.....	22
Pelvimeters.....	23
The Female Organs of Generation .....	23
The Vagina .....	26
Internal Organs.....	29
Uterus.....	29
The Oviduct or Fallopian Tube.....	35
The Ovaries .....	40
Ovisacs or Graafian Vesicles.....	43
Anatomy of the Ovisacs.....	43
The Ovum .....	44
Ovulation .....	45
Generation .....	50
Pregnancy.....	51
Modification of Other Textures .....	56
Changes in the Ovum .....	65
The Membranes.....	77
The Extra-Ventral Pregnancy .....	116
Missed Labor.....	117
Mole Pregnancy — Blighted Ova.....	117
Displacements of the Uterus during Pregnancy.....	119
Abortion — Miscarriage .....	123
Affections of the Ovum .....	124
Accidents to the Fœtus.....	126
Symptoms of Abortion.....	126
Labor .....	133
The Mechanism of Labor.....	139
Face Presentations.....	147
Breech, Knee and Foot Presentations.....	151
Diagnosis of Labor .....	155

Diagnosis of Face Presentation.....	162
Diagnosis of the Third Stage of Labor .....	163
Prognosis connected with Labor .....	165
Management of Natural Labor.....	168
Management of Face Presentations .....	173
Management of Breech, Feet and Knee Presentations .....	173
Anæsthetics in Labor .....	177
Chloral in Labor.....	179
Damage to the Perineum .....	179
Natural Labor for Multiple Cases.....	180
Attention to the Child.....	181
Apnoea.....	185
The Puerperal Condition .....	188
The After Pains .....	191
Management of the Puerperal Condition .....	191
Management of the Breasts.....	196
Inflammation of the Nipple .....	197
Milk Abscess .....	198
Glandular Abscesses of the Mamma .....	199
Causes of Mammary Inflammations.....	200
Difficult Labors.....	207
Deformity of the Pelvis .....	210
Obliquities of the Uterus.....	216
Preternatural Firmness of the Membranes.....	217
Monsters .....	219
Difficulties Requiring Instrumental Delivery .....	220
Application of the Forceps while the Head is within the Pelvic Cavity, and before the Vertex has Turned toward the Symphysis.....	230
Application of the Forceps when the Occiput is to the Right Groin .....	231
Application of the Forceps when the Vertex is to the Right Sacro-Iliac Junction, and the Forehead to the Left Groin.....	231
Application when the Occiput is to the Left Sacro-Iliac Junction .....	233
Application of the Forceps at the Brim, or above the Superior Strait .....	233
Application of the Forceps in Breech or Footling Cases.....	235
The Vectis in Retention of the Head after Delivery of the Body.....	238
Embryotomy .....	238

Turning in Contracted Pelvis .....	248
Labor Rendered Difficult by Preternatural Presentations .....	249
General Management of Tedious and Instrumental Labors .....	264
Effects of Difficult Labor .....	265
Induction of Premature Labor .....	268
Mode of Operating .....	270
Gastro-Hysterotomy — Cæsarean Section .....	274
Difficult Labor from Complications .....	281
General Symptoms of Hemorrhage .....	282
Treatment of Uterine Hemorrhage .....	284
Development of the Fœtus .....	82
Anatomical Peculiarities of the Fœtus .....	84
Symptoms of Pregnancy .....	88
Enlargement of the Abdomen .....	92
Physical Signs .....	95
Placental, Uterine, or Abdominal Souffle .....	103
Duration of Gestation .....	104
Multiple Pregnancy .....	105
Superfœtation .....	107
General Pathology and Therapeutics of Pregnancy .....	107
General Therapeutics of Pregnancy .....	110
Extra Uterine Pregnancy .....	112
Unavoidable Hemorrhage; Placenta Prævia, or Placental Presentation .....	292
Hemorrhage after Expulsion of the Fœtus .....	302
Post-Partum Hemorrhage .....	306
Inversion of the Uterus Complicating Labor .....	308
Rupture of the Uterus .....	311
Rupture of the Bladder .....	316
Prolapse of the Cord .....	316
Puerperal Convulsions .....	321
Symptoms and time of occurrence .....	324
Treatment during a paroxysm .....	328
Treatment between paroxysms .....	328

# OBSTETRICS,

## REDUCED TO QUESTIONS AND ANSWERS.

---

### THE PELVIS.

QUESTION. What purpose does the pelvis subserve?

ANSWER. It contains, and gives attachment to the organs of generation.

Q. What is its support?

A. The legs below.

Q. To what does its position sometimes give rise?

A. Deformities of the pelvis.

Q. In what particulars does the female differ from the male pelvis?

A. The bones of the female pelvis are lighter, the angles less sharp and prominent, cavity not so deep, but broader; the curve in sacrum begins below the middle, while in male the curve begins at the promontory. The rami of the pubes and ischia flare outward in the female pelvis, as though molded on a rounded body.

Q. How is the pelvis divided for description?

A. Into true and false.

Q. Which is the more important to the accoucher?

A. The true pelvis.

Q. What is its upper boundary called?

A. The superior strait; or brim.

Q. To what is it likened?

A. To the heart of a playing card—the larger part looking backward.

Q. What and where is the spine of the ischium?

A. It is a lancet-shaped process of bone, projecting downward and inward, from the posterior border and internal surface of the body of each ischium.



FIG. 1. — Inner Surface of True Pelvis.

Q. How do these projections affect the size of the pelvis?

A. They diminish the transverse diameter from one-half to three-quarters of an inch.

Q. Where is the plane of the ischium?

A. Just above the spine begins a concave surface that extends obliquely downward and forward to the ramus of the ischium. The plane of the ischium corresponds to this surface.

Q. What is this plane called by some authors?

A. The anterior lateral inclined plane.

Q. Where is the great sacro-sciatic notch, and when filled with the soft parts, what is it called?

A. It lies behind and above the plane of the ischium, and when filled, is called the posterior lateral inclined plane.

Q. Is a part of each lateral inclined plane yielding?

A. A part of each plane is formed of yielding tissue instead of bony structure.

Q. What effect does this fact have on the oblique diameter of the pelvis during labor?

A. It may be increased by the yielding of some of these tissues.

Q. What does the spine of the ischium constitute, and what effect has it on the foetal head?

A. The spine of the ischium is the apex of a triangular space lying below and between the two lateral inclined planes, the first point of resistance to the head in sinking down toward the bottom of the pelvis, and beyond which it cannot pass without a change of position.

Q. What is the shape of the anterior surface of the sacrum, and where does the curvature begin?

A. It is concave from side to side, and entirely straight from the promontory to the lower end of the third bone. The curvature commences at the fourth bone, and continues almost in the segment of a circle to the coccyx, which is correspondingly bent forward, and thus extends the concavity.

Q. Where, then, does the hollow of the sacrum begin or end?

A. It begins below the third bone, and is made up of the curve of the last two bones of sacrum and the coccyx.

Q. What is the direction of the straight surface of the sacrum, and what does it form?

A. It is from the promontory down, and very decidedly backward, forming an inverted inclined plane, perpendicular to the axis of the plane of the superior strait.

Q. What constitutes the anterior wall of the pelvis?

A. The bodies of the pubic bones.

Q. What is the shape of this wall?

A. Smooth and concave from side to side.

Q. What is the direction of its plane?

A. Downward and backward in the general direction of the upper anterior surface of the sacrum.

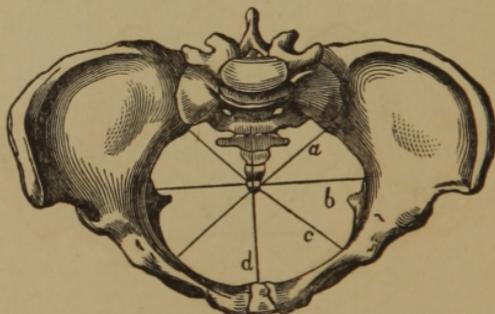


FIG. 2. — Measurements of Superior Strait.

Q. What direction does this give the head?

A. Directs it from the superior strait downward and backward into the hollow of the sacrum.

Q. What forms the superior strait?

A. The promontory of the sacrum behind, the linea-ileo-pectinea on the sides; in front, the upper border of the symphysis.

Q. How do authors usually measure the pelvis?

A. In three directions at each strait. The antero-posterior diameter of the superior strait extends from the promontory of the sacrum to the symphysis pubis, and measures four and a quarter to four and a half

inches. The transverse, or bilateral diameter, is represented by a line drawn between two most distant points of the ileo-pectineal lines at right angles to the antero-posterior chamber. It measures from five to five and a half inches. The oblique diameter is a line drawn from the sacro-iliac synchondrosis of one side to the ileo-pectineal eminence of the other. Its length is about four and a quarter inches.

Q. What is the average length of the three diameters?

A. Between four and three-quarters and five inches.

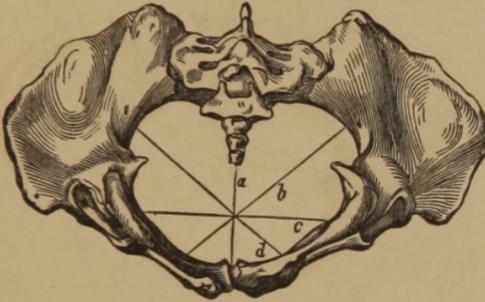


FIG. 3. — Measurements of Inferior Strait.

Q. What are the diameters of the inferior strait?

A. They are nearly equal, and in the dry pelvis measure four and a quarter inches.

Q. How are these diameters increased?

A. The antero-posterior diameter is increased probably half an inch by the extension of the coccyx. In labor, the soft parts, filling the great sacro-sciatic notch, yield to the pressure of the foetal head, and thus the oblique diameter is increased quarter of an inch or more.

Q. What bounds the inferior strait?

A. The tuberosity of the ischium on either side,

the point of the coccyx behind, the arch of the symphysis in front.

Q. What renders its outline irregular?

A. The tuberosities extend about quarter of an inch lower down than the coccyx, while the arch is much higher than either.

Q. What are the notches between the projections?

A. On either side the great sacro-sciatic notch; in front, the notch of the symphysis.

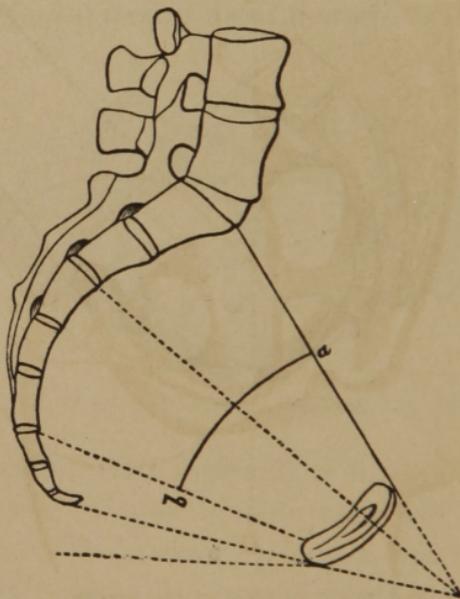


FIG. 4. — The Planes and Axis of the Pelvis.

Q. What represents the plane of the superior strait?

A. A line drawn from the summit of the sacrum to the top of the symphysis.

Q. What is its angle.

A. In the erect posture it forms an angle of  $55^{\circ}$  to  $60^{\circ}$  with the horizon.

Q. What represents the plane of the inferior strait?

A. A line drawn from the point of the coccyx to the lower border of the symphysis.

Q. What is its angle?

A. About  $10^{\circ}$  from the horizon.

Q. If the lines representing the two planes were continued would they meet?

A. They would cross about one and a half inches in front of symphysis.

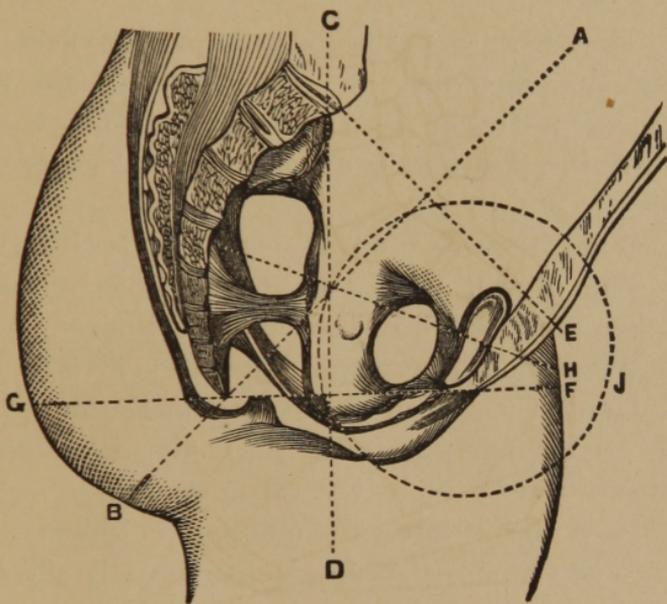


FIG. 5. — The Axis of the Straits.

Q. What is the axis of the superior strait?

A. A line drawn perpendicular to the center of the plane of the superior strait, which exactly corresponds in direction with the upper anterior surface of the sacrum.

Q. What is the axis of the inferior strait?

A. A line drawn perpendicular to the plane of the inferior strait.

Q. What is the axis of the cavity of the pelvis?

A. A line drawn equi-distant from the lateral walls of the pelvis corresponding with the curve of sacrum and coccyx.

Q. Does this line ever vary?

A. The head of the child varies this line opposite the end of the sacrum, by pressing the coccyx backward.

Q. What muscles project over the sides of the brim of the pelvis?

A. The iliacus and psoas-magnus, so as to lessen the bilateral diameter half an inch. During the erect posture, the bodies of these muscles are strong enough to modify the position in which the head enters the pelvis.

Q. What, then, is the best obstetrical position?

A. The dorsal, with the thighs flexed, because then these muscles are relaxed and yielding.

Q. Where does the rectum enter the pelvis?

A. Upon the left of the sacrum at the top of the pelvis. After fairly gaining the cavity it assumes a central position in the hollow of the sacrum.

Q. How does it affect the oblique diameter?

A. When collapsed it does not materially affect the oblique diameter; but when distended it shortens the diameter from one-half to one and a half inches.

Q. Which, then, is the longest diameter of the superior strait?

A. The right oblique.\*

\* Most modern writers designate the oblique diameters the right and left, according as the right or left sacro-iliac synchondrosis is its posterior termination.

Q. What effect has this long diameter upon the entrance of the head?

A. Being the longest diameter of the superior strait, it more frequently engages the long diameter of the head.

Q. How is the bladder changed in position by pregnancy?

A. It is drawn upward, and perhaps makes a very little difference in the length of the antero-posterior diameter.

Q. What yielding place may slightly increase the oblique diameter during the rotation of the head?

A. The obturator foramen covered by the obturator internus.

Q. What other soft tissues allow an increase of room?

A. The pyriformis muscle and the sacro-sciatic ligaments which close the great sacro-sciatic notch.

Q. How far does this yielding portion extend?

A. It extends as far as the inferior strait, and admits of a decided increase in the diagonal diameter of the cavity and strait.

Q. What muscles constitute the floor of the pelvis?

A. The large broad muscle, the levator ani, the coccygeus, transversus perinæi, the constrictor vaginae, and the sphincter ani close the lower opening of the pelvis in the virgin to within half an inch of the symphysis, making a firm floor on which the superadjacent viscera rest, and whose anterior portion is called the perineum, the raphé of which extends from the anterior margin of the anus to the commissure of the vulva.

Q. What is the length of the perineum?

A. Usually it measures one and a half inches; but in case of great distension during labor it will measure over five inches.

Q. Where does the pelvic axis terminate, and the perineal begin?

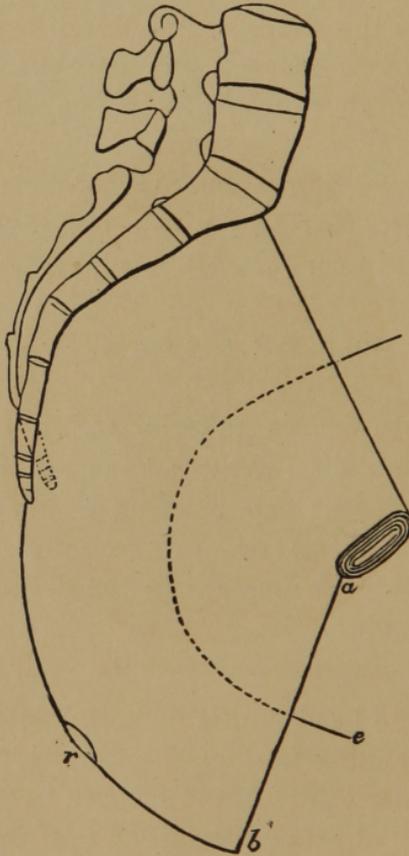


FIG. 6. — Shows Perineal Extension.

A. The axis of the pelvis terminates, technically, at the end of the coccyx, where the perineal axis begins.

Q. What renders this line variable?

A. The variable distensibility of the perineum.

## THE FŒTAL HEAD.

QUESTION. What is the largest, firmest and most frequently presenting part of the fœtus?

ANSWER. The head.

Q. What is the shape of the fœtal head?

A. Ovoid.

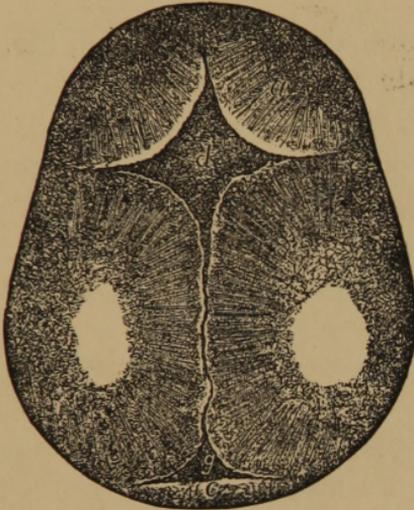


FIG. 7.—Fontanelles.

Q. Does the head admit of compression?

A. Yes; because the bones are remarkably flexible.

Q. How many important sutures are there?

A. Three; sagittal, coronal and lambdoidal.

Q. Where is the anterior fontanelle, and how is it formed?

A. Where the sagittal crosses the coronal there is a quadrangular open space, called the anterior fontanelle, formed by the deficiency of the angles of the two parietal and the two halves of the frontal bones.

Q. What is its size?

A. In many cases it is more than an inch long and three-quarters of an inch broad.

Q. Where is the posterior fontanelle?

A. At the posterior end of the sagittal suture.

Q. What is its shape and size?

A. It is triangular, and probably not more than half an inch from angle to angle.

Q. What is the condition of the sutures at this time?

A. The coronal and lambdoidal, like the sagittal, are both widely open.

Q. Do the fontanelles vary in size?

A. They vary according to the degree of ossification of the head. When ossification is slight, the anterior fontanelle may extend nearly to the nose. When the bones are well developed, the sutures and fontanelles are nearly closed.

Q. What makes the compression of the head possible?

A. The edges of the bones are smooth instead of serrated, and are attached to each other by the pericranium and dura mater. The bones are so widely separated, and the attachments so elastic, that their edges easily glide over each other.

Q. How do the sutures feel during compression?

A. Like what they really are, elevated ridges instead of depressed openings.

Q. What is the advantage of measuring the head?

A. By knowing its size, the obstetrician is enabled to decide upon the most favorable position in which the head can pass the pelvis.

Q. How many, and what, are the principal diameters?

A. Four; occipito-frontal, bi-parietal, occipito-mental and fronto-mental.

Q. Where, and how long, is the occipito-frontal?

A. It extends from the occipital protuberance to the frontal eminence, and measures from four and a half to five inches.

Q. Where, and how long, is the bi-parietal?

A. It extends from the most prominent part of one parietal bone to the same point on the opposite side. Its length is three and a half inches.

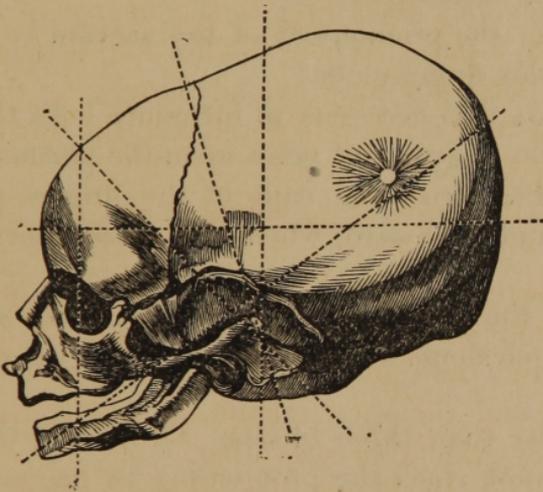


FIG. 8. — Diameters of the Fœtal Head.

Q. Where, and how long, is the occipito-mental?

A. It extends from the apex of the occiput to the point of the chin, and measures from five and a quarter to five and a half inches.

Q. Where, and how long, is the fronto-mental?

A. It extends from the summit of the forehead to the chin, and measures three and a quarter inches.

Q. What other diameters are sometimes given?

A. There are several; such as the trachelo-bregmatic, bi-mastoid, bi-malar, etc.

## MEASUREMENTS OF PELVIS.

QUESTION. What is the simplest way of measuring the pelvis of the living woman?

ANSWER. By means of the fingers.

Q. What diameter is most accurately measured by them?

A. The antero-posterior.

Q. Can the promontory of the sacrum be reached by the index finger alone?

A. No; it is necessary to introduce both the index and middle fingers, and press upon the perineum with considerable force, the ends of the fingers pointing upward and backward, when the promontory can be felt.

Q. If the promontory can be felt easily with the index finger alone, what should we judge the diameter to be?

A. Less than three inches. Ordinarily the index finger cannot reach the promontory by one and a half inches.

Q. Can the bi-lateral and oblique diameters be measured by the fingers?

A. Not unless the pelvis is much contracted.

NOTE.—For the description of various instruments for measuring the pelvis, called pelvimetres, the student is referred to the works on Obstetrics.

## THE FEMALE ORGANS OF GENERATION.

QUESTION. How are the organs of generation divided?

ANSWER. According to their situation, into external and internal.

Q. What are the external parts?

A. Mons veneris, external and internal labia, clitoris, hymen, and the meatus urinarius is sometimes included.

Q. What constitutes the pudenda?

A. The mons veneris and the closed external labia.

Q. What is the vulva.

A. The opening bounded by the labia majora.

Q. What is the mons veneris, and where situated?

A. It is a thick cushion of adipose and tough areolar tissue lying over the symphysis pubis.

Q. What is found on its surface?

A. Usually an abundance of hair and sebaceous follicles.

Q. Where are the labia majora?

A. The labia majora, or external labia spring from the mons veneris at its lower central point, and extend backward to the posterior commissure.

Q. What, and where, is the fourchette?

A. It is a fold of mucous membrane which extends between the labia majora at their junction with the perineum.

Q. What is the structure of the labia?

A. They are composed of connective and adipose tissue, and a few muscular fibres. Their external surface is continuous with the surrounding integument,

while the internal is continuous with the mucous membrane of the vagina. They are capable of great distension, and are analogous to the male scrotum.

Q. What, and where, is the clitoris?

A. It is a small, erectile body, consisting of a corpus cavernosum, situated about half an inch from the upper commissure of the labia, and is connected to the pubis and ischium by two crura on each side. It is the analogue of the male penis.

Q. What, and where, is the bulb of the vestibule?

A. It is a plexus of veins situated immediately at the junction of the labium major with the vagina on either side. It is about two inches long, and is connected to the clitoris by small veins.

Q. What, and where, are the labia minora?

A. They are two folds of mucous membrane which extend from the membranous fold of the clitoris known as the prepuce, and are lost about the middle of the inner surface of the labia majora.

Q. What is the vestibule?

A. The triangular, smooth space bounded at its apex by the clitoris, and on either side by the folds of the nymphæ or lesser labia.

Q. Where is the meatus urinarius?

A. At the base of the vestibule, immediately beneath the arch of the symphysis. It forms the outlet of the urethra.

Q. Where is the mouth of the vagina?

A. Immediately below the bulb which marks the opening of the urethra.

Q. How is the vagina closed in the virgin?

A. By the action of its sphincter.

Q. What, and where, is the hymen?

A. It is a crescentic fold of mucous membrane situated across the lower part of the vaginal opening,

Q. Is it always present in the virgin?

A. No; it is so easily ruptured that it is seldom found in the adult virgin. Though there are cases in which the hymen persists, even after child-birth, so that its presence is not always proof of chastity, nor its absence proof of unchastity.

Q. Does it vary in shape and size?

A. It takes on a variety of shapes, and may be large enough to entirely close the vaginal opening.

Q. What is the perineum?

A. It is that anterior portion of the floor of the pelvis, between the anus and posterior commissure.

Q. What are the *carunculæ myrtiformes*?

A. They are small fleshy tubercles, from two to five in number, situated around the vaginal orifice, and are apparently the remains of the ruptured hymen.

Q. Of what does the secreting apparatus of the external genitals consist?

A. Of various glands, sebaceous and mucous, the chief of which are the vulvo-vaginal.

Q. What, and where, are the vulvo-vaginal glands?

A. They consist of an almond-shaped conglomerate gland, situated on either side of the vaginal orifice, just posterior to the bulb of the clitoris; each gland has several secretory ducts, which unite in a single duct about half an inch long, opening at the edge of the hymen, or at the base of one of the *carunculæ*.

Q. Why is it important to know the exact location?

A. Because they sometimes become the seat of abscess from the obstruction of the duct, and the consequent accumulation of the secretion.

## THE VAGINA.

QUESTION. What is the vagina?

ANSWER. It is a conoidal-shaped canal, leading from the external to the internal generative organs, dilated above and narrow below.

Q. What is its length?

A. Its anterior wall is two and a half, and the posterior from four to five inches.

Q. What two causes make the anterior wall shorter than the posterior?

A. First, the cervix uteri is inserted into the vagina above at the expense of the anterior wall. Second, the anterior wall is shortened by the canal curving forward at the outlet.

Q. Of what is it composed?

A. Mucous, muscular and cellular coats; the cellular includes the strong, fibrous and loose vascular variety of tissue.

Q. What are the peculiarities of the mucous membrane?

A. It is covered with the tessellated variety of epithelium, and is destitute of glands.

Q. How is the mucous membrane arranged?

A. It is arranged in numerous folds, which start from longitudinal ridges on both the anterior and posterior walls, but more especially on the anterior wall, where the folds form prominent rugæ.

Q. What is the vascular arrangement?

A. The arrangement is such as to form an erectile tissue. The arteries form a net work around the tube, and finally end in a sub-mucous capillary plexus. The

twigs which supply the vaginal papillæ give origin to venous radicles, which unite into interlacing meshes, forming a well-marked venous plexus.

Q. Where is the vascular tissue most abundant?

A. At the vaginal orifice, especially about the urethra, where, sometimes, on account of the pressure above, the tissues become so congested as to simulate a tumor.

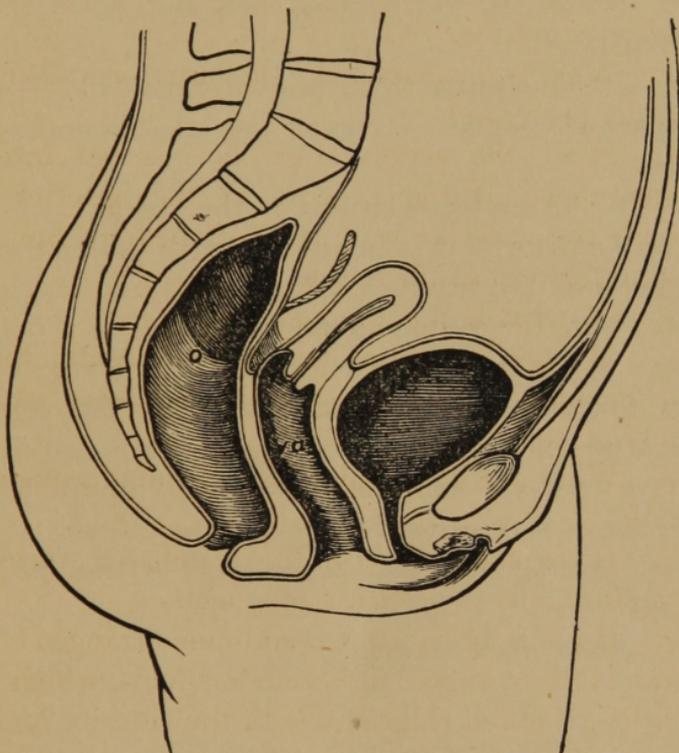


FIG. 9.—Relations of the Vagina.

Q. When is the vascular layer turgid, and the mucous membrane purple?

A. During pregnancy, menstruation, or congestion from any cause.

Q. What is the arrangement of the muscular coat?

A. The fibres which make up the muscular walls of the vaginal tube take a longitudinal direction; while those that lie in the sub-mucous tissue have also a circular and oblique layer, the latter connecting the other two. These are so strongly developed toward the vaginal opening as to keep the opposite walls in contact.

Q. Where is the fibrous coat, and what are its peculiarities?

A. It lies external to the muscular coat, and abounds in elastic elements. Its outer layer is likened to the dartos.

Q. What are the relations of the vagina?

A. Anteriorly, it is in relation with the face of the bladder and the urethra. Posteriorly, at its upper fourth, with the recto-vaginal cul-de-sac, or Douglas' pouch; at its middle part, with the rectum; at its lower fourth, with the perineum. At the sides it gives attachment to the broad ligaments above and to the levatores ani and the recto-vesical fascia below, while above it receives the neck of the uterus.

Q. How far does the cervix uteri extend into the vagina?

A. About half an inch.

## INTERNAL ORGANS.

QUESTION. What are the internal organs of generation?

ANSWER. The uterus, Fallopian tubes and ovaries.

## UTERUS.

QUESTION. What is the uterus?

ANSWER. It is a hollow, muscular organ, pyriform in shape, flattened from before backward, with the larger part, which consists of the body and its rounded fundus, extending upward and forward, while the cervix projects into the vagina.

Q. Where is it situated?

A. In the adult it is situated deeply in the pelvis, between the bladder in front and the rectum behind, while the fundus lies below the pelvic brim.

Q. Is the uterus fixed or movable?

A. It is decidedly movable, being hung in the pelvis by its ligaments without fixed support, save the vaginal tube upon which it rests.

Q. Do the surrounding viscera affect the position of the uterus?

A. They do; especially the bladder and the rectum, according as they are full or empty.

Q. What is its normal position?

A. The fundus points forward, and the cervix toward the junction of the sacrum and coccyx.

Q. How is the uterus divided?

A. For the sake of description, it is divided into the fundus, which is the rounded upper extremity, the body, which extends from the opening of the Fallopian tubes above to the cervix below, and the cervix, which projects into the vagina.

Q. How is the cavity of the uterus divided?

A. It is divided by the internal os, into the cavity of the body, and that of the cervix.

Q. What is the form of the cavity of the body?

A. The cavity of the body is triangular, the base of the triangle corresponding to a line joining the opening of the Fallopian tubes, while the apex is formed by the upper orifice of the cervix or the internal os. The anterior and posterior walls of the cavity are in contact.

Q. What is the form of the cervical canal?

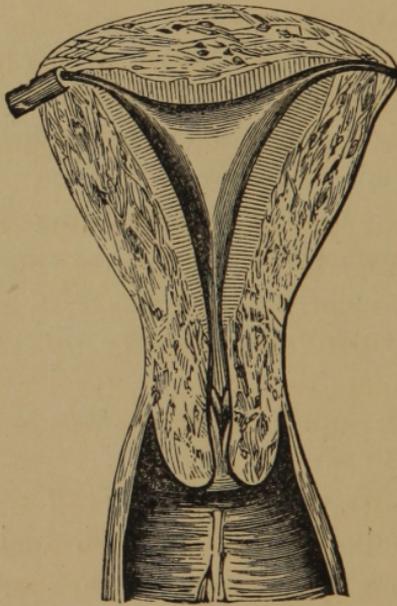


FIG. 10. — Showing Form of Body and Cervix.

A. It is spindle-shaped, narrow at the internal and the external os, and rather dilated between. It is also flattened from before backward, but its opposing surfaces are not so closely applied as are those of the body.

Q. What are the dimensions of the uterus?

A. It is from two and a half to three inches in length, about an inch thick, from before backward,

while its widest part measures from one to one and a half inches.

Q. What is its weight?

A. It weighs from three-quarters to two and a half ounces.

Q. What are some of the differences between the uterus of the virgin and that of the multipara?

A. In the multipara the organ and its cavity are larger, the cavity less triangular in shape, the fundus more elevated and less arched, while the constriction between the body and the cervix at the internal os is less marked than in the virgin.

Q. What are the peculiarities of the uterus in the aged multipara?

A. It is smaller than the virgin uterus, the original shape is changed, the cavity nearly obliterated, and the cervix grows shorter after the birth of each child, until the projection of the cervix into the vagina is changed to a funnel-shaped depression.

Q. What is the shape of the cervix uteri in the virgin?

A. It is conical, and has no well marked labia, although at its lower extremity the anterior portion projects more than the posterior. The opening between these projections, the os uteri, is lenticular in shape, and to the touch feels more like a mere depression in the tissues.

Q. What is the shape of the cervix in the multipara?

A. The cervix, at its lower end, is divided into two projections, called the labium anterior and posterior, of which the anterior is the longer, while the mouth increases in size, so as to admit the tip of the finger.

Q. What is this mouth sometimes called?

A. The os tinæ, on account of its resemblance to the mouth of a fish.

Q. Where in the pelvis is the cervix situated?

A. It is situated centrally with reference to the circumference of the pelvis, the lower end slightly below the level of the arch of the symphysis.

Q. What is the change in the multipara?

A. It is a little below this point.

Q. Of what does the uterus seem to be formed when viewed from a cut surface?

A. A confused assemblage of bundles of rudimentary fibres, while in places minute sinuses may be seen by the naked eye.

Q. What is the relation of the peritoneum to the bladder?

A. From the outer wall of the abdomen the peritoneum is reflected upon the bladder, passing over the top, around the body, and down behind.

Q. What is its relation to the uterus?

A. From the sides and posterior part of the bladder this membrane is continued upon the uterus, dipping down between the two rather below the junction of the body and cervix. It passes over the fundus, down the back of the uterus, upon the vagina for an inch and a quarter, or an inch and a half.

Q. What is the vesico-uterine ligament?

A. It is the fold of membrane passing from the bladder to the uterus. It serves to bind these two organs together.

Q. What are the broad ligaments?

A. From the central layer just described as investing the bladder, uterus and rectum, there is a broad

expansion that reaches from the sides of these viscera to the circumference of the pelvis, called the broad ligament of the uterus.

Q. Are these ordinarily sufficient to retain the uterus in position?

A. They are.

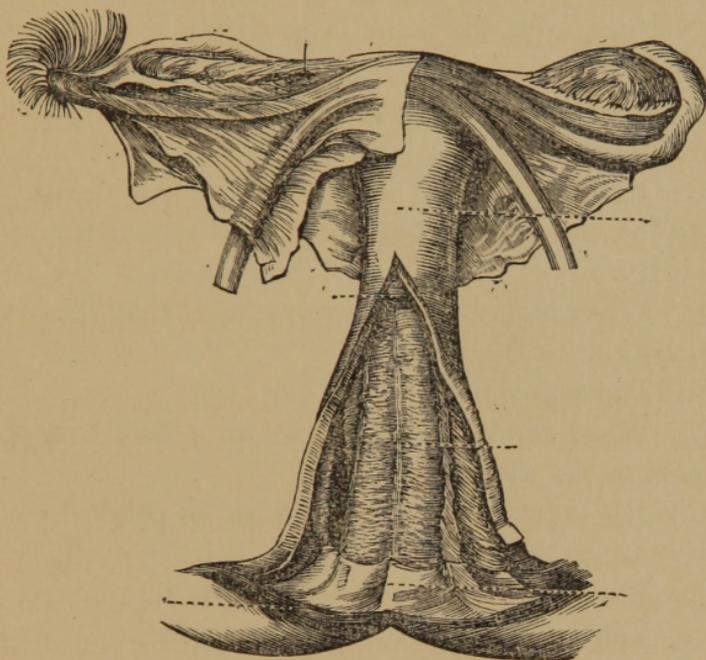


FIG. 11. — Uterus and Appendages.

Q. What makes the upper surface of the broad ligaments uneven?

A. The deep folds at the sides of the bladder, the elevation caused by the round ligaments, the Fallopian tubes, the ovary and its ligament; while behind these commences a depression which is continued down into the posterior part of the pelvis.

Q. What is the recto-vaginal cul-de-sac?

A. This last depression forms a deep pouch, the cul-de-sac of Douglas.

Q. What is its capacity?

A. Two ounces of fluid.

Q. To what part of the uterus does the peritoneum adhere most intimately?

A. The adhesion is very intimate before and behind, but laterally the adhesion is so slight it may be separated by the fingers.

Q. What kind of tissue strengthens the peritoneal ligaments?

A. Fibrous tissue. Tissues from the uterus pass out to the two layers at each side and strengthen them decidedly.

Q. What is probably the most important ligamentous material in the pelvis?

A. The connective tissue.

Q. What renders the vagina an efficient base of support to the uterus?

A. Its attachment with the solid pelvis by connective tissue.

Q. What, and where, are the round ligaments?

A. They are ligaments of fibro-cellular structure, containing blood vessels nerves and lymphatics, reaching from the anterior angle of the fundus uteri to the external abdominal ring.

Q. What is their office?

A. They keep the uterus from being pressed backward by the distended bladder.

Q. What is their covering?

A. The peritoneum.

## THE OVIDUCT, OR FALLOPIAN TUBE.

QUESTION. What is the oviduct, and what is its function?

ANSWER. The oviduct, or Fallopian tube, is the medium of communication between the uterus and ovary, serving at once as a viaduct for the sperm to the ovary, and for the ovum from the ovary to the uterine canal.

Q. How long is it?

A. From four to five inches.

Q. What is its shape and size?

A. It is trumpet-shaped, and hollow; the cavity of the small or uterine extremity measuring about the sixteenth of an inch in diameter. From this the tube gradually dilates, and near its ovarian extremity measures from a quarter to half an inch in diameter.

Q. What peculiarities at the ovarian extremity?

A. Immediately at the ovarian end it is constricted, so that its mouth is not more than quarter of an inch in diameter, and it is round. This extremity is surmounted by a fringe of digital-shaped projections, each half an inch in length, and the size of a small sewing needle, when turgid and erect.

Q. Is each digit of the fimbriæ entirely separate?

A. No; all are held together by delicate connective tissue.

Q. When are the fimbriæ erect?

A. Probably during the menstrual molimen.

Q. What does this insure?

A. The passage of the ovum into the oviduct.

Q. What is the composition of the oviduct?

A. The main substance is fibrous tissue, there being two sets of fibres; the longitudinal, which, for the most part, are external, and the circular, internal to this layer.

Q. What covers that?

A. The peritoneum.

Q. How is this tube lined?

A. With delicate mucous membrane.

Q. With what peculiar action is the Fallopian tube endowed?

A. It is supposed to be endowed with peristaltic action, the motion being toward the uterus.

Q. What are some of the anomalies of the Fallopian tubes?

A. They occasionally have two circles of fimbriæ, one at the ovarian extremity, the other near the uterus; or they may be within half an inch of each other. Wherever the second circle may be there is an opening into the tube, through which the ovum may pass should it come within reach of the fimbriæ. The uterine termination of the Fallopian tube is not always the same; sometimes it bifurcates within the wall of the uterus: one portion of the tube traversing the length of the side of the organ, terminating at the extremity of the cervix.

Q. What are the bodies of Rosenmüller?

A. These are a number of canaliculi that may be seen, by means of strong, transmitted light, in the broad ligament, near the outer end of the Fallopian tube.

Q. What is the lining of the uterus?

A. Mucous membrane.

Q. How does its surface look when magnified?

A. It is thickly covered with minute depressions.

Q. What are these depressions?

A. They are funnel-shaped openings to minute tubes that extend from the free surface through the mucous membrane, and are planted upon the fibrous structure of the uterus.

Q. How is the free surface of the mucous membrane covered?

A. It is covered with delicate epithelium, which dips down into the tubules above described.

Q. What, then, is the main substance of the mucous membrane?

A. It is formed of these follicles or tubes standing close together, kept so by attenuated connective tissue.

Q. How is it attached to the fibrous structure?

A. By connective tissue, the extremities of the tubes being slightly imbedded in its substance.

Q. Is the mucous membrane of uniform thickness?

A. No; it is one-third the thickness of the whole substance in the central parts of the anterior and posterior surfaces, where it is thickly plaited, and becomes thinner toward the Fallopian tube and cervical orifice.

Q. How does its cut surface appear?

A. It appears striated, on account of the arrangement of the tubules.

Q. How does the mucous membrane of the cervix differ from that of the body?

A. It is plicated, thinner, and is only specially peculiar in having large mucous follicles, called the glands of Naboth; also in the form of its epithelium.

Q. What did Naboth consider them?

A. He regarded them as the ova from which the embryo was produced.

Q. What is the arbor vitæ?

A. It is the penniform arrangement of the mucous membrane upon the anterior and posterior walls.

Q. What is the source of the cervical mucus secretion?

A. It is produced for the most part by the glands of Naboth.

Q. What is its character?

A. It is thick and glairy, with an alkaline reaction.

Q. What is the character of the vaginal secretion?

A. It is thinner, less tenacious, and acid in reaction.

Q. When both are superabundant and mixed, what is the appearance?

A. The secretion has a milky appearance, on account of the coagulation of the cervical mucus.

Q. What is the source of the uterine arteries?

A. They are derived from the ovarian and hypogastric arteries.

Q. What is their course, to reach the uterus?

A. They enter the sides of the organ between the layers of the broad ligaments, and pass downward toward the cervix, and upward to the fundus.

Q. How are they distributed to the substance of the uterus?

A. They penetrate its substance, divide into numerous branches, which are again subdivided, and after traversing the walls around, upward and downward, their capillary divisions penetrate the mucous membrane and distribute themselves about the tubules of that membrane.

Q. How are the veins disposed in the mucous membrane about the follicles?

A. Each tubule seems to be supplied with an arterial capillary that terminates at its epithelial extremity in a venous capillary.

Q. What does this become?

A. It joins other capillaries, and becomes a venous ramuscle.

Q. How are the veins formed?

A. The veins are formed at and beneath the mucous membrane, becoming larger by the accession of twigs, and, traversing the uterine substance, they emerge from the sides as uterine veins.

Q. What is their peculiarity in the uterine substance?

A. In the substance of the uterus they are sinuses, or channels lined with the inner membrane of the veins without the external coats.

Q. What system of nerves supplies the cervix?

A. The spinal system.

Q. How is the body chiefly supplied?

A. By the sympathetic system.

Q. How is the nerve supply distributed on the uterus?

A. That portion below the vaginal attachment seems to have but little nervous endowment, while that above that attachment is more abundantly supplied.

Q. What is the source of the sympathetic nerves supplying the uterus?

A. They are derived from the renal and hypogastric plexuses, with some branches from the sacral.

Q. Are there any lymphatics here?

A. The lymphatics are numerous, and proceed to the lumbar and renal lymphatics.

Q. Is the uterus ever wanting?

A. It is occasionally wanting; at other times rudimentary and incapable of function.

Q. What are the occasional anomalies of its structure?

A. Sometimes it is double, having a partition in the center, with two cavities and two mouths. Or there may be two cavities emptying into one cervical canal. The partition may extend the whole length of the vagina.

## THE OVARIES.

QUESTION. Why are the ovaries sometimes called the testicles of the female?

ANSWER. Because they are the source of the germ furnished by the female, to be fecundated by the material received from the male testes.

Q. Of what does their bulk consist?

A. It consists of stroma, or parenchymatous substance, formed by the interlacement of muscular fibres.

Q. What does the intertwining of these fibres form?

A. They form interstitial cells, likened to spongy substance.

Q. Is this stroma of the same density and color throughout?

A. The outer portion is of a lighter color, and firmer in consistency than the central part, which is darker in color, and more loose and spongy in texture.

Q. What is the thickness of the outer layer?

A. One twenty-fifth of an inch.

Q. What does it contain?

A. The rudiments of the ova.

Q. What is it named?

A. The oviginous portion.

Q. How many germs is each ovary supposed to possess?

A. Over three hundred thousand.

Q. How is the central portion regarded?

A. Merely as the core, around which the fruitful portion is spread.

Q. What investment has the stroma?

A. It is enveloped in a fibrous capsule, which contains and gives shape to the organ.

Q. What covering is outside of that?

A. It is invested by peritoneum, except at its lower edge.

Q. What is the source of the fibres that run through the organ?

A. They are derived from the elastic fibrous capsule.

Q. What are the arteries called?

A. They are called the ovarian arteries, and correspond to the spermatic in the male.

Q. Where do they enter the ovary?

A. At the edge, where the peritoneal covering meets.

Q. What is their course?

A. They pursue a tortuous course, the twigs supplying the oviginous portion.

Q. What do the veins form?

A. After emerging from the substance, they form a plexus in the broad ligament.

Q. Where are the ovaries situated?

A. Within the broad ligament on either side of the uterus. (See Fig. 11.)

Q. Where are they situated during foetal life and early infancy?

A. Entirely above the pelvic cavity.

Q. Just where are they at puberty?

A. They are very nearly in contact with the sides of the pelvis, just anterior to the sacro-iliac junction, and slightly below the brim of the pelvis.

Q. Where are they during pregnancy?

A. They are elevated with the uterus, and are closely applied to its sides.

Q. What is their shape?

A. They are somewhat oval, and flattened, the lower edge thinner than the upper.

Q. How does the size of the ovaries differ in the different periods of life?

A. They are comparatively large in the foetus and young infant, do not grow much in children, become larger at puberty, and remain so during the child-bearing period; while the senile ovary is so much atrophied as to be scarcely recognizable.

Q. What are the ovarian ligaments?

A. The ovaries are bound to the uterus by strong fibrous cords, called the ovarian ligaments.

Q. How are they retained in their places?

A. Partly by the ovarian ligaments, but mostly by the folds of the broad ligaments.

Q. How are they attached to the Fallopian tube?

A. They adhere to a very small part of the fimbriated extremity of the Fallopian tube.

## OVISACS OR GRAAFIAN VESICLES.

QUESTION. What change occurs in the surface of the ovaries at puberty?

ANSWER. The ovaries, instead of being smooth, have some round elevations on the surface.

Q. What are these elevations?

A. These correspond to the ovisacs; they are vesicles filled with transparent, tenacious fluid.

Q. How many are usually visible?

A. From twelve to twenty in each organ, varying in size from a pin head to that of a pea.

## ANATOMY OF THE OVISACS.

QUESTION. What is the ovisac?

ANSWER. It is a fibrous capsule containing the ovum and associated material.

Q. To what is its wall compared?

A. To the fibrous stroma of the ovary.

Q. What is the granular membrane, and what are its properties?

A. On the inner surface of this envelope is a layer of granular matter, thicker than the investing capsule itself, called the granular membrane.

Q. What is the proligerous disc?

A. It is a mammary-shaped accumulation of granules at the side of the ovisac nearest the ovary, and is about the fourth of the thickness of the cavity.

Q. Where is the ovum?

A. Within this accumulation of granules.

Q. What occupies the interior of the ovisac?

A. It is filled with a limpid, viscid fluid, in which are floating granules, like those forming the granular membrane.

## THE OVUM.

QUESTION. How large is the ovum?

ANSWER. It is about one-tenth of a line in diameter.

Q. What is its appearance under the microscope?

A. It has the appearance of a round ring; the outside is a white "pellucid zone," very notable in thickness.

Q. To what is this likened by some?

A. The membrane inside the white of an egg; others regard it as the albumen.

Q. What is it?

A. It is probably composed of both these different parts.

Q. What is the essential character of the fluid inside the ring?

A. It is the same as that contained in the yolk of the egg.

Q. Where is the germinal vesicle found, and what is its size?

A. Near the ring, at one side or the other, within the yolk, may be seen a bright, transparent globule, the germinal vesicle, which is about one-sixtieth of a line in diameter.

Q. What is the germinal spot?

A. Inside the germinal vesicle again may be seen a spot or point, apparently granular in form, called the germinal spot.

Q. What adheres to the ovum, and is discharged with it?

A. The granules surrounding it, forming the pro-ligerous disc.

## OVULATION.

QUESTION. By what means does the ovisac increase in size?

ANSWER. It continues to grow by an increase of its contents, until it projects from the surface of the ovary very prominently.

Q. How large does it become?

A. Half as large as the ovary.

Q. What occurs finally as a consequence of the increase in size?

A. The ovisac bursts, and the ovum escapes on the surface of the ovary, within the grasp of the fimbriated extremity of the Fallopian tube.

Q. What is the condition of the ovary at the time of rupture?

A. The ovary is very much enlarged.

Q. What takes place in the ovisac and ovary after the rupture?

A. The ovisac collapses to about half its former size, and the ovary also decreases in a few hours.

Q. How long, usually, after the rupture of one ovisac, before another is ruptured?

A. At the end of a month.

Q. What is the condition of the genital organs during this maturing of the ovum and rupture of the sac?

A. There is a universal turgescence; from the

greater labia to the fringes of the Fallopian tubes; the organs are engorged with blood.

Q. What is the appearance of the mucous membrane of these parts?

A. It is livid, and moistened with a superfluity of mucus.

Q. What effect has this congestion on the uterus and its mucous membrane?

A. It increases the size of the uterus, and renders it more soft to the touch, while the mucous membrane is thrown into folds and crowded together, so as to fill up its cavity.

Q. Which diameter is the more increased?

A. The antero-posterior.

Q. How does this turgescence affect the capillaries of the uterine mucous membrane?

A. They become so distended with blood as to be visible through the delicate epithelium.

Q. How does this forcible distension terminate finally?

A. It becomes so great that microscopic fissures make their appearance in the walls of the capillaries, through which blood escapes, and after awhile there is a copious effusion, announcing the appearance of the menses.

Q. Is the congestion then ended?

A. The congestion gradually subsides, the organs resume their natural size, and recover their wonted hue.

Q. What is the menstrual discharge evidence of?

A. It is an evidence of the discharge of an ovum, which is susceptible of fecundation.

Q. Does a discharge of blood invariably accompany ovulation?

A. No.

Q. On the other hand, can a woman menstruate who does not ovulate?

A. No; and a discharge of blood prompted by any other cause is not menstruation.

Q. What is the corpus luteum?

A. It is the collapsed ovisac.

Q. Why so called?

A. Because of its yellowish color.

Q. What marks the place of the corpus luteum a month after rupture of the ovisac?

A. A flattened, puckered cicatrix.

Q. What does the ruptured ovisac become if the ovum is fecundated?

A. It increases in size for several weeks, and is called the corpus luteum of pregnancy.

Q. What effect has the fecundation on all the generative organs?

A. There is an increase in vascularity, especially in the uterus and ovaries.

Q. How soon is the cicatrix formed in the corpus luteum of pregnancy?

A. At about the fortieth day.

Q. What size is the corpus luteum in pregnancy at six weeks?

A. Nearly an inch long, and five-eighths wide.

Q. When does it begin to diminish in size?

A. About the end of the third month.

Q. Is the process of retrogression uniform?

A. No; in some it disappears before labor, in others

remains of it may be discovered several months after labor.

Q. At what age does menstruation begin?

A. From the age of ten to twenty years.

Q. What is the average in temperate climates?

A. Fifteen years.

Q. Does it recur regularly each month?

A. The periodicity is not always completely established at first; it may intermit for an indefinite period.

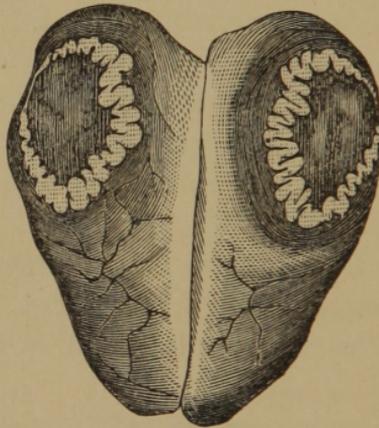


FIG. 12. — Corpus Luteum of Pregnancy.

Q. On what physical conditions does it seem to depend?

A. Upon the stature and organization and the vital energies.

Q. Does the phenomena occur monthly in all women?

A. No; it occurs in some every three weeks, in others every thirty days, and even longer periods.

Q. At what age does ovulation cease?

A. Usually at the age of forty-five, in this climate.

Q. Is the cessation always sudden and complete?

A. Sometimes; generally, however, there are intermissions for some months, and then a recurrence before the final cessation.

Q. What is the quantity of the average menstrual discharge?

A. The average is eight ounces.

Q. How can we determine whether the amount is normal?

A. Women generally wear folded napkins applied to the vulva, replacing them when saturated. One of these is equal to the absorption of an ounce of menstrual fluid.

Q. What gives the discharge its stringy appearance?

A. The large admixture of mucus, which is especially present during the first and last hours of the flow.

Q. What renders the blood non-coagulable when in small amount?

A. The acid secretion of the vagina.

Q. What is the probable reason of its very dark color?

A. The oxygenation is prevented by the impervious mucus.

## GENERATION.

QUESTION. How is generation effected?

ANSWER. By the joint action of the two sexes.

Q. What does the female furnish?

A. The germinal ovum and material — the nidus for its development.

Q. What part does the male supply?

A. The fructifying principle.

Q. What is conception?

A. The union of the two materials thus furnished.

Q. Is it necessary that the semen should be thrown into the os uteri?

A. It is enough that a small quantity be deposited on the mucous membrane of the vagina.

Q. By what force are the spermatozoids conveyed to the point of contact?

A. By their own action they diffuse themselves over the mucous membrane in every direction, and by the vermicular action of the cervical canal.

Q. Do the spermatozoids have independent action?

A. They do.

Q. Where does the point of contact seem to be?

A. Whether contact occurs on the ovary always, or in the ovarian tube, or in the uterus, is a matter of conjecture.\*

Q. Is the nature of contact between the ovum and spermatozoids understood?

A. It is a fruitful theme for speculation.

Q. Can this contact be accomplished immediately?

A. No; it does not take place during sexual connection, but some time afterward.

Q. What time, in relation to menstruation, does conception most probably occur?

A. It is most probable while the ovum is in the tube, after it has been discharged from the ovisac — the first eight or ten days. Some women are susceptible at other times.

\* Probably oftener in the ovary.—*Byford*. Dr. Ritchie, of Glasgow, with modern physiologists, believes the uterus itself the normal seat of conception.

## PREGNANCY.

QUESTION. When is a woman said to be pregnant?

ANSWER. After she has conceived.

Q. What changes are then observed in the organs of generation?

A. If the menstrual congestion has subsided, the vessels are again injected, and all the organs are rendered turgid with blood.

Q. Where is the turgescence greatest?

A. In that part of the uterus to which attachments are formed.

Q. How long does this congestion last?

A. It does not subside during the whole term of gestation, but increases.

Q. What diameter of the uterus is affected first?

A. The antero-posterior.

Q. What are its diameters at the beginning of the fourth month?

A. Three inches and three-quarters in all directions.

Q. What is its size at the sixth month?

A. It is eight and three-quarter inches long, six and one-quarter wide and thick.

Q. What are its diameters at the ninth month?

A. Twelve inches, or more, in length, nine inches wide, and not quite so thick.

Q. Where is the origin of the Fallopian tube?

A. At about the center of the unimpregnated organ, but very much behind that point at the end of gestation.

Q. Does the uterus change its position when pregnancy occurs?

A. It settles below its ordinary position, so that it rests on the perineum at the second month.

Q. What direction does the fundus usually take?

A. It is generally inclined backward toward the sacrum.

Q. What is the relative position of the fundus and the cervix at the end of the fourth month?

A. The fundus is again at the superior strait, while the cervix still rests on the perineum.

Q. What shape does the uterus now assume that facilitates ascension?

A. Looked at from above, it appears wedge shaped, the fundus representing the large end, and the cervix the small end, of the wedge.

Q. What is the position of the cervix at the seventh month?

A. It is almost, if not quite, elevated to the superior strait.

Q. How does the ascent sometimes begin?

A. It sometimes begins with a jerk, so that the patient is sensible of it.

Q. How may this sudden elevation be accounted for?

A. By supposing there is some crowding of the uterus for awhile until by some movement, as in stooping, the pressure is suddenly removed, and the uterus bounds upward.

Q. When is the lower part of the uterus developed?

A. During the eighth and ninth months.

Q. What forces urge the uterus downward?

A. The crowded viscera, abdominal muscles and diaphragm.

Q. Where ought the cervix to be when labor begins?

A. At the point it occupied before conception.

Q. What is the relation of the fundus to the intestines?

A. It passes in front of the intestines, resting on the recti muscles.

Q. What causes this anterior inclination of the fundus?

A. This direction is imparted to it by the promontory of the sacrum and the anterior convexity of the lumbar portion of the spinal column.

Q. Is the increase in size of the uterus a true hypertrophy?

A. It is proved so by examination and comparison of its tissues at different stages of development.

Q. What change takes place in the uterus as to thickness and color?

A. The walls of the body retain about the same thickness, but differ in density, while the color is darker.

Q. What change do the glands of the cervix undergo?

A. They are enlarged and secrete more mucus.

Q. During what period is the cervix developed?

A. It seems to be almost wholly developed during the ninth month.

Q. Do authors agree on that question?

A. No; some believe the cervix does not partake of the hypertrophy at all, but remains undeveloped until labor begins.

Q. What is the condition of the walls of the cervix at the end of gestation?

A. Its walls are not more than one-half the thickness of the body and fundus, and sometimes so thin as to feel like membrane.

Q. Is the change in the cervix hypertrophy?

A. It is partly distended, as well as hypertrophied, its contractility being less than that of the body, while it is less vascular.

Q. What forces aid in producing this distension?

A. The pressure exerted above by the fibres of the fundus, seconded by the abdominal and diaphragmatic muscles.

Q. What is the first change apparent in the cervix?

A. It becomes enlarged by congestion, and the os becomes less regular, is puckered and enlarged.

Q. What appearance have the labia?

A. They are tumid, soft, livid in color, and in most cases there is a development of mucus follicles, giving the idea of minute fungi.

Q. At what period has the softening affected the whole lower end of the cervix?

A. According to Cazeaux, at the fifth month.

Q. When has it pervaded the whole uterine neck?

A. The softening extends upward during the last three months, and at the end of pregnancy pervades the whole cervical substance.

Q. What changes are wrought in the cavity of the cervix after the seventh month?

A. It is gradually enlarged, so the finger may be inserted into it, and we may reach the membrane in this way shortly before labor.

Q. What difference in the changes of the cervix between the multipara and the primipara?

A. The cervix of the multipara is broader, more

irregular and shorter, while the cavity becomes larger than in the primipara.

Q. When does the constriction at the upper end of the cervix give way?

A. A fortnight before labor the internal os gives way, and the cavity of the cervix rapidly increases.

Q. What, then, does the lower portion of the neck become?

A. A flattened ring at the os uteri, into which the finger will sink, as in a mere depression.

Q. How is the shortening of the cavity of the cervix effected?

A. During the ninth month it is shortened by the approximation of its two orifices, by the upper end being pressed downward, as before explained.

## MODIFICATION OF OTHER TEXTURES.

QUESTION. What effect does the development of the uterus have on its peritoneal covering?

ANSWER. It is increased in quantity as fast as the uterus enlarges.

Q. Is the peritoneum changed in character?

A. No; it is just as thick, elastic and delicate as before.

Q. What change is produced in the peritoneal duplicatures?

A. As the uterus rises, the broad ligaments are unfolded, and lie spread out on the sides of that organ, with the Fallopian tubes and ovaries pressed on the sides.

Q. What is the office of the broad ligaments now?

A. They are hypertrophied, so as to reach from the brim of the pelvis to the fundus uteri, to steady that organ, as before impregnation.

Q. How is the mucous lining of the body of the uterus changed?

A. It very soon doubles its ordinary thickness, its follicles increase in size, and the secretion is more abundant.

Q. What prevents the ovum from falling to the cervix when it enters from a Fallopian tube?

A. The mucous membrane is crowded with folds on the anterior and posterior walls, in such a manner that the ovum is almost sure to fall into a sulcus at the side.

Q. Are the glands of the mucous membrane changed?

A. A magnifying glass reveals the open mouths of follicular lacunæ, scarcely discoverable before pregnancy.

Q. What is the purpose of these changes?

A. For the formation of the decidua.

Q. What change occurs in the mucous membrane when the ovum arrives in the cavity?

A. The tumefaction of the mucous membrane increases at the point of arrest, and the folds crowd upon each other around the ovum.

Q. What do these folds form?

A. After a time, the folds most closely pressed together around the ovum contract adhesions, and thus form an adventitious cavity.

Q. What change occurs in the mucous membrane not engaged in forming this cavity?

A. It becomes more smooth, its tumefaction some-

what subsides, but it is still thicker than before pregnancy.

Q. When does the ovum and its capsule fill the uterine cavity?

A. At the middle of the second, or beginning of the third month it comes in contact with the opposite side, and soon after entirely fills the uterine cavity.

Q. As the ovum enlarges, what effect is produced on its enveloping mucous membrane?

A. During the growth of the ovum, the part of the mucous membrane which embraces it becomes thin and non-vascular, and is called the decidua reflexa.

Q. What effect has this pressure, caused by the stretching of the membrane, on the glands and vessels of the membrane?

A. They are atrophied by it.

Q. What is the doctrine of Prof. Ercolani, of Bologna, as to the formation of the decidua?

A. He believes it to be the product of a secretion poured out of the reticular glands.

Q. What change is produced in the fibrous tissue of the uterus during pregnancy?

A. The fibres are developed into well-defined and very large muscular fibres, capable of very efficient action.

Q. How many layers of muscular fibres are there in the uterus?

A. According to Madame Boivin there are two, external and internal; but M. Hélie adds a third, a middle layer.

Q. What is the arrangement of the outer layer?

A. It has both transverse and longitudinal fibres.

Q. Describe the longitudinal fasciculus.

A. A very strong band of fibres extends from the cervix, on the central line of the anterior surface up to the fundus, where it spreads into a broad band that covers the whole fundus, and then passes down the center of the posterior surface to the cervix behind.

Q. With what does it blend in its course?

A. With the the transverse fibres.

Q. How are the transverse fibres arranged?

A. Like the rays of a fan, the large end or base at the center, and the apex at the sides.

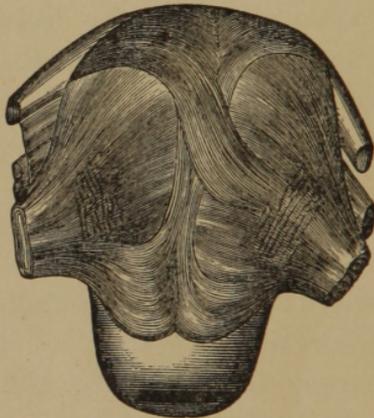


FIG. 13. — Muscular Fibres of Uterus.

Q. How extensive is this radiating arrangement?

A. The base of this radiating arrangement extends from one end of the body of the uterus to the other.

Q. What is the course and character of the outer layer in the cervix?

A. The fibres are arranged circularly, and are not very thick or strong.

Q. What is the arrangement of the internal layer of fibres at the fundus?

A. One portion of it is disposed around the open-

ing to the Fallopian tube, on either side, in circles. The circles grow larger as they recede from the opening, until they intermingle at the central lines.

Q. What is the course of these fibres on the lower part of the body and cervix?

A. Their course is pretty uniformly circular.

Q. What peculiar arrangement of the muscular fibres form the internal os uteri?

A. At the junction, between the body and neck, the transverse fibres form a projecting ridge, which makes the internal os uteri.

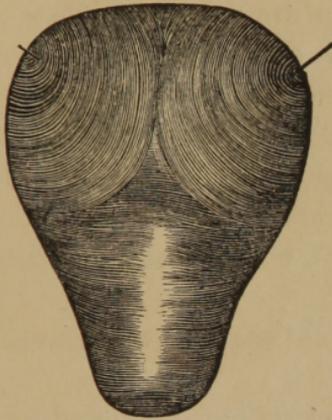


FIG. 14. — Middle Layer.

Q. Of what is the middle layer composed?

A. It is formed of bands of variable width running obliquely, transversely and longitudinally.

Q. In what layer are the blood vessels situated?

A. In the middle layer.

Q. What arrangement have the fibres about the blood vessels?

A. They form loops, rings and orifices about the

veins and sinuses, so that each vessel traverses true contractile canals.

Q. Are the vessels changed in size?

A. They are enlarged and hypertrophied as utero-gestation advances.

Q. Where do the arteries begin to enlarge?

A. At the place of entrance.

Q. Where are they distributed?

A. They ramify in the muscular structure, dividing as they go into smaller branches.

Q. Where do they terminate?

A. They terminate in capillaries in the muscular structure, and on the mucous surface.

Q. Into what do the capillaries terminate?

A. They terminate in sinuses grooved through the middle layer of muscular tissue, which open into the uterine veins at the surface of the sides, between the folds of the broad ligaments.

Q. What do the capillaries become in the placental region?

A. They doubtless become sinuses at the mucous surface.

Q. Do the nerves change also during gestation?

A. The nerves seem to undergo just as great hypertrophy as the rest of the uterine tissue.

Q. Why is the body of the uterus not rendered more sensitive by pregnancy?

A. Because it is being mainly supplied with branches from the sympathetic nerves, which are not sensitive to external impressions.

Q. Why is the cervix rendered more sensitive by pregnancy?

A. Because its supply is mostly from the spinal nerves.

Q. How does irritation of the cervix act on the body?

A. It acts more readily, perhaps, than if made directly on the body.

Q. What property does uterine muscular tissue possess, that renders it able to subserve the purpose it does at the end of gestation?

A. It possesses, besides the normal quality of clonic or intermittent contractility, a property called tonic contractility, which maintains the shortened condition of the muscle after intermittent contractions have ceased.

Q. Is this tonic contraction painful?

A. It is without sensation.

Q. What seems to be the office of this elastic contractility after the child is expelled?

A. It retains the lessened size of the uterine cavity.

Q. How does it prevent hemorrhage after the expulsion of the placenta?

A. The elastic contraction closes the mouths of the bleeding vessels.

Q. What does it finally initiate?

A. Involution.

Q. Is there always the requisite correspondence between these contractile forces?

A. Not always; sometimes a rapid labor is followed by a relaxed state of the uterus, or *vice versa*.

Q. Is this elastic contraction ever sufficient to expel the fœtus without the aid of the intermittent or clonic contraction?

A. Sometimes it is sufficient; hence, we hear of

women being delivered during sleep, or even in a waking state, without pain.

Q. How do contractions occur at term?

A. They occur spontaneously; they are elastic at first, which generally partially dilates the os uteri before the intermittent contraction commences.

Q. What agencies will excite and increase contractions?

A. Electricity, certain drugs, irritation of the cervix, nervous excitement and bodily agitation.

Q. What drugs tend mostly to control them?

A. Anodynes, especially opium, in the earlier months of utero gestation.

Q. What are some of the conditions that impair contractility?

A. It may be impaired by over distention, by presence of twins, a superabundance of liquor amnii, or sanguineous effusion.

Q. What is the relation of the uterus to the other organs during the first weeks of pregnancy?

A. At first it is within the pelvis, the bladder before and overlying it, the intestines on and around the fundus, the ovaries and Fallopian tubes above.

Q. As the uterus enlarges, what relation does it assume toward the same and other organs?

A. It intrudes into the abdominal cavity, carrying the bladder, ovaries and tubes up with it, while the intestines are pressed behind the uterus.

Q. What important organs does it finally embarrass?

A. In its extreme ascent it presses the liver, spleen and stomach against the diaphragm with much force.

Q. What change is produced in the appendages of the uterus?

A. The broad ligaments are increased in length, the round ligaments in length and size, and the ovaries and their ligaments hypertrophied.

Q. When, during gestation, is the vagina shortest?

A. At the fourth month.

Q. When is it longest?

A. At the seventh month.

Q. What is the condition of the vagina during gestation?

A. It is dilated, especially the upper portion; the circulation is greatly increased, the glands enlarged, and secretion abundant.

Q. What causes its folds to sometimes protrude between the labia?

A. From pressure during the first six months the erectile tissue is strongly injected, and occasionally protrudes between the labia.

Q. How does enlargement of the uterus cause varicose veins and œdema of lower extremities?

A. It presses on the vessels passing through the pelvis. The veins from the lower extremities are pressed so as to retard the upward current, and the blood accumulates in the capillaries until the serum exudes through their parietes.

Q. What are the causes of derangements in more remote organs?

A. As the uterus rises out of the pelvis it presses the internal iliac and aortic arteries, and, later, presses the smaller arteries, the hepatic, mesenteric and gastric. This causes more blood to be sent through the carotid and vertebral arteries, inducing unusual reple-

tion of the vessels of the brain, and such consequences as headache, vertigo and apoplexy, and acts as a predisposing cause of puerperal convulsions.

Q. On what organs are effects produced that are liable to prove most disastrous?

A. Pathologists are pretty well agreed that uremia is one, if not the most efficient, predisposing cause of puerperal convulsions, and that it is brought about by pressure on the vessels of the kidneys.

Q. What condition of the blood is produced by this pressure?

A. The urea and other excrementitious substances are imperfectly eliminated from the blood, while the serum containing the albumen is pressed through the walls of the capillary vessels into the pelvis of the kidneys, and appears in the urine.

Q. How does this act to cause convulsions?

A. According to Frerichs, the urea is changed into carbonate of ammonia, and, circulating through the nervous centres, increases their excitability, predisposing to eclampsia.

Q. How are varices about the genital organs produced?

A. By the pressure on the vessels of these parts.

Q. What causes constipation?

A. It is caused partly by the pressure obstructing the rectum, but mainly by retarding the circulation in all the abdominal viscera, and diminishing the secretion in them.

Q. What condition would all this array of complications produce?

A. General anæmia, with local hyperæmia of the head and upper part of the body and extremities.

Q. What effect has the great distension on the abdominal walls?

A. The aponeurotic tendons sometimes yield to the pressure, permitting the occurrence of hernia in different parts of the abdomen.

Q. What condition sometimes follows separation of the recti muscles?

A. Uterine hernia.

### CHANGES IN THE OVUM.

QUESTION. What changes are first observed in the ovum after it has escaped from the ovisac?

ANSWER. The germinal vesicle and germinal spot both disappear, together with the collection of granules at the center of the ovum.

Q. What change is noticed in the vitellus?

A. The vitellus, very soon after the ovum is received into the tube, becomes more compact and consistent, so as not to entirely fill the vitelline membrane.

Q. What occurs to the transparent fluid of the vitellus?

A. The fluid, instead of being distributed throughout the substance of the vitellus, is pressed out until it is upon the outer surface, and by the time the ovum arrives at the uterine extremity of the tube, is collected into a small transparent globule, between the vitellus and vitelline membrane.

Q. What does this globule become after fecundation?

A. It becomes the starting point of embryonic development.

Q. How large is it, and what is it called?

A. It is about one-five-hundredth of an inch in diameter, and is called the polar globule.

Q. What change does the vitellus undergo while passing through the tube?

A. First, a bright transparent spot is seen in the center of the ovum, which grows by crowding out the globule.

Q. What is its name and composition?

A. It is called the vitelline nucleus, is composed of a thick fluid, not surrounded by any membranous covering.

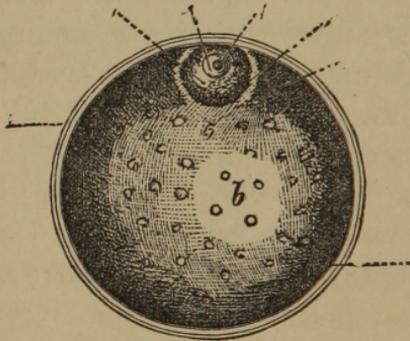


FIG. 15.—Changes in the Ovum.

Q. What is segmentation?

A. This nucleus elongates, a stricture appears at its middle, which finally divides it, and, by an extension of this same structure, the vitellus is also divided into two parts, each part containing half the vitelline nucleus. This process is repeated, the two become four, and the four eight, until the whole cavity within the vitelline membrane is filled with vesicles, each containing a portion of the vitelline nucleus.

Q. What time is required for the ovum to travel through the tube?

A. From twelve to fifteen days.

Q. What has become of the granules that entered the tube with the ovum?

A. They have disappeared; probably have been absorbed as nourishment, as the ovum is decidedly increased in size.

Q. When is segmentation complete?

A. By the time the ovum reaches the uterus.

Q. What appearance does the external layer of cells assume?

A. The cells nearest the investing membrane of the vitellus form a mulberry-like appearance, each sphere showing its prominent external half, while the depression between it and its neighbor is plainly seen.

Q. What occurs a little later?

A. The row of external cells coalesce in such a way as to form a membrane.

Q. What is this membrane called?

A. The blastodermic membrane.

Q. If we examine the ovum now with sufficient magnifying power, what do we find?

A. Externally the albuminous layer, the zonum pellucidum, thinner than before it left the ovisac; inside of this the vitelline membrane, thicker than before it left the ovisac, and within this the newly formed blastodermic membrane.

Q. How does the ovum lodge in the uterus?

A. It drops into the folds of the turgid mucous membrane, and becomes lodged in the rugæ, and in a short time becomes attached to the uterine mucous membrane.

Q. What change now shows itself in the ovum?

A. A dark spot shows itself on one side of the ovum.

Q. What does it signify?

A. The formation of the embryo, and is called the embryonic spot.

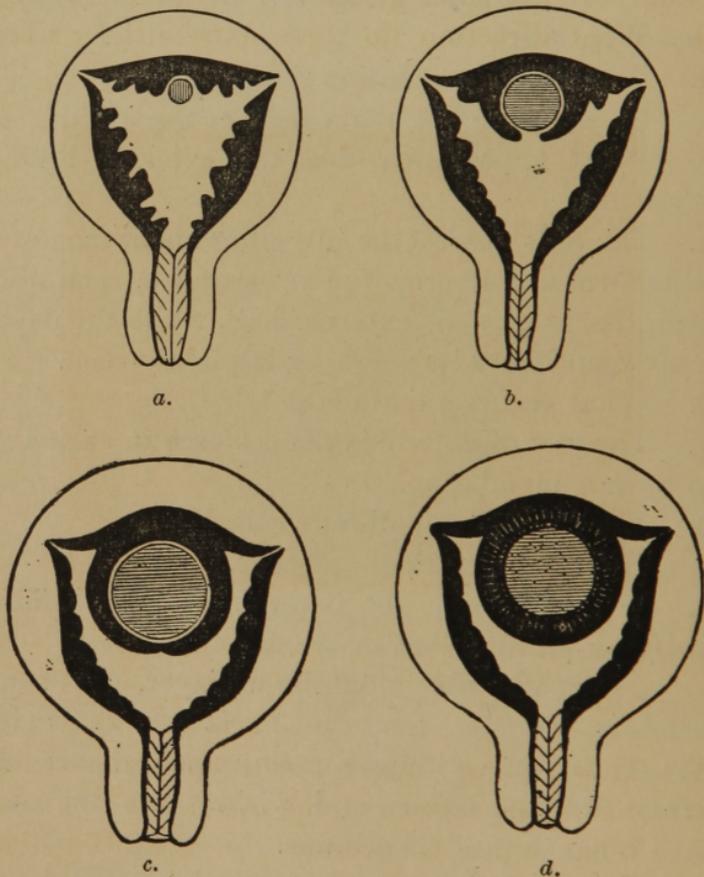


FIG. 16. — Lodgment of the Ovum in the Uterine Mucous Membrane.

Q. Between what membranes is it situated?

A. The blastodermic and vitelline membranes.

Q. How does the embryonic spot change?

A. It enlarges, its form becomes elongated, and an enlargement appears at each extremity, one of which is smaller than the other.

Q. What are its ends called, respectively?

A. The small extremity is called the caudal, while the longer is named the cephalic hood, and is marked originally by the polar globule.

Q. What direction do these extremities or hoods take?

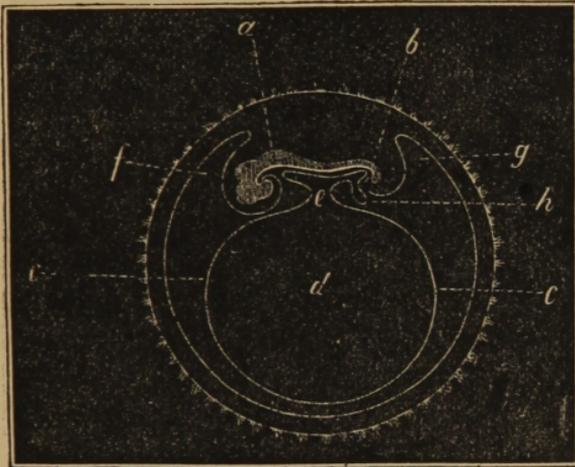


FIG. 17. Development of Embryo and its Membranes. *a*, Embryo; *b*, Caudal extremity; *c, c*, Internal lamina of blastoderm, forming umbilical vesicle; *f, f*, Hood-like projections of external lamina; *d*, Umbilical vesicle; *h, h*, Alanters.

A. They curve inward, the concavity looking toward the upper surface of the ovum.

Q. What office is assumed by the blastodermic membrane?

A. On account of the folding of the original membrane upon itself, it becomes separated into two distinct parts; the outer becomes applied to the vitelline membrane, and forms the second chorion, while the

inner helps to form the embryo, viz., the epidermis and all its appendages.

Q. What becomes of the vitelline membrane?

A. It forms the first chorion, which becomes gradually absorbed by the outer layer of the blastoderm or second chorion.

Q. Where do the cephalic and caudal hoods meet?

A. At the dorsal surface of the embryo.

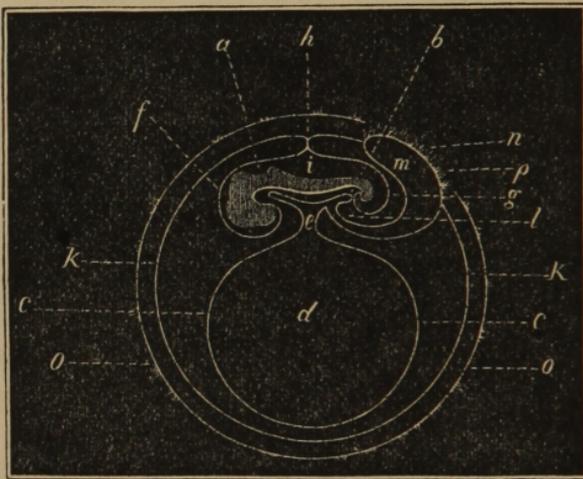


FIG. 18. — Farther Development of Embryo and Membranes. *a*, Cephalic end; *b*, Caudal end of embryo; *c, c*, Internal layer of blastoderm; *k, k*, External layer of blastoderm; *d*, Umbilical vesicle; *e*, Its attachment; *h*, Convergence of the dorsal hood for the formation of the amnion; *m*, Allantois; *n*, Tufts of villi; *i*, Cavity of the amnion.

Q. Why do they not meet in front?

A. There must be an opening left for the cord.

Q. What does this union form?

A. A shut sac, called the amniotic sac, which encloses the embryo, and the amniotic fluid, which is secreted by the walls of the sac.

Q. What is the remaining portion of the blastoderm called?

A. The second chorion.

Q. What is the umbilical vesicle, where is it situated with reference to the blastoderm, and what is its function?

A. It is the remains of the vitellus or yolk. It is situated between the two divisions of the external layer of the blastoderm, internal to the one that forms the second chorion, and external to the one that forms the amniotic sac. Its function is to nourish the embryo.

Q. What may be seen on the umbilical vesicle?

A. The omphalo-mesenteric vessels ramifying in every direction over it.

Q. What becomes of the umbilical vesicle?

A. It gradually atrophies.

Q. What takes its place?

A. A pouch or vesicle, called the allantios, which protrudes from the ventral surface of the embryo toward its caudal extremity, and finally is applied to and takes the place of the second chorion. It carries with it the omphalo-mesenteric vessels, becomes tufted and very vascular.

Q. How is the umbilical cord completed, and what does it contain?

A. It is completed and enfolded by the amnion. It contains the remains of the umbilical vesicle and vessels, allantois and the umbilical arteries and veins.

Q. What is the function of the omphalo-mesenteric vessels?

A. Their office is to supply the necessary demand for nutritive material.

Q. As the internal supply decreases, and the de-

mand for nutrition increases, what provision is finally made?

A. A connection between the maternal vascular system and the embryo takes place, through the medium of the allantois.

Q. What vessels become the permanent umbilical vessels?

A. The arteries and veins of the allantois.

Q. What does the amniotic membrane cause in throwing its folds behind the embryo?

A. It lifts it away from the vitelline membrane and the outer division of the blastoderm, and by continued development forms the space filled with fluid, in which the foetus floats.

Q. Is the umbilical cord in the cavity of the amnion?

A. No; it is infolded by its walls.

Q. Can the amnion be traced into the placental formation?

A. No; it lies on its foetal surface.

Q. What is the relation of the amnion and chorion during the earlier months of pregnancy?

A. They are separated, the interspace containing fluid.

Q. How long does this fluid remain?

A. Sometimes even to the seventh month.

Q. Is its evacuation hazardous?

A. The largest quantity is near the cervix, and is sometimes discharged without affecting the vitality of the ovum.

Q. Do these membranes adhere finally?

A. They grow together so intimately as to require nice management to separate them.

Q. What membrane finally surrounds the embryo?

A. The amnion, which is a part of the original blastoderm.

Q. What changes occur in the vitelline prior to the third week?

A. It is first roughened on its external surface; afterwards villous projections sprout out.

Q. What is its size and appearance when placed in water?

A. It is about eight lines in diameter, and covered with floating branches that wave loosely.

Q. What purpose do these villi probably subserve?

A. They serve as a medium of transit for nutritive substances and effete material.

Q. What is the situation of the ovum during the formation of the villi?

A. It is embraced in the duplicature of the hypertrophied mucous membrane of the uterus.

Q. What is the nature of the contact between the villi and the mucous membrane?

A. It is very intimate; many of the villi grow into the follicles of the mucous membrane, others insert themselves into every fissure and pit of the uterine surface.

Q. What is the condition of the allantois when these projections are complete?

A. It is in contact with the inner surface of the chorion throughout part of its extent, bearing in its lamina the umbilical arteries and veins.

Q. What is contained in the villi mentioned above?

A. The capillaries of the embryonic vessels.

Q. What is contained in the uterine follicles?

A. The capillaries of the veins and arteries of the uterus.

Q. What intervenes between the maternal blood and that of the foetus?

A. Nothing but the delicate walls of the two systems of capillaries.

Q. What is this process the commencement of?

A. The formation of the placenta.

Q. Is the number of the uterine capillaries increased as embryonic life advances?

A. The original number remains the same, but their size increases, the veins becoming sinuses, while the arterial capillaries develop into the "curling arteries" of older writers.

Q. What anatomical peculiarity does this explain?

A. The fact that large arteries empty directly into venous sinuses.

Q. What peculiarity of reverse character is manifest in the placenta?

A. The capillaries of the foetal side of the placenta remain minute in size, but increase in number.

Q. What arrangement makes the placenta appear of foetal origin?

A. The capillaries, as they increase in number, push themselves into the bulk of the maternal sinuses until they make a thick, spongy mass.

Q. What arrangement do the foetal arteries and capillaries assume in the placenta?

A. They enter, and arrange themselves into lobules.

Q. What occupies the inter-lobular spaces?

A. The venous sinuses of the mother.

Q. What were these uterine sinuses before conception?

A. They were capillaries in the follicles of the uterine mucous membrane.

Q. What peculiar appearance has the maternal surface of the placenta?

A. It is apparently denuded of mucous membrane.

Q. Why is this?

A. Because it is not covered by any membrane, except such as enter into its own structure.

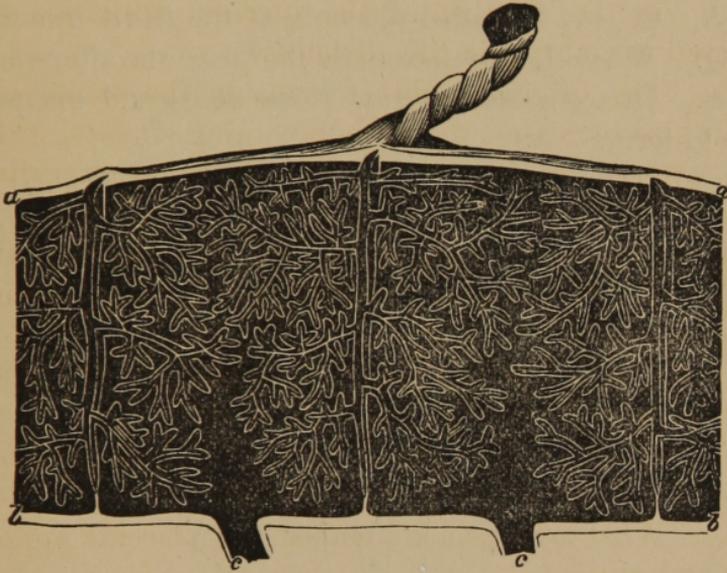


FIG. 19. — Termination of Umbilical Vessels in the Placenta. *a, a*, Fœtal surface of placenta; *b, b*, Maternal surface; *c, c*, Uterine veins, terminating in sinuses.

Q. How extensive is the commingling of the capillaries between the chorion and uterine mucous membrane?

A. Almost the whole circumference of the ovum is penetrated by the capillaries of the umbilical veins and arteries.

Q. How is the later separation effected?

A. The side most remote from the uterine wall

loses its villous roughness, and, at the end of the second, or during the third month, the smooth side is the largest.

Q. What is the condition at the fourth month?

A. Nearly one-half of the uterine wall is occupied by placental attachment, while more than one-half is smooth, formed of distended membrane.

Q. When is there a perfectly formed placenta?

A. It may be called placenta at the third month.

Q. What changes occur in the placenta afterward?

A. It continues to grow more dense and compact up to term.

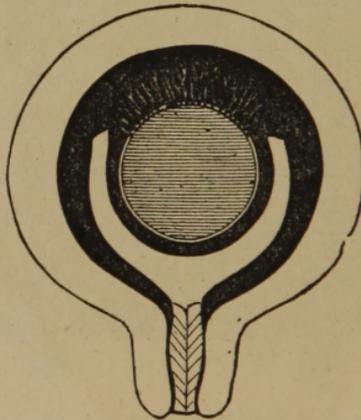


FIG. 20.

## THE MEMBRANES.

QUESTION. What is the decidua, and what are its functions?

ANSWER. It is a maternal membrane, serving to protect the embryo, and to form a medium of communication between it and the uterus.

Q. Into what does it enter intimately?

A. Into the structure of the placenta.

Q. What is its appearance remote from the placenta?

A. A thin, translucent membrane, closely applied to the chorion.

Q. Where, and what, is the chorion?

A. It is inside the decidua, closely applied to it, and is one of the membranes of the ovum.

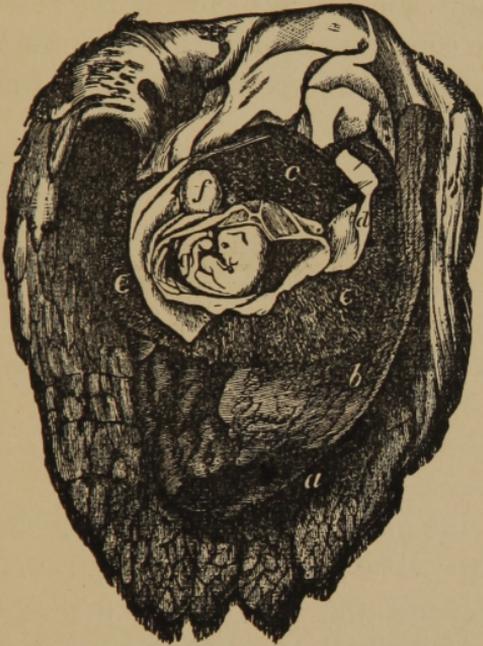


FIG. 21. — Embryo and its Membranes.

Q. What relation has it to the placenta?

A. It penetrates it throughout, and envelopes the foetal vessels.

Q. What is the amnion, and where is it found?

A. It is also a foetal membrane; it is inside the chorion, closely applied to it.

Q. What relation has the amnion to the cord and its vessels?

A. It serves as a connection between the different parts of the cord, and completely enfolds it.

Q. Does it enter into the formation of the placenta?

A. No; it is simply applied to its foetal surface, adding to its firmness.

Q. What do these membranes constitute, and what is their order?

A. They constitute a membranous bag, in which the foetus grows, the decidua externally, the chorion next, the amnion internally.

Q. What, beside the foetus, is in this bag?

A. The liquor amnii.

Q. What is its composition?

A. It is almost wholly water, two parts in one hundred being salts of soda and lime.

Q. Does it vary in quantity during normal gestation?

A. Only relatively, compared with the varying size of the foetus.

Q. Are the movements of the foetus facilitated or restrained by it?

A. It distends the walls of the uterus so that the foetus moves with great facility until near term, when the fluid is small, compared with the size of the foetus.

Q. What is the source of the liquor amnii?

A. It is probably a secretion from the walls of the sac, or from the walls of the uterus, transuded through the three membranes.

Q. Does the foetus subsist on it?

A. There is no reason for thinking so, though it probably swallows small quantities of it.

Q. What is added to it during the latter months of gestation?

A. Excretions from the foetus.

Q. What is the exact position of the placenta?

A. It is outside the amniotic cavity; is formed in the hypertrophied chorion and decidua; is inside the cavity of the decidua, and forms part of the cavity of the chorion.

Q. What membrane covers its foetal surface?

A. The amnion.

Q. What does the decidua vera become?

A. It becomes the utero-placental membrane, and sends prolongations into the placental substance.

Q. Of what does the placenta consist?

A. It is a fragile, vascular mass, consisting mainly of the foetal and maternal vessels intertwining with each other.

Q. What is its shape, size and thickness?

A. It is nearly circular in form; it is from seven to eight and a half inches in diameter, and about three-quarters of an inch thick in its center, growing thinner toward the circumference.

Q. Does it vary in these characteristics?

A. Any marked variation from the above type is probably abnormal.

Q. Where is the funis usually attached?

A. It is usually attached to the center; sometimes near the edge.

Q. Describe the foetal surface of the placenta.

A. It is turned toward the cavity of the ovum, has a smooth, polished appearance, given by the amniotic

membrane, which covers it. Beneath this the veins and arteries may be seen, giving it the appearance of cords.

Q. How does the maternal surface appear?

A. It is rough and granular in appearance, and divided by furrows into irregular lobes.

Q. Do the vessels of the mother and fœtus inosculate?

A. No.

Q. How is the fœtus nourished?

A. The vessel walls are so thin that osmosis is free between them; the serum, with its solutions, finds its way from one to the other freely, while oxygen is interchanged by the corpuscles.

Q. What is the cord or funis?

A. It is the medium of circulation between the foetal body and placenta.

Q. What is its average length?

A. Three feet.

Q. What are some of the exceptions?

A. In a few cases it is from four to six feet in length, while very rarely it is so short the abdomen of the fœtus and placenta are in contact.

Q. What is its size?

A. Its average diameter is half an inch.

Q. What is the appearance of the cord?

A. It has a nodulated, twisted appearance; occasionally it is tied in knots.

Q. What causes the twisted appearance?

A. The vein pursues a direct course in the center of the cord, while the arteries run spirally around it.

Q. What is the composition of the cord?

A. It contains two arteries, one vein, the atrophied

remains of the umbilical and allantois vesicles, and a gelatinous substance, all held together and firmly invested by the amniotic membrane.

Q. Does it contain nerves or lymphatics?

A. Probably it does not.

Q. What is the function of the placenta?

A. It is the medium through which nutritive pabulum is transmitted from the mother to the foetus.

Q. What change is wrought in the foetal blood while passing through the placenta.

A. It is changed from venous to arterial blood.

Q. What interchange is effected by the maternal blood?

A. It yields up the oxygen of its red globules, and receives carbonic acid and the other waste products of the foetus.

Q. What does Prof. Ercolani consider the placenta?

A. He considers the maternal portion glandular in structure and function, while the foetal is vascular and absorbent.

Q. What was this deciduous gland denominated by older writers?

A. The decidua serotina.

Q. In multiple pregnancy, how are the foetuses nourished?

A. Each is nourished by a separate placenta. The edges of the placenta are usually in contact.

Q. How are the membranes arranged?

A. Each foetus has its separate amnion and chorion; both are included in one decidua; occasionally the two are in one chorion.

Q. Are there two cords?

A. Each foetus is supplied with a separate cord.

## DEVELOPMENT OF THE FŒTUS.

QUESTION. What is the nature of the first development in the embryo?

ANSWER. Until the ovum arrives in the uterus, and for a short time after, the growth is apparently simple cell development.

Q. What are some of the first visible changes?

A. The fluids in the cavity of the ovum undergo changes. The granules, germinal vesicle and germinal spot disappear, and give place to differently formed bodies, and the ovum increases in size by imbibing the surrounding fluid.

Q. When are the omphalo-mesenteric vessels formed?

A. As the embryo begins to appear.

Q. What is the object of these vessels?

A. To bring the embryo in communication with the walls of the ovum, for the sole purpose of nourishment.

Q. When is the incipient child called the embryo?

A. Before the formation of the placenta.

Q. When is it called fœtus?

A. After the placenta is formed.

Q. What is the condition of the embryo at two months?

A. The embryo is from one and a half to two metres long, weighs from three to five drachms; the cord is complete, and placenta in progress of formation.

Q. How has it progressed at ten weeks?

A. It is from one and a half to two and a half inches in length, weighs from one and a half to two

and a half ounces, and there is a firmer connection between ovum and uterus.

Q. What is the condition at the end of third month?

A. The embryo is from four to six inches in length, and weighs from three to four ounces.

Q. What is the condition of the villi and membranes at three months?

A. The villi are pretty well gone, and the membranes remote from the placenta have become transparent and smooth.

Q. What changes have taken place by the end of the fourth month?

A. The placenta is complete, the embryo becomes the fœtus, and measures from six to eight inches in length, and weighs from seven to eight ounces.

Q. At the end of the fifth month what is the size and weight of the fœtus?

A. It is from eight to ten inches in length, and weighs from eight to eleven ounces.

Q. What condition exists at the end of the seventh month?

A. The liquor amnii is proportionately less, the fœtus nearly fills the cavity of the uterus; it is from twelve to fourteen inches in length, and weighs from one and a half to four pounds, and its organization is sufficiently complete to render it capable of independent existence in case of premature labor.

Q. When are all the fœtal organs perfect?

A. At the end of the ninth month.

Q. What peculiar covering has the skin of the fœtus?

A. A thick, unctuous coating especially abundant about the head and in the flexures of the limbs.

Q. What is its source?

A. It seems to be a secretion from the cutaneous glands.

Q. When does it make its appearance?

A. About the middle of the term of pregnancy; it is thicker about the fifth and sixth months, and begins to disappear before the child is expelled.

### ANATOMICAL PECULIARITIES OF THE FŒTUS.

QUESTION. How does the capillary system of the fœtus compare with that of the child after birth?

ANSWER. The proportion of capillaries to the large vessels is much greater in the fœtus than in the child.

Q. What change is continually going on in the ovum after development begins to take place?

A. The deposition of solid substances in place of the original fluids of the ovum.

Q. When do the solids preponderate?

A. At the end of gestation the solids preponderate vastly.

Q. What is the progress of this change through life?

A. From the time of conception, the dryness and density of the tissues increase.

Q. What is the condition of the skin of the fœtus at birth? •

A. It is rosy red and very vascular; it feels soft and moist, and the adipose tissue beneath is very abundant.

Q. What is the condition of the muscles and bones?

A. The muscles are soft, and the bones elastic, so that they can be easily bent.

Q. Why is nutrition more active than sensation or motion?

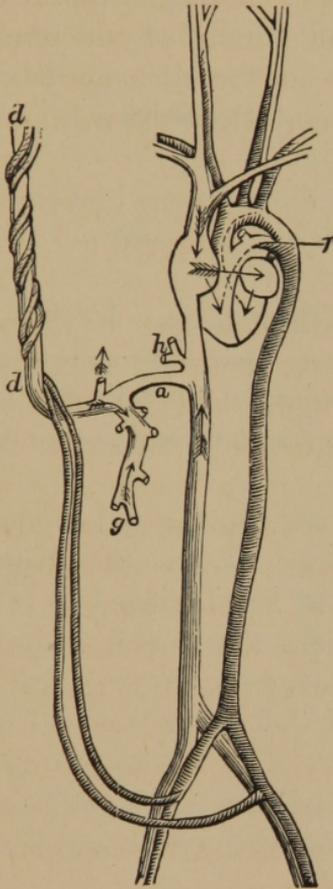


FIG. 22. — Fœtal Circulation. *a*, Ductus venosus; *d, d*, Umbilical cord; *F*, Ductus arteriosus; *g*, Fœtal veins. The cross arrow shows the position of foramen ovale.

A. Because the sympathetic nervous system is more perfectly formed; hence, can perform its function better than any other part of the nervous system.

Q. What is the main anatomical difference between the foetus and child?

A. The main difference is in the vascular system; the blood is less highly oxygenized, and the white portion is more abundant than the red.

Q. What is the peculiarity of the iliac arteries?

A. In the foetus each internal iliac artery gives off a branch, which continues upward between the abdominal muscles and the peritoneal membranes to the umbilical opening.

Q. What do these vessels become?

A. They pass out, and become the arteries in the umbilical cord.

Q. What do these become in the child?

A. They become partially obliterated, persisting as cord-like elevations, which converge at the umbilicus.

Q. What course and distribution has the umbilical vein?

A. After it reaches the abdomen it enters the fissure on the under side of the liver; while in this fissure it sends off two branches to the liver, and then goes on to become the ductus venosus which enters the ascending vena cava.

Q. When is the ductus venosus closed, and what does it become?

A. It is closed soon after the blood from the placenta ceases to flow through it, and is soon transformed into a solid cord.

Q. What is the foramen ovale?

A. It is an opening in the septum between the auricles of the heart.

Q. When is it closed?

A. It is generally closed the first month after birth.

Q. What is the ductus arteriosus?

A. It is an arterial tube that extends from the pulmonary artery, before it divides into the right and left, to the concavity of the arch of the aorta, which it enters.

Q. What becomes of it after birth?

A. It collapses, and becomes solid in early infancy.

Q. What do these anatomical differences cause?

A. They cause great variations in the course and distribution of the blood.

Q. What is the course and distribution of the blood from the placenta?

A. From the placenta the blood enters the vein leading to the liver, to which organ a large part is distributed.

Q. What becomes of the other portion?

A. It passes into the ascending vena cava through the ductus venosus.

Q. What blood joins it in its upward passage?

A. The portion coming from the lower extremities.

Q. What is the course of this current?

A. It passes upward into the right auricle, through the foramen ovale into the left auricle, whence it enters the left ventricle. By the contraction of this cavity it is injected into the aorta, to be distributed largely to the brain and upper extremities.

Q. What is the course of the blood which is returned from the head and upper extremities?

A. It enters the right auricle through the descending vena cava, is guided into the right ventricle, from which it is thrown into the ductus arteriosus, and thus finds its way into the arch of the aorta below the

branches to the head and arms; thence is carried to the abdominal and pelvic viscera and lower extremities.

Q. As it passes downward, does the current divide?

A. About half of it is sent, by way of the umbilical arteries, to the placenta.

Q. Why is so little blood sent to the lungs?

A. Because the blood is oxygenated elsewhere; hence, there is only enough blood sent to the lungs to nourish them while the air cells are impervious.

Q. What is the cause of the change of circulation at birth?

A. The supply of oxygen which is furnished by the maternal blood being cut off, the air cell of the lungs dilate, and the anatomical differences, being no longer necessary, disappear.

Q. Why, during foetal life, are the liver, head, and upper extremities proportionately larger than after birth?

A. Because those parts are most liberally supplied with placental blood.

## SYMPTOMS OF PREGNANCY.

QUESTION. What is the first symptom of pregnancy?

ANSWER. Suppression of the menses.

Q. Is suppression an invariable symptom?

A. It is not; suppression may persist for several months in the newly married, and it is often a symptom of disease.

Q. Do the menses ever appear *after* conception?

A. The menses sometimes continue through a part of, or even the whole term.

Q. What other healthful condition, than pregnancy, will cause suppression of the menses?

A. The menopause, or change of life.

Q. What is the next most common symptom of pregnancy?

A. Derangement of the stomach.

Q. How early in the term of pregnancy does this occur, and at what time of the day?

A. Soon after the period for menstruation has passed, and it is usually felt upon rising in the morning.

Q. What is the cause of the nausea?

A. It is believed that it does not occur in healthy persons, and that by properly seeking for it, some pathological condition sufficient to explain it will be found.

Q. What are some of the derangements supposed to cause it?

A. Some believe the uterus is more or less inflamed, especially the cervix, and that the morbid condition gives it greater sympathetic influence over the stomach; or that the stomach is hyperæmic independently; or that the liver is torpid, as the effect of pregnancy.

Q. What is the treatment?

A. According to the supposed cause, anodyne suppositories in the vagina, brisk cathartics, blisters to the epigastrium, and ant-acids.

Q. What are the remedies addressed to the nerve centers?

A. Brandy, ammonia, strong coffee, etc.

Q. When does this gastric disturbance disappear?

A. It generally disappears after the third month, but in rare instances lasts throughout the term of pregnancy.

Q. Does it return?

A. It not unfrequently returns during the last fortnight.

Q. Does regulation of diet control this derangement?

A. In some cases, while in others it seems to make no difference.

Q. If the nausea occur immediately on rising in the morning, what plan should be suggested?

A. That of taking a light breakfast before rising.

Q. What are some of the complications that doubtless aggravate and prolong the nausea?

A. Constipation, acidity of secretions of stomach, or sub-acute inflammation of that organ.

Q. What condition demands premature delivery?

A. In those rare instances where the effects of continued vomiting and want of nutrition are likely to prove fatal.

Q. What fact should make the accoucheur cautious in adopting this plan?

A. The fact that a sudden change often occurs, and the patient recovers.

Q. What is the cause of the salivation which often accompanies early pregnancy?

A. The sympathetic influence of the gravid uterus.

Q. Is there any relation between salivation and nausea?

A. Apparently none; the worst cases occur where there is no nausea.

Q. Is the ptyalism ever severe?

A. So large a quantity of saliva is sometimes lost as to impair digestion and greatly exhaust the patient.

Q. What is the appearance of the mouth in grave cases?

A. It presents the appearance of ptyalism from mineral poisons; the gums are livid in color, spongy and tender; the tongue swollen, coated with a mucus covering, and the salivary glands enlarged and tender.

Q. What are some of the remedies used?

A. Ice, slippery elm and pulverized cinchona bark.

Q. Is the appetite often deranged?

A. Depraved appetite or "longing" is a not uncommon symptom of pregnancy.

Q. What superstitions are connected with its effect?

A. Some believe if the fancy is not indulged the child will be marked with *nævi*, shaped like the coveted object; others believe the desire makes the mark.

Q. At what time do changes in the breast occur?

A. Usually in the second month of pregnancy.

Q. In what do these changes consist?

A. The breasts become sensitive to the touch, with a feeling of prickling pain, and the glands become more defined and lobulated.

Q. What change of color is noticed?

A. From the latter part of the second month, and until the seventh, the areola becomes darker in color, being especially dark in brunettes.

Q. What other changes in the areola?

A. The sebaceous glands become prominent, and, like the nipple, become erected upon handling.

Q. What important diagnostic change occurs in the breasts about the third month?

A. The secretion of a transparent fluid that may be pressed out of the nipples.

Q. What other condition than pregnancy may produce these changes in the breasts?

A. Chronic inflammations and tumors of the uterus.

Q. How may they be differentiated from pregnancy?

A. The changes produced by pregnancy are always symmetrical — both breasts are affected alike; while the changes from uterine disease are not symmetrical.

### ENLARGEMENT OF THE ABDOMEN.

QUESTION. Why does the abdomen enlarge during the first and second months of pregnancy?

ANSWER. Probably because of an increase in the quantity of blood in the vessels, and the retention of gas in the intestinal canal.

Q. When is there a similar fullness not due to pregnancy?

A. During menstruation.

Q. To what part of the abdomen is the enlargement of early pregnancy confined?

A. To the lower part.

Q. Why is the hypogastric region flattened and more resonant during the first three months than it is before pregnancy?

A. The uterus settles down in the pelvis during that period, giving room for the intestines and bladder to subside also.

Q. What appearance has the umbilicus at this time?

A. It is less prominent.

Q. When is this appearance changed, and the positive enlargement perceptible?

A. During the latter part of the fourth and the beginning of the fifth month.

Q. What effect has this enlargement on the former resonance?

A. The hypogastrium has lost its former resonance, and emits a flat sound on percussion.

Q. Where is the fundus uteri at the end of the fifth month?

A. Midway between the pelvis and umbilicus.

Q. Where is it found at the sixth month?

A. It has risen rather above the umbilicus.

Q. What is its development at the seventh and eighth months?

A. At the seventh month it is half way from the umbilicus to the eusiform cartilage, and has reached the latter at the eighth month.

Q. Where is the fundus uteri at the end of the ninth month?

A. The uterus subsides slightly during the ninth month, the fundus being lower at term than it is four weeks before that time.

Q. What changes in color occur in the skin during gestation?

A. The skin of the whole abdomen becomes darker in color, but especially along the lineæ semi-lunares and linea alba.

Q. What other marks make their appearance during the abdominal enlargement?

A. Marks strongly resembling cicatrices, some of them two or three inches long and a quarter of an inch

wide, with their long direction across the walls of the abdomen.

Q. Are these marks permanent?

A. They persist for some time as a mark of previous utero-gestation.

Q. What sign of pregnancy is found in the urine?

A. Kysteine.

Q. When does this manifest itself?

A. During the third month, and persists until the end of pregnancy.

Q. What is kysteine?

A. It is a pellicle which forms on the surface of the urine exposed to the air, and which breaks up and precipitates as sediment, reforming and precipitating several times before putrefaction takes place.

Q. How early will it make its appearance after the urine is drawn?

A. Upon the second or third day.

Q. Is it distinguished from the normal constituents of the urine?

A. "Its chemical qualities distinguish it from other matters found in the urine. It is neutral, insoluble in alcohol, ether, water and ammonia, nor is it soluble in alkaline fluids, like albumen, nor like mucus in a mixture of soap and ammonia; neither in boiling alcohol and ether, like fat. The urine containing it will not coagulate by boiling, as albuminous urine does, but deposits a copious white powder on cooling; nor will it coagulate by the addition of nitric acid."—*Cazeaux*.

Q. Are the symptoms enumerated, suppression of the menses, derangement of the stomach, enlargement

of abdomen, discoloration of integument, etc., etc., positive evidence of pregnancy?

A. They are only probable evidence. We would not decide by these symptoms alone where there was much at stake, as in medico-legal cases.

### PHYSICAL SIGNS.

Q. What are the physical signs of pregnancy?

A. The signs we get by the touch per vaginam and rectum, percussion, external palpitation, auscultation and vision.

Q. How is the uterus changed by conception?

A. It is increased in size, changed in position, color and consistence soon after conception.

Q. How may it be determined that the uterus is lower in the pelvis than it is normally?

A. By the touch per vaginam.

Q. What other change than mere prolapse will be noticed in the second month?

A. The uterus will be found more than twice the thickness of the unimpregnated organ, softer and more elastic, and the cervix generally in contact with the perineum.

Q. How can pregnancy be differentiated from the enlargement caused by an intra uterine polypus?

A. The polypus renders the uterine tumor almost cartilaginous in hardness.

Q. What change in the mobility of the uterus is produced by pregnancy?

A. It becomes heavy by the second month, and moves sluggishly, without freedom or elasticity.

Q. Can the fundus uteri be felt above the symphysis pubis at the second month of pregnancy?

A. If the uterus is lifted and moved gently by the fingers of the right hand placed in the vagina, the fundus can be felt easily with the fingers of the left hand, pressed down into the pelvis from above, while in the unimpregnated healthy uterus it is difficult to find it.

Q. How is the change of color of the mucous membrane ascertained?

A. By speculum examination.

Q. What is the change?

A. The membrane grows darker in color till the seventh month.

Q. What change is produced in the cervix and its glands?

A. The cervix is tumid and moist, unshapely and puckered, while the muciparous glands appear as scarlet points or transparent elevations, according to the presence or absence of their contents.

Q. How may the uterine tumor be measured before it has arisen from the pelvis?

A. By conjoined manipulation — touch and palpation together.

Q. What condition of the uterus would require touch and palpation to detect the tumor after it had arisen from the pelvis?

A. An unusually softened condition.

Q. How may the boundaries of the tumor be definitely ascertained?

A. By palpation, touch and percussion.

Q. What is the shape of the tumor, and how does it feel?

A. It is balloon-like in shape, feels elastic and obscurely fluctuating.

Q. What peculiar hardness may be felt through the abdominal walls in the last two months.

A. The hard parts of the child.

Q. Are the uterine muscular fibres quiet during pregnancy?

A. The uterine muscles are contracting and relaxing pretty constantly during the latter months of pregnancy.

Q. Are these contractions general?

A. They are not; they may be confined to a small part of the organ.

Q. How does the gravid uterus differ from an ovarian tumor?

A. It differs in shape, does not fluctuate so clearly, is harder when contracting, and softer when not contracting.

Q. How may the pregnant uterus be differentiated from a distended bladder?

A. By using the catheter.

Q. If the abdominal walls are so thick that these diagnostic signs are not clear, what will demonstrate unequivocally the existence of pregnancy?

A. The movements of the child, either active, passive, or vital.

Q. In cases of grave interest, what should the physician rely on for his decision?

A. He should not commit himself unless he can hear the heart of the foetus unequivocally, not only once, but at repeated examinations.

Q. When can this sign be heard?

A. For the most part not before the fifth month.

Q. How did the first movement of the foetus get the name of quickening?

A. Ancient observers supposed the first movement occurred when life entered the foetus; hence they called it quickening.

Q. What is the first sensation the mother feels?

A. An unusual motion in the pelvis, which she doubts as a motion until it is frequently repeated.

Q. Are these movements always the same?

A. No; they become stronger, and before the end of gestation may annoy, and even give pain.

Q. May the motion be perceived earlier by the mother when it is established gradually?

A. Yes; it may be perceived as early as the middle of the third, or beginning of the fourth month.

Q. Are the sensations called quickening always felt thus slowly?

A. No; it may be so sudden as to alarm the patient, for fear some viscus has given way and is displaced.

Q. What is the source of these movements?

A. The first, described as gentle and uncertain, are doubtless caused by the movements of the foetus, while those that give rise to the strong perceptions are the result of the sudden upward movement of the uterus from the pelvis.

Q. About what time do the foetal movements become perceptible to the observer?

A. Not until the pregnancy is well advanced into the fifth month; and even in the sixth month they may be confounded with motions of the abdominal muscles.

Q. Can they be induced when desired?

A. Movements may be induced by placing the hand flat on the abdomen and pressing downward firmly, striking it a smart stroke; or gently squeezing the uterus between the hands; or placing the hand suddenly on the abdomen after immersing it in cold water.

Q. Are these efforts always successful in giving the desired motion?

A. These expedients will sometimes fail.

Q. How may the movements be divided for descriptive purposes after they become vigorous?

A. Into striking or tapping, as from a light blow from a foot or a hand, and gliding or rolling motion, as though the whole body of the fœtus changed position.

Q. During what part of gestation is the rolling motion usually perceived?

A. The last two months.

Q. What position of the patient is most favorable for determining these movements?

A. A position in which the abdominal walls and uterine surface are brought in contact, as on the hands and knees, or stooping.

Q. Is complete cessation of motion evidence of death of the fœtus?

A. As a general thing it is, though there are exceptions.

Q. What is ballottement?

A. It is the act of causing passive motion of the fœtus against the fingers of the examiner, which are placed in the vagina.

Q. When can this be accomplished?

A. During the latter part of the fifth, the sixth and seventh months, while the liquor amnii is abun-

dant enough to permit the foetus to be moved about by the hand, and the foetus large enough to be readily perceived.

Q. What position should the woman assume?

A. She should be placed on her back, or in the erect posture.

Q. Describe the process.

A. Two fingers are introduced into the vagina in contact with the uterine tumor, a little anterior or posterior to the os uteri; the presenting hard part of the foetus is steadied for a moment on the fingers, and gently tossed up; the impulse raises it off the uterine wall, but it immediately settles back against the fingers. This can be repeated until the examiner is satisfied.

Q. What is the value of this sign?

A. It yields in importance only to the sound of the foetal heart.

Q. What other way may ballottement be performed?

A. Through the rectum.

Q. How valuable are the results of auscultation in determining pregnancy?

A. Some of the results are entirely reliable, while others only afford presumptive evidence.

Q. In what position should the patient be placed?

A. The position on the back, with the limbs semi-flexed, the head and chest bent forward by the pillow, is generally sufficient; but it is necessary to vary the position in cases of doubt or great importance.

Q. What are the relative merits of the mediate and immediate modes of auscultation?

A. With the stethoscope the accoucheur can retain

a more easy position, and is not obliged to come in contact with the person of the patient, while the sounds are rendered more distinct; immediate auscultation will be preferred by some, because the sounds perceived are unmodified by the instrument, and the contact of the head with the abdominal walls is one of the best methods of discovering the movements of the foetus.

Q. How early may the sound of the foetal heart be heard?

A. It may be heard at the fifth month, though we need not be surprised if at the end of the sixth month, it is still uncertain.

Q. Is it heard more easily as pregnancy advances?

A. Yes.

Q. Where should the stethoscope be placed in searching for the heart sound?

A. In the fifth month it should be placed over the center of the uterus; in the eighth and ninth months it should be placed midway between the anterior superior spinous process of the ileum of the left side and the umbilicus.

Q. If the sound is not heard in the common locality, where should search be made?

A. The instrument should be moved about slowly until the whole uterine tumor has been carefully examined.

Q. If it is not heard in one examination, what course should be pursued?

A. We ought not to give a decided opinion without two or three careful examinations.

Q. And if the sounds are not detected at term is it proof that the foetus is dead?

A. It is not positive proof but strong presumptive evidence.

Q. To what are the foetal heart sounds best compared?

A. To the sounds of the adult heart.

Q. In what respects do they differ?

A. The foetal heart pulsates with double the frequency of the adult heart, while its sounds are more feeble and less audible.

Q. How may it be determined that the sounds heard are not the mother's heart sounds?

A. Place the hand on the radial artery, or over the heart, while the ear is applied to the uterine tumor; if the pulsations are caused by the maternal organ, they will be synchronous; if by the organs of the individuals, mother and foetus, they will differ in time decidedly.

Q. When the foetal heart is heard unmistakably, what is the character of the proof?

A. The proof can be no stronger until the expulsion of the foetus.

Q. How can multiple pregnancy sometimes be diagnosed?

A. By auscultation we may hear one heart beating on the left and one on the right side of the abdomen; perhaps at different levels and with different degrees of distinctness.

Q. Will the heart sounds define the position of the foetus at term?

A. If the head presents at the beginning of labor, the heart ought to be heard most distinctly below the umbilicus, and nearly on a level with the anterior superior spinous process of the ilium. If the occiput

is in the left side of the pelvis, the sounds are to the left of the linea alba; if it is in the right side, the sound will be to the right of the linea alba. Should the breach present, the sounds will be higher.

Q. What effect has opium or congestion of the uterus on the foetal heart sounds?

A. Either opium or congestion will make the heart beat slower.

Q. How will alcoholic stimulants given to the mother affect the foetal heart?

A. They will accelerate its motion.

Q. To what may the souffle of the cord be compared?

A. The blowing sound heard by placing the stethoscope over the carotid artery in chlorotic patients.

Q. What is its supposed cause?

A. The circulation of blood through the umbilical arteries.

Q. When, and where, can it be heard most easily?

A. After the liquor amnii has been discharged, and generally near the head of the foetus.

Q. Why is it supposed to be a sound caused by the vessels of the foetus?

A. Because of its frequency.

Q. What is its diagnostic value?

A. Taken with other signs of pregnancy, it is confirmatory.

## PLACENTAL, UTERINE, OR ABDOMINAL SOUFFLE.

QUESTION. What is the cause of the uterine souffle?

ANSWER. It is produced by the blood traversing the uterine arteries.

Q. What is it like?

A. It is a prolonged, blowing murmur, like the pronunciation of the word *who* in a loud whisper.

Q. Is it uniform in character?

A. No; it sometimes changes while under observation from a soft, continuous sound, to a boisterous roaring, called the *bruit de diable*.

Q. What is it synchronous with?

A. The maternal pulsation.

Q. Where may it be heard?

A. Usually near, and rather above, the center of the uterine tumor.

Q. When may it be heard?

A. It may be recognized earlier than the sounds of the foetal heart, or motion in the foetus; it is sometimes detected during the latter part of the third month.

Q. How early can a positive opinion be given in regard to the existence of pregnancy?

A. Not earlier than the fifth month, or until the pulsation of the foetal heart has been heard beyond a reasonable doubt.

### DURATION OF GESTATION.

QUESTION. What is the average duration of normal pregnancy?

ANSWER. Forty weeks, or two hundred and eighty days.

Q. How much variation has been known?

A. That of forty days, or from two hundred and sixty to three hundred days.

Q. How early may the child be viable?

A. At the end of the seventh month.

Q. From what period is pregnancy usually dated?

A. The cessation of the last menstruation.

## MULTIPLE PREGNANCY.

QUESTION. What is the proportion of multiple pregnancies?

ANSWER. One case of twins is said to occur in every eighty-seven cases of labor.

Q. What is the proportion of triplets?

A. One in seven thousand six hundred and nine cases.

Q. What are the conditions admitting of the occurrence of multiple pregnancy?

A. Sometimes there is a bifid uterus, and more than one ovum produced, either from one or both ovaries; a double ovum is possible; the Graafian vesicle may contain two or more ova.

Q. Does the development of the fœtus differ from the usual course in simple pregnancy?

A. It is very much the same.

Q. What is the arrangement of the membranes?

A. Each fœtus has a separate chorion and amnion, but they are both surrounded by a single deciduous membrane.

Q. How are the cord and placenta arranged?

A. They are usually distinct from each other; the placentæ are in close proximity, and the edges, when they touch, are usually thicker, so as to sometimes have the appearance of being connected.

Q. What is the usual position of the twins in utero?

A. They occupy the vertical position, but their heads may be both up or both down, or one up and the other down.

Q. Can multiple pregnancy be diagnosticated before labor?

A. The diagnosis is not always, though usually, possible.

Q. What signs would lead one to suspect its existence?

A. The uterine tumor is larger, especially broader than usual at the same period of gestation; the limbs and heads of the two may be felt through the walls of the abdomen. By auscultation one heart may be heard on one side, below the umbilicus, the other opposite, above that point.

Q. What is the progress and prognosis of multiple pregnancy?

A. It is not quite so favorable as in single gestation.

Q. Why is premature delivery more likely to occur in multiple pregnancy?

A. The rapid distension of the uterus sometimes provokes the expulsion of its contents before the end of the usual time.

Q. Are the risks to the mother any greater?

A. The post-partum changes are generally more intense, and attended with greater risks.

Q. Are twins equally developed at birth?

A. Usually they are; but many cases are observed in which there is quite a difference in size.

Q. Is the sex the same?

A. In most cases the sex is the same, and there are more female than male twins.

Q. Is the third stage of labor different from other cases?

A. No; the placentaë are almost always expelled together, after the birth of the second twin.

### SUPERFŒTATION.

QUESTION. What is meant by superfœtation?

ANSWER. When conception takes place while there is a fœtus in process of development already in the uterus, the condition is called superfœtation.

Q. What condition of the uterus renders this possible?

A. There does not appear to be any serious anatomical obstacle to its occurrence in the early stages of gestation; the decidua vera does not close the os uteri or the opening to the Fallopian tubes, and the decidua reflexa does not entirely fill the uterine cavity until the end of the second month.

### GENERAL PATHOLOGY AND THERAPEUTICS OF PREGNANCY.

QUESTION. In what respect does pregnancy change the general condition of the woman?

ANSWER. It influences her susceptibility to, and immunity from, diseases.

Q. Are the general or special conditions which accompany pregnancy always the same?

A. The want of uniformity in the character and degree of effects caused by pregnancy is no more than might be expected from the great diversity of organizations, and will teach us not to attribute too much of the sanitary condition to pregnancy alone.

Q. What is the liability of pregnant women to epidemic diseases?

A. Pregnancy bestows a comparative immunity from attacks of epidemic diseases, with perhaps the exception of a few particular epidemics.

Q. What renders acute diseases more dangerous in pregnant women?

A. The frequent complication of abortion.

Q. What diseases are liable to produce abortion in pregnant women?

A. Any disease in which the nervous susceptibility or vascular action is much greater than natural, is likely to interrupt the processes of gestation.

Q. How would this accident affect the prognosis?

A. Seriously, because the condition of the uterus, blood, peritoneal surface and nervous system would render an attack of some form of puerperal disease a probable consequence.

Q. What is the effect of pregnancy on the circulation?

A. It is quickened to a decided degree in most cases, the pulse beating more frequently, and with more force.

Q. What is the nature of the blood change that MM. Andral, Cazeaux and others have shown to exist.

A. They have shown that the blood in pregnant women is poorer than the average in blood corpuscles, thus reversing the idea that pregnancy causes plethora, and proving that comparative anæmia actually exists.

Q. Is the anæmia only comparative?

A. It would seem so, because women who are pale and delicate become full featured and red as pregnancy advances; there is an actual development of the differ-

ent parts of the system, the limbs are larger, the vessels fuller, the muscles harder, and there is an increase of adipose tissue.

Q. What is the course of acute inflammations during gestation?

A. They are more rapid in course, more intense in nature, and require to be combated with more energy than in the unimpregnated state.

Q. What is puerperal mania?

A. Insanity sometimes originates during pregnancy, and puerperal mania is the name given to it when it occurs in or near the puerperal state.

Q. What effect has pregnancy on chronic diseases of the uterus?

A. An aggravation of the disease is the usual result.

Q. How is organic disease of the heart affected by it?

A. The disease is apt to advance during the gestation, and be aggravated by the occurrence of labor.

Q. What change in the course of phthisis pulmonalis will often occur when pregnancy supervenes?

A. The symptoms are ameliorated, and sometimes the destruction of the lung tissue seems to be stayed. This improvement is in most cases only temporary, and after accouchement the progress of the disease is more rapid.

Q. What diseases are probably most hazardous to pregnant women?

A. Dysentery is probably the most dangerous, but enteritis, peritonitis, hepatitis and nephritis are far more dangerous and difficult to manage than when the woman is not pregnant.

Q. What is Dr. Tyler Smith's opinion of inflammations occurring in the organs of the thorax?

A. He says they are more intense, run a more rapid course, and the treatment should be more prompt and energetic.

### GENERAL THERAPEUTICS OF PREGNANCY.

QUESTION. What condition of the pregnant woman calls for caution in medication?

ANSWER. The susceptibility of the nervous system and increased activity of the circulation call for the more liberal use of arterial and nervous sedatives, and the cautious use of remedies that may increase the excitement of either.

Q. In protracted diseases, what conditions of the blood arise that may prove hazardous to the life and nourishment of the fœtus?

A. The deterioration of the globules, and their consequent inability to convey oxygen.

Q. What remedies are suggested?

A. Chlorate of potassa, peroxide of hydrogen, permanganate of potassa, ozonic ether and *fresh air*.

Q. When indicated by the presence of disease, to what extent may depletion be carried?

A. It should not be carried so far as to produce syncope, as we might do with propriety in patients not pregnant.

Q. If necessary to administer emetics, which are preferable?

A. Ipecacuanha and lobelia are probably the safest, while antimonials and other mineral substances are likely to do mischief.

Q. Why should cathartics be avoided?

A. A drastic impression on the alimentary canal is often propagated to the uterus and bladder.

Q. What particular remedy is very likely to have such an effect?

A. Aloes; because it acts particularly on the lower bowel.

Q. What remedies are the most reliable cathartics in pregnancy?

A. Calomel, rhubarb and the sulphates of magnesia, soda, etc.

Q. What diuretics are dangerous during pregnancy?

A. The terebinthinate diuretics, juniper, savin, cantharides, and some others, in addition to causing an increase in the secretion of urine, very strongly stimulate the mucous lining of the whole urinary apparatus, creating an irritation that is apt to be propagated to the uterus, thus causing abortion.

Q. What class of diuretics would be mild enough to use during pregnancy?

A. The preparations of potassa and soda.

Q. Is quinine likely to produce abortion, in ordinary doses?

A. There are many who believe so, but without sufficient evidence.

Q. Why should the effects of mercurials be most carefully watched?

A. To avoid ptyalism and inflammation of the mucous membrane of the rectum.

Q. What is the best anodyne to combat any symptom of commencing uterine contractions.

A. Opium is undoubtedly the best, and should be

on hand to administer upon the commencement of any suspicious pain.

### EXTRA UTERINE PREGNANCY.

QUESTION. What is the meaning of this term?

ANSWER. It is the lodgment and development of the embryo more or less completely outside of the uterus.

Q. What is ovarian pregnancy?

A. It is that variety of extra uterine pregnancy in which the ovum does not leave the ovary, but forms attachments to that organ and neighboring structures.

Q. What constitutes the variety called abdominal pregnancy?

A. When the ovum is displaced into the abdominal or pelvic cavities, and makes connections at a distance from the ovary, it is called abdominal pregnancy.

Q. When is it ovaro-tubal pregnancy?

A. The ovum may have commenced to enter the tube, and its development may involve both tube and ovary in its attachments, constituting ovaro-tubal pregnancy.

Q. What is tubal pregnancy?

A. Its name is derived from its development in the Fallopian tube.

Q. What other variety remains?

A. Interstitial pregnancy, in which the ovum commences to develop in that part of the tube which passes through the uterine wall.

Q. What is the process of development of the fetus and its appendages in extra uterine pregnancies?

A. It is very much the same as in utero.

Q. Where is the decidua formed?

A. It is fair to conclude it is always formed, but not always found, in the uterine cavity. Upon this point there is much difference of opinion.

Q. Does labor occur at the end of these abnormal pregnancies?

A. Symptoms of labor generally occur at the end of gestation, but after a few hours, or days, subside; the motion is no longer felt, auscultation reveals no sign of life, the tumor, gradually diminished in size, subsides toward one of the iliac fossæ, and remains stationary for an uncertain length of time.

Q. What other mode of relief is sometimes established by nature?

A. The dead fœtus acts as a foreign body, inflammation is lighted up, and in one great abscess the whole is eliminated; and after months of toxæmia, the patient is restored to health.

Q. Is this kind of termination the rule?

A. Cases differ widely; acute inflammation may take the patient's life, or the long continued effort of elimination may exhaust the vital force and lead to the same result.

Q. What are the symptoms of the tubal variety?

A. It is generally diagnosticated by its termination alone; for in the early weeks the patient has no reason to suspect the nature of the pregnancy.

Q. When does it terminate?

A. At the end of the second, or during the third, or, in rare instances, the fourth month.

Q. How does it usually terminate?

A. The patient has probably experienced pains from the second month, but supposed them to be colicky or

uterine; in one of the paroxysms she is seized with faintness, sinks into a collapsed state, and dies within twelve or forty-eight hours.

Q. Is there any discharge from the uterus?

A. There may be a muco-sanguineous discharge from the uterus, but occasionally there is none.

Q. Do all cases of tubal pregnancy terminate alike?

A. No; the termination depends upon the locality of the rent, and the amount of blood lost.

Q. What is the cause of extra uterine pregnancy?

A. Any circumstance that arrests the progress of the ovum in its transit to the uterus would cause this accident.

Q. What is the prognosis?

A. In the abdominal and ovaro-tubal varieties it is very grave, and the tubal is almost uniformly fatal.

Q. Is it possible to diagnosticate extra uterine pregnancy before the disastrous termination is reached?

A. If the suspicions of the practitioner are aroused, the diagnosis is generally possible.

Q. What are the symptoms?

A. They are those of ordinary pregnancy. In the abdominal and ovaro-tubal varieties the tumor rises out of the pelvis earlier than in ordinary cases, is situated more on one side, less movable and more globular than the pregnant uterus, and the motions and irregularities of the foetal surface more distinct, and auscultation far more easy.

Q. Is the uterus increased in size?

A. It is not much increased in size, and the probe will show its outlines not in connection with the tumor.

Q. Can ballottement be performed?

A. It is not usually possible to perform it satisfactorily.

Q. Does the death of the fœtus render the diagnosis more difficult.

A. It does, and we must then rely on the history and the exploring needle to obtain the fluids of the tumor which are characteristic.

### TREATMENT.

QUESTION. Should the abdominal variety be recognized during the course of gestation, what course should be pursued?

ANSWER. An effort should be made to arrest the growth of the fœtus.

Q. How could this be accomplished?

A. If the tumor is in reach of the vagina, the liquor amnii could be drawn off from the ovum, and thus cause it to perish; or its growth may be arrested by strong shocks of electro-magnetism.

Q. What would be the best course, if the condition was only recognized at term?

A. The performance of gastrotomy would be the most promising for the two individuals.

Q. How would it differ from gastro-hysterotomy?

A. Not at all, except in the management of the placenta and membranes. If the placenta did not separate from its connections by gentle traction on the cord, it would be advisable to tie a strong silk thread to the funis, and allow it to hang out of the wound, and remove the rest of the cord. Later, when detachment is proved, by the placenta presenting itself when

gentle traction is made on the cord, the wound may be reopened to permit its passage.

Q. If the abdominal pregnancy is only recognized after the efforts at expulsion have failed, and the foetus is dead, what then should be the treatment?

A. It would be better to await the tedious method of nature for elimination, sustaining the patient as well as we may.

Q. What remedies would assist to combat the toxæmia?

A. The sulphites of soda and lime.

Q. Is tubal pregnancy likely to be detected by the ordinary physician?

A. It is not, because of the obscure symptoms.

Q. When should the physician resort to a surgical operation in these unfortunate cases?

A. When the question lies between inevitable death and a possibility of relief.

### EXTRA-VENTRAL PREGNANCY.

QUESTION. What is extra-ventral pregnancy?

ANSWER. When the ovary and fimbriated end of the Fallopian tube have found their way out of the inguinal ring on one side, the ovum is sometimes arrested between them, and undergoes development there. This condition is known as extra-ventral pregnancy.

Q. What should be done with it?

A. We should endeavor to preserve the child in its adventitious lodgings until viable, and then remove by excision.

Q. What are the dangers of the operation?

A. Hemorrhage or inflammation.

## MISSED LABOR.

QUESTION. What is missed labor?

ANSWER. The name is properly applied to cases in which gestation is complete, but the uterus fails to expel the fully developed fœtus.

Q. Is the diagnosis difficult?

A. An investigation of the uterus by manual examination, the introduction of the sound, if necessary, and the history of the case, ought to lead to a proper diagnosis.

Q. How can the uterus be relieved of its contents?

A. By dilating the mouth with compressed sponges, evacuating the liquor amnii and giving ergot.

## MOLE PREGNANCY.—BLIGHTED OVA.

QUESTION. What are mole pregnancies, or blighted ova?

ANSWER. There are organized substances discharged from the uterus that are fleshy in character, that have not the characteristics of any part of the ovum to a perfect degree, and yet are enough like the structure of the placenta to be referred to it as their origin.

Q. What is the form of placental degeneration to which this term mole is applied?

A. It is that form in which the placenta, instead of being spongy, is carnified. The fœtus is either lost, or becomes disintegrated in the liquor amnii, or is very diminutive in size.

Q. What is the form called hydatidiform?

A. The degeneration of the placenta gives origin

to a large number of sacs or vesicles of different size, containing a transparent fluid. These vesicles are called hydatids.

Q. How rapid is their growth?

A. The uterine tumor is as large at the fourth month as it would be at the sixth month of real pregnancy.

Q. What is the origin of the vesicles?

A. It is believed they are hypertrophied villi of the chorion.

Q. How large may the mass grow?

A. The bulk may amount to several quarts.

Q. When are they expelled?

A. Usually at the end of the sixth month.

Q. How is the mole variety of blighted ova diagnosed?

A. The diagnosis is sometimes impossible; but ordinarily some unusual phenomena appear, such as pain in the region of the uterus, discharge of blood from the vagina, etc. If there have been motion and nausea, they cease; the breasts, from being full, become flabby. This may occur weeks, and even months, before the ovum is expelled.

Q. What are the symptoms of the hydatidiform variety?

A. The usual symptoms of pregnancy, except that the abdomen enlarges more rapidly. No motion is felt, ballottement is not possible, and at uncertain periods there are discharges of blood and serum, or water without blood.

Q. What is the probable source of this watery discharge?

A. It is probably from the rupture of one or more vesicles.

Q. How can the mole or product of blighted ova be distinguished from the products of the unimpregnated uterus?

A. The substances, not polypoid, discharged from the unimpregnated uterus, are small, seldom weighing more than one or two drachms, while moles weigh as many ounces.

Q. What is the prognosis in these cases of blighted ova?

A. Hemorrhage is likely to be the worst circumstance connected with their conditions, especially in the hydatidiform variety. They are generally thrown off spontaneously, after being retained a very variable length of time.

Q. What is the main object to be obtained by treatment?

A. The expulsion of the substance, with as little damage as possible.

Q. How would this be accomplished?

A. If there are no disagreeable symptoms, we should give nature an opportunity to effect the expulsion unaided; otherwise use compressed sponges, ergot, or break up the attachments with the finger, or evacuate the liquor ovi, to initiate uterine contractions.

## DISPLACEMENTS OF THE UTERUS DURING PREGNANCY.

QUESTION. To what extent may the uterus become displaced during pregnancy?

ANSWER. Under extraordinary circumstances, it

may become so much displaced as to cause much suffering, and sometimes death.

Q. Does prolapse often occur?

A. It does not often occur as a serious difficulty in cases where it did not exist before pregnancy supervened.

Q. Does it always occur in women who were the subjects of prolapse previous to pregnancy?

A. No; pregnancy sometimes cures the state of the organ favoring prolapse.

Q. Are there different degrees of this form of displacement?

A. Yes; from the slight degree, where the uterus remains low in the pelvis, touching the perineum longer than usual, to the extreme, in which the whole organ hangs outside the vagina.

Q. What treatment will usually be sufficient during the early months of pregnancy?

A. The same used for the same condition of the unimpregnated organ.

Q. As the uterus becomes heavier, will external support still suffice to keep it in position?

A. After the sixth month, the weight of the organ is too great for external support, and the woman should keep in a recumbent position.

Q. If labor begins while the uterus is protruding, what course would be advisable?

A. To replace it before the mouth is dilated, retain it by pressure, keeping the patient in a recumbent position until expulsion is effected.

Q. What is the position of the uterus in *retroversion* and *retroflexion*, when complicated with pregnancy?

A. In *retroversion*, the fundus uteri lies in the hollow of the sacrum, and the cervix and os uteri are turned upward at or near the symphysis pubis. In *retroflexion*, the fundus occupies the same position, and the cervix so curved that the os looks downward.

Q. What are these displacements sometimes the result of?

A. A continuation of the same misplacements that existed prior to impregnation.

Q. At what time, during gestation, do these displacements usually correct themselves?

A. From the third to the fourth month.

Q. What condition of other organs may cause sudden displacement of the uterus?

A. A distended bladder, loaded bowels, or tumors of the abdomen may cause such an accident.

Q. What are the symptoms of retroversion?

A. When retroversion exists from the beginning of pregnancy, the symptoms are developed gradually; slight difficulty of voiding urine and evacuating the rectum is first experienced, which gradually increases to symptoms of constitutional derangement from retention.

Q. What might be the result if these symptoms were not relieved?

A. Rupture of the bladder or uterus, or inflammation of either or both organs, with their appalling consequences.

Q. Is this condition sometimes relieved without our assistance?

A. Nature is competent to relieve the patient sometimes, by discharging the contents of the uterus, or even by rectifying the malposition without causing abortion.

## DIAGNOSIS.

QUESTION. How are these displacements diagnosed?

ANSWER. By digital and bi-manual palpation, the use of the catheter and sound in the bladder, and the history of the case.

## PROGNOSIS.

QUESTION. What is the prognosis?

ANSWER. Prognosis of retroversion of the impregnated uterus with impaction is grave; yet, properly managed, very few cases would terminate unfavorably.

## TREATMENT.

QUESTION. What treatment is sufficient before impaction has taken place?

ANSWER. Keeping the bladder and rectum as nearly empty as possible, and removing all superincumbent weight.

Q. When the uterus is impacted in the pelvis, what course should be pursued?

A. After emptying the bladder and rectum thoroughly, place the patient on the left side, left arm thrown behind, so as to turn the thorax forward, while the right leg lies over in front; then two fingers of the right hand should be introduced into the vagina, and the fundus pressed upward. If the length of the fingers is not sufficient to raise it beyond the promontory of the sacrum, the colpeurynter, uninflated, must be passed as far up against the fundus as the fingers

will carry it, and then inflated while steadily pressed upward.

Q. What should be done if reduction is impossible?

A. Abortion should be induced.

Q. If it prove impossible to reach the os uteri to evacuate the fluids, what resource is left?

A. That of puncturing the uterus below the cervico-vaginal junction with the smallest trocar through which the water will flow.

Q. After reduction or abortion, what care should the patient have?

A. After reduction, the patient should be kept quiet a few days; after abortion, care must be exercised to prevent evils which frequently follow.

#### ABORTION.—MISCARRIAGE.

QUESTION. If pregnancy is arrested and brought to a termination before the foetus is viable, what is the accident denominated?

ANSWER. Miscarriage, or abortion.

Q. If the child is capable of independent existence, what is the accident called?

A. Premature labor.

Q. What is a common cause of abortion?

A. Violence, accidentally applied or intentionally used.

Q. What inflammatory condition of the uterus may act as a cause of abortion?

A. General congestion or inflammation of the uterus, and its appendages, of an acute or chronic grade.

Q. What other condition of the uterus may be the cause of frequent abortions?

A. A susceptibility to exciting causes, sometimes called a nervous or irritable uterus.

Q. What is meant by reflex causes?

A. The effects produced on the uterus by impressions made upon parts or organs more or less remote, with which it is connected by the reflex centers in the spinal system.

Q. What forms of toxæmia are common causes of abortion?

A. Uræmia, syphilæmia and idio-miasm.

Q. Is there such a thing as an epidemic of abortions?

A. From some occult cause, a much larger number than the average miscarry in certain places at certain times.

Q. Has habit an influence in causing miscarriages?

A. After having a miscarriage, a patient seems to be more liable to a recurrence at the same period in subsequent pregnancies.

## AFFECTIONS OF THE OVUM.

QUESTION. What affection of the placenta may cause abortion?

ANSWER. Inflammation, which impairs the function, on account of the fibrin which is effused into the tissues of the placenta.

Q. What may cause inflammation of the placenta?

A. Injuries inflicted by violence, through the abdominal walls.

Q. What are the symptoms?

A. The symptoms are not sufficiently marked to be diagnostic, and as the inflammation of the placenta is generally accompanied with more or less metritis, it is impossible to distinguish between the two.

Q. What other changes sometimes occur in the placenta?

A. Calcareous deposits, or fatty degeneration and partial detachment may cause abortion.

Q. How would this last accident announce itself?

A. By hemorrhage.

Q. Is the membranous portion of the ovum the subject of disease, giving rise to abortion?

A. It is occasionally so fragile as to rupture and discharge the liquor from between the chorion and amnion, or from the amniotic cavity itself.

Q. If the fluid discharged from the uterus is that from the cavity of the chorion, may gestation continue?

A. It may.

Q. In what period in gestation does this discharge occur?

A. It has been known to begin in the sixth month, and continue intermittently during the remainder of gestation; but it does not usually occur until the seventh or eighth month.

Q. How should a discharge of clear liquor from the vagina be regarded?

A. It is an almost invariable evidence of rupture of the amnion, and abortion should be expected.

Q. What disease of the amnion sometimes arises?

A. Dropsy of the amnion.

Q. What is the main symptom of this affection?

A. Rapid increase of size.

## ACCIDENTS TO THE FŒTUS.

QUESTION. What accidents to the fœtus may cause abortion?

ANSWER. Anything that would deprive it of vitality, as injuries received by falls or blows on the abdomen, or the cord may become wound around its neck, or body, or limbs so closely as to interrupt circulation, or do other damage.

## SYMPTOMS OF ABORTION.

QUESTION. What are the symptoms of the death of the fœtus?

ANSWER. There is a subsidence of all the sympathies which formerly existed, the mammæ decrease in size and become flabby; if quickening has been experienced it ceases, and sometimes there is a feeling of coldness, and the nervous symptoms are various.

Q. How do the symptoms vary when congestion or inflammation precede miscarriage?

A. There is a sense of weight and heat, copious mucus or sanguineous discharges, chilliness and fever.

Q. Do all cases of abortion have appreciable premonitory symptoms?

A. In many cases there are no indications that can be regarded as premonitory.

Q. What are the symptoms of commencing abortion?

A. There are three in number: pain, hemorrhage and discharge of the liquor amnii.

Q. What time is consumed in effecting abortion?

A. From a few hours to several days.

Q. After symptoms of abortion are initiated, does expulsion of the foetus always follow?

A. There are cases where this result is long delayed, the pain and hemorrhage continuing, though not enough to exhaust the woman.

Q. Why are abortions usually more tedious and painful than labor at full term?

A. Because the muscular tissues of the uterus are undeveloped, and incapable of powerful contraction, and the cervix is still elongated, narrow and firm.

Q. Is this always the case?

A. We meet with cases occasionally in which delivery is even more rapid than in ordinary labor.

Q. In what condition is the ovum likely to be expelled in very early abortions?

A. With the membranes unruptured.

## DIAGNOSIS.

QUESTION. What facts and condition would lead us to expect abortion to be imminent?

ANSWER. Previous abortion and evident toxæmia.

Q. With what are habitual early abortions often confounded?

A. Hemorrhages from other causes, as menorrhagia and dysmenorrhœa.

Q. How do they differ?

A. Menorrhagia and dysmenorrhœa continue alike in severity each month, while in early abortions there is more irregularity.

Q. How can commencing abortion be detected?

A. By physical examination of the uterus and close examination of all discharges.

## PROGNOSIS.

QUESTION. What are the probabilities of abortion under the influence of uræmia, syphilæmia and habit?

ANSWER. Uræmia does not often cause abortion after the first pregnancy, while syphilæmia is very likely to produce it, without appropriate treatment, in subsequent pregnancies. When habit is established, it is difficult to prevent it occurring perpetually.

Q. What are the probabilities of preventing abortion, when pain and hemorrhage have begun?

A. It will be very difficult, if at all possible.

Q. Which is the most unfavorable, pain or hemorrhage?

A. Hemorrhage, as it indicates the separation, to a greater or less extent, of the placenta from the uterus.

Q. What amount of blood loss would be fatal to the life of the fœtus?

A. The loss of six ounces of blood in forty-eight hours would almost certainly be followed by abortion in the first three months of pregnancy.

Q. What are the immediate dangers to the woman?

A. First, hemorrhage; following that, acute inflammations of varying intensity and extent.

Q. What are the remote dangers?

A. Chronic inflammation, such as metritis, cervicitis, perimetritis and sterility.

## TREATMENT.

QUESTION. What are the important objects of treatment?

ANSWER. To save the embryo, or, if that is impos-

sible, to promote expulsion, in order to avoid danger to the woman.

## PREVENTIVE TREATMENT.

QUESTION. What is the first idea that presents itself in the preventive treatment?

ANSWER. To cure the causing conditions, or neutralize their effects.

Q. How should chronic inflammations of the uterus be treated?

A. In the earlier months of pregnancy local applications of nitrate of silver, or stronger remedies, may be applied, with sitz baths; later, vaginal injections, water compresses and anodynes over the uterine region. If intermittent uterine pains occur, they should be allayed by full doses of opium.

Q. How should nervous excitability be met?

A. By improving the general health; expose the patient as much as possible to the purest air and sunshine; she should be all her waking hours out doors, and take as much exercise as possible.

Q. What medicines are best suited to this condition?

A. Such remedies as supply most oxygen to the tissues, as peroxide of hydrogen, permanganate and chlorate of potassa, with an anodyne suppository of belladonna in the vagina at night.

Q. What treatment should be adopted for chloroanæmia?

A. Out-door exercise, iron for the blood, bitters and ant-acids, if the stomach requires them.

Q. How may abortion from syphilæmia be avoided?

A. By using anti-syphilitic remedies as soon as

possible after pregnancy. Give half a grain of blue mass twice a day, until the slightest possible effects show themselves in the mouth, and then succeed it by iodide of potassium in the comp. syrup stillingia for some weeks. This should be done two or three times during gestation.

Q. What can be done for uræmia during pregnancy?

A. Very little but to keep up a good state of the secretions by the employment of colchicum, as much as the stomach and bowels will bear, and the use of as much citric acid as the patient can be induced to take. Abortion in this condition is often inevitable, and curative of the condition.

Q. In acute inflammation of the lungs or other organs, or in idiopathic fevers, what should be the course of treatment?

A. We should bear in mind the probable occurrence of abortion, and, while treating the disease with all the energy necessary, leave opiates with the nurse, and advise their liberal use, should symptoms of abortion present themselves.

Q. When is the habit of abortion said to be established?

A. When a patient has miscarried twice at the same period of gestation.

Q. If the habit is established, how should a present pregnancy be treated?

A. We should place the general health of the patient in the best possible condition, and as the time approaches, require her to abstain from all excitement, especially sexual, and to exercise moderately.

Q. How long may uterine pain precede damage to the ovum?

A. Pain may precede damage to the ovum for many hours, and even days.

Q. When abortion symptoms begin with a discharge of liquor amnii, will an opiate be efficient to control them?

A. Such cases are rare, but the opium will probably be effectual.

Q. When abortion is initiated by hemorrhage, what should be the treatment?

A. If the hemorrhage is slight, we would be justified in making a trial of opium and astringents to control it.

Q. What astringents would answer?

A. Aromatic sulphuric acid, in half drachm doses, every three hours, keeping the patient quiet.

Q. How should opium be given, if not well borne by the stomach?

A. It should be given by the rectum in sufficient doses to control pain. It may be given by sub-cutaneous injection.

Q. If abortion is inevitable, what change should be made in the treatment?

A. We should promote the speedy expulsion of the foetus.

Q. If, by examination, we find the mouth of the womb closed, and the hemorrhage not excessive, what may we do?

A. Give ergot.

Q. When is it necessary to resort to decided measures?

A. When the patient begins to fail from loss of blood, with a prospect of the hemorrhage continuing, or if there is any sign of toxæmia or inflammation.

Q. What means would be regarded efficient?

A. Ice to the abdomen or in the vagina, or a tampon in the vagina or os uteri.

Q. What benefit is derived from the gum elastic air bag or colpeurynter in the vagina?

A. It stimulates the uterus to contraction, by drawing upon the cervix through the vaginal walls, aiding in dilating the os uteri, thus promoting the expulsion of the ovum.

Q. How long should it be allowed to remain?

A. It may remain twenty-four hours, and then returned, after syringing the vagina, if hemorrhage persists; but the ovum will generally be found in the vagina.

Q. What substitutes may be used for the air bag?

A. Sponge and laminaria tents in the os uteri, or cotton tampons in the vagina.

Q. When should the placenta be removed from the uterus?

A. When the os uteri is open sufficiently to admit the finger, the placenta should be removed, whether there is much hemorrhage or not.

Q. How should it be removed?

A. If the mouth of the uterus will admit the finger, we should introduce it, and bring away the placenta with it. If we have difficulty in depressing the uterus low enough, with the hand above the symphysis, we may make traction with the finger in the cervical cavity, and pull it down; instruments should not be introduced unless positively necessary.

Q. In what condition will the placenta usually be found?

A. It will sometimes be found lying detached in

the main cavity, while a portion of it may be traced to a constricted cavity beyond.

Q. If bleeding continues, or toxæmia occurs, or inflammation commences, and dilatation and delivery become imperative, what means may be used to effect the desired result?

A. The sponge and sea tangle tents could be used, but a simpler plan would be to dilate the cervix with the fingers.

Q. How much time is necessary to dilate the cervix with the fingers?

A. About twenty minutes.

Q. What instruments are sometimes used to remove a retained placenta?

A. The placenta forceps and hook.

Q. What precaution is always necessary in their use?

A. They should always be kept in contact with the guiding finger, and never be allowed to go so far that we do not know exactly where they are.

## LABOR.

QUESTION. What is labor?

ANSWER. The term includes all the processes by which the uterus is emptied of its contents after the time the fœtus becomes viable.

Q. What is premature labor?

A. Labor which takes place before full term.

Q. When may it occur?

A. Any time between the middle of the seventh and the end of the ninth month.

Q. What is natural labor?

A. It is labor in which there is a practicable presentation, terminating within twenty-four hours, and unattended with any circumstance calculated to excite apprehension as to the safety of either mother or child.

Q. In what are all labors the same?

A. The general conditions of all varieties of labor are essentially the same.

Q. From what source is the force necessary to expel the foetus derived?

A. While the uterus supplies the only force absolutely necessary to expel the foetus, yet at some time during the process every muscle in the body co-operates.

Q. Ordinarily, what is the most serious resistance and cause of suffering in natural labor?

A. The great resistance of the pelvis to the passage of the head.

Q. Can this resistance be overcome by any natural process?

A. Yes; the head is compressed and molded into a favorable shape.

Q. What three conditions are connected with labor, that seem to influence its commencement?

A. The perfect development of the ovum, insuring its viability, the entire evolution of the cervical cavity, and the return of the menstrual period.

## SYMPTOMS.

QUESTION. What symptom usually indicates the approach of labor?

ANSWER. The descent of the uterus.

Q. What inconvenience does the subsidence sometimes initiate?

A. Vesical and rectal tenesmus, which increase, and become more urgent, until the first stage of labor is established.

Q. When does the subsidence of the uterine tumor occur?

A. It generally begins early in the ninth month, and is very gradual until within a few days of labor.

Q. What change occurs in the uterine tissues just previous to labor, or at its commencement?

A. The walls of the body and fundus are thickened, and become harder to the touch, while the walls of the cervical portion become thinner and more elastic.

Q. What change occurs in the external generative organs simultaneously with subsidence?

A. They become dark and turgid with blood, and secrete more abundantly the mucus which is their natural product; consequently they become relaxed and easily distensible.

Q. Into how many stages is labor divided?

A. Three.

Q. When does each begin and end?

A. The first begins with the labor pains, is completed when the os uteri is dilated sufficiently to let the fœtus pass, and the membranes are ruptured; the second begins at this time, and ends in the entire expulsion of the fœtus; the third begins at the close of the second, and ends in the expulsion of the membranes and placenta.

Q. What is the first signal of the commencement of labor?

A. A change in the character and amount of the vaginal discharges.

Q. What is the so-called "show"?

A. A lump of vitreous substance, tinged with blood, discharged together with the ordinary mucus.

Q. What is the character of the first pains?

A. They are slight, and recur at long intervals.

Q. What change do they undergo?

A. The intervals become gradually shorter, until there are but two or three minutes between the pains.

Q. What nervous phenomena sometimes appear?

A. With the beginning of pains there is often a nervous trembling — not a chill, but a shake — attended sometimes with a sensation of coldness, and cold hands and feet.

Q. How severe may it be?

A. It is generally moderate in intensity, but in some nervous temperaments amounts to a species of convulsion.

Q. Do other organs become deranged during this stage of labor?

A. The distress of the first stage is often increased by nausea and vomiting.

Q. Is the length of the first stage variable?

A. It may vary from one to many hours.

Q. To what extent are the membranes protruded before they rupture?

A. The rupture usually takes place when the membranes have been pressed through the dilated os far enough to press on the perineum; but sometimes the ovum is expelled whole, the membranes remaining intact during the first and second stages.

Q. Is all the liquor amnii expelled when the membranes rupture?

A. Ordinarily the head engages in the os uteri sufficiently to prevent farther loss at that time, and only about twenty per cent. of the liquor is lost.

Q. What variations may occur in the symptoms of the first stage of labor?

A. The membranes may rupture, and liquor amnii begin to discharge at intervals, until the uterus is drained of the fluid.

Q. What is the character and name of the succeeding labor?

A. It is usually more painful and protracted, and is called a dry labor.

Q. Does the muscular system take any part in the first stage of labor?

A. The uterus is alone in action in that stage.

Q. What effect have the pains on the pulse?

A. The pulse is usually small and quickened during a pain.

Q. Is the severity of the pain equal to the rapidity of the dilatation?

A. There is no constant correspondence between them; more frequently the greater the pain the slower the dilatation.

Q. What effect have nausea and vomiting on the first stage?

A. It has been observed that the more nausea and vomiting, the more rapidly the mouth of the womb relaxes.

Q. What change usually occurs in the pains when the membranes are ruptured?

A. There is an interval of rest, sometimes lasting

half an hour or longer, usually only a few minutes, followed by a marked change in the character of the pains; the efforts become more or less voluntary on account of the co-operation of the patient.

Q. What is the character of the pains of the second stage?

A. The intervals are more free from suffering than in the first stage; but they grow shorter, and the length and force of the pains greater, until in one that seems to combine the energy of half a dozen, calling into action every muscle, the presenting part is forced through the external parts.

Q. What change takes place in the womb after expulsion of the foetus?

A. The violent contractions cease, and the organ is quiet, for a short time.

Q. What is the process of the third stage of labor?

A. The tonic contraction gradually lessens the size of the uterine cavity until the placenta is expelled, which is announced by pain and the discharge of a few ounces of blood from the vagina. The placenta remains a short time in the vagina, but is finally extruded by one or more pains, and labor is completed.

Q. Is the third stage ever delayed?

A. The placenta may remain in the vagina several hours, and has been known to be retained there thirty-six hours without pain.

Q. What is the relative duration of the different stages of labor?

A. Perhaps we shall approximate an average when we say the first stage lasts from four to six hours, the second from one to four, and the third from thirty minutes to an hour.

Q. Are labors always the same duration in different patients, or in the same patient at different times?

A. No; one patient differs from another, and the same patient may not have the same experience twice.

### THE MECHANISM OF LABOR.

QUESTION. What is our purpose in studying the mechanism of labor?

ANSWER. In order to be able to afford appropriate aid in difficult cases.

Q. By what is the head made to pass through the os uteri?

A. The os is rendered dilatable by changes that precede labor; but it is opened by the force of the uterus exerted upon the fœtus.

Q. By what is the dilatation effected preparatory to expulsion?

A. It is effected by the pressure of the membranes filled with liquor amnii.

Q. What effect has the bag of waters on the vagina?

A. Its upper part is dilated by the distended membranes being pressed forcibly down into it; but the head, in passing through, completes the process.

Q. At the beginning of labor, how is the fœtus situated with regard to space?

A. It is in a state of complete flexion, in order to occupy as little space as possible.

Q. What equalizes the inequalities of the fœtus during the first stage?

A. The liquor amnii fills all the interspaces formed by the inequalities of the fœtal surface.

Q. When does the foetal head usually enter the pelvis?

A. In most cases the head enters the pelvis previous to the commencement of labor, the movement belonging to the preparatory stage; but in some cases it remains at the superior strait until the contractions of the uterus force it down.

Q. How does the head usually engage in the pelvis?

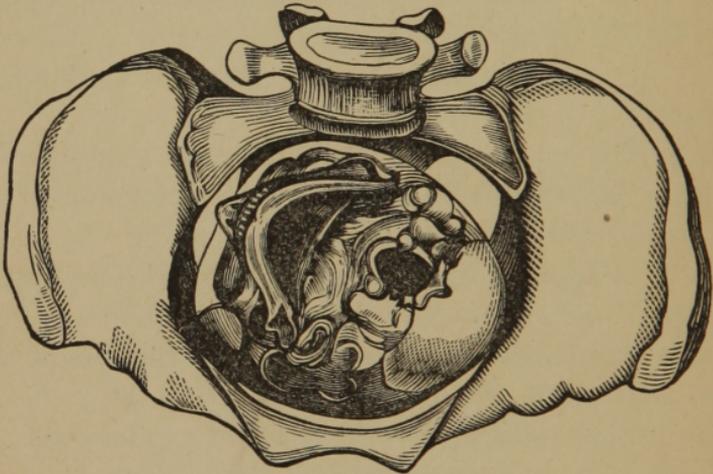


FIG. 23. — First Position in Vertex Presentation.

A. In an oblique direction?

Q. What part of the head is most dependent?

A. The upper part, or that called the vertex, consisting of the upper part of the occiput and the back part of the parietal bones.

Q. In what cases is there variation of the rules for the entrance of the head in the superior strait?

A. In cases where the disparity between the size of the head and pelvis is such as to allow the head to float about loosely.

Q. Where is the vertex in most cases of labor?

A. It is near to the left acetabulum.

Q. Where, in relation to the pelvis, is the occiput?

A. It is in contact with the side of the pelvis somewhere during the whole time of the expulsion of the head.

Q. If the vertex, or top of the head, is the most dependent, or, in other words, the *presenting* part, where may the occiput be?



FIG. 24. — Second Position in Vertex Presentation.

A. The occiput may be at the left acetabulum, while the forehead is at the right sacro-iliac synchondrosis.

Q. What is this position called?

A. The first position, because the most frequent.

Q. What is the relation of the *head* to the pelvis in the second position?

A. The occiput is at the right acetabulum, the forehead looks toward the left sacro-iliac symphysis.

Q. What is the relation of the head to the pelvis in the third position?

A. The occiput is at the right sacro-iliac symphysis.

Q. Explain the fourth position?

A. The occiput is at the left sacro-iliac synchondrosis, and the forehead at the right acetabulum.

Q. What other positions sometimes occur in premature labor?

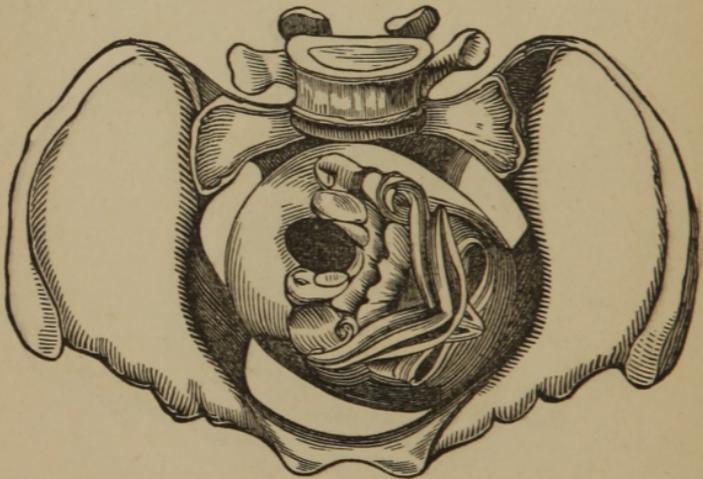


FIG. 25. — Third Position in Vertex Presentation.

A. The occiput may be to the pubis or sacrum in a direct antero-posterior direction, and again it may be at the side, placing the head across the pelvis.

Q. What class of cases is alone suited to the study of the mechanism of labor?

A. Those in which the size of the head is well adapted to the size of the pelvis.

Q. What two conditions of the foetal head are strongly maintained until the vertex presses on the perineum?

A. The flexed condition of the head, and the diagonal direction of the antero-posterior diameter.

Q. When the vertex presses on the perineum, what determines its rotation?

A. As the head is urged downward by the pains, when it reaches the perineum one angle of it comes in contact with the spine of the ischium, which causes the head to slide forward upon the anterior inclined plane.

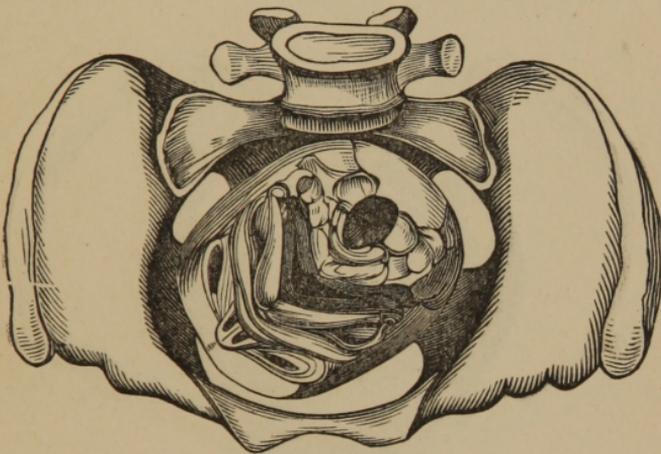


FIG. 26. — Fourth Position in Vertex Presentation.

Q. What is its motion after this?

A. The head then passes downward and forward to the tuber and ramus of the ischium, and assumes, by a spiral motion, a position under the symphysis pubis.

Q. What diameter of the head and pelvis correspond when rotation is complete?

A. The antero-posterior diameter of the head and pelvis correspond.

Q. What is the next movement?

A. Extension, or the departure of the chin from the breast.

Q. When should this occur?

A. The occiput should be down well on the perineum, and begin to turn forward, before extension occurs.

Q. How does the perineum aid in the spiral change?

A. The perineal eminence is elastic, and glides up behind the head, and urges the occiput forward.

Q. What is the necessity for extension when the occiput is under the symphysis?

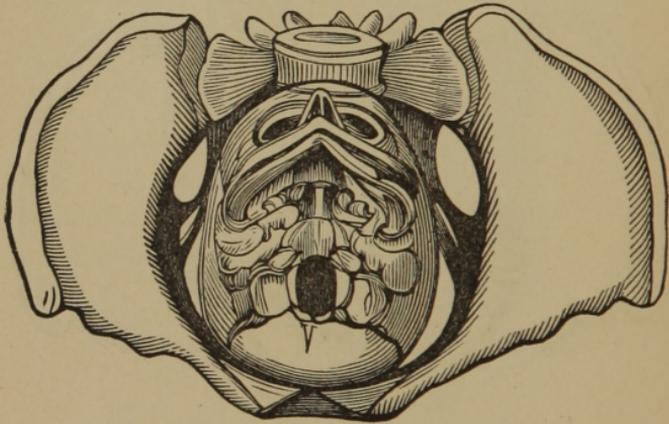


FIG. 27. — Occiput to the Pubis.

A. The occiput cannot be pressed forward nor elevated sufficiently to permit expulsion, unless the neck is extended from the body as forcibly as it was flexed before labor began.

Q. When is extension complete?

A. Not until the head is expelled.

Q. What are the combined forces that effect this spiral change?

A. Uterine action forces the head downward, corresponding with its own axis; the spine of the ischium

turns the occiput forward; the uterine force, still applied in the new direction, bends the head downward and forward until extension occurs.

Q. After the head has passed the inferior strait, and cleared the external parts, what change in position does it undergo?

A. Restitution takes place; that is, the head takes the same position it had before rotation.

Q. What is the mechanism of the delivery of the shoulders?

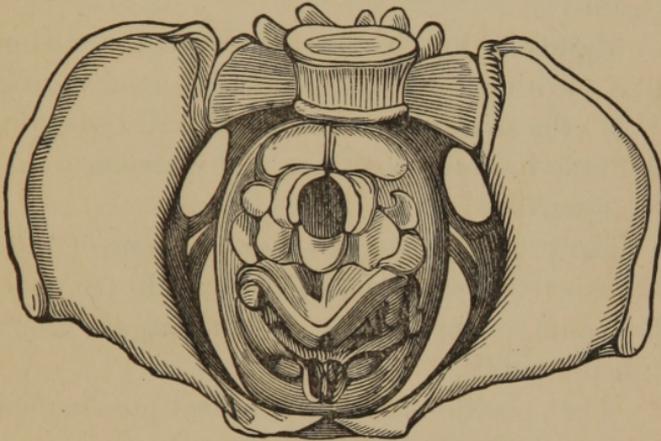


FIG. 28. — Occiput to the Sacrum.

A. A continuation of the expulsion brings down the shoulders; as they press upon the bottom of the pelvis, the one nearest the symphysis is thrown forward, and engages beneath the arch. Here they may be arrested for a short time, the shoulder under the symphysis appearing, while the body is bent laterally up around the symphysis, the other side sweeping over the lower part of the sacrum and perineum, until the lower one is free, when both are expelled.

Q. What is the mechanism of the delivery of the hips?

A. The parts are so distended by that time there is no distinct mechanism, the abdomen and hips passing readily.

Q. What follows after the child?

A. The placenta is next expelled, and, following the uterine axis, is lodged in the hollow of the sacrum, where it remains from a few minutes to several hours.

Q. By what means is the placenta expelled from the vagina?

A. Mainly through the action of the abdominal muscles, pushing the uterus down into the vagina.

Q. Do the same general rules govern the expulsion of the fœtus in other positions and presentations as in the one described?

A. The presentations of other portions of the head beside the vertex, and even of the breech, are governed by the same general rule of change as they pass through the pelvis.

Q. What position has the simplest mechanism and easiest delivery?

A. The first position of the vertex, with the occiput to the left acetabulum, and the forehead to the right sacro-iliac junction.

Q. What is the direction of the spiral change in the first position of the vertex?

A. It is from left to right, until the face is in the sacral cavity and the occiput under the symphysis pubis.

Q. What space is passed over?

A. It is one-eighth of the circuit around the pelvis.

Q. Why are the changes that occur in the third position of the vertex greater?

A. Because the occiput has to describe three-eighths instead of one-eighth of a circle.

Q. When does the spiral change commence in the third position of the vertex?

A. When the vertex is low enough to touch the spine of the ischium.

Q. What is the mechanism of the second and fourth positions, compared with the first and third?

A. The second is like the first, with the spiral movement reversed; the movement of the fourth is like the third reversed.

Q. How can the movements of the head in the third and fourth positions be accounted for?

A. In those positions the long plane of the head is opposed to the shallow portion of the pelvis, and hence the occiput touches the spine of the ischium before so much of the head has descended into the pelvic cavity, as in the first and second, and consequently is not fixed.

## FACE PRESENTATIONS.

QUESTION. What part of the head presents next in frequency to the vertex?

ANSWER. The face.

Q. What is probably the cause in most cases?

A. As it is only necessary to extend the head upon the neck to convert a vertex into a face presentation, there can be little doubt that this is the manner of occurrence in face presentations.

Q. How many positions are usually described for face presentation?

A. Four. In the first the fronto-mental diameter coincides with the right oblique diameter of the brim, the chin looking backward. In the second the diameter of the face coincides with the left oblique diameter of the brim, the chin looking backward. The

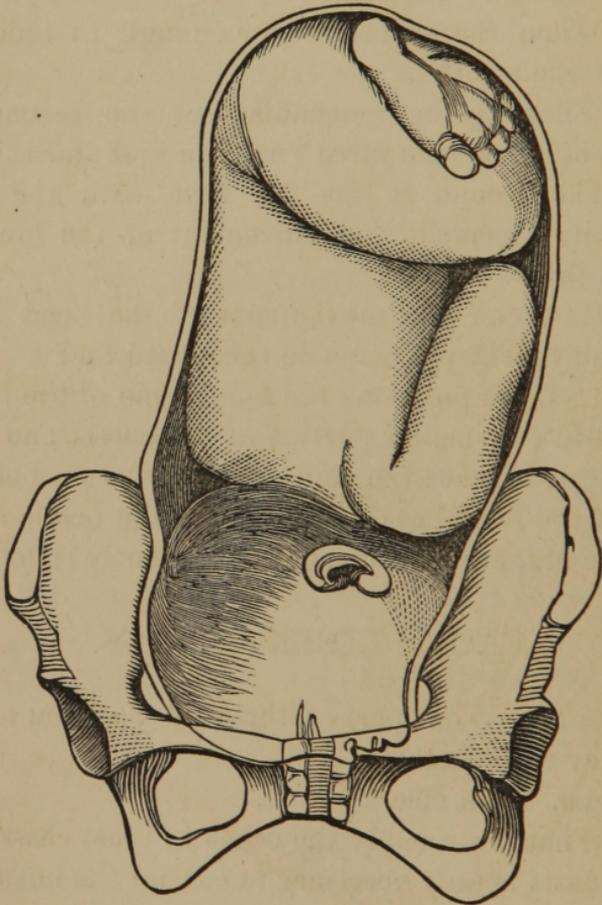


FIG. 29.

third is the reverse of the first, the chin looking forward. The fourth the reverse of the second.

Q. What diameter of the head is engaged in face presentations?

A. The fronto-mental, which is less than the occipito-bregmatic.

Q. What three causes render this presentation more difficult of delivery?

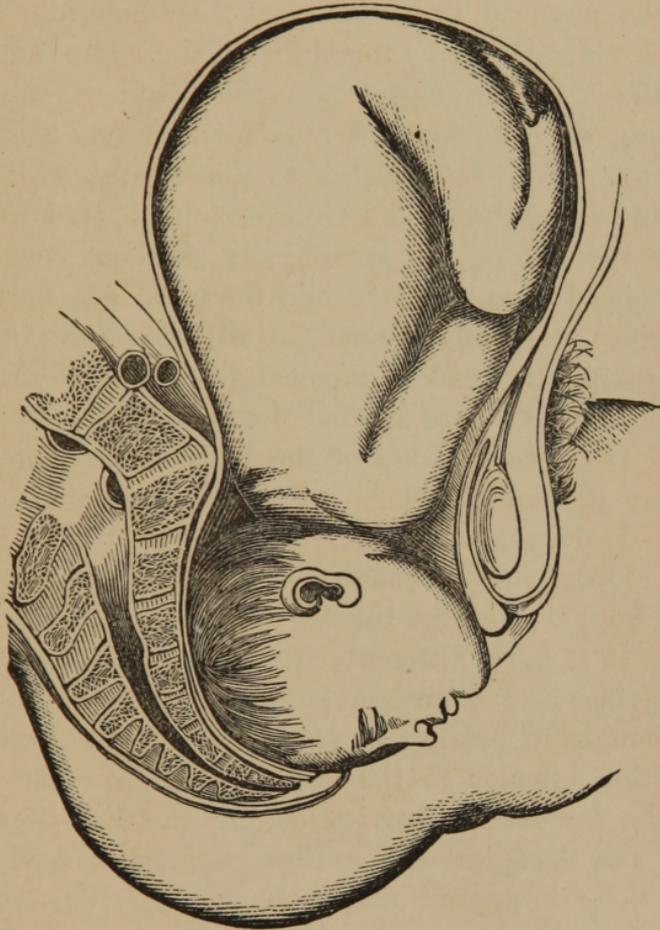


FIG. 30.

A. The unyielding nature of the bones forming this diameter, the less readiness with which the spiral movement is effected, and the greater length of the

curve formed by the flexion as against extension in the vertex presentation.

Q. What is the mechanism of delivery in the third position of face presentation?

A. The chin descends behind the left acetabulum, and the forehead next the sacro-iliac junction, until this last is arrested by the spine of the right ischium, and the chin impinges upon the plane of the left ischium, when its forward movement causes the forehead to turn into the hollow of the sacrum, while the chin is turned into the ischio-pubic arch, and finally under the arch of the symphysis; the posterior part of the head then descends, and the neck is flexed; the chin rides up around the symphysis, and approximates the breast; the head is expelled from the vulva with the chin pressed hard against the symphysis.

Q. Does the delivery of the body differ from that in other presentations?

A. It does not.

Q. Does the mechanism of the first position differ from that of the third?

A. It is quite different; the head sinks down into the pelvis, with the forehead behind the left acetabulum, but changes in passing down, so that the chin attains a position anterior to the spine of the right ischium, and the forehead is carried behind the left ischiatic spine, and the spiral change thus initiated is continued until the chin appears under the symphysis from the right side.

Q. What is the mechanism of the fourth position?

A. It is like the first, only the chin is situated on the opposite side of the pelvis, and the movements are in the opposite direction.

Q. How does the second differ from the fourth?

A. It differs only in moving in the opposite direction.

Q. Is delivery practicable in a face presentation that would bring the occiput to the symphysis pubis?

A. It is impracticable, because the fronto-mental diameter of the head would be added to the thickness of chest and shoulders during passage through the inferior strait.

Q. What would render such a delivery possible?

A. Great disparity in the diameter of the head and pelvis, as in premature labor, or in case of a very small head.

Q. How may a vertex be changed into a brow presentation?

A. As the head descends, the chin may depart from the chest, until the brow is the most depending part.

Q. What diameter is engaged?

A. The coronal-mental.

Q. How is such a presentation usually disposed of?

A. It is generally converted into a face presentation.

Q. How do ear presentations terminate?

A. They are generally converted into vertex presentations.

## BREECH, KNEE AND FOOT PRESENTATIONS.

QUESTION. How many modes of breech presentations are recognized?

ANSWER. Four. First, with the spine of the foetus applied to the region of the left acetabulum of the mother, and the face looking to the sacro-iliac synchon-

drosis; second, the spine of the foetus applied to the right acetabulum, with the abdomen turned to the left sacro-iliac junction; third, the reverse of the first; and fourth, the reverse of the second.

Q. What is the mechanism of the first and second positions?

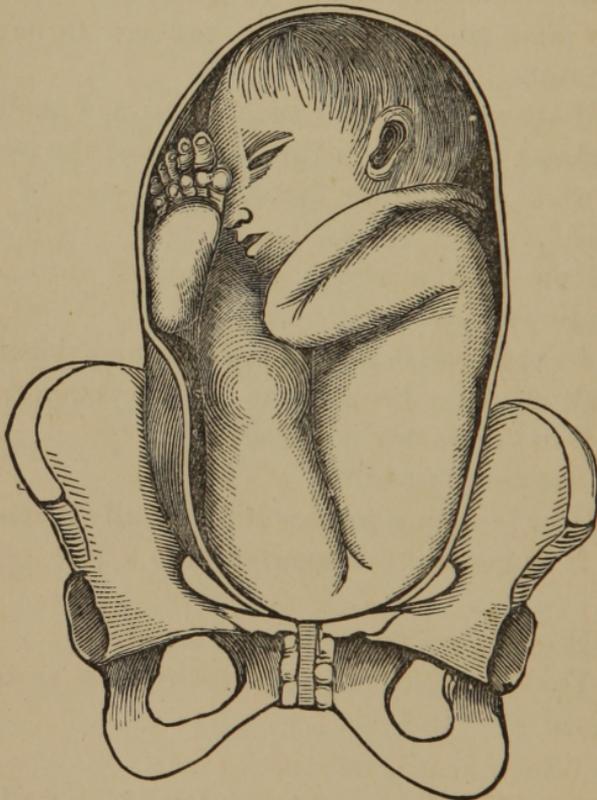


FIG. 31. — Breech Presentation.

A. When the breech is within the pelvis, in the first position, it sinks down to the perineum in the direction in which it entered, with the sacrum of the foetus at the left acetabulum. When it begins to press strongly on the perineum, the left hip begins to

turn toward the pubis, and as it reaches the lower strait shows itself under the arch of the symphysis, and advances slowly, while the right hip, which has glided into the hollow of the sacrum, distends the perineum, and emerges from the vaginal orifice.

Q. Has the part of the foetus in the uterus turned while the hips have been making the spiral change?

A. It has not.

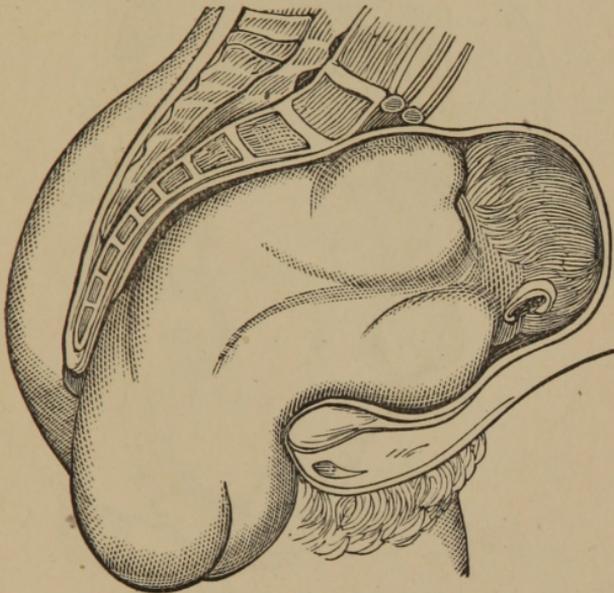


FIG. 32.

Q. Which arm is delivered first?

A. Usually the right arm drops out first.

Q. How is the head delivered?

A. The head enters the pelvis before the shoulders are expelled. It comes with the face looking downward, and toward the right sacro-iliac junction, and the occiput upward, and toward the left groin. As it sinks down the chin and face come in contact with the

perineum, and turn into the hollow of the sacrum. The occiput then remains stationary behind the symphysis, while the face and forehead pass over the perineum, and all emerge together.

Q. How should the arms remain during delivery by the breech?

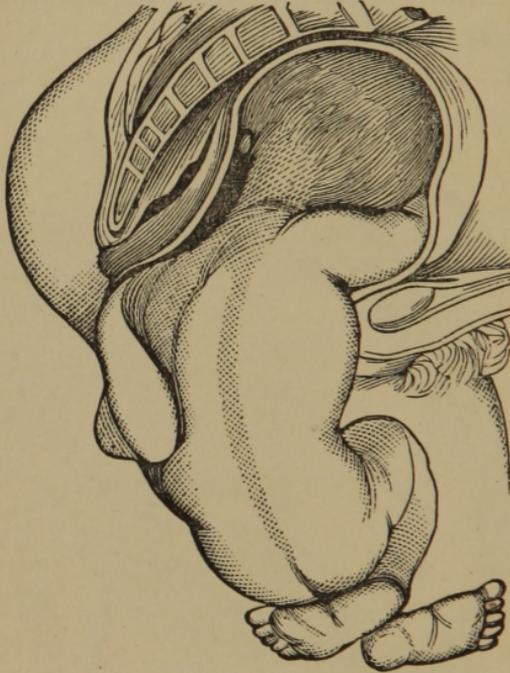


FIG. 33.

A. The arms should remain flexed on the chest, closely applied to the sternum, until they drop out of the vagina.

Q. What is the mechanism of delivery in the second position?

A. All the steps of delivery are the same as in the first, except the movements have the reverse direction.

Q. What is the mechanism of the third position?

A. In this position the breech is intruded into the pelvis, with the sacrum to the right sacro-iliac junction, and sinks down until it comes in contact with the perineum, when the right hip rotates to the pubis, and remains in contact with it, until the left hip passes over the perineum, and both are expelled at once. The head enters the pelvis with the face looking downward, and at the left acetabulum; otherwise the mechanism is continued as in the first and second positions.

Q. How does the fourth differ from the third?

A. The motion is in the opposite direction.

Q. What is the liability of the foetus to injury during delivery by the feet, knees or breech?

A. The danger is that the head may be delayed, and press the cord long enough to endanger the life of the foetus.

## DIAGNOSIS OF LABOR.

QUESTION. What inquiry should be made in regard to the condition of the patient?

ANSWER. We should ask how long since the first symptoms were observed, the nature of them, whether the time for confinement has arrived, and how frequently the pains come, satisfying ourselves as nearly as possible from the questions whether labor has begun.

Q. What will the manner of the patient indicate?

A. It will assist us in getting a knowledge of the stage and progress, whether she tries to aid the pains or shrinks from them.

Q. What is necessary to a positive diagnosis?

A. We cannot arrive at any positive information in respect to the case without a physical examination.

Q. How should the bed be prepared for labor?

A. The bed should be so prepared that the woman can lie without disturbance for twenty-four hours, as it is often important that she is not moved for that length of time. A rubber sheet, with a doubled quilt and sheet over it, should be placed across the bed, and removed when labor is over, in order to make the patient at once dry and comfortable.

Q. How should the patient be dressed?

A. She should be dressed as for bed, and care taken to keep her clothing dry, so that she need not be compelled to change her clothing for several hours after labor.

Q. What is the best position for an examination?

A. The patient should be in the dorsal decubitus, near the edge of the bed, with the head to the left hand of the attendant, as he stands facing the bed.

Q. What is the process of examination?

A. The examiner is seated by the side of the bed, opposite the hips of the patient. The right hand should be placed under the cover, beneath the flexed limbs of the patient, and after reaching the genital organs, the index finger, previously oiled, is gently inserted into the vagina. If it fail to reach the whole of the presenting part, both fingers should be introduced.

Q. Should the examination be during a pain, or in the interval?

A. It should be continued over the interval, in order to get an idea of the force and efficiency of the contraction.

Q. What conditions are determined by examination if labor has just begun?

A. If the presentation is vertex, the finger will come in contact with a round, firm body, that prevents it from passing upward, except in contact with the pubis or other part of the pelvic wall.

Q. What is the characteristic feel of the head of the foetus?

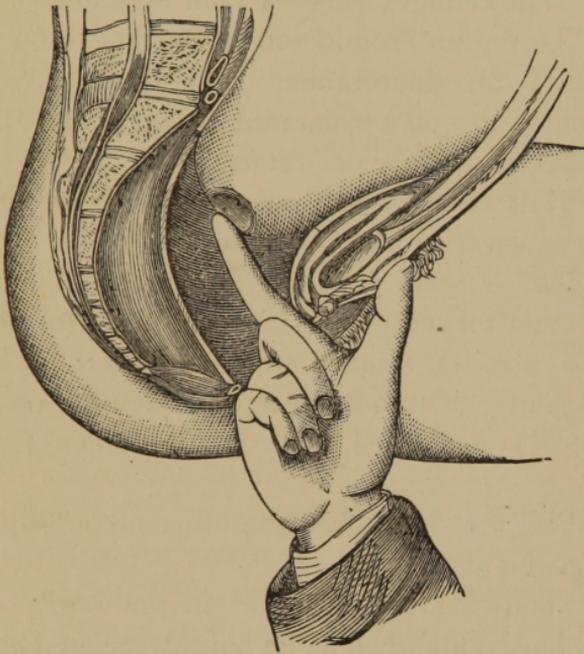


FIG. 34.

A. The finger recognizes the fact of being in contact, or nearly so, with bone.

Q. Will the examiner be able to detect the os uteri?

A. At the most dependent part of the tumor, or perhaps a little behind it, toward the sacrum, will be

found a depression large enough to allow the finger to sink into it, which is the os uteri slightly dilated.

Q. What change will be produced in the os uteri if we allow the finger to remain in contact with it during a pain?

A. We can feel the edges to become firm, and after remaining so for a short time relax and dilate somewhat.

Q. What changes may we note farther?

A. The region around the os appears to be pointed downward; the membranes, lying apparently on the skull before, are now separated from it, and the head is felt through a layer of water.

Q. What changes are accomplished as the pains increase in severity and frequency?

A. The os uteri becomes larger; the membranes protrude and form a projecting bag, tense to the touch during a pain, and relaxed after it goes off. The head is continually crowded lower, the membranes break, the water is discharged, and the first stage is accomplished.

Q. Will the hand feel the uterine contractions if placed on the abdomen?

A. When the pain comes on the uterus slowly becomes hard, and when at its height the whole uterine globe is very hard, feeling as hard as we should suppose a wooden ball would feel if covered by the abdominal walls. It continues thus firm for a time, gradually becoming softer at its lower portion as the pain ceases, the hardness subsiding at the fundus last.

Q. Where are spurious pains situated?

A. Sometimes they are in the alimentary canal, especially, and more frequently, in the rectum. At

other times they are in the abdominal muscles, occasionally in the lumbar muscles, and sometimes in the uterine muscles themselves.

Q. How may these pains be differentiated from real labor pains?

A. There is always some discrepancy in the pains, as compared to real labor pains. They are irregular as to time or intensity; but as they are sometimes in the uterine muscles, an examination of the uterus alone may satisfy the physician of the difference.

Q. May the uterine contractions be controlled when once initiated?

A. In some cases the evidence of commencing labor is very decided, and yet the contractions may subside.

Q. What is the treatment?

A. It should be such as is calculated to remove the condition on which the pain depends. Opium in decided doses; fomentation to the abdomen; attention to the state of the bowels; and venesection in plethoric cases.

Q. What caution is necessary in examining to ascertain the presentation?

A. We should be careful not to rupture the membranes.

Q. What amount of exploration should suffice at this time?

A. We should simply find out whether it is the head, breech, feet, knees, or some other part presenting.

Q. What are the three conditions that may hinder the vertex entering the pelvis before labor begins?

A. Deformity of the pelvic brim, the head disproportionately large, or great obliquity of the uterus.

Q. What is the most common cause of the head being detained at the superior strait?

A. Obliquity of the uterus is probably the most common cause.

Q. How may a vertex presentation be determined?

A. The vertex fills the whole circle of the pelvic cavity, is round and uniform, so that it is one rotund, solid part, that sinks lower in the pelvis than any other.

Q. How can the vertex presentation be distinguished from that of the face?

A. The face is flat when felt from below, and always high up in the pelvis in the commencement of labor, and pretty uniformly fills the pelvic circle.

Q. How can the vertex be distinguished from a breech presentation?

A. When the breech presents, it usually sinks well into the pelvis before the beginning of labor, and generally fills the pelvis in all directions; and we shall find soft tissue if we press the finger on the presenting part at the sides of the pelvis.

Q. What are the characteristics of the knees, feet, elbow, or hand presentation?

A. If the knees present together, it will not be difficult to distinguish them from any other part, as there are no other two that closely resemble them. When only one knee presents, the patella will distinguish it from the olecranon. If both feet present, the diagnosis is not difficult, as the hands seldom come together.

Q. What is an item of value in diagnosing these small parts?

A. The mobility and lightness of them.

Q. What is likely to be the shape of the bag of water in these different presentations?

A. In the vertex and breech presentations, the bag of water is more globular in form than in others. In face and shoulder presentations, it is comparatively long and slender.

Q. At what time are we to determine the presentation positively?

A. We can, by a careful consideration of all these marks, determine, before the os uteri is open fully, and before the rupture of the membranes, whether there is cephalic presentation, or some other; but when the cervix is fully open, and the membranes ruptured, we are to determine positively the part presenting, and its position in the pelvis.

Q. What are the three methods by which we may determine the position of the occiput in the vertex presentations?

A. By determining the relative positions of the vertex, fontanelles, and the ear, in relation to the pelvic walls.

Q. Which fontanelle is the most easily reached?

A. The lesser, the greater being a good finger's length from the vaginal opening.

Q. Where will the ear be found in the first position?

A. It will be found to the right of the symphysis, and the free portion of the concha points to the occiput.

## DIAGNOSIS OF FACE PRESENTATION.

QUESTION. What are the distinctive points by which we are enabled to diagnosticate a face presentation?

ANSWER. The face comes down slowly, and the second stage often finds it high up in the pelvis. The features are so plain when uncovered by the full establishment of the second stage, that we can generally make out the presentation unmistakably, though it will generally be necessary to introduce two fingers to make out a face presentation.

Q. How may we distinguish between the face and a breech presentation?

A. The sex will to some extent govern the facility with which the presentation is determined. If it be male, the relation between the genital organs and the anus will always be a sure guide as to the direction of the back. If it is a female, this will not be so easy, and we will depend on tracing the genital sulcus to the division between the thighs.

Q. What are the signs by which we distinguish the face from a foot or knee presentation?

A. The knees can easily be detected by the patella; the feet are also easily recognized, remembering the heel points in the direction of the occiput, and the toes in that of the face.

Q. What can be learned by palpation of the abdomen?

A. Very much may be learned by a careful examination of the abdomen by the hands. The shape of the uterine tumor differs in shoulder from what it does in head or breech presentations. A cross pre-

sentation may be diagnosticated by the shape of the tumor.

Q. When should the manipulation be practiced?

A. Between the pains.

Q. What may be determined by the aid of auscultation?

A. The position and number of fetuses in utero.

Q. Where is the heart heard?

A. Before the subsidence of the head in the pelvis, the heart is heard to one side, and slightly above the umbilicus; after it has sunk into the pelvis, it is below that point in the abdomen. If the heart is heard to the left of the umbilicus, the occiput is at the left side of the pelvis; if to the right, the reverse. If there are twins, one heart may be heard above, and on the opposite side of the abdomen from the other.

### DIAGNOSIS IN THE THIRD STAGE OF LABOR.

QUESTION. What is the shape and position of the uterus at the beginning of the third stage?

ANSWER. It is globular in shape, and extends up to or above the umbilicus.

Q. What is its position after the placenta is expelled?

A. It will contract down to midway between the umbilicus and symphysis pubis.

Q. If there are irregular contractions of the uterus, how may they be detected?

A. Such contractions change the shape of the uterine tumor from a globular to an elongated shape.

Q. If we can reach the placenta with the fingers, what has probably occurred?

A. It is partly or wholly expelled from the uterus.

Q. For what purpose should an examination be made after labor is completed?

A. We make an examination of the genital organs to ascertain if damage has been done, and to what extent.

Q. What simple method will satisfy us as to the amount of perineal rupture?

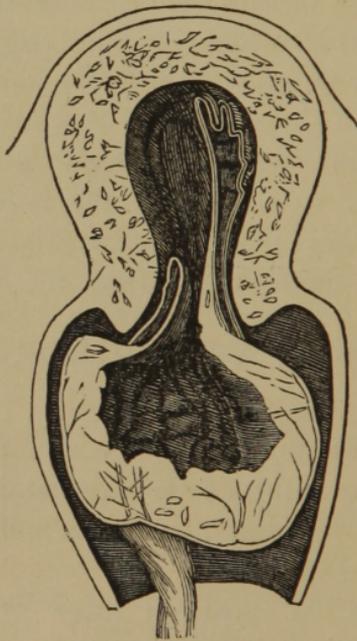


FIG. 35.

A. We may introduce one finger in the anus, and thumb in the vagina, and try how nearly we may approximate them, which will give us an idea of the extent of rupture.

Q. Why should the placenta and secundines be examined after their expulsion?

A. In order to be sure there is no part left behind to cause harm by their decomposition.

## PROGNOSIS CONNECTED WITH LABOR.

QUESTION. What is the rule in regard to suffering and duration of labor in the first and subsequent confinements?

ANSWER. It may be regarded as almost universally true that the woman will suffer more, and the duration will be longer, in her first than in subsequent labors.

Q. Is this so of all stages of labor?

A. This protracted duration extends to all the stages.

Q. What stage is likely to be delayed in multipara?

A. The first stage.

Q. What stage of labor, if prolonged, is most dangerous to both mother and child?

A. The second stage.

Q. Does the age at which the first labor occurs have any influence on its duration?

A. Old primiparæ have more tedious labors than younger women; but quite young primiparæ are likely to have labors of longer duration, and more hazard, than those of mature age. There are exceptions to these rules.

Q. What condition of the soft parts is an augury of speedy delivery?

A. If the whole of the genital canal is thoroughly lubricated with mucus, and soft and cool, it is favorable.

Q. What condition would indicate tardiness?

A. A scarcity of secretion is almost always attended with tenderness of the parts, and both of these conditions indicate tardy dilatation.

Q. How may we ascertain whether the os uteri is dilatable?

A. We may introduce the finger into the cervix, and make a gentle attempt to open the mouth. If it yields between pains, and does not close during a pain, in spite of our finger, we may regard it as dilatable. But if it resists our efforts at dilatation between pains, it will be a cause of detention.

Q. What is the probable cause for the edges of the os uteri being thick and unyielding?

A. The cervix is probably not completely developed.

Q. What must be the condition of the vagina and perineum to afford easy passage for the head?

A. These must be moist, lax, and not tender to the touch.

Q. What condition of the bag of waters is most favorable to a good delivery?

A. It should be firm enough to withstand the pressure from above, and the circular pressure around it, until dilatation is complete, and then not too strong to be ruptured by the force exerted by the uterus after this is accomplished.

Q. What effect will too early rupture of the membranes produce?

A. As the liquor amnii drains away, the uterine tissues come in direct contact with the child's surface, the inequalities of which become a source of irritation and increased suffering.

Q. Are the membranes ever too strong?

A. They are occasionally so tough that they do not rupture when dilatation is complete, and thus retard labor.

Q. What presentations are the most favorable for a speedy delivery?

A. The first position of the vertex is most favorable, but the vertex in any position is the most auspicious presentation.

Q. What presentations retard delivery?

A. The face, breech, knees and feet.

Q. What presentations are most dangerous to the child?

A. The breech is an extremely dangerous position for the child, especially in primiparous cases. The knees and feet are more dangerous to the child than the breech, and more tedious and unsafe for the mother.

Q. What is the source of danger to the child in feet, knee and breech presentations?

A. The danger arises from the fact that as the head passes through the pelvis the cord is pressed between it and the bones, strongly enough to partially or wholly arrest the circulation of blood between the placenta and foetus; and this may continue long enough to destroy the child.

Q. What may we expect from the character of the pains?

A. Should the pains be increasing in severity and frequency, we may expect a speedy termination; but if they are irregular, or become less frequent, the labor will be slow.

Q. Of what significance is a large, flabby womb, yet retaining the placenta?

A. A tardy delivery of the placenta, and great danger of hemorrhage.

Q. What does a small, firm condition of the womb indicate?

A. The reverse of the soft, flabby one.

Q. What condition of the patient promises immunity from post partum hemorrhage?

A. In cases where the pulse is slow and tranquil, we need not fear bleeding; but if the pulse is quick and jerky, we should be careful for the welfare of the patient for an hour or two.

Q. Does a general good condition insure no hemorrhage?

A. In some instances sudden and alarming hemorrhages supervene, when all appearances are most flattering. We should be sure of our premises before we come to a conclusion that might place our patient in jeopardy.

### MANAGEMENT OF NATURAL LABOR.

QUESTION. What is the main object in the management of cases of natural labor?

ANSWER. It is to keep the patient as comfortable in mind and body as practicable.

Q. How should the diet of the patient be regulated?

A. She should be allowed to eat her ordinary diet in usual quantities, in order to support her strength.

Q. What privileges of dress and position should be allowed her?

A. Until the first stage has terminated she may wear her ordinary dress, and move about to suit her own inclinations.

Q. When should the bed and clothing be specially arranged?

A. When the second stage has begun.

Q. How should nervousness or bad temper on the part of the patient be treated?

A. Anything of the kind should be met with the utmost kindness and indulgence.

Q. How many attendants are necessary?

A. The nurse, and, at most, one or two lady friends are all that are necessary under ordinary circumstances.

Q. If, by examination, it is found labor is just begun, what attention is necessary?

A. We may inquire into the state of the bowels, and give an enema or laxative, if necessary; further, there is nothing to do but wait.

Q. Is it necessary to make many or frequent examinations?

A. It is best to make examinations to learn the progress very seldom, and with great care, to avoid rupturing the membranes or irritating the vagina.

Q. If the rigors of the first stage become alarmingly severe, how should they be treated?

A. An anæsthetic may be given.

Q. When will it be necessary for the patient to assume the obstetric position?

A. When the presenting part begins to press with any force on the perineum she will require more attention, and it will be necessary to assume the obstetric position.

Q. What are the two positions recommended?

A. One is upon the left side, the other upon the back, with the limbs flexed.

Q. For what purpose should an examination be made immediately after the rupture of the membranes?

A. It should be made in order to make a complete diagnosis of the position.

Q. What is the duty of the accoucheur when the presenting part begins to press upon the perineum?

A. He should remain at the bedside of the patient, and attentively watch its progress.

Q. What is supporting the perineum?

A. When the external parts are distended the perineum may be supported with the palm of the hand in such a way as to keep the presenting part well up against the symphysis pubis, and thus prevent its carrying the perineum far enough downward to rupture it.

Q. Will such support always prevent rupture of the perineum?

A. It will not; ruptures do occur in the hands of competent physicians.

Q. How should the head be supported during expulsion of the body?

A. The head should be supported on the hand, in such a manner as to allow air to enter its mouth and nostrils freely, and its face should be wiped clean of mucus.

Q. Why should the neck be examined as soon as possible after the expulsion of the head?

A. Because the cord is often found wrapped once or twice, or even three times around the child's neck.

Q. What should be done if the cord is found around the neck?

A. The cord should be disengaged by gentle traction, sufficiently to allow the loop to pass over the head; or increase the circle, so that the child may pass through it; or, rather than risk its being torn from the abdomen at the umbilicus, it may be cut, the child delivered and the cord secured.

Q. How should the body be held while being expelled?

A. We incline it up toward the symphysis while the limbs are being expelled.

Q. How should it be placed after expulsion?

A. It should be placed so that its head may be exposed to the air, and allowed to remain attached to the cord until respiration is established.

Q. How is this event usually announced?

A. It is generally announced by a number of lusty screams, but sometimes quietly, and we satisfy ourselves by attention to the movements of the chest and abdomen.

Q. How should the cord be secured?

A. A ligature should be tied tightly around the cord, about an inch from the umbilicus, and the cord divided half an inch beyond this.

Q. How many ligatures are necessary?

A. It is only necessary to use one; but many experienced practitioners use two, and divide the cord between them.

Q. What other mode of treating the cord is advocated?

A. The question of leaving the cord untied, without any dressing at all, after division by blunt scissors, which bruise the tissues of the cord so it does not bleed, has been tried with some success.

Q. What should be done with the child when the cord has been properly treated?

A. It may be handed over to the nurse.

Q. For what purpose should the abdomen of the mother be examined after the child is delivered?

A. We should place our hand on the abdomen, to

ascertain whether the uterus is contracted enough to have expelled the placenta.

Q. If the size of the uterine tumor indicates it has not been expelled, what is to be done?

A. We are to sit quietly by and wait until it has done so.

Q. How long should we wait without interfering?

A. If, after an hour, the uterus does not contract enough to pass the placenta down into the vagina, we may knead it with the left hand, while we tighten the cord with the other.

Q. If the placenta is in the vagina, should it be removed?

A. There is no reason to delay its removal from that passage, and we ought to extract it at once.

Q. How is its extraction from the vagina accomplished?

A. We place the fingers of the right hand on the cord at the point of its insertion into the placenta, while it is tightened by traction with the left. The placenta is then pressed downward into the hollow of the sacrum until it is relieved of its position in the mouth of the uterus. Gentle traction forward and upward in the perineal axis will easily effect its delivery.

Q. Why should the placenta and membranes be examined after being expelled?

A. To ascertain if the uterus is sufficiently contracted to prevent hemorrhage.

Q. What attention will now be necessary for the woman?

A. The clothes may now be arranged beneath the woman, so as to make her comfortable and dry, and a

soft, dry cloth be placed upon the genitals between the thighs. A binder should then be applied which will extend from the pubis to the ensiform cartilage; it must be pinned smoothly, and comfortably tight, and if there is an extension of the same between the legs, it will be found better to hold the cloths against the vulva, and also hold the binder down.

Q. What is the purpose of the binder?

A. It is to supply the tension of the abdominal walls, and need not be used more than eight or ten days.

Q. How soon may the patient be changed or moved about?

A. She should be kept quiet for six or eight hours, or until all danger of hemorrhage is passed by.

Q. How long should the accoucheur remain within call after labor is completed?

A. An hour, at least.

## MANAGEMENT OF FACE PRESENTATIONS.

QUESTION. How should face presentations be managed?

ANSWER. The management of such cases differs in no respect from that of the vertex. They should be left entirely to nature, until the failure of her powers demands interference upon general principles.

## BREECH, FEET AND KNEE PRESENTATIONS.

QUESTION. How should the first stage of labor in breech, feet and knee presentations be managed?

ANSWER. The first stage should be treated as in

head presentations, and the management of the second is the same until the breech is expelled.

Q. What should be the treatment of the latter half of the second stage?

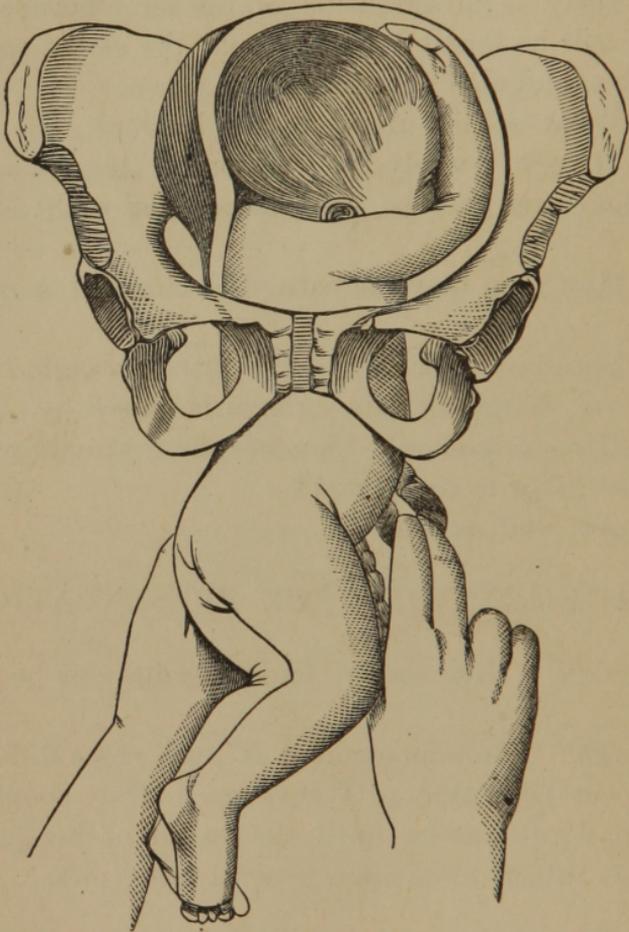


FIG. 36.

A. After the hips are expelled, and the umbilicus appears, the cord should be drawn down very gently until six or eight inches are left hanging loose outside the vulva. After this, satisfy ourselves the face of the

child is directed diagonally backward, and then we may wait until the shoulders are expelled.

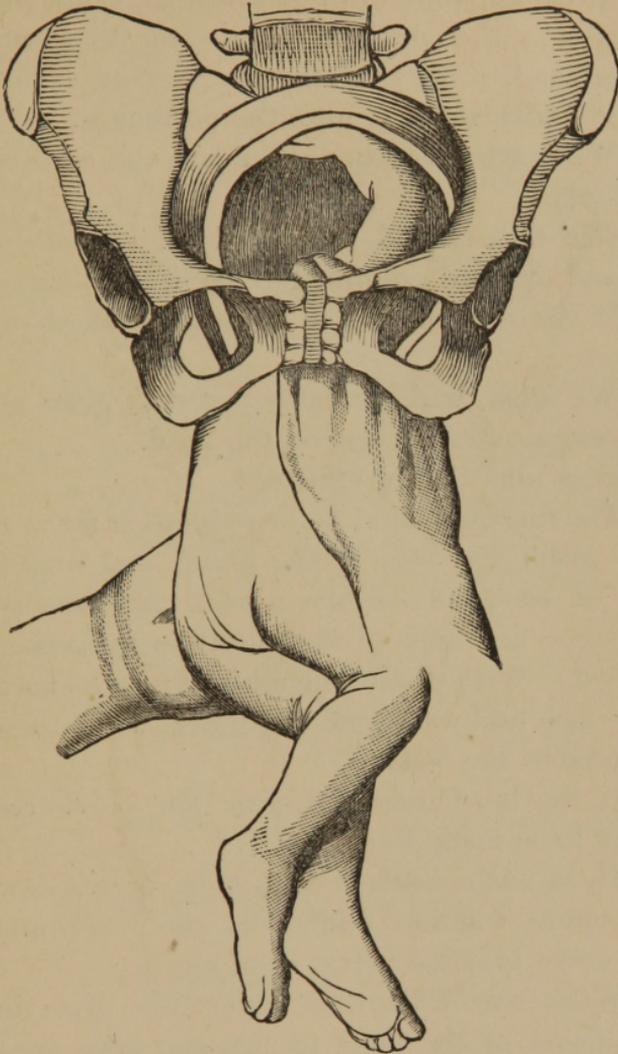


FIG. 37.

Q. If the arms do not come down readily, how may they be aided in doing so?

A. The index and middle fingers may be passed

up the arm next the pubis, to the bend of the elbow, and made to press the arm downward in a sweeping motion over the face, until it falls out. The body of the child may then be held up toward the symphysis with one hand, while the other may execute the same manœuvre with the arm next the perineum.

Q. What attention should the face and cord receive at this stage?

A. The face should be turned to one side of the pelvis, and the cord examined to see if it still pulsates.

Q. If the cord ceases to pulsate, what should be done?

A. We must, without delay, but with great gentleness, accelerate the passage of the head.

Q. How may this be effected?

A. The fingers should be introduced as far as necessary to reach the face of the child, and one finger planted on each side of the nose, firmly against the cheek bones, and kept in that position until the head is expelled. With these fingers we must endeavor to turn the face backward and downward, while the other hand supports the body.

Q. If the head does not enter the pelvis readily, how may it be made to do so?

A. If, in such cases, it cannot be drawn down by the moderate traction allowable, the head may be pressed down into the pelvis from above.

Q. What two difficulties sometimes arise during the expulsion of the head in feet and knee presentations?

A. One is, the extension of the arms upward, so they enter the pelvis beside the head, and thus retard its passage through the superior strait; the other is

the too early departure of the chin from the chest, and the consequent engagement of the occipito-mental diameter instead of the occipito-frontal.

Q. How are they usually produced?

A. They arise from *too much traction* on the body of the child.

Q. What is the great evil to be avoided in these cases?

A. Too much traction. No traction should be made until the shoulders are expelled, *and not then, if the cord pulsates freely.*

Q. If the hand presents with the head, or descends beside it, what should be the treatment?

A. We will not be under the necessity of interfering, unless for special reasons, as exhaustion, etc.; when we will be governed by general rules.

Q. How are ear and brow presentations to be treated?

A. They should be left entirely to nature, until some reason besides such position exists for interference, when we would follow the rules observed in face presentation.

Q. Are there any cases of head presentation susceptible of change by the hand in the pelvis?

A. There are few, if any, such cases.

## ANÆSTHETICS IN LABOR.

QUESTION. Is the use of anæsthetics in natural labor allowable?

ANSWER. Their use is almost unanimously sanctioned by the profession.

Q. Do they always act beneficially?

A. They sometimes act beneficially in every respect; but when given too freely, they generally lessen the efficacy of the pains, and protract labor.

Q. How may they occasionally affect the mind of the patient?

A. They sometimes render her delirious and unmanageable, unless kept too profoundly affected by them?

Q. What other effect may chloroform exhibit?

A. It sometimes increases the nausea and vomiting.

Q. What particular anæsthetic is probably safer than chloroform?

A. Sulphuric ether.

Q. When should the anæsthetic be given?

A. It should only be given during the second stage, unless the first stage is more severe than usual.

Q. How should it be administered?

A. Pour thirty or forty drops of ether, or, if chloroform is used, about half that quantity, on a folded handkerchief, and let the patient apply it to her nostrils.

Q. How is the anæsthetic beneficial when the external parts are being distended?

A. If the anæsthetic has had no disagreeable effect, there can be no objection to causing complete insensibility as the head passes the vulva, especially in primiparæ, because the tissues distend and relax better under the full influence of it, and there is less danger of extensive rupture.

## CHLORAL IN LABOR.

QUESTION. What is the effect of chloral hydrate, if given during labor?

ANSWER. "This agent rather produces uterine contractions, by suspending all reflex actions which tend to counteract the incitability of the centers of organic motion."

Q. How should it be administered?

A. In fifteen grain doses, every twenty minutes, until some effects are produced. It may be given in syrup and water.

## DAMAGE TO THE PERINEUM.

QUESTION. How are the lacerations of the perineum divided for description?

ANSWER. They are divided into three varieties: The first, and most common, is the incomplete, extending through any portion of it, short of the sphincter ani; second, next most common, the complete variety, or division of its entire substance into the rectum. In the third the child has been expelled through the perineum, without tearing the sphincter of the anus or vagina.

Q. Why are the first and third varieties of little importance?

A. Because both of them are susceptible of relief, and are generally cured without any interference.

Q. What appears to be the cause of rupture of the perineum?

A. Unusual rigidity of the muscular fibres, and

the rapid and forcible delivery of the head by the forceps.

Q. How is the third variety to be treated?

A. The rupture should be closed after the method of I. Baker Brown, within twelve hours after delivery.

Q. Will the rupture be likely to recur at subsequent deliveries?

A. It will depend on the size of the child and condition of the perineal tissue.

### NATURAL LABOR IN MULTIPLE CASES.

QUESTION. In what respect do multiple labors differ from single labors?

ANSWER. They only differ from being slower, usually.

Q. Why are they slower?

A. The expulsive efforts are weaker, on account of the great distension.

Q. What are the presentations?

A. One fœtus is usually expelled head first, and the other breech first; but occasionally they are both delivered alike by either head or breech presentation.

Q. Is the second fœtus expelled immediately after the first?

A. It is usually expelled soon after; but there are instances on record where the second was not expelled for several days after the first.

Q. When one has been expelled, how may we know there is another in the uterus?

A. The abdomen remains almost as large as it was at first, the placenta does not come down after sufficient pain, and we may feel the bag of waters at the

uterine mouth, and finally the presenting part of the second child.

Q. Does the management of twin cases differ from single ones?

A. Difficulties arising from malpositions or complications of any kind call for interference only as they resemble difficulties in the simple forms of labor.

### ATTENTION TO THE CHILD.

QUESTION. For what purpose should the child be examined after the mother is made comfortable?

ANSWER. For the purpose of making the cord secure, if it is not so; to see whether respiration is completely established.

Q. What condition of the child should cause delay in washing and dressing?

A. If it is feeble, or the respiration imperfect, it is not to be subjected to the fatigue of washing and dressing, but must be kept quiet, wrapped in a warm flannel in a warm room, with its face exposed to the air.

Q. Must the child necessarily be washed and dressed immediately?

A. There is no necessity for haste, as the vernix caseosa is bland and unirritating, and will do no harm, as some nurses and mothers think; but for the sake of cleanliness it may be washed at the earliest convenience.

Q. How is the vernix caseosa most easily removed?

A. It is best to mix it thoroughly with some animal oil, as lard or goose grease, applied with a

sponge, and then thoroughly wiped or washed off with soap and water.

Q. Why should the mouth of the infant be wiped out?

A. The wiping is intended to remove any mucus that might be drawn into the air passage in breathing.

Q. How should the cord be dressed?

A. The stump of the cord should be covered longitudinally with soft linen, and then rolled in soft tape, commencing at the umbilical and proceeding outward to the free extremity, where it may be secured with thread.

Q. What is the object in dressing the cord so?

A. It is merely for the purpose of preventing the dessicating cord from remaining in contact with the delicate skin.

Q. How should the child be dressed?

A. The simpler the dressing of a new born infant the better. The belly band should be discarded as impeding respiration and circulation. The only necessary articles are a loose diaper, a night gown of soft, warm flannel, coming up well to the chin, and tied with a tape, with sleeves long enough to cover the arms. Over the flannel gown may be placed a soft muslin one, and the regulation shirt dispensed with.

Q. Should it be fed by the nurse?

A. We should be strict in directing that nothing be given but the breast. Unless closely watched, the nurse will feed it, or give it something because of a fancied need of purging the child,

Q. How soon may it be placed to the breast?

A. In an hour or two after it is dressed, or as soon as the mother is sufficiently rested.

Q. What good results from allowing the child to nurse early?

A. The sympathetic effect causes more perfect contraction in the uterus, and the stimulus to the gland encourages an early and gradual secretion of milk.

Q. What is the effect of the first secretion from the mother's breast on the bowels of the child?

A. It purges the meconium from the bowels, and stimulates the urinary organs.

Q. What is the color of the meconium?

A. It is a dark green.

Q. What is the color of the natural discharges from the bowels after the meconium is all purged away?

A. They are a light yellow.

Q. What effect does retention of the meconium produce?

A. It occasions distress and vomiting, and after a few days will produce disease, and even convulsions.

Q. How should this irritation of the bowels be treated?

A. If the irritation continues two or three days after delivery, and the stools have not changed their color, the patient should have a teaspoonful of castor oil.

Q. What is the process of separation of the cord?

A. Soon after it is tied, the cord begins to exude an albuminous serum, that glues and stiffens the cloth with which it is wrapped, and in a few days shrivels into a hard fragment. Between the third and ninth days it separates from the abdomen by ulceration, and falls off.

Q. If the ulceration should continue to affect the

skin after separation of the cord, what treatment may be adopted?

A. Some simple ointment is usually sufficient — tannic acid, or calomel, or bismuth sub. nit., dusted on the surface; or, if the case prove obstinate, a weak solution of nitrate of silver may be called for.

Q. What may be the shape of the umbilical cicatrix?

A. It may be round, depressed and puckered, or elevated and pouting.

Q. If an hernia occur at this time, what may it contain?

A. It may contain a knuckle of intestine, or piece of omentum, or both of these.

Q. What completes the transition from foetal to infantile life?

A. The casting off the cord, and drawing nourishment from the mother's breast, complete the change so far as external appearance is concerned; but the change is not perfect until the foramen ovale, ductus arteriosus and ductus venosus are closed, which may not be until the end of the first month.

Q. In what different conditions may a child be born?

A. The child may be dead when born, or only in a state of apnœa.

Q. How may these states be determined?

A. There is a peculiar limpness and laxness in the joints and limbs of a recently dead foetus, enough in themselves to distinguish it from one in a state of apnœa. A foetus that is not dead has some muscular elasticity in the limbs; they are somewhat flexed, and have a tendency to remain so, while the limbs of a dead foetus lie perfectly flat.

## APNŒA.

QUESTION. What might the first condition of apnœa be called?

ANSWER. Congestion.

Q. What is the appearance of a child suffering from it?

A. The face is bloated and discolored, the eyes are prominent, the skull is misshapen and elongated, while the scalp is almost black with unoxygenated blood.

Q. What is usually the cause of this condition?

A. Long continued pressure of the head.

Q. How should such cases be treated?

A. The cord should be cut, and allowed to bleed an ounce or less; a warm bath to the lower part of the body, and cold to the head for a short time. Sometimes an injection of a few drops of turpentine in an ounce of castor oil will move the bowels quickly, and do much toward relieving the head.

Q. What may the second condition of apnœa be called?

A. It may be denominated syncope.

Q. What is usually its cause?

A. Loss of blood from a complete or partial separation of the placenta, or from rupture of the cord.

Q. What is the appearance of the fœtus in this condition?

A. It is pale; the eyes are prominent, the mouth open, and if the heart beats at all it is very weak.

Q. How should it be treated?

A. In this case the warm bath will do harm. The child should be wrapped in blankets made as warm as

they can be, placed near the fire, with its head toward the fire, and lowered to an angle of forty-five degrees with its body and limbs. It must be kept very quiet, and artificial respiration performed with as little agitation as possible.

Q. What is another form of apnœa?

A. Apnœa from interruption of the circulation.

Q. What is its cause?

A. Pressure of the cord between the head and pelvis, or between the uterus and some hard part of the fœtus; or, after the child is born, the cord may be around its neck, or stretched over some part of it in such a manner as to cause the circulation through it to stop.

Q. How may this condition be differentiated from the congestive form?

A. The appearance is the same, except the head, which is not pressed out of shape, though it may be as blue as in the congestive variety.

Q. What treatment will be demanded?

A. Friction of the surface, warmth, artificial respiration, and stimulating injections.

Q. What is the condition in those cases where none of these symptoms show themselves; the child being plump, no deformity of the head, or, in fact, none of the appearances indicating the cause of the apnœa?

A. There seems to be no reflex sensibility, or it is so dull as not to be aroused by contact with cold air, and the circulation ceases because not sustained by respiration.

Q. What is the appropriate treatment for such cases?

A. Remedies that will arouse the reflex sensibility of the skin, such as a sudden shower of cold water on the head and shoulders, repeated every half minute; or, dip the body in a bath of about 100° F. for forty seconds, and then dash a pint of very cold water forcibly over its surface, following it up by artificial respiration.

Q. How may the condition of asthenia be recognized?

A. The child is small, limbs soft and emaciated, the surface is sallow, and if the heart beats its pulsations are quick and feeble.

Q. What should be done to resuscitate the child?

A. Dry heat, by means of blankets placed close by a fire; artificial respiration; a few drops of aromatic spts. ammonia, and perfect quietude.

Q. How many modes are there of causing artificial respiration?

A. There are three: The old plan of inflating the lungs with the mouth of the operator; Marshall Hall's method; and Sylvester's method.

Q. Which is probably best to use on a feeble child?

A. The old plan, as it requires less movement, which is a matter of great importance in feeble children.

Q. What is the proper way to perform the old method?

A. Place the fetus on its back on a firm pillow, with a compress under its shoulders, with its head hanging backward over the compress in such a manner as to bring the larynx on a stretch, and cause it to compress the œsophagus. Hold the nostrils with one hand, spread a handkerchief over the mouth of the

child, and force the air into the lungs through it. Remove the mouth from the child's mouth, and make gentle pressure over the chest to expel the air. Repeat the process ten or twelve times a minute, until an effort is made by the foetus to breathe, or we are satisfied there is no use in further attempts.

Q. How long should such efforts be kept up?

A. It should be tried an hour or so, because it sometimes requires great perseverance to succeed in resuscitating still-born children by any of these methods.

### THE PUERPERAL CONDITION.

QUESTION. What effect does the termination of labor have on the circulation of the mother?

ANSWER. The pulse drops from eighty or upward, down to between sixty and seventy, and is not very full. The temperature suddenly falls, the copious perspiration ceases, and in many instances the patient is seized with chills and rigors.

Q. What is the cause of this depression?

A. It is not produced entirely by the previous excitement. The abdomen before labor is extended to a great degree; the blood is pressed out of its cavity by the uterus, and most of the viscera do not contain as large an amount of blood as usual. The surface, extremities, head and spinal column are fuller of blood than ordinary. This distension of the abdomen being removed, the cavity becomes, in a certain sense, a vacuum, into which the blood is attracted in large quantities; hence the external coldness and small pulse.

Q. Why is the binder useful?

A. It has an equalizing influence, when judiciously applied, in tranquilizing the circulation.

Q. What is the condition of the blood at labor?

A. It contains more water, white globules and fibrine, and less red globules; it is less plastic in its capacities, and enters into the rapidly destructive processes of asthenic inflammations, with great celerity.

Q. What is the condition of the uterus, which has such an important influence on the puerperal state?

A. The uterus is transformed in a few hours from a highly vitalized organ, drawing from the general sources of nervous energy and nutrition, into a process of degeneration (?) and atrophy.

Q. What is the process of involution?

A. The muscles contract the uterus down to a small size, and in doing so constrict the vessels at all points, and thus diminish the amount of blood and nutrition; consequently the muscular fibre cannot then be maintained in its perfect state, and we have the rudimentary fibres and fatty globules. So long as the muscular fibres continue to exist in their enlarged form, they continue to contract, and diminish the calibre of the vessels, until they are scarcely visible. This process continues till both muscular and vascular tissues are reduced to their original condition.

Q. When is involution complete?

A. At the third week the fundus is felt at the top of the symphysis pubis; in the fourth week, it is in the pelvic cavity, but involution is not complete until the fourth month.

Q. What is the condition of the mucous membrane of the uterus, a few hours after delivery?

A. It is soft and friable, and easily separated from the muscular tissue; the placental portion is covered with small clots of blood, hanging from the patent mouths of the ruptured placental vessels.

Q. How soon is the mucous membrane organized, and fitted for the discharge of its function as a menstrual and decidual surface?

A. Not until the fortieth day.

Q. What is the appearance of the mucous membrane of the vagina soon after delivery?

A. It is raw, and denuded of epithelium in many places; at the orifice, there is always more or less injury inflicted, and even the mucous membrane torn, so it must be repaired by granulation. In twelve or fifteen hours, the vagina is tumid and injected, showing a tendency to reparative inflammation.

Q. What is the lochia?

A. The discharge which begins when labor is completed, and lasts from a few days to several weeks.

Q. How long may it continue bloody?

A. Eight or ten days.

Q. What is its character after the blood disappears?

A. It is a thin white mixture of serum and mucus.

Q. What is its odor?

A. It is merely that of discharges of decomposing blood furnished by the genital organ under other circumstances.

Q. What influence does the milk fever exert on the lochia?

A. The lochia is sometimes lessened very decidedly during the few hours the milk fever continues.

## THE AFTER PAINS.

QUESTION. What are after pains?

ANSWER. The pains that immediately succeed the delivery of the placenta.

Q. What is their nature and cause?

A. They are the same in character as labor pains, and are connected with uterine contractions.

MANAGEMENT OF THE PUERPERAL  
CONDITION.

QUESTION. To what does the puerperal state render the woman more susceptible?

ANSWER. It renders her more susceptible to the effects of morbid causes.

Q. What should be the condition of the lying-in room?

A. It should be large and airy; situated so we can keep up the proper temperature; it should be quiet, scrupulously clean, and free from poisonous gases.

Q. Does the process of labor exhaust all women alike?

A. It does not, many patients pass through the ordeal with scarcely an appearance to indicate the fact, a few hours afterward; while others are exhausted, lame, and depressed.

Q. What is necessary for the accoucheur to deduce from this fact?

A. We ought to accustom ourselves to discriminate between the conditions and requirements of the lying-in room.

Q. Why is a knowledge of the previous condition of the patient important?

A. It will enable us to be guarded against any difficulty that might arise from previous circumstances.

Q. What is the first attention necessary to be given to the woman, as soon as the foetus is expelled?

A. It is to see that she is warmly covered, before any chilliness is experienced, with a view to moderate the influence of the centripetal tendency of the circulation.

Q. Why should the practitioner not leave the bedside for an hour after delivery?

A. Because some of the most destructive hemorrhages make their appearance during that time.

Q. When may we safely leave the patient?

A. After having assured ourselves that the uterus has contracted well, and the bladder is not distended, we may, if there is nothing unusual in the case, take our leave, after an hour or more.

Q. Is it necessary to make a second visit?

A. We should visit the patient in twenty-four hours.

Q. What are the points necessary to be investigated at the second visit?

A. We should notice the pulse, and inquire into the state of the bladder.

Q. Why may there be less urine secreted, than usual, in the first twenty-four hours?

A. Because of the great activity of the skin during and after labor.

Q. If the bladder is not evacuated voluntarily, how often should the catheter be used?

A. Once in twelve hours.

Q. Who should attend to this duty?

A. This may be intrusted to an intelligent nurse, after carefully instructing her, and seeing her introduce the catheter.

Q. Should the patient be allowed to assume the sitting posture in order to empty the bladder?

A. Unless there has been unusual prostration, there can be no objection to her sitting on the vessel in the bed.

Q. How should the various conditions that cause retention of urine be treated?

A. If it be from urethral inflammation, fomentation, emollient applications, and lapse of time will cure it. If it depend on partial paralysis, give ergot to restore the tone of the muscles; or strychnia, if it arises from want of nerve energy. Should it still persist, electricity may be used.

Q. When and how should the bowels be moved?

A. If the bowels have been properly cared for previous to confinement, they will require no attention for three days. On the morning of the third day, if they do not move, an injection may be given, or seidlitz powder, or sulphate of magnesia used to procure an evacuation.

Q. What should be the diet of the lying-in woman?

A. It must be regulated by time and circumstances. It should always be as nourishing as the stomach will digest.

Q. What effect has a meagre diet on convalescence?

A. It protracts it very much.

Q. Should all women be confined to the bed the same length of time?

A. There is no rule that can be constantly applied.

The patient may be allowed to sit up in bed or in an easy chair from the third day, if she feels well and strong.

Q. Why is the recumbent position necessary for the first two or three days?

A. To avoid hemorrhage, or too abundant lochial discharge.

Q. When is the liability to prolapse uteri greatest?

A. So far as prolapse, or any kind of displacement is concerned, there is more danger from the ninth day forward, than before, because the uterus continues heavy for several weeks, and is only in a condition not to be influenced by the erect posture, after the lapse of from six to twelve weeks.

Q. What are the dangers from early exercise and fatigue?

A. Inflammations and permanent congestions, so that when the patients are ever so well, they should return to their ordinary duties slowly.

Q. How should the genital organs be treated?

A. They should be thoroughly washed with soap and water two or three times in twenty-four hours. After the second day the vagina should be thoroughly, but gently, washed out by a syringe or syphon, with soap and water, every day, as long as the lochia continues. If the discharge is offensive, the soap may be replaced by chlorinated soda or carbolic acid.

Q. How should after-pains be treated.

A. Remembering that their effects on the uterus and its discharge are beneficial, we should not interfere with them, if the patient can bear them without too much nervousness. But if they depress the nervous energies, we must relieve the patient, and camphor

and opium are very reliable means for that purpose. One to two grains of opium, with two of camphor, given every four or six hours, is sufficient; or camphorated tincture of opium in tablespoonful doses.

Q. How may the after-pains sometimes be prevented?

A. We may give a full dose of ergot immediately after labor, in order to induce the uterus to contract more firmly and prevent the formation of clots.

Q. What other remedies may be given for the pains?

A. Hydrate of chloral, chloroform and other narcotics and anodynes.

Q. Is there any special time for the lochial discharge to cease?

A. Women generally think the flow cleansing, and that it must flow nine days, or so; but it does not matter how soon it stops, if not attended by bad symptoms at the time.

Q. If suppression of the lochia is attended with inflammation of the uterus, what are the symptoms?

A. Deep-seated and dull pain and tenderness in the region of the uterus, fever and other evidences of uterine inflammation.

Q. May the lochia be retained by obstruction in the uterus?

A. If it occurs at all, it is very soon after delivery.

Q. To what symptoms does it give rise?

A. After the flow ceases there are strong uterine contractions, growing more and more painful. There is no fever or chilliness at first, but after a number of hours rigors may supervene. The uterine globe enlarges, and is tender to the touch.

Q. Is this condition easily remedied?

A. A vaginal examination is generally sufficient to break up the obstacle, whatever it may be.

### MANAGEMENT OF THE BREASTS.

QUESTION. At what time in pregnancy does fluid appear in the breasts?

ANSWER. By the end of the third, or the commencement of the fourth month, there may be a serous fluid pressed from the breasts.

Q. When may milk be pressed from the nipple?

A. From the seventh month up to term.

Q. What is the first milk called?

A. The colostrum.

Q. How does it differ from the later secretions of the breasts?

A. It contains a larger proportion of saline ingredients, and acts as a laxative on the infant's bowels.

Q. Why is it better to allow the child to draw the breast as soon as possible?

A. The glands are stimulated by the nursing, and the secretion of milk is encouraged early and more gradually, and the violent congestion that comes later is generally avoided.

Q. When does the congestion of the breasts, causing milk fever, usually occur?

A. At the end of two or three days.

Q. What are the symptoms of milk fever?

A. The patient has a sense of chilliness, or has severe rigors, with thirst, dry mouth, rapid pulse, sometimes rising to one hundred and forty in the minute; the head aches, the limbs are painful, and in severe

cases there is delirium. This is followed by a hot stage, that lasts from two to ten hours, after which the sweating stage brings relief. The breasts which were sensitive, hard and hot become softer during the sweating stage, and the tenderness is replaced by a sense of fullness and tension.

Q. Does the fever always run a short course?

A. It is sometimes protracted, caused by an imperfect subsidence of the congestion of the breasts, and should lead us to apprehend inflammation of the organ.

Q. How should the milk fever be treated?

A. If it pursues an ordinary course, there is no need of treatment, except to keep the patient comfortable.

## INFLAMMATION OF THE NIPPLE.

QUESTION. What may inflammation of the nipple be accompanied with?

ANSWER. Abrasions, fissures and ulcerations.

Q. Which is the most frequent?

A. Abrasions.

Q. How are they produced?

A. The epidermis is removed by the act of sucking, leaving the dermis naked, raw and bleeding.

Q. How are these abrasions sometimes deepened?

A. They may be deepened by ulceration, until more or less of the nipple is destroyed.

Q. Where may the fissures be located, and how extensive may they be?

A. They may be on the apex of the nipple, and so extensive as to lay it open to the bottom; but they are

generally less extensive, and simply lay open the top of the nipple to the depth of the skin.

Q. What are the worst kind of fissures?

A. Those which more or less completely encircle the base of the nipple; ulceration sometimes extends this form so that it completely amputates the nipple.

Q. What are the symptoms of these affections of the nipple?

A. There is great pain upon handling the part, and the nursing of the child may be intolerable to the patient, and the nipple may bleed so as to disorder the milk and sicken the child.

Q. Do ulcerations ever occur in the areola?

A. Very seldom, and they are not very severe.

### MILK ABSCESS.

QUESTION. What is a milk abscess?

ANSWER. Inflammation of a milk reservoir, followed by ulceration and discharge of pus and milk.

Q. Do they occur singly?

A. As a general thing there are several going on at the same time, each abscess involving one tube.

Q. How are they located?

A. They are seated under the anterior surface of the breast, mostly within an inch of the areola, sometimes under it.

Q. What are the symptoms of milk abscess?

A. A tender swelling is felt near the areola; it increases steadily until an apex is observed in the tumor; the integument is thinned, fluctuation is observed, and rupture follows.

Q. What is the cause of milk abscess?

A. The inflammation is caused by distension of the reservoir by milk which cannot find its way out of the milk tubes.

Q. Do these abscesses cause sympathetic fevers?

A. The sympathetic symptoms are not generally so great as in other varieties of mammary inflammations.

Q. Do these abscesses recur often?

A. One of their worst features is their persistent repetition, wearing out the patient.

Q. With what are they always complicated?

A. With diseases or deficiency of the nipple.

Q. What is the condition of those cases where blood and pus is discharged from the milk tubes?

A. It is an ordinary inflammation of the lining membrane of the milk reservoirs, discharging its products through the nipple.

Q. Do these abscesses ever occur during pregnancy?

A. They do.

## GLANDULAR ABSCESSSES OF THE MAMMA.

QUESTION. Does mastitis occur in other than nursing women?

ANSWER. It does; but in such instances it is the result of violence.

Q. What are the symptoms of glandular abscess?

A. Mastitis cannot, in the first few hours, be distinguished from the intense congestion that occurs when the milk is produced. The woman is seized with a severe chill; this gives place to reaction, a high fever, with pain in the back, head, limbs, and often in the abdomen. If it is milk fever, this all subsides; but if it is inflammation, the breast does not become soft

and cool. A hard lump continues to occupy some deep portion of the breast, and the patient is left with more or less fever.

Q. How may glandular abscesses be diagnosed from milk abscesses?

A. They are much deeper at first, while the milk abscess seems to be immediately beneath the integument. When fluctuation is first perceptible in milk abscess, it is shallow—in mastitis, it is deep, and makes its way slowly to the surface.

Q. What may be the history after discharge begins?

A. Extensive destruction takes place both in the internal portions of the organ, and in the integument. And so tortuous and irregular are the tracks of transit, in some instances, and the pus finds its way out with such difficulty that the sinuses are extremely difficult to heal.

Q. What are the symptoms when the abscesses occur later during lactation?

A. It may be more slowly established, and not produce such disturbances of the system. The first thing noticed, perhaps, being what women call a “cake” in the breast, of moderate, but decided tenderness.

## CAUSES OF MAMMARY INFLAMMATIONS.

QUESTION. What are the causes of mammary inflammation?

ANSWER. The physiological congestion preceding and accompanying the commencement of lactation, is carried too far, and merges into pathological congestion, and this into inflammation. This usually occurs

in the puerperal condition; but later it may be caused by the *excitement of anger*, stimulants, sexual intercourse, cold on the extremities, or from violence.

Q. What is a common cause of cracked nipples?

A. The habit of allowing the fluids deposited on the skin to evaporate and carry off the sebaceous unction of the parts.

Q. Are these pathological causes?

A. Yes, one affection produces another, such as ulceration of the nipple, which prevents the emptying of the reservoir; the distention of which causes inflammation.

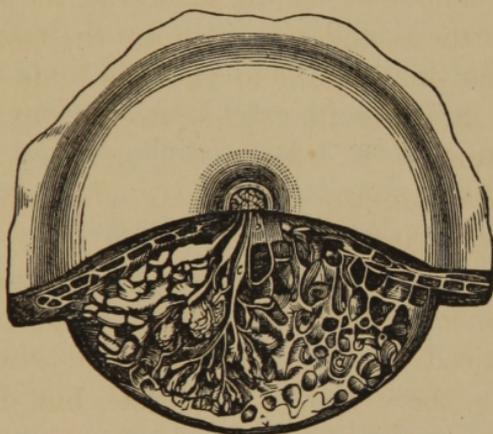


FIG. 38.

Q. What anatomical causes of inflammations of the breasts do we sometimes meet with?

A. The flat, undeveloped, or retarded nipple is one form, which prevents the perfect performance of sucking, and which is generally brought about by improper dressing. There is another nipple, large enough to be drawn by the child, but too constricted at the base. The milk tubes, upon entering, turn an acute angle,

and a slight swelling of the sub-areolar tissue, from retention of the milk, will stop them up.

Q. What kind of a nipple has a model breast?

A. The nipple is slightly conical, the base being larger than the apex; the milk tubes enter the nipple by a slight curve, instead of an angle, so they are free from pressure everywhere.

### TREATMENT.

QUESTION. How should the treatment of mammilitis be divided and arranged?

ANSWER. Into prophylactic, palliative, and curative.

Q. What is the prophylactic treatment?

A. Such treatment as will develop the nipple, and harden the epidermis and cuticle, so that in nursing, abrasions shall not occur.

Q. What is the palliative treatment?

A. It is the use of means to protect the cracks and abrasions from injury by the child, and yet prevent retention of the milk. Ivory or britannia shields for the nipple, which should be deep if the chaps are on the summit, or shallow, if they are on the sides of the nipple, so that the cracks are not stretched. The milk may be pressed out, or drawn by the mouth of an adult.

Q. How does nature try to cure abrasions?

A. There is an effusion of a viscid albuminous layer on the naked surface, to protect it from the atmospheric air or other irritating substances; but this is removed by the child's mouth, and we should try to imitate nature by using starch or mucilage.

Q. When the cracks are very deep, how should they be treated?

A. Press the nipple in such a way as to close the crack, and apply a thick layer of collodion over the surface. We should watch the coat, and remove it when loosened by nursing.

Q. How should the acute variety of ulcers be treated?

A. As this variety is apt to be attended with heat, this condition may be removed by leeches, or cold emollient poultices, removed as soon as they get warm. The poultice should not extend beyond the inflamed part.

Q. After the acute symptoms subside, what should be done?

A. Astringents become necessary, when the acute symptoms entirely subside, and must vary in strength according to the indications. Alum and tannin, sulphate of zinc, and borax are useful in this respect.

Q. If the ulcer becomes indolent, what stronger remedies are sometimes necessary?

A. The skillful use of sulphate of copper and nitrate of silver will shorten the course of these chronic ulcers.

Q. If the ulcer is very irritable, what course may be pursued?

A. Ointments made of narcotic extracts such as belladonna, hyoscyamus, opium, etc., may be used.

Q. What advice should be given in regard to the propriety of nursing the child, in cases where the nipple is so defective the child cannot grasp it?

A. We should decide against compelling the woman

to pass through the terrible pain and exhaustion the effort to nurse the child would produce.

Q. What mechanical treatment might be employed before confinement to develop the nipple?

A. First correct the habit of dress that presses the nipple back into the tissues of the breast; remove all perpendicular pressure and employ such pressure upon the areola that will cause the nipple to protrude. The use of a shield of iron or silver wire is indicated.

Q. Will this treatment avail if not employed before parturition?

A. Such treatment requires time to produce good results, and if not employed until the time of parturition, will not avail. In some cases the nipple may be made temporarily available by inducing its erection by titillation with the fingers, and immediately applying the child. When there is considerable depression, a thick layer of collodion may be placed around it, on the areola; the contraction of this when it dries, will elevate the nipple.

Q. What is the best means of preventing milk abscesses?

A. Keeping the reservoirs empty.

Q. When inflammation of the reservoir has begun, can suppuration be prevented?

A. It will be exceedingly difficult to prevent suppuration.

Q. What are the curative means recommended?

A. The different modes of evacuating the reservoirs, and keeping them empty.

Q. Is there any objection to the various breast-tubes and pumps in use for this purpose?

A. It is a very easy matter to injure the delicate

tissues of the breast by the hard rim of these instruments.

Q. What is the best and only proper mode of drawing the milk.

A. The mouth of an adult can vary the pressure and force to suit the tenderness of the part better than any instrument.

Q. What medicines tend to diminish the secretion of milk?

A. Narcotic substances taken internally, or applied to the breast. Opium, camphor, and belladonna are highly recommended.

Q. What effect has cold on the treatment of mammary inflammations?

A. It anæsthetizes the part, decreases the secretion, constricts the milk reservoirs, and allays excitement in the capillary circulation.

Q. How should it be employed?

A. A bladder partly filled with ice and water, with a flannel cloth between it and the skin, would do very well. The temperature should be forty or fifty degrees, and kept only on the breast, and no part of the person allowed to get wet.

Q. What effect has heat and thick padding applied to the breasts?

A. It is promotive of the secretion of milk, by drawing blood to the gland, and thus keeps up the state of things we desire to avoid.

Q. What medicines should be given in aid of other treatment?

A. A saline cathartic every other day, and two grains of iodide of potassium every four hours, may be relied upon as materially aiding the other treatment.

Q. What is usually the cause of glandular inflammation?

A. The congestion immediately preceding the secretion of milk.

Q. How extensive may it be?

A. It is sometimes very extensive, involving the whole gland.

Q. What treatment should be instituted?

A. For the first few hours we should try warm fomentations, with the hope of establishing the secretion. If this fail to bring relief, and the patient is robust, a decided venesection will turn the balance in favor of resolution. Then give *veratrum viride* until the pulse is brought down to sixty in the minute, and by diminished doses keep it as near that as possible.

Q. If the inflammation becomes permanent, what may be recommended as a good cooling lotion?

A. A lotion made of one part of sulphuric ether to two of alcohol.

Q. What effect will drawing the milk have on glandular abscess?

A. As retained milk is not the cause of inflammation in this case, strenuous efforts to draw the breast would be injurious.

Q. What should be the treatment in case milk abscess and glandular inflammation exist together?

A. We should use general and local antiphlogistics, with means to arrest the secretion and empty the reservoirs.

Q. What particular measure is advisable in chronic inflammation of the glands?

A. Well regulated and graduated pressure and

support, with adhesive straps; or encasing the breast thoroughly with collodion.

Q. When suppuration has taken place, what are the indications which justify us in evacuating it?

A. We should not lance the part until fluctuation is quite evident, and the pus has made its way to the fascia or integument.

Q. What time should a milk abscess be lanced?

A. As soon as it is evident that suppuration is inevitable. The opening should be preserved if the cause of retention still exists.

Q. What treatment is the most reliable for the cure of the tortuous lacunæ that sometimes results from deep glandular abscesses of the breast?

A. Iodine injected to the bottom of the pus fistula.

## DIFFICULT LABORS.

QUESTION. What are difficult labors?

ANSWER. Labors that are merely tedious, or that require instrumental aid on account of complication.

Q. What is a very common cause of difficult labor?

A. Inefficient labor pains.

Q. What stage of labor becomes dangerous to both mother and child if prolonged?

A. The second stage.

Q. What are some of the causes giving rise to this condition?

A. Weakness of the uterus, owing to the debility of the general system, want of native strength, or as the effects of disease. The mind of the patient has a great effect on the labor pains. The announcement that interference will probably be necessary, has often

rendered the pains inefficient. The uterus is sometimes so distended with liquor amnii, or multiple pregnancy, as to prevent efficient contractions.

Q. Is it a difficult matter to diagnosticate uterine inefficiency?

A. The contrast between these pains and those that are efficient is generally so well marked, it is not difficult to distinguish between them. Pains that are doing well ought steadily to increase in force, duration and frequency, so that in comparing one hour with another we can see a decided difference in these qualities. Inefficient pains, if they increase in any of these respects, do so moderately.

### TREATMENT.

QUESTION. If it only requires a little nervous or vascular energy to arouse the uterus to steady action, what simple measures may be employed?

ANSWER. A cup of warm ginger tea, or an injection of a half pint of gruel containing a teaspoonful of oil of turpentine, or grasping the uterus through the abdominal walls with the hands, and kneading it during a pain, are all useful unless the patient is so depressed as to need alcohol or other more decided stimulants.

Q. What medicines are considered specific uterine stimulants?

A. There are several remedies used as such — borax, the root of the cotton plant, etc.; yet there is none so effectual as the *secale cornutum*, or spurred rye.

Q. What are the conditions under which it may be used?

A. It is a most energetic remedy, and if misapplied may do much mischief. When it is given there should be no obstacle in the way of speedy delivery; the os uteri and other soft parts should be dilatable, if not dilated; the pelvis roomy enough not to hinder its passage; the position of the foetus cephalic, and not abnormal in size or formation.

Q. In what form, and how, should it be given?

A. Twenty grains of the powder, or a small tea-spoonful of the fluid extract, every half hour, in water or syrup, by the mouth; or in infusion of three drachms to half a pint of water may be given in two doses per rectum.

Q. How soon will it show its effects on the uterus?

A. If the drug is fresh and strong, in twenty or thirty minutes it will increase the force, frequency and duration of the pains.

Q. From what cause does ergot probably fail to produce its specific effect?

A. It is probably because of its inferior quality.

Q. What effect has ergot in cases of immature development of the uterine fibres, as in abortions?

A. Its effects are very uncertain.

Q. In what manner does it probably injure the foetus where its full action is obtained?

A. By pressure of the cord around parts of the body, or by too strongly and constantly pressing the head into the pelvis, embarrassing the circulation to a fatal extent.

Q. In cases where the drug has failed to excite its specific action on the uterus, and yet the foetus is still-born, what is probably the cause of its death?

A. It is probably poisoned by the drug.

Q. What damage might this drug inflict on the uterus, vagina and perineum, under unfavorable conditions of these parts?

A. Rupture of the uterus, or laceration of the vagina or perineum would probably occur, under urgent ergotism.

Q. What medicine may be given with ergot that will lessen the danger to the soft parts?

A. Chloroform.

Q. If auscultation reveals the depressing effect of the drug on the fœtal circulation, what ought to be done to save the life of the fœtus?

A. Artificial delivery by the forceps ought to be resorted to at once.

### DEFORMITY OF THE PELVIS.

QUESTION. What conditions of the pelvis cause difficult labor?

ANSWER. A great variety of deformities.

Q. What are some of the varieties of deformity of the pelvis?

A. The simpler forms are: Contraction at the pelvic brim, by projection forward of the promontory of the sacrum, lessening the antero-posterior diameter. The same diameter of the pelvic cavity may be shortened by the sacrum being too straight, or deficient in curvature; the oblique diameter of the cavity may be shortened by too great a curvature forward and inward of the spinous processes of the ischium; contraction of the transverse diameter of the outlet, by too great approximation of the tuberosities of the ischiatic bones, or the shortening of the antero-posterior diameter of

the inferior strait, by too great a curve forward of the sacrum, and ankylosis of the coccyx.

Q. What are the smallest dimensions of the pelvis through which a living child may be expelled by the unaided powers of nature?

A. Three inches and a half in the antero-posterior diameter, and four and a half bi-laterally.

Q. What are the dimensions through which it is only possible to deliver a living child by the forceps or turning?

A. Three inches antero-posterior, and four bi-lateral.

Q. What are the dimensions of the pelvis through which it is only possible to deliver the child by mutilating instruments?

A. The minimum size given is one and a half inches antero-posterior diameter, and three inches from side to side.

Q. If the contractions farther diminish the size of the pelvis, is it possible to deliver through it at all?

A. It is not.

Q. What part of the pelvis, if contracted, offers the greatest difficulty in operating?

A. Contractions at the brim, because the presenting part of the fœtus will be so remote.

Q. What are pelvic deformities usually the result of?

A. They result from diseases of the bone, for the most part in infancy, but also in adult life.

Q. What growths occasionally are found obstructing the pelvic passage?

A. Bony tumors, or exostoses growing from the surface of the sacrum or some other part, and tumors

of the soft parts within the pelvis, as the different forms of ovarian tumors.

Q. When the descent of the head is obstructed by hard ovarian or bony tumors of the pelvis, what should the treatment be?

A. If the tumor can be elevated above the brim, so as to allow the head to advance before it, there will be no farther difficulty; but if this is impracticable, and the space is not too much diminished, the forceps should be employed. If there is too little room to deliver by forceps, craniotomy is the next resort; and if the space will not allow this to be done, the question arises as to the propriety of removing a part of the tumor, and deliver per vaginam, or through section in the abdominal walls.

Q. When the obstruction is a dropsical ovary, how may it be differentiated from distension of the bladder or fluid contents in the rectum?

A. The catheter will evacuate the bladder, and appropriate means empty the rectum, and an exploring trocar will demonstrate the nature of the contents of the tumor.

Q. How should the case be treated, if found to be obstructed by an ovarian fluid tumor?

A. The trocar will soon evacuate the fluid, causing the tumor to collapse, when the foetus can be expelled naturally, or delivered by appropriate instruments.

Q. How do uterine fibroids complicate pregnancy and labor?

A. The complication of pregnancy with intra-mural fibroid growths does not seem to make interference necessary; for if the uterus is not capable of development, the ovum is expelled; and if the growth of the

ovum is accommodated by the increase in the size of the uterus, labor will be likely to occur without disaster.

Q. If polypous growths from the cervix uteri present obstacles to delivery, how should they be treated?

A. Small polypoid growths will be flattened by the great pressure, and prove of little importance. When large, they should be permitted to pass down before the head, and remain outside the vulva until delivery is accomplished, when they may be returned, as should the tumors in the wall of the vagina, until recovery from the puerperal condition.

Q. If this cannot be done, what question remains to decide?

A. If the efforts of the uterus are insufficient alone, we should apply the forceps, and give the additional force; but if this cannot be done, the question between removing the tumor and resorting to craniotomy is to be decided.

Q. If the descent of the bladder before the head of the child occurs, what may be done?

A. The introduction of the catheter, by removing the contents of the tumor, usually does away with the obstacle; but this is not always so, and it is then necessary to raise the tumor up, and keep it in place until the head passes, and if this cannot be accomplished, the forceps should be applied and labor terminated.

Q. If impaction of the rectum, with hardened feces presents an obstruction to the descent of the head, how may it be diagnosticated and treated?

A. It may be diagnosticated by introducing the finger into the rectum, and the lodgment may be re-

moved by breaking it up with the finger and washing out with warm water by means of a syringe.

Q. What are the symptoms of irritable os uteri when complicating labor?

A. The cervix, instead of dilating at the time the ovum is pressed upon it, contracts decidedly, and is overcome slowly by mere force, not giving way spontaneously; there is no heat, not much tenderness, and it seems irritated by contact.

Q. How should it be treated?

A. As it is found in patients of nervous temperaments, the use of chloroform or ether, morphia, or belladonna is indicated.

Q. What are the symptoms of muscular rigidity which sometimes complicate labor?

A. The os is generally cool, moist, and not sensitive, but remains hard and unyielding under pressure of the pains, and is not impressible by the finger.

Q. What class of patients is it usually found in?

A. It is found in aged primiparæ, large-framed, muscular women, who have nothing of "nervousness" about them.

Q. How should it be treated?

A. Time is an important element. As it is to be overcome by force alone, we are justified in gently aiding the uterus by introducing the fingers and pressing the anterior lip of the os up toward the symphysis pubis, and retaining it in that position while the action of the uterus affects the posterior part of the cervix.

Q. In extreme cases, what extreme measures would be advisable?

A. There may be small incisions made by a blunt pointed bistoury in the sides of the os uteri, which

will be continued by rupture to a sufficient depth to allow the passage of the head.

Q. What are the symptoms of congestion or inflammatory rigidity of the os uteri?

A. The os is sensitive, dry and tumid, the pulse more or less accelerated, with a tendency to chilliness, and the uterine contractions are attended with a great deal of suffering.

Q. If such a condition complicate labor, how should it be treated?

A. If the patients are plethoric, they are benefited by bleeding. Tartarized antimony, given in doses of one-twelfth of a grain every half hour until nausea ceases, is followed by improvement. Warm baths and warm vaginal injections, or belladonna introduced up to the os uteri, after nauseants and cathartics have been used, is also an efficient means of relief.

Q. What is diseased rigidity of the os uteri, which sometimes causes difficult labor?

A. It is rigidity caused by structural lesion. The lower part of the cervix is sometimes converted into cancerous tissue — carcinoma — perfectly unyielding, when dilatation is of course impossible, and the efforts of the uterus may tear off the diseased part and dilate the tissue above, so that the foetus may pass.

Q. How should such rigidity be treated during labor?

A. The practice, in carcinoma of the cervix, is to incise the diseased part, in order that it may be dilated afterward.

Q. Where, and to what extent, should the incisions be made?

A. The best place is on the side, one incision on

either side, the full depth of the diseased part, but not into the sound portion of the organ. It may be done with the scissors or knife.

Q. How does the rigidity caused by cicatrices differ from that caused by carcinoma?

A. It is caused by bands of resisting tissue, and is never so deep as that caused by carcinoma.

Q. What should be the treatment of this kind of resistance?

A. If there is so much of the circle thus affected that the child cannot pass, the bands should be divided at the sides, if it is equally prominent; if not, the incision should be made at the most prominent part.

Q. Should these different varieties of rigidity occur in the vagina and perineum, how are they to be treated?

A. The treatment should be the same as for rigidity of the os uteri.

## OBLIQUITIES OF THE UTERUS.

QUESTION. What deviations from the natural axis does the gravid uterus occasionally assume?

ANSWER. It sometimes leans too much to the right or left, or projects forward too far.

Q. How are these obliquities designated in description?

A. They are called right, left, or anterior obliquity.

Q. What class of patients do we find suffering from protracted labor caused by obliquity?

A. It is more commonly observed in women who have borne many children; its cause being great laxness of the abdominal muscles.

Q. How should labors complicated by uterine obliquity be managed?

A. For treatment of slight degrees of obliquity, it is only necessary to observe position; if it is right obliquity, the patient should lie on the left side; if it is left, she should lie on the right side, and the position on the back will correct slight anterior deviations. Another method, applicable in severe cases, is to apply a broad bandage around the abdomen, making it tighter at the upper part of the abdomen than below.

Q. If the obliquity is extreme, and cannot be corrected by supporting the organ with the hand or binder, so that the axis is restored sufficiently to permit the entrance and passage of the head, what should be done?

A. Artificial delivery will become necessary and proper.

Q. What is the danger in uterine obliquity?

A. Rupture of the uterus.

## PRETERNATURAL FIRMNESS OF THE MEMBRANES.

QUESTION. What condition of the membranes may complicate labor, and render it difficult?

ANSWER. Preternatural firmness of the membranes renders them capable of resisting the contractions of the uterus for a number of hours, thus retarding the labor.

Q. When, and in what manner should the membranes be ruptured when thus complicating labor?

A. If the membranes do not rupture spontaneously when the os uteri is fully dilated, and they are pressing

on the perineum, they ought to be perforated by pressing the finger forcibly against them during a pain.

Q. How does the frail conditions of the membranes which allows them to rupture too early render labor difficult?

A. The amniotic fluid is drained off slowly, until the empty uterus contracts down about the irregularities of the fœtus, and thus spends its force, instead of propelling the whole fœtus downward.

Q. Why is it particularly unfortunate in breech presentations?

A. Because the breech does not plug up the mouth of the uterus, and in that way retain the liquor amnii in the organ, as the head sometimes does, but permits a complete loss of water, and causes irregular contractions.

Q. What conditions of the head may render labor difficult?

A. *A head too large* for the pelvis is not an unfrequent cause of difficult labor. The head may be large, but healthy, or so firmly ossified that the ordinary compression will not take place; or there may be hydrocephalic enlargement of the head.

Q. How may the hydrocephalic condition of the head be diagnosticated during labor?

A. The elastic feel of the parts, as compared with the head in an ordinary condition, the fact of its filling up every portion of the pelvis, advancing before the uterine efforts, and immediately receding with a bound to the upper strait; this advance, as though some part was ready to pass the external organs, and the sudden and distant recession, are almost characteristic of the hydrocephalic condition of the head.

Q. How should complications of labor by enlarged head be treated?

A. Such cases are all treated alike, by perforation and evacuation.

Q. What condition of the abdomen of the fœtus occasionally complicates labor?

A. The abdomen of the fœtus may be so enlarged by the accumulation of gas, by decomposition, or from an accumulation of fluid within the peritoneal cavity, that it is impossible for it to pass through the pelvis.

Q. When can such a condition be recognized?

A. Not until a portion of the fœtus has been expelled.

Q. How should it be managed?

A. We should endeavor to draw the child through the pelvis, and finding this impracticable, we should perforate, and allow the contained fluid to escape, when traction will finish the delivery.

Q. Is a short funis a cause of difficult labor.

A. Not necessarily.

## MONSTERS.

QUESTION. What kinds of monstrosities are most frequently met with?

ANSWER. Those that are deficient in the skull and brain, having only the face, base of the cranium and a rudimentary scalp, covering only the cerebellum and medulla oblongata and some serous fluid.

Q. What kinds render labor difficult?

A. Where there are two heads and four arms implanted upon one broad chest, or two almost complete individuals joined at some part of the body, or when some part of the fœtus is greatly enlarged.

Q. How should such cases be treated?

A. The treatment must depend upon a careful consideration of the case as it arises; the resources of nature are singularly adequate in these cases.

## DIFFICULTIES REQUIRING INSTRUMENTAL DELIVERY.

QUESTION. What are those causes of tedious labor, that render instrumental delivery necessary?

ANSWER. Inefficient labor-pains, rigidity of the os uteri, obliquity of the uterus and moderate contraction of the pelvis.

Q. What are the causes of impracticable labor?

A. A greatly contracted pelvis, a large head, tumors of the pelvis, a hydrocephalic head, etc.

Q. What indication is to be met in the first class of causes?

A. Force should be added to the efforts of the uterus.

Q. What are the indications to be met in the second class?

A. The removal of the obstacle, or mutilation of the child.

Q. What are the instruments called which give additional force?

A. This class of instruments may be called extracting, and are intended to save the child, while the mother is relieved. Forceps belong to this class.

Q. What instruments would be used in the second class of cases?

A. The instruments termed destructive — the perforator and crochet.

Q. What is the damage done by the first class of causes?

A. Generally nothing but exhaustion.

Q. What is the damage done by the second class of causes?

A. Inflammation of the uterus from violent and protracted efforts, or of the vagina from long continued pressure, or rupture of the uterus, or laceration of the vagina.

Q. If there are doubts as to the class of causes that are rendering labor tedious, what instruments should first be used?

A. The instruments of the first class should first be used, and if they fail, then those of the second class.

Q. What is the business of the practitioner during a case of difficult labor?

A. To apply the means of relief before it is too late.

Q. What is the most common indication for the use of instruments?

A. The approach of exhaustion, and the failure of the powers of the uterus and of the general system.

Q. What relation has failure of uterine action to general exhaustion, and local danger to the parts?

A. It is the first evidence of exhaustion, and almost always becomes obvious before any great amount of danger is done to the parts.

Q. How is the failure of the uterine powers manifested?

A. The pains gradually decrease in strength, their frequency becomes less, they lose their propulsive efforts, and the presenting part does not move forward.

Q. How does vomiting of exhaustion differ from the vomiting of the first stage?

A. In the vomiting from dilatation the mouth of the uterus is not entirely open; the matters ejected, are merely the food or drink the patient has taken. It is seldom severe enough to cause bile to be ejected. Vomiting from exhaustion soon becomes acid and greenish, and, if the exhaustion proceeds to a grave degree, it becomes grumous, resembling coffee grounds.

Q. What condition of the pulse indicates mischief and admonishes us to interfere?

A. The rise of the pulse to one hundred or more per minute.

Q. What condition of the pulse indicates grave mischief has already been done?

A. When the pulse attains a rapidity of one hundred and twenty strokes to the minute, injury has already been inflicted, and if the cause is removed, the patient is still in jeopardy because of effects already produced.

Q. What other symptoms of grave injury usually occur?

A. There is often chilliness with actual coldness and tremors, dryness of the mouth, the tongue is coated brown, the temperature of the body is cool and bathed in exudation, and there may be either muttering delirium, or wild frenzy.

Q. What indicates change in the mucous membrane of the uterus?

A. A peculiar yellowish discharge from the vagina.

Q. What denotes the occurrence of inflammation in some of the parts?

A. Thirst, increased heat of skin, a more than

ordinarily fickle pulse, which is sharp and corded, and a tenderness of the part affected, as the uterus, vagina, or bladder.

Q. What causes inflammation of the pelvic organs during a tedious or protracted labor?

A. It is caused by the continued severe pressure of the presenting part against the soft parts and the bony structure, embarrassing the capillary circulation.

Q. Why is mere time no indication of the liability to inflammation of the pelvic organs from pressure?

A. Because a head that is impacted in the pelvis, will cause destructive inflammation very much sooner than one remaining there for want of uterine force to push it through.

Q. What is the difference between an impacted head, and one simply arrested for want of impelling force?

A. The impacted head fills the pelvis, so that it is difficult if not impossible to pass the finger between it and the bones of the pelvis; in the absence of pain, it cannot be elevated or otherwise moved; it does not advance with a pain, nor recede in the absence of pain. The head, arrested from inefficient pains, does not fill the pelvis perfectly, the pains even of moderate force, do advance it, and the elasticity of the soft parts, causes it to recede somewhat.

Q. What are the effects produced by either of these conditions?

A. The vagina becomes dry, hot, and tumid, so as to increase the obstruction; febrile symptoms supervene, and if not relieved, the patient becomes exhausted. Post partum vaginitis, vesico-vaginal and

recto-vaginal fistulæ, and even fatal metritis, peritonitis, and perimetritis sometimes follow.

Q. What instrument is indicated in a case of impaction?

A. The forceps.

Q. When should they be used?

A. In time to prevent the occurrence of inflammation.

Q. Should we rely on time as an indication for their use?

A. As before intimated, we cannot derive our indications for obstetrical practice from time, but must watch the symptoms. As soon as the head is at a stand still, and the parts begin to swell and become dry, if only an hour has elapsed, we are called upon to interfere.

Q. What two indications for interference are liable to occur together?

A. Exhaustion and vaginal inflammation.

Q. Do these consequences of impaction and arrest of progress result from other than head presentations?

A. They occasionally occur in breech presentations, or from long continued pressure in shoulder presentations.

Q. When both mother and child are in danger that threatens the life of one or the other, what is our duty?

A. Our duty is to save the mother.

Q. In ordinary tedious labor, when should the forceps be used?

A. As soon as they can be easily introduced and adjusted.

Q. Which incurs the most responsibility, the use of the forceps or ergot?

A. The responsibility of using the forceps is much less than that of using ergot, and it is too common to resort to the use of the latter instead of the former.

Q. What are the absolute prerequisites to the use of any obstetrical instrument through the vagina?

A. That the bladder and rectum should be empty.

Q. What are the extracting instruments?

A. Forceps, extractor, vectis and fillet.

Q. Which are the most important?

A. The forceps which have almost entirely superseded all other instruments of this class.

Q. What are they called by some authors?

A. The child's instrument.

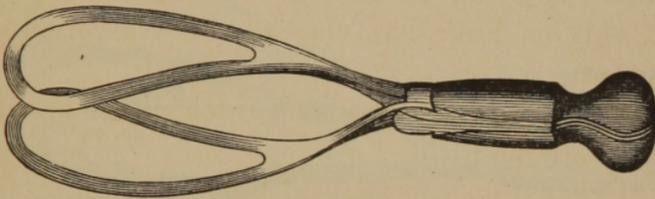


FIG. 39. -- Short Forceps.

Q. How are the forceps constructed?

A. They are so constructed as to enter the vagina and uterus, and embrace the foetal head much in the same way as if the hands were inserted one on either side.

Q. How long have forceps been in use?

A. In some form or other, they seem to have been used as far back as Celsus.

Q. Who has the honor of reviving and perfecting their use?

A. Dr. Paul Chamberlen.

Q. What make of American forceps are susceptible

of being used at the perineal strait, in the pelvis, and at the superior strait?

A. Elliot's and Hodge's.

Q. In what does the length of the forceps consist?

A. The difference in the length consists in difference of distance from the lock to the extremity of the blade.

Q. What effect has the length of the handles on the instrument?

A. Forceps with short handles are not capable of compressing the head so powerfully, but are efficient extracting instruments. With the long handles we may manage the instrument more easily, but are likely to do more damage than with short handles.

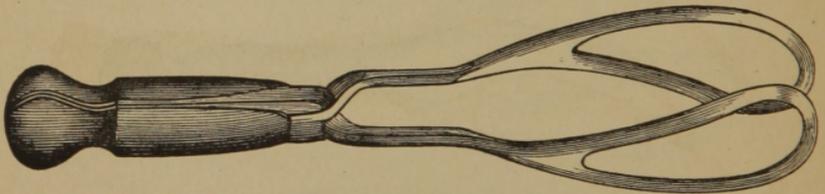


FIG. 40. — Long Forceps.

Q. Where may the long forceps be used?

A. The long forceps may be used in all situations where the short will answer the purpose, and also at the superior strait or above it.

Q. Where may the short forceps be used?

A. In the pelvis and at the inferior strait.

Q. For what other purpose than traction may the long forceps be used?

A. As an extractor when head and pelvis are properly proportioned, and as a compressor when the head is large or the pelvis rather small for its passage.

Q. In what position should the short forceps be applied to the head of the child?

A. The short straight forceps should be applied to the sides of the head always, in whatever position we find it.

Q. How should the long forceps be applied?

A. The long forceps may generally be applied to the sides of the head when it is low in the pelvis; but if it is high up, or strongly impacted, we are compelled to apply them with reference to the curve of the pelvis, without regard to the position of the head.

Q. What advantage does the use of the short forceps give over the long in the pelvis?

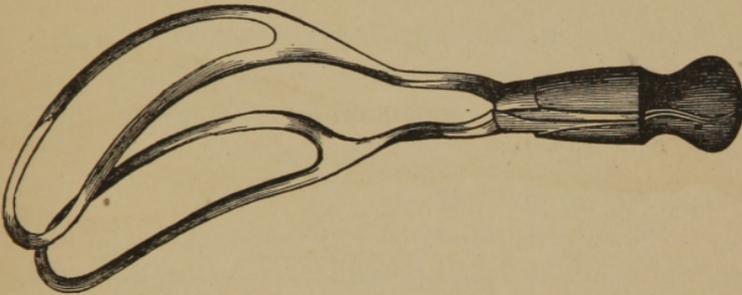


FIG. 41. — Curved Forceps.

A. One advantage in using the short forceps is the ease with which rotation occurs spontaneously, and the facility with which it is effected when it does not take place spontaneously.

Q. What should be the condition of the os uteri for the use of the forceps?

A. The mouth of the uterus should be dilated sufficiently to permit the introduction of both blades easily.

Q. If the os is rigid and unyielding, what would be the danger, even if we could introduce the forceps?

A. Laceration of the os in delivery.

Q. If the os uteri is not dilated, and the woman in danger, how should the case be managed?

A. If possible, dilate the parts artificially, by nauseants, gentle use of the fingers, etc.; but if this is impossible, and the instrument can be introduced, the practitioner should weigh the hazard of laceration against delay, and make the decision.

Q. In what position should the woman be placed for the use of the forceps?

A. She should be on her back across the bed, with her shoulders slightly raised, the vulva projecting slightly over the edge of the bed, the limbs widely separated and flexed, with each foot placed in a separate chair, and an assistant supporting each knee.

Q. Should an anæsthetic be administered?

A. I think there can be no doubt as to the propriety of giving ether to complete anæsthesia in this stage of the proceedings.

Q. What position should the accoucheur assume?

A. He should take his seat in front of his patient, as nearly as possible between her knees, and every muscle should be free and unrestricted.

Q. How should the forceps be prepared?

A. They should be placed in a basin of warm water within reach, and when ready one blade should be taken at a time, wiped dry and oiled.

Q. How should the forceps be applied after the vertex has turned to the symphysis?

A. The left hand blade, or the one that enters the left side of the pelvis, should be taken up by the left hand of the operator, and held in a perpendicular

position over the vulva, while two fingers of the right hand are introduced as high as they will extend alongside of the head, and between it and the left side of the pelvis. The point of the forceps blade is now very gently passed into the cavity of the vagina, along the inside of, and in close contact with, the fingers. The hand containing the instrument is passed over toward the right thigh of the woman and depressed, and then should be gently pressed upward until the head is perfectly embraced by the concavity of the blade. The handle is then pressed against the perineum, and held by an assistant, while the other blade is introduced by following the same manœuvre with the other hand, and if properly introduced, the blades will be easily locked.

Q. Why do the inexperienced meet with difficulty in the introduction of the forceps?

A. Generally because they fail to adapt the instrument to the axis of the different parts of the pelvis; they forget the necessity of carrying the handle of the instrument across the median line, so as to suit the curve of the instrument to the rotundity of the head.

Q. When, in relation to the pain, should the manipulation for the introduction of the forceps be made?

A. In the absence of pain.

Q. When, and how, should traction be made?

A. We should wait until evidence of uterine contraction is manifest, then make traction in the direction of the axis in which the head is situated.

Q. If there are no pains, how should the traction be made?

A. We should imitate the gradual manner of

expulsion by the pains, by swaying the forceps from side to side slowly as we draw upon them.

Q. When should the forceps be removed from the head?

A. When the head has emerged from the vulva the forceps should be removed with great gentleness; but sometimes when the obstacle to expulsion consists in narrowness of the inferior strait, as soon as this obstacle is overcome we may remove the instrument, and allow the pains to expel it.

#### APPLICATION OF THE FORCEPS WHILE THE HEAD IS WITHIN THE PELVIC CAVITY, AND BEFORE THE VER- TEX HAS TURNED TOWARD THE SYMPHYSIS.

QUESTION. How should the forceps be applied to the head in the first position, before the vertex has turned to the symphysis?

ANSWER. Following the direction to introduce the blade that comes underneath first, the instrument is applied diagonally as regards the pelvis, the left blade being very decidedly behind the other, and the whole instrument oblique.

Q. Should force be used while adjusting the instrument?

A. The caution that no force is to be employed in executing these movements, cannot be too emphatically expressed, or too strongly impressed upon the mind of the operator.

Q. How should traction be made in this position?

A. Traction should be made in the direction

toward the coccyx, until the perineum is somewhat distended.

Q. When and how should rotation be effected?

A. If the instrument does not turn spontaneously when the perineum is distended, it should be changed so as to bring the blade first introduced forward to the side of the pelvis.

Q. What movement is next given the instrument?

A. Elevate the handle, so as to cause the occiput to press close against the symphysis, until the head emerges from the vulva.

#### APPLICATION OF THE FORCEPS WHEN THE OCCIPUT IS TO THE RIGHT GROIN.

QUESTION. How should the forceps be applied in the second position of the vertex?

ANSWER. The blades are introduced in a manner very similar to the procedure in the first position, only the left hand blade is inserted more anteriorly.

Q. What is the difference in the manner of rotation in this position?

A. The delivery is the same, except that rotation is effected by moving from right to left, instead of in the opposite direction.

#### APPLICATION OF THE FORCEPS WHEN THE VERTEX IS TO THE RIGHT SACRO-ILIAC JUNCTION, AND THE FORE-HEAD TO THE LEFT GROIN.

QUESTION. How are the forceps applied in the third position of the vertex?

ANSWER. The same manner as in the first position.

Q. How should rotation be effected in this position?

A. We commence rotation at the same time with the traction, so as to bring the vertex to a point opposite the right acetabulum, effecting it slowly during each pain.

Q. What relation to the pelvis will the forceps assume during this movement?

A. The instrument will turn, so that the blade that was introduced into the left side will be in the hollow of the sacrum, while the other will correspond with the symphysis pubis, and at the conclusion of the operation the blades will have exchanged sides.

Q. Can the long forceps be used to make this manœuvre?

A. This complete rotation cannot be executed with the curved forceps without removing when the convexity is brought opposite the symphysis, and re-applying with the curve forward. There is too much risk to the soft parts in delivering without removing and re-applying the forceps.

Q. How may the operator avoid this necessity?

A. By using the straight forceps.

Q. If straight forceps cannot be obtained, what may be done to render rotation possible without removing the instrument?

A. Rotation may be performed in the opposite direction, and bring the face out under the symphysis pubis.

### APPLICATION WHEN THE OCCIPUT IS TO THE LEFT SACRO-ILIAC JUNCTION.

QUESTION. How are the forceps to be applied in the fourth position of the vertex?

ANSWER. The instrument is to be applied the same as in the third position.

Q. In what direction is rotation effected when the occiput is to the left sacro-iliac junction?

A. Rotation should be effected around the left side of the pelvis to the pubis.

Q. Is it always possible to apply the forceps to the sides of the head in a regular manner?

A. We find it impracticable sometimes, especially if the head is impacted closely, or the pelvis misshapen.

Q. What are we justified in doing in such cases?

A. We may introduce the curved forceps with one blade on either side of the pelvis, and seize the head diagonally.

### APPLICATION OF THE FORCEPS AT THE BRIM, OR ABOVE THE SUPERIOR STRAIT.

QUESTION. What kind of forceps can be used at the superior strait?

ANSWER. The long, curved instrument is the only one adapted to this operation.

Q. How are they to be applied?

A. With reference to the sides of the pelvis, instead of the position of the head.

Q. What is the manipulation in applying the forceps at the superior strait?

A. It is the same as for their use in the pelvic cavity, requiring the same care to protect the uterus from injury.

Q. What does the fact that the head is not down in the pelvis denote?

A. That there is serious discrepancy in the diameters of the head and pelvis, and should prepare us to expect much difficulty in the delivery.

Q. In what direction should traction be made when the head is above the brim?

A. It should be in the direction of the superior strait, downward and backward.

Q. Should the traction and compression be constant or intermittent?

A. The traction and pressure should be both constant and intermittent, and correspond in time with uterine contractions and intervals.

Q. When the head descends by our efforts to the external parts, what will be the probable position of the forceps on the head?

A. We shall find that one blade of the instrument is over one side of the occiput, and the other over the opposite frontal protuberance.

Q. Should the operator now rotate the head, or draw it through, or remove the forceps and reapply to the sides of the head, or use a straight pair of forceps for the latter purpose?

A. There is less danger in removing the long and applying the short, or straight-bladed instrument, than in drawing the head diagonally through the vulva; and there is no harm, usually, in delaying for a short

time for that purpose. Dr. Ramsbotham favors the plan of finishing the delivery without removing the long forceps or making rotation.

Q. When should the forceps be used in face presentations?

A. When anything arises during labor to require interference, as exhaustion or impaction.

Q. What mode of application should be followed?

A. The blades should be applied to opposite sides of the head. With the chin toward either groin, the application is very similar to the operation in occipital presentations in this position.

Q. How must rotation be performed?

A. Traction must be made until the chin descends to a point corresponding to the arch of the symphysis, and then this part should be gently rotated to the front, and as it is expelled, kept in close to the symphysis until the occiput rides over the perineum and escapes.

Q. If the chin is posterior, how should it be managed?

A. After the instrument is applied, rotation forward should be effected in a gradual manner, as the head descends, until the chin shall be applied to the symphysis, and the occiput escapes behind.

### APPLICATION OF THE FORCEPS IN BREECH OR FOOTLING CASES.

QUESTION. What circumstance in delivery by the breech may require the use of forceps?

ANSWER. There is sometimes difficulty in getting the head to pass through the pelvis, and there is danger of fatal compression of the umbilical cord.

Q. How should the forceps be applied when the head is retained, after the body is delivered?

A. An assistant will hold the expelled portion of the foetus in such a manner as to be least in the way of the introduction of the instrument, while the operator successively introduces the blades, the first on the left, and the second on the right-hand side of the pelvis, locks, and makes extraction with as much expedition as is compatible with safety to both mother and child.

Q. What will probably be the best position in which to hold the body of the child while applying the forceps?

A. When the occiput is at the symphysis, if the straight forceps are used, they will be more easily applied if the body of the child is raised up sufficiently to introduce the instrument below it. The curved instrument may be used by passing it over the child, which is held in a dependent position between the thighs of the patient.

Q. What is the injury which will most likely be inflicted on the child by the use of the forceps?

A. The one to be dreaded most is caused by too powerful and long-continued pressure in operating at the superior strait, resulting in irreparable injury to the brain.

Q. What should be the manner of traction and compression in order to avoid this?

A. We should be deliberate and slow in applying force both for purposes of extraction and compression, allowing the forceps to expand in the absence of pain, in order to allow as great freedom in the circulation as possible, and then slowly resume the force.

Q. What are some of the accidents that may occur to the mother during delivery?

A. Pressure on the vagina, bladder and rectum by the descending head may give rise to severe subsequent inflammation, if continued for a long time with violence.

Q. How should we try to prevent this?

A. We should give time between pains for the re-establishment of the circulation and nourishment of the parts under pressure.

Q. In what kind of cases may Evans's Extractor be used? \*

A. It can be used only in cases where there is no impaction of the head. It is as easily applied as the forceps, is applicable to the same condition, except where compression is necessary, and may be used without reference to position of vertex. There is hardly any danger of injuring the child's head, and it is incapable of rupturing the perineum.

Q. What use may be made of the fillet?

A. It may be used to some advantage in difficult breech presentations; passed over the flexure of the thigh, it is a desirable addition to our means of extraction?

Q. What is the vectis or lever?

A. It is an instrument in shape very like one blade of the straight forceps, except that the curve is greater near the end. It is called a spoon by the German obstetricians.

Q. For what purpose is it chiefly adapted?

A. It is useful in changing certain malpositions of

\* See Byford's Theory and Practice of Obstetrics, pp. 331-2.

the head. It may be used to change a face presentation into a vertex, or to bring down the top of the head in cases where one side of the head presents.

### THE VECTIS IN RETENTION OF THE HEAD AFTER DELIVERY OF THE BODY.

QUESTION. How should the vectis be applied to the retained head after delivery of the body?

ANSWER. If the occiput be directed transversely, or in front, the vectis should be slipped behind the symphysis, and applied either upon it, or upon the

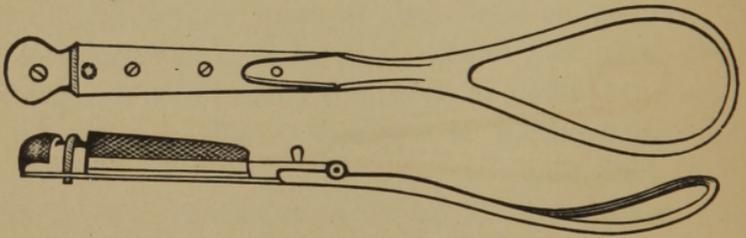


FIG. 42. — Vectis.

mastoid region; but when the forehead looks toward the anterior arch of the pelvis, there is danger of wounding the face, and the temple is then the part to be acted on; remembering the further the instrument is inserted, the less will the face be exposed to injury.

### EMBRYOTOMY.

QUESTION. What is embryotomy?

ANSWER. The simplest signification of this term is the cutting of the fœtus.

Q. Into what varieties is it divided?

A. Perforating and evacuating the head is called

craniotomy. When the thoracic or abdominal cavity is operated upon, it is called evisceration or embryulcia.

Q. What are the conditions requiring embryotomy?

A. Usually a contracted pelvis, or one in which the cavity is obstructed by osseous or other sorts of hard tumors, cartilaginous, glandular, or fibroid, outside the vaginal cavity.

Q. What are the dimensions of the pelvis through which a living child cannot be delivered?

A. If the measurement is below two inches in diameter, and some authors say one inch and three-quarters, embryotomy is the only condition of safety to the mother.

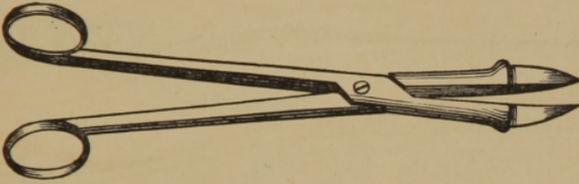


FIG. 43. — Perforator.

Q. Are there any conditions of the soft parts of the mother that would require embryotomy?

A. There are scarcely any; cicatrices may be torn or divided, a rigid os uteri, vagina, or perineum cut, stretched, or even lacerated before the life of the fœtus should be sacrificed.

Q. What is the proportion of mortality to the mother in cases of embryotomy?

A. Statistics show that one mother in five is lost.

Q. What variety of embryotomy is most frequently necessary?

A. Craniotomy.

Q. What instruments are necessary to the performance of and delivery by craniotomy?

A. The particular instruments used for this operation, especially in this country, are the perforator, the crochet or sharp hook, and the craniotomy forceps.

Q. How is the perforator made?

A. Smellie's scissors perforator is about twelve inches long, shaped like scissors; the points of the blades are sharp, and the outside parts furnished with cutting edges that terminate at a shoulder, to prevent the instrument from passing further; the insides of the blades are also furnished with a cutting edge.

Q. How is the crochet made?



FIG. 44. — Crochet.

A. It is about a foot long, nearly straight, until within about two inches of the end, where it is slightly curved. At the end it is bent abruptly into a hook, which is moderately sharp, to fasten upon bone without cutting through.

Q. How should craniotomy forceps be made?

A. They should be light, and furnished with teeth or a roughened surface on the inside of the jaws of the instrument, to furnish a good hold, and the whole strong enough to enable us to apply decided force.

Q. What other instrument is used in some forms of embryotomy?

A. The blunt hook, with a much larger curve, for the purpose of encircling the limbs, or fastening without tearing upon every part upon which they impinge.

Q. How is perforation of the cranium performed?

A. Introduce three fingers of the left hand, and place them firmly upon the most dependent portion of the cranium; take the perforator by the handles, in the right hand, and place the cutting part of it in the palm of the left hand, and push it up along the palmar surface of the fingers, guarding the cutting edges by placing the index and ring fingers in advance of the middle, until the point comes in contact with the head. Then direct the outside part of the instrument backward, to make the point assume a perpendicular relation to the surface of the skull, and in this position the points should be pressed into the cranium up to

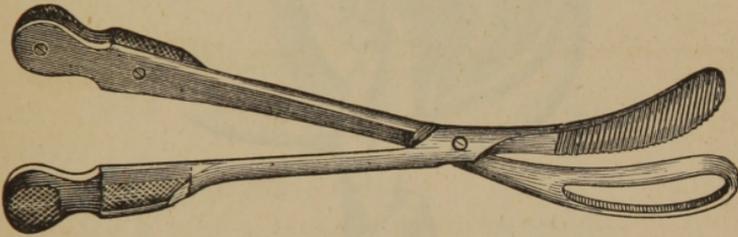


FIG. 45. — Craniotomy Forceps.

the shoulder. With the fingers still guarding the instrument, the handles must be separated about three inches by the thumb and finger, or by means of an assistant holding one handle by the ring, while the operator holds the other. The cutting edges may be drawn out of the cranium and re-entered in a transverse direction to the first incision, and pressed in to the shoulder again, and again separated as before. This should be repeated, until all the processes of the dura mater have been destroyed.

Q. If the pains do not expel the foetus after waiting a sufficient time, what instrument should then be used?

A. We may at once proceed to extract the foetus with the crochet.

Q. How is the crochet used?

A. It is introduced along the left hand and fingers in the same manner as the perforator, until it arrives

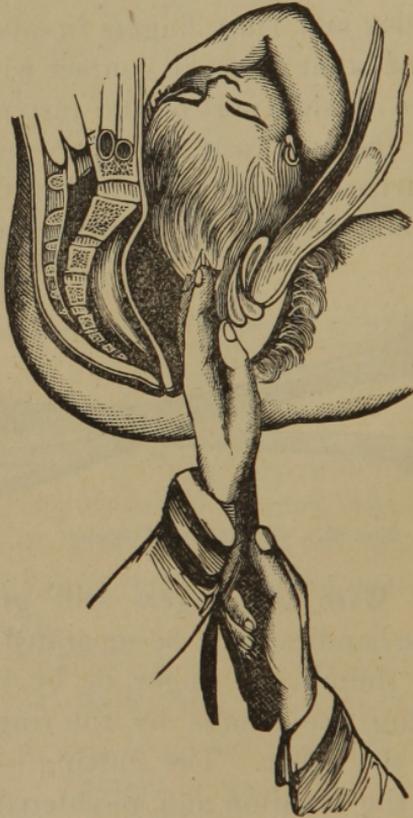


FIG. 46. — Perforation.

at the perforation. The knuckle of the bent part is placed in the perforation, and pushed into the cavity of the skull, and the point brought to bear on the inner surface of the bones near their base, if we can get it there. Before exerting any force, the finger of

the left hand must be carried up the outside, opposite the point of the crochet and kept there.

Q. If the point of the crochet perforates the bone while we are extracting it, what is it an indication for?

A. It is an indication for the removal of the point, and changing its position to some firmer point.

Q. If this continue until the bones of the vault of the cranium are all splintered up, what should we do with the pieces?

A. They should be carefully picked out with the fingers, to prevent their sharp edges from lacerating the vagina and vulva, as they pass out.

Q. When, in relation to pains, is perforation to be made?

A. In the absence of pain.

Q. What may we use in place of the crochet, to extract with?

A. The craniotomy forceps.

Q. How is this instrument to be used?

A. One blade of the forceps is pushed inside the cranium, guarded and directed by the fingers, while the other, more closely watched, passes over the outside, and as soon as enough tissue is enclosed between the two, they are to be closed, and with the fingers of the left hand on the outside blade and skull, extraction is effected with the right hand.

Q. What is Dr. Simpson's cranioclast?

A. It is an excellent instrument for extracting the head after perforation. It resembles the craniotomy forceps. It has an inside and outside blade; the outer one is longer, and has a concave surface, deeply serrated, and it is fenestrated. The inside blade is convex and serrated on the side next its fellow, and not much

larger than the fenestrum, into which it fits rather closely. The blades are joined with a lock.

Q. For what particular use is it best adapted?

A. By its use the bones of the cranium may be so comminuted, that the head is reduced to a soft compressible mass throughout, while the scalp is not injured save where it was perforated, and this integrity of the scalp insures the vagina from damage by spicula of the bones.

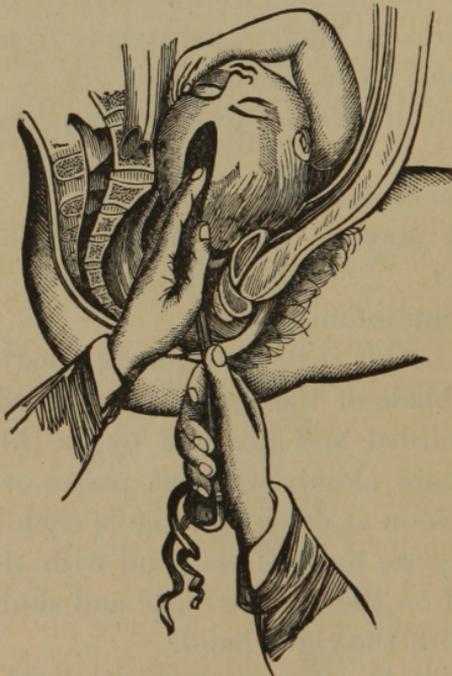


FIG. 47. — Application of Craniotomy Forceps for Extraction.

Q. What is the cephalotribe?

A. It consists essentially in a strong forceps with a hook-like termination of the blades, that sinks into the skull at the base, and thus takes firm hold for extraction. At the extremity of the handles, is a

screw rod, reaching from one handle to the other, with which the blades are made to approximate each other with irresistible force.

Q. How is it used?

A. It is adjusted in the same manner as the midwifery forceps, observing all the precaution necessary with those, and the process of crushing is commenced by working the nut on the screw.

Q. How should the operation be preceded?

A. It should be preceded by perforation, accomplished between pains.

Q. How is craniotomy performed when the head is retained after the body is expelled, in footling, breech, or knee cases, or after turning has been accomplished?

A. We may introduce the perforator at the mastoid process, or near it, break up the brain, plant our crochet or blunt hook on the bottom of the skull, and apply sufficient extractive force to bring it away; or we may succeed by pressing the crochet deep into the skull, over the mastoid region, without using the perforator.

Q. How may craniotomy be performed when the head has been torn or cut from the body, and retained in the uterus?

A. The head may be turned over, until the anterior fontanelle can be felt, and then, while steadied by an assistant, at the top of the pelvis, it can be perforated and extracted.

Q. In arm presentation, if the fœtus is dead, which would be better for the woman, evisceration or turning?

A. Evisceration ought always to be practised in

such a case, because attended with less danger and pain to the woman.

Q. What is the manner of performing the operation?

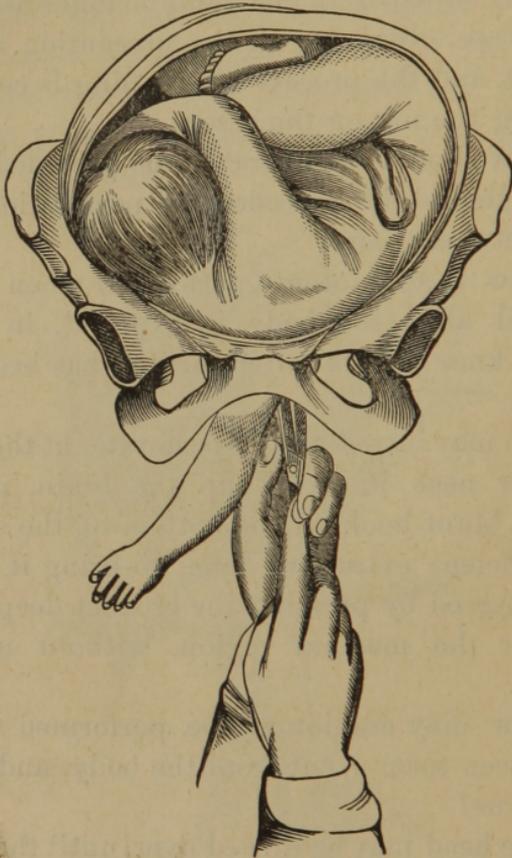


FIG. 48.

A. Draw the presenting part as low down toward the perineum as possible, and perforate, if the side, as far toward the hip as possible; or, if the thorax, between the ribs, making a free opening. Through the opening the sharp hook is carried down the abdo-

men to the ilium, the left hand extending along outside, to guard its movements. The instrument once fixed in the bones of the pelvis, the breech is readily brought down and version accomplished. If we cannot reach the hip, the hook may be planted upon the vertebra as near to it as possible, with the same object.

Q. If the abdomen is too large to pass readily, how may we remedy it?

A. It may be evacuated by the perforator and hook, as may also the thorax.

Q. In case of a very much contracted pelvis, what kind of treatment of the foetus may be necessary?

A. It may be necessary to pick it to pieces with the crochet, and embryotomy forceps, aided by the perforator or any other form of instrument that may become available.

Q. How is decapitation performed?

A. A knife resembling the sharp hook, with an edge in the concavity, is suggested for that purpose by Dr. Ramsbotham. A strong pair of straight scissors may be used, an assistant holding the neck in position by the blunt hook; or it may be done with the sharp hook, lacerating and cutting through the tissues.

Q. What is Dr. Barnes' method of performing embryotomy with the *écraseur*?

A. He uses a steel wire *écraseur*, introducing the wire doubled, the bent portion held together until within the pelvis. When let go, the wire opens out, and may be made to include a portion of the head. He works the wire through this part, and cuts off a slice of the cranium which is removed by the crainot-

omy forceps, and the process repeated as often as necessary.

### TURNING IN CONTRACTED PELVIS.

QUESTION. In what condition of contracted pelvis, is turning, to deliver, better than delivery with the long forceps?

ANSWER. When the contraction is not so considerable as to preclude the hope that the head may be passed without destruction, instead of the long forceps, with a view to compression, turning is an expedient of great value.

Q. What instrument may be of great use in such a case?

A. The vectis, as recommended by Coppée.

Q. What are the arguments in favor of turning in moderately contracted pelvis?

A. The arguments are, that the bi-mastoid diameter is not so great by half an inch, as the bi-parietal, and this part of the head can be made to enter the pelvis easier than the top, and that compression takes place as the effect of less power, applied so as to act toward the more yielding portion of the skull, instead of toward the base or more solid part. Dr. Simpson mentions also, the escape of the mother from the danger of laceration of the vagina, and vulva, by the use of instruments.

Q. What is the reasoning in favor of the use of the forceps instead of turning?

A. The danger to the mother, resulting from the introduction of the hand into the uterus is avoided,

and also, the danger to the child, from compression of the cord.

Q. What is Dr. William Goodell's ingenious plan of arranging the after-coming head in deformed pelvis?

A. He directs the operator to make his first movement of traction in a line anterior to the axis of the outlet, at the same time forcing the neck of the child against the pubes, which causes the pubic side of the head to recede from the inlet, and the sacral side to descend over the point of the promontory, and affront the inlet. Without relaxing the traction force, its direction is reversed; the body of the child is carried backward upon the coccyx, the neck being forced into the hollow of the sacrum, the pubic side of the child's head is made to revolve around the promontory, and descend with the least expenditure of traction force, and the line of force is then changed to that of Carus' curve.

### LABOR RENDERED DIFFICULT BY PRE- TERNATURAL PRESENTATIONS.

QUESTION. What are impracticable presentations?

ANSWER. When any other part of the child than the pelvic or cephalic extremity presents at the superior strait, it is impossible, under ordinary circumstances, for it to be expelled unless a change is effected in its position. Such presentations are impracticable.

Q. What are the most common presentations of this kind?

A. The shoulder, arm or hand.

Q. What are some of the probable causes of impracticable presentations?

A. Deformed pelvis, large amount of liquor amnii and premature labor.

Q. What are the general symptoms of impracticable presentations?

A. The presenting part is high up at first examination, and descends very slowly; the pains are irregular

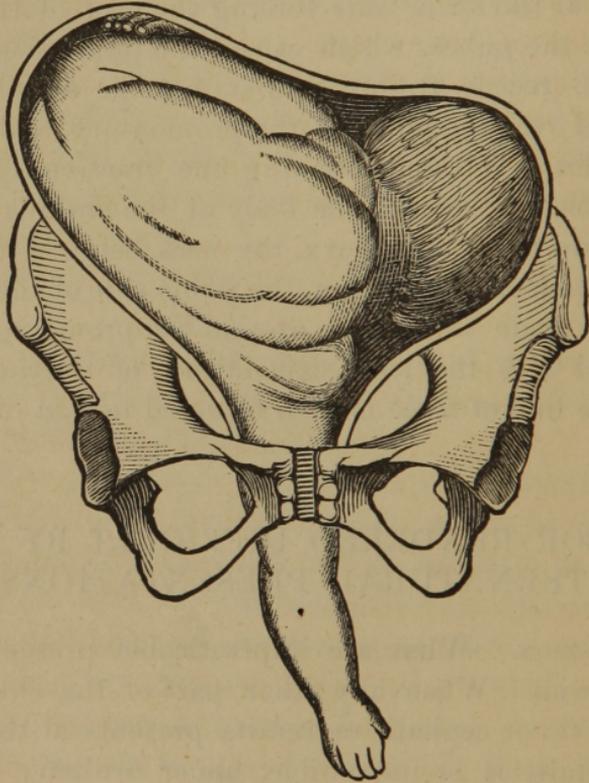


FIG. 49.

and inefficient. After rupture of the membranes, the cessations of pain are of longer duration. The os uteri does not open rapidly, and the first stage is usually tedious.

Q. How does unaided nature sometimes overcome these preternatural presentations?

A. By spontaneous evolution.

Q. How is this effected?

A. In some instances the shoulder is forced down to the inferior strait, until it gets under the ramus of the ischium, and pressed around it, sliding up toward the symphysis pubis, more room is given to the rest of the body; the hips enter the pelvis and glide into the hollow of the sacrum; the shoulder is urged still further up under the symphysis, and the breech is expelled first. Another way is by cephalic version. The head is strongly bent upon the chest, its side enters the brim of the pelvis, and the head and shoulders both occupy the cavity at once, and they are both expelled together; or the shoulder rises, permitting the head to be expelled first.

Q. What are the conditions which will allow these changes to occur?

A. None of these spontaneous changes will occur unless the pelvis is larger than usual, or the fœtus small.

Q. Why is an early diagnosis of preternatural presentations all important?

A. Because success in treatment is very much more probable if instituted in the first stage of labor.

Q. What two modes of examination will enable us to diagnosticate an impracticable presentation?

A. By a careful examination of the abdomen externally, and the aid of auscultation, we may judge of the position with a good deal of certainty. But the vaginal touch is necessary to complete the diagnosis.

Q. How are shoulder presentations distinguished from the head?

A. The presenting part does not fill equally all the

pelvic cavity, and is not round like the head. We may find the pointed acromion process, pass the fingers into the axilla and feel the ribs.

Q. How may the shoulder be distinguished from the breech?

A. By the absence of the genital organs and the anus.

Q. If the membranes are ruptured, and there is still doubt as to whether the presentation be that of the knee or elbow, what should be done?

A. Bring down the presenting part and examine it.

Q. How may a side presentation be recognized?

A. By the ribs, which are the distinguishing mark. Posteriorly we may find the scapula or the sternum, as the case may be.

Q. What is the distinguishing sign of a back presentation?

A. The ridge formed by the spinous process of the vertebræ.

Q. How may the presentation of the belly be recognized?

A. By the marked sensation of softness imparted to the finger of the accoucheur; also by the usual prolapsus of the cord, and by following up the cord to its insertion at the umbilicus?

Q. When the vice in presentation is recognized, what should be done?

A. The position of the fœtus should be changed, so as to make the long diameter correspond with the pelvic axis.

Q. When should this be done?

A. Before the liquor amnii passes away, as it is

sometimes impossible to change the presentation after the uterus has been emptied of its fluid.

Q. What is this process or change called?

A. A version or turning.

Q. What are the different modes of turning called?

A. If the fœtus is turned so the head presents, it is termed cephalic version; if so that the breech is made to present, pelvic version; or if the feet are brought down, it is podalic version.

Q. What are the arguments in favor of cephalic version?

A. The general arguments in favor of this change are those in favor of head presentation over any other. It may be more easily effected by external manipulations than version of any other part.

Q. What are the arguments against cephalic version?

A. The arguments are, that the position of the presentation cannot always be regulated favorably; the chin is apt to be extended instead of flexed. If there is a close correspondence in the diameter of the head and pelvis, the difficulty will require further interference, which cannot be so easily rendered as when the feet can be reached.

Q. Under what conditions should cephalic versions not be thought of?

A. When the pains are weak, the pelvis rather under size, and the head somewhat remote.

Q. What variety of version is most frequently practiced?

A. The podalic.

Q. Which is the best version for the child, supposing both are perfectly formed?

A. The cephalic.

Q. What are the three general methods of turning?

A. First, by external manipulation; second, external and internal manipulations combined; and third, by internal manipulation.

Q. Which method is the best?

A. The first, when practicable, is by all odds the best for both mother and child.

Q. Which method is the most dangerous to both mother and child?

A. The third.

Q. What conditions favor version by external manipulation?

A. The liquor amnii should not be evacuated; no part of the fœtus should be impacted in the pelvis; the abdominal walls should not be too thick or rigid, so that the parts of the fœtus can be correctly and easily distinguished through them.

## OPERATION.

QUESTION. What position should the woman take for external version?

ANSWER. She should be placed on her back, near the edge of the bed, with her head toward the left hand of the operator; her shoulder should be elevated, and the legs and thighs flexed, and the abdomen uncovered.

Q. When should the manipulation be performed?

A. It should be made in the interval between the pains.

Q. If the position is the common one with the

head in the left iliac region, by what manipulation can the breech be brought down?

A. The palm of the right hand must be placed over the head, and the fingers pressed down between the groin of the woman and the head of the child. When we feel the hand has secured a bearing upon the head, we push it up along the iliac fossa toward the fundus; while the palm of the left hand lies flat upon the breech, with the fingers pressed in above, draw it down toward the pelvis. If a pain supervenes, we are to maintain the position until it passes off, and renew our efforts until the change is completed.

Q. What will the operator require to succeed in these manœuvres?

A. Gentleness, firmness and perseverance.

Q. To effect cephalic version on the same plan, when the head is in the left iliac fossa, what are the movements?

A. Reversing the movements of the hands, the head is depressed and the breech elevated.

Q. After the cephalic version is accomplished, how may the head be made to enter the pelvis properly?

A. If the occiput is forward, we may place the finger upon it and press it down with a view to insure flexion of the chin upon the chest, and a consequent good position of the head in this respect; it may be also moved to one side, to make it assume the diagonal position, which is very important. If the occiput is backward, we can better secure flexion by placing our fingers against the neck and pressing it backward and downward.

Q. What are the conditions necessary for the second method, or conjoined manipulation?

A. The os uteri should be partially, if not wholly, open, and should be dilatable.

Q. What should be the preparation of the woman?

A. As the operation is likely to cause more pain, and stimulate the uterus to action, the patient should be placed under the influence of chloroform or ether, and placed on her back across the bed, with the breech at the edge of it, with the feet on two chairs at its side, the limbs being held, as in position for the use of forceps.

### OPERATION.

QUESTION. How is the manipulation performed?

ANSWER. The right hand should be lubricated, and so many of the fingers, generally four, introduced into the vagina, so as to enable us to reach the presenting part easily and completely, and elevate it above the brim, and pressure made in direction of the head, so as to move it further from the pelvic brim; at the same time the fingers of the left hand may be pressed between the head and iliac fossa below, and elevated, while an assistant depresses the breech on the other side of the abdomen. These efforts are to be continued in the absence of uterine contractions, until the breech is made to present at the upper strait.

Q. How should the manipulation be varied to bring down either the head or breech?

A. The same process applies to either case; only remembering to move the parts in the direction of the head when we desire to cause a breech presentation, and toward the breech when we desire to bring down the head.

Q. What are the dangers to the mother in internal manipulation?

A. The most common injury to the woman is inflammation of the uterus, which may be so intense as

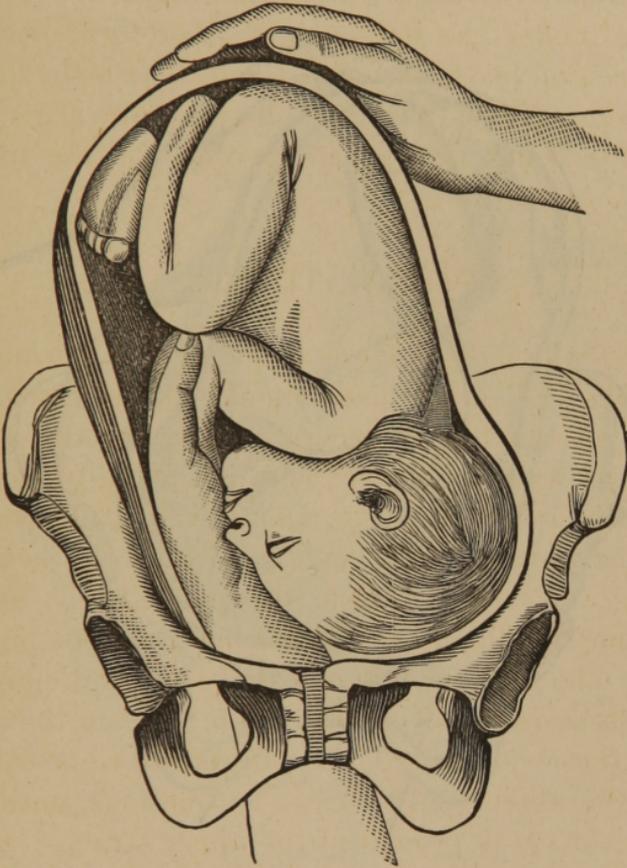


FIG. 50.

to spread to the peritoneum and surrounding organs, and prove fatal. Toxæmic fever may be another result, the abrasion of the mucous surface of the uterus, which is almost sure to follow the introduction of the

hand, enabling the vessels to imbibe putrid material from the cavity of the uterus.

Q. What position should the patient assume for the operation?

A. The position described previously, as for the

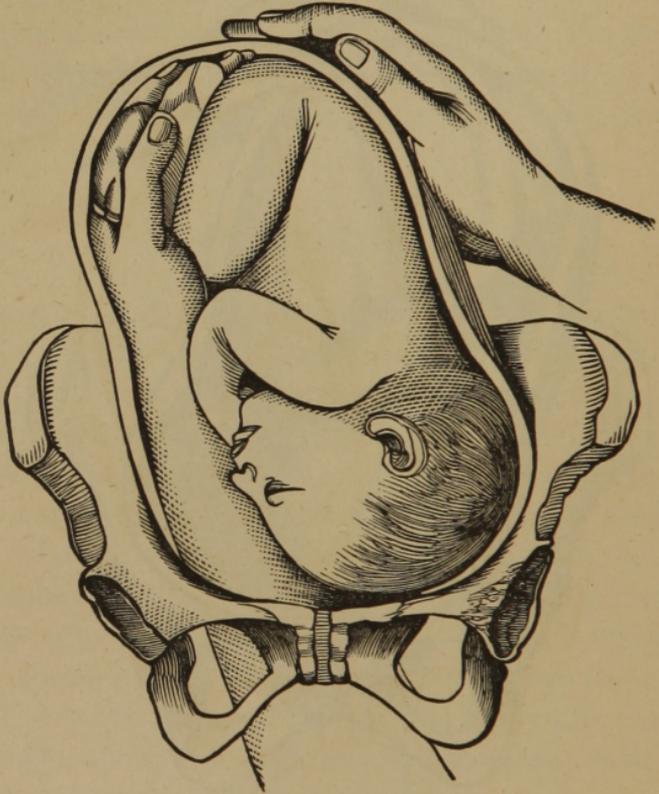


FIG. 51.

use of the forceps. Prof. Wright recommends that the patient be placed on her knees and elbows.

Q. Should an anæsthetic be used?

A. It should.

Q. Which hand should be introduced for the purpose of turning?

A. That hand is to be introduced the palmar surface of which can be most easily placed in contact with the abdomen of the fœtus. If the occiput is to the left side of the pelvis, the left hand of the operator is to be introduced; and if the right side of the pelvis, the right hand.

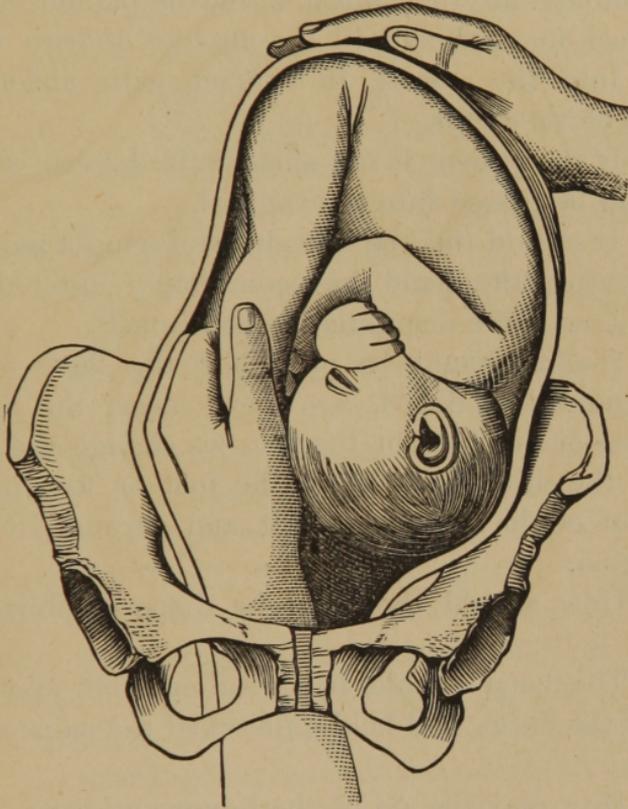


FIG. 52.

Q. What is the best time to operate?

A. Before the liquor amnii is discharged, but after the os uteri is sufficiently dilated to admit the hand.

Q. How is the hand to be introduced?

A. After oiling the dorsal surface, the fingers are

approximated, the little and forefinger in front of the two middle fingers, and the thumb between them in such a manner as to form an imperfect cone. The hand in this position is introduced into the vagina with the palmar surface next the perineum, the labia being held open by the other hand. With the hand still doubled into the conical form, the palmar surface is turned forward, and in the absence of pain introduced into the uterus, in contact with abdominal surface of the fœtus.

Q. If the patient is not anæsthetized, when should the hand be passed into the vagina?

A. It should then be introduced during a pain.

Q. After the hand has completely entered the cavity, how is the manipulation continued?

A. Search should be made for the feet, which, when normally flexed, are very near the chest. Grasping one or both of the feet, we change the position of the child by drawing the foot or feet in the direction of the superior strait, and through it into the vagina.

Q. How should the hand be disposed during a pain?

A. The hand should be spread out flat upon the body of the fœtus, and held quiet until the pain passes off.

Q. How may the aid of the liquor amnii be maintained for some time during the manipulation?

A. It has been recommended, when the membranes are entire, that the hand be passed up between the uterus and membranes three or four inches above the cervix, and then turned forward to rupture them and

search for the feet; and when this can be done, it will save for us more of the liquor amnii.

Q. How should we vary from the usual mode in the introduction of the hand in umbilical presentation?

A. In that case the hand must be introduced into the uterus at the side of the pelvis next to the feet.

Q. Should delivery be completed by traction after the hips are engaged?

A. If it is not necessary to accelerate delivery from any cause after the position is changed, and the parts have fairly engaged, we should, if possible, allow the uterus to expel the whole of the fœtus.

Q. What amount of force should be employed in performing any mode of version?

A. The very least force that will insure success; the power of the uterus should not be resisted.

Q. Why is version difficult, and sometimes impossible, after the rupture of the membranes?

A. The mucous membrane of the uterus becomes dry, and the fœtal surfaces do not glide over it easily, so that the fœtus becomes fixed, the two surfaces clinging to each other so tenaciously that it is difficult to dislodge it; the pains are mainly expended in more firmly grasping the body and limbs of the child.

Q. If turning is rendered impossible under these circumstances, what should be done?

A. Evisceration is the only operation that can be practiced.

Q. If the child is dead, which should be preferred, turning or evisceration?

A. Evisceration and removal, because less dangerous to the mother.

Q. Can the hand be introduced into the uterus when it is thus dry?

A. The presenting part is so impacted in the brim of the pelvis, that there is great difficulty in getting the hand by it, and the resistance can be overcome only by working between pains, and persevering with great pertinacity and firmness.

Q. Should an arm hang down in the vagina, how should it be disposed of?

A. Let it remain in that cavity, as it occupies less important room than if it is crowded back into the uterus.

Q. What may hinder the descent of the fœtus after the limbs have been brought down?

A. The contractions of the transverse fibres will hinder descent and resist our traction most.

Q. What efforts should be made to overcome this?

A. If the position does not change after moderate direct tractions, we should direct our efforts in a diagonal manner around the pelvis, varying the direction from time to time until the resistance is overcome. Assistance will be derived from external manipulations in overcoming these sacculated contractions.

Q. Why is it better to secure the feet by a fillet or tape after they are brought down?

A. Because it often happens that we bring down one or both feet into the pelvis without materially changing the position of the child, and they have a strong tendency to retract, and sometimes do return into the uterus; and to avoid the inconvenience of searching again, it is better to place a piece of tape around them by which to keep them down.

Q. In cases where the uterus is dry, what kind and degree of traction is necessary to effect version?

A. It requires constant and forcible traction to complete version; and the more constant and unremitting the traction, the less force it will require to fatigue the irritated fibres to relaxation.

Q. When does the traction seem to be the most effective?

A. Immediately succeeding the cessation of uterine contraction, provided the traction is kept up during the pain and after it has ceased.

Q. How may version sometimes be accelerated in these desperate conditions?

A. By the assistance of external manipulation to dislodge the sacculated portions of the foetal body.

Q. When the uterus has become dry, after the evacuation of the liquor amnii, what has been suggested as a remedial measure?

A. It has been suggested to inject it full of warm oil, preparatory to commencing the operation of turning.

Q. How may this be done?

A. By introducing the flexible tube of a pump syringe above the presenting parts, so that the oil may be carried above the body of the child, and passing the oil or other mucilaginous fluid through it.

Q. How is the case conducted after version?

A. It is conducted in the same manner as a footling case.

## GENERAL MANAGEMENT OF TEDIOUS AND INSTRUMENTAL LABORS.

QUESTION. Why should women during tedious labor take nourishing food?

ANSWER. Because exhaustion is so commonly the result, her strength should be sustained.

Q. What kind of food is appropriate in such cases?

A. It should be light, easily digested material, because of the embarrassed condition of the nervous system. Animal broths or essences, ice cream, milk, wine, egg-nog, tea or coffee, may be properly allowed, and cooling drinks as they are desired.

Q. How are anæsthetics useful in tedious labor?

A. They enable the patient to sleep and become refreshed.

Q. How should they be given?

A. Only during pain, as in natural labor.

Q. What care should be exercised about ventilation and attendants?

A. The room should be large and open, so that the patient shall have abundance of pure cool air, and there should be no more attendants in the room than are useful.

Q. Why is it best not to make frequent examinations during tedious labor?

A. Because the vagina is likely to become irritable and excited by the labor, and the presence of the finger will only increase it.

Q. How is the bladder affected during tedious labor?

A. The pressure on the urethra often obstructs the

canal, and the congested tender condition makes it painful to urinate, so the urine is retained, and the organ becomes distended and endangered.

Q. What is the duty of the attendant in the case?

A. He should often examine the state of the bladder, by placing the hand over the hypogastrium. If it is found distended, and the patient cannot voluntarily evacuate the urine, the catheter should be used.

Q. How may the introduction of the instrument be made easy?

A. By passing it in the absence of pain, or while lifting up the foetal head.

Q. What change in the position of the meatus urinarius should the student bear in mind?

A. During labor the urethra is directed upward, and in all its course is immediately behind the symphysis pubis, and the meatus urinarius, instead of being prominent and easily discovered, as in the ordinary condition of the parts, is sometimes drawn up within the pelvis, so that it cannot be seen without carefully separating the parts and searching behind the arch of the symphysis.

Q. If catheterism becomes impracticable, and the bladder so distended as to be in danger of rupture, what should be done?

A. We should not hesitate to resort to artificial delivery.

## EFFECTS OF DIFFICULT LABOR.

QUESTION. Does delivery always remedy existing exhaustion?

ANSWER. It may continue after delivery, and occasionally increases to a state of deep and fatal collapse.

Q. When exhaustion continues, without amelioration, for twenty-four hours after the termination of labor, what is the prognosis?

A. Very grave.

Q. How should exhaustion be treated?

A. By the administration of nourishing diet, and rest in complete quiet; and for more serious degrees of exhaustion, external and internal stimulants: Hot turpentine stupes to the legs, mustard to the epigastrium, warm cataplasms over the whole abdomen, camphor and opium to allay vomiting, and brandy and water in the rectum.

Q. What singular condition of the abdomen sometimes follows tedious labor?

A. There is sometimes a very great distension of the alimentary canal with gas, so that the convolutions of the intestines may be seen through walls of the abdomen.

Q. What is the usual prognosis in such a condition?

A. If not attended by fever or great pain, apprehensions may be dismissed, as it will disappear in two or three days — seven or eight grains of assafoetida every four or five hours, or minute doses of turpentine in emulsion will hasten its removal.

Q. What condition of the uterus is likely to follow tedious labor?

A. Inflammation of the uterus.

Q. How is it characterized?

A. The patient becomes feverish, and the uterine globe hard and tender; the pains much more severe than ordinary after pains, and there is a dull aching all the time; the lochia becomes scanty, or is sup-

pressed; there is a retardation, if not prevention, of the secretion of milk.

Q. How should it be treated?

A. If the inflammation is moderate, hot fomentations and a cathartic succeeded by opiates in full doses, will be generally followed by relief; but, if severe, cupping or leeches, succeeded by mercurial or other alterative remedies must be added as a means of cure. The ravages of inflammation are less in proportion as the system is well nourished, and the nutritive processes are performing their proper functions, hence tonics, restoratives and eliminatives are indicated.

Q. What affections of the vagina, vulva and other pelvic organs sometimes occur, as a consequence of long continued pressure of the head in the pelvis?

A. Post-partum vaginitis, followed by ulceration, and not unfrequently sloughing of tissue, which lays open the cavity of the bladder or rectum, giving rise to vesico-vaginal or recto-vaginal fistula.

Q. What is the proper treatment?

A. It consists in emollient injections, followed after the discharges become fetid, by carbolic acid, acetate of lead, tannic acid, and in bad cases, the bladder should be kept almost absolutely empty, until the force of the disease is passed.

Q. What non-inflammatory affection of the bladder sometimes occurs, as a consequence of tedious labor, or over distention?

A. Paralysis; which may last from a few days, to as many weeks or months.

Q. What is necessary to be done in these cases?

A. The nurse should be instructed how to use the catheter, so that the bladder may be evacuated every

eight or ten hours. Fomentations, emollient injections and bathing and sometimes astringents should be used for the first few days. As soon as the period of excitement has passed, eight or ten grains of pulverized ergot may be given every four or six hours. If the infirmity still persists, strychnia and electricity afford a prospect of relief. Belladonna carried to its full effect has sometimes relieved this condition.

Q. What condition sometimes arises, as the result of pressure on the nerves passing through the pelvis?

A. Pressure on those nerves, especially the sacro-sciatic, sometimes causes obstinate neuralgia, and occasionally temporary paralysis of the limbs.

Q. What treatment should be adopted?

A. The antiphlogestic, locally and generally, as cupping or leeching, emollient injections and cathartics. This should be followed by counter irritants, over the sacrum and iodine internally, strychnia and galvanism may be used when appropriate.

## INDUCTION OF PREMATURE LABOR.

QUESTION. For what purpose is it sometimes necessary to induce premature labor?

ANSWER. To avoid the necessity of the dreadful operations described in the preceding pages.

Q. If necessary when should it be induced?

A. At a stage of pregnancy when the foetus is viable and yet has not attained too great bulk to pass through the pelvis without mutilation.

Q. When would it be necessary to produce abortion instead of premature labor?

A. When the pelvis is contracted below the size

which admits of the delivery of the fœtus in a viable condition, and the life of the fœtus must necessarily be sacrificed to insure the safety of the mother.

Q. What kind of evidence should the practitioner possess before undertaking such operations?

A. He must assure himself by a careful measurement at the time, or have positive knowledge of the difficulty experienced in a previous labor at full term, in order to guard against mistake or imposition.

Q. In what cases may we not expect to save the fœtus, except by gastro-hysterotomy, and hence should resort to abortion?

A. In all cases where the antero-posterior diameter is below two and a half inches.

Q. What is the dimensions of the pelvis in which we may decide to wait longer and induce premature labor?

A. In cases where the antero-posterior diameter is above two and a half inches.

Q. At what period is a fœtus said to be viable?

A. Instances are on record of children being born in a viable condition during the seventh month, but we cannot calculate upon such a result until the end of the month.

Q. What is the bilateral diameter of the head at this time?

A. It may be a little above two and a half inches, but the bones are so flexible, the sutures and fontanelles so open, and the brain so compressible that the diameter may be reduced to less than two and a half inches.

Q. What are the limits of pelvic diameters in which this procedure is justifiable?

A. In cases where the antero-posterior diameter of the pelvis measures from two and a half up to three and a half inches.

Q. Why should the foetus be allowed to remain in the uterus as long as possible before inducing premature labor?

A. Because the longer the foetus is allowed to remain in the uterus, the more likely it is to live after delivery.

Q. What size pelvis will an eighth-month foetus require for safe passage?

A. Three inches.

Q. What are the damages to the mother of premature delivery compared to those resulting from grave operations at full term?

A. They are slight usually, yet are sometimes followed by metroperitonitis and other serious and possibly fatal affections.

Q. What is the mortality among children prematurely born?

A. The foetus is lost in nearly fifty per cent.

Q. From what does the great mortality probably result?

A. It results in a great measure from the malpositions so frequent in these cases.

## MODE OF OPERATING.

QUESTION. What is the object of the different appliances for producing delivery?

ANSWER. All have one of two objects in view, and some of them both of these objects. Some of them open the os uteri largely and indirectly cause uterine

contraction; others act upon the irritability of the uterus inducing contraction, and in this way cause the contents to be pressed down into the mouth of the uterus and open it.

Q. What are the means generally used to dilate the os uteri?

A. The compressed sponge, Barnes' elastic dilators, and the fingers.

Q. How is the operation of dilation with compressed sponge performed?

A. A piece about an inch and a half long, of the size at the end of a goosequill, may be passed up point foremost into the cervical canal, so that the sponge touches the membranes. At the end of six hours change this for one double the diameter, and so on every six hours, increasing the size of the sponge to double the diameter. The sponge should have tape attached to it, that it may be readily removed.

Q. What time will the operation require?

A. In less than twenty-four hours the mouth of the uterus may be opened large enough to admit the passage of the fœtus, and generally the labor pains will have been established.

Q. What are Dr. Barnes' elastic dilators?

A. These dilators are strong India-rubber bags, with a long tube attached to one extremity, through which air or water may be injected to distend it. They are of three sizes, the smallest about two inches long, and the largest one three, and they are constricted somewhat in the center. On each side there is a sort of pocket, into which a piece of whalebone or other instrument may be inserted, with which to crowd it into the cervix-uteri.

Q. How are they used?

A. They are used much like the sponge, the small one being passed up until one end is in the cavity of the uterus; the bag is then inflated with air, or filled with water by means of the syringe, the air or water being retained by a stop-cock in the tube. They should be dilated slowly, as the parts yield.

Q. What time is required with these dilators?

A. Dr. Barnes thinks the delivery can be effected in a very few hours by this method.

Q. How long will it require to dilate the os uteri by means of firm, gentle pressure with the fingers?

A. It may be done in three or four hours.

Q. What is the best manner of performing it?

A. The uterine globe may be pressed down low in the pelvis with the left hand, or by an assistant, until the mouth is within easy reach of the right hand. The index finger may be pressed slowly into the cervix up to the membrane, and swept around the os internum gently, and continued in that position until the parts relax, so that by a firm effort the middle finger will be admitted. The two may be separated slowly and firmly until the third finger can be introduced, and these efforts should be persevering; pains can thus be induced which assists the dilation.

Q. What caution is necessary during the use of these means?

A. Care should be taken not to rupture the membranes.

Q. Should the presentation not be favorable, what should be done?

A. It should be corrected before the membranes are ruptured, by pressing the presenting part upward in

the absence of pain with the fingers of the right hand in the vagina, and manœuvering with the left hand above; and as soon as a good presentation is secured, the membranes are to be ruptured, and the labor managed according to circumstances.

Q. What are the means for inducing contraction before dilation?

A. The douche, the ordinary flexible bougie and the rupture of the membranes.

Q. Is the douche always effective?

A. It is uncertain in its results.

Q. How is it used?

A. The best way to use it is to direct a stream of water against the os uteri, and partly in it, half an hour at a time, for five or six hours.

Q. What should be the temperature of the water?

A. At first it may be ninety-five or a hundred degrees Fahrenheit, and should be gradually reduced to about sixty degrees.

Q. How may the flexible catheter, or bougie, or cat-gut cord be used to induce contractions?

A. Any one of these, or two or three small catheters may be directed up behind the membranes, and pushed entirely within the uterine cavity, care being used not to rupture the membranes. In a few hours these foreign bodies excite uterine contractions.

Q. Why is this a preferable mode?

A. Because it is a safe way of exciting the organ; the progress of contraction and dilatation closely resembles natural labor.

Q. What is the most infallible mode of producing uterine contraction, when premature delivery is desired?

A. That of rupturing the membranes with a probe or catheter introduced through the cervix uteri.

Q. Is the use of ergot to be recommended in producing premature labor?

A. In addition to the terrible energy with which it causes the uterus to embrace the frail fœtus, its poisonous effects ought to exclude it from use in all cases where the life of the fœtus is of any value.

Q. When is ergot applicable?

A. When the fœtus is dead, or too young to live after being expelled.

Q. Why is it desirable to manage these cases with very little manipulation?

A. On account of the tenderness and frailty of the fœtus.

Q. Are instruments ever necessary in these cases?

A. The forceps, even the crochet, may be used, as there may be a vice in the formation and proportion of the fœtus.

### GASTRO-HYSTEROTOMY.—CÆSAREAN SECTION.

QUESTION. For what is the operation of gastro-hysterotomy designed?

ANSWER. To remove from the uterus, through the abdominal walls, a fœtus that cannot be delivered through the natural passages, and it may be performed after the death of the mother.

Q. What is the indication for gastro-hysterotomy?

A. An occlusion of the pelvis from distortion or tumors to such an extent as to make delivery impossible, even after the greatest comminution of the fœtus that can be practiced.

Q. What sized diameter may be mentioned as entirely too small for any kind of delivery except gastro-hysterotomy?

A. A diameter which is decidedly less than two inches cannot pass any ordinary sized fœtus.

Q. In case of sudden death near term, or at full term, what is the duty of the attending physician?

A. The indication is to perform Cæsarean section, to save the child.

Q. What is the only caution necessary in such a case?

A. To be sure the woman is dead. The operation should be performed as soon as possible after we are assured of this fact. It is best to operate with great care, lest the patient, if not dead, be placed in jeopardy from neglect of appropriate minutiae.

Q. What is the rate of mortality to the mother in gastro-hysterotomy?

A. The statistics are meagre and unreliable; but, as far as known, the mortality of the mother is about eighty-one per cent. in Great Britain; on the Continent of Europe, where the operation is much more common, it is about forty-three per cent.; while in America, according to Dr. Playfair, it is only thirty-four per cent.

Q. What circumstances tend to increase the mortality?

A. The effects of protracted labor and injudicious efforts at delivery.

Q. When, during labor, should the operation be performed?

A. For the sake of the mother and child, the operation should not be delayed longer than the completion

of the first stage; and if the membranes rupture, and allow the liquor amnii to escape, and the os uteri is dilated large enough to allow a free lochial discharge, the operation should not longer be delayed.

Q. If we can have time to prepare the patient, what should be done?

A. We should put her in the most vigorous condition, by regulating the digestion and secretions, by administering tincture of iron for some time before the operation.

Q. What is usually the cause of death in Cæsarean section?

A. The causes of death after Cæsarean section are very much the same as in ovariectomy, viz., shock to the nervous system, hemorrhage and utero-peritonitis.

Q. How may the shock be avoided?

A. The shock is most likely to be avoided by the use of an anæsthetic, of which sulphuric ether is the best.

Q. What is the source of the hemorrhage?

A. It has three sources: From the vessels of the abdominal walls, from those of the uterine walls, and from the placental surface.

Q. How may hemorrhage be avoided?

A. That from the vessels of the abdominal walls may generally be avoided by the careful operator, and that from the placental surface may be avoided by inducing firm contractions to close the bleeding vessels.

Q. How is the inflammation controlled?

A. It may be avoided by properly treating the peritoneal cavity and regulating the diet; and if inflammation arises, treat it as an ordinary peritonitis.

Q. What are the dangers to the child?

A. The delay of the operation after the liquor amnii has been evacuated, and the difficulty of extracting the child after the incision is completed.

## OPERATION.

QUESTION. What preparation of the patient is necessary before operating.

ANSWER. The bowels should be emptied by a cathartic, or by an injection, immediately before the commencement of the operation.

Q. What instruments are necessary?

A. The operator will need a scalpel, blunt-pointed bistoury, grooved director, tenaculum, artery forceps, scissors, one dozen straight needles, two inches long, armed with silk, well waxed, ligatures for arteries, two or three fine sponges, some adhesive straps, a broad binder, hot and cold water.

Q. Should the patient be anæsthetized?

A. The patient should be etherized in bed, and then carefully placed upon the operating table in a good light.

Q. Why should we try to inform ourselves as to the location of the placenta?

A. So that we do not disturb it, or operate through it.

Q. Where should the incision be made, if the placenta is situated in front?

A. It may be made through one of the linea semilunares.

Q. Why should an assistant press the abdominal muscles closely against the uterus at the sides?

A. In order to prevent the intestines from rising

up over the uterus, and to facilitate the incision by giving a firm substance upon which to operate.

Q. What should be the extent of the incision?

A. It should begin two inches below the umbilicus, and extend to within an inch and a half of the symphysis pubes.

Q. What may be the mode of incising through the integuments?

A. It may be incised the whole length of the intended opening by one prolonged stroke of the knife.

Q. Why should we begin to dissect through the other tissues at the lower angle of the wound?

A. Because the intestines are less likely to get before the uterus there.

Q. How should the peritoneum be incised?

A. This membrane should be pinched up by the forceps, or thumb and finger, and cut through while quite elevated above the subjacent viscera.

Q. Why is this necessary?

A. To avoid all risk of wounding any organ in the abdominal cavity.

Q. In what manner should the incision in the peritoneum be enlarged to the size of that of the integument?

A. The finger should be passed up beneath the incision in the integument, and act as a guide to the blunt-pointed bistoury, which should be carried along its palmar surface until the incision in the peritoneum corresponds to that in the integument.

Q. What should be the condition of the patient when the uterus is incised?

A. She should be profoundly anæsthetized, so as to lessen the uterine contraction.

Q. When should the incision in the uterus be made?

A. In the absence of pain.

Q. How should the uterus be divided?

A. The uterine tissues should be divided by successive delicate strokes of the scalpel, sponging the wound frequently, until the membrane becomes visible. The grooved director must be carefully inserted between the membrane and the mucous membranes of the uterus, and the uterine tissue divided until the incision is equal in extent to the external wound.

Q. How should the membrane be opened?

A. The membranous bag may be ruptured, and the hand quickly passed into the cavity of the uterus, and the foetus seized by the neck, lifted out, the cord tied and separated.

Q. How should the placenta be managed?

A. The hand must be again passed into the uterus, the placenta seized and held until separated by uterine contraction, and after the pain subsides withdrawn from the organ.

Q. To whom should cutting and ligating the cord be left?

A. To an assistant.

Q. Why?

A. In order that the operator may turn his attention to the placenta.

Q. How long should the assistants continue pressure on the abdominal walls?

A. Until the operator is satisfied there is no danger of hemorrhage from the uterine vessels into the peritoneal cavity, nor from vessels in the abdominal muscles.

Q. What is the next duty of the operator?

A. He should then cleanse the wound carefully, removing any blood or fluid that may have escaped into the abdominal cavity.

Q. Should the incision in the uterus be closed by sutures?

A. It should.

Q. Why?

A. Relaxation is known to occur after the uterus has contracted well, and it is thought best to avert the danger that might arise from the escape of blood into the peritoneal cavity by closing the wound.

Q. How should the wound in the uterus be closed?

A. Mr. Spencer Wells has used a form of uninterrupted sutures in the uterus, the silk thread carried through the sides like the "whip stitch," beginning at the upper and terminating at the lower end, and the thread left long enough and passed down through the vagina, to be removed through that passage when desirable. Dr. Barnes recommends placing the sutures in the uterus and abdominal walls at the same time, stitching them together, which would result in adhesion between the outside surface of the uterus and abdominal wall.

Q. How should the abdominal wound be closed?

A. The sutures should be passed, one inch apart, from one end of the wound to the other. The needles should be inserted three-quarters of an inch from the edge of the incision, and include the lips of the wound down to the peritoneum. The silk may be tied over the wound, so as to make an even, uninterrupted suture, and the adhesion straps and the binder applied.

Q. How should the subsequent condition of the patient be managed?

A. The after treatment should be conducted according to symptoms. If the shock is great, or pain intense, opium is our great remedy; in the former condition in small stimulating doses, in the latter in large sedative quantities, as in puerperal peritonitis from other causes. The patient may be allowed cooling drinks, acidulated or not, according to her taste. The diet should not be meagre, but strictness in reference to rest should be enjoined.

Q. What is vaginal hysterotomy?

A. An incision by a blunt pointed bistoury, one on either side of the cervix, an inch deep, which would not wound the vagina, and yet permit of dilatation and delivery.

Q. When is this justifiable as an operation?

A. When a *post mortem* gastrotomy would be called for, it would not be so serious if the patient should prove not to be dead, and would be a justifiable procedure for delivery.

## DIFFICULT LABOR FROM COMPLICATIONS.

QUESTION. Can circumstances that suddenly render labor dangerous, that is otherwise progressing favorably, always be anticipated?

ANSWER. They cannot always be anticipated.

Q. What is the most common occurrence that may suddenly change a favorable condition into a dangerous one?

A. Hemorrhage.

Q. When may such an accident occur?

A. At any time during gestation.

Q. What is the source of the hemorrhage usually?

A. Separation of the placenta and rupture of the blood vessels which attach it to the uterus.

Q. With what is the quantity and rapidity of the bleeding proportionate?

A. The quantity of blood lost varies with the extent of the separation. If the placenta is largely and suddenly separated, the effusion is very great, and may be fatal in a short time. The danger is greater the more advanced the gestation.

Q. When do the most terrible and alarming hemorrhages occur?

A. At the time of and during labor.

Q. May fatal hemorrhage occur during gestation, not connected with it or labor?

A. It may occur during gestation, as the result of accident, as from a fall, bursting a varix, or rupturing a blood vessel.

## GENERAL SYMPTOMS OF HEMORRHAGE.

QUESTION. What are some of the symptoms of copious uterine hemorrhage?

ANSWER. The pulse becomes small, rapid and weak, the face pale and covered with perspiration; there is noise in the ears, dimness of vision, nausea, sense of suffocation and faintness. The patient then arouses to consciousness, but in a little while the symptoms return in an aggravated form, and syncope supervenes.

Q. With what does the rapidity of these phenomena correspond?

A. The rapidity of the flow, the general vigor of

the patient, and the plan of treatment. Sometimes but a few minutes will elapse before the patient is exhausted.

Q. If efforts to check the hemorrhage are successful, what follows?

A. The fainting spells become less frequent and profound, and a violent arterial excitement supervenes.

Q. How is this reaction characterized?

A. The heat of the surface is increased, the head aches, and sense of violent throbbing is often experienced; the skin is dry, and the pulse is small, sharp and rapid.

Q. What is the condition of the patient's mind?

A. She is generally restless and wakeful, but sometimes stupid and comatose.

Q. What is the duration of this excitement?

A. It sometimes subsides in a few hours, leaving the patient weak and exhausted, or it is continued in remittent paroxysms for a number of days. The patient slowly recovers, or effusion of serum in the meningeal cavities takes place, increasing the stupor, and resulting in death.

Q. Should the patient recover after effusion in the meningeal cavities, what will probably be the future condition?

A. She will be the subject of prolonged debility, amounting to paralysis in some of the extremities, or obstinate and almost uncontrollable neuralgia in some part of the body.

Q. What form of hemorrhage may occur that is only recognized by the appearance of patient and size of the uterus?

A. Concealed hemorrhage.

Q. With what might it be confounded?

A. A rupture of the uterus; the same prostration, and something like the same irregularity of the abdominal rotundity, might exist in both.

Q. If the hemorrhage occur after the child is expelled, what may hinder it from becoming manifest?

A. The mouth of the uterus may become closed by a clot, by the membranes, or placenta itself; the uterus fills up with blood.

Q. In case of concealed hemorrhage before the fœtus has been delivered, where is the blood effused?

A. The blood is effused between the membranes and the uterine parieties, elevating the walls into a tumor that may be observed by examining the abdomen.

Q. How may this variety finally become manifest?

A. Sometimes the membranes give way at the place of effusion, and the blood is mixed with the liquor amnii; but soon the distended membranes give way, and the blood is poured out in such quantities as to cause great alarm.

Q. Is the rupture of the membrane favorable under such circumstances?

A. It is; for when this happens the uterus contracts enough ordinarily to check the hemorrhage.

## TREATMENT OF UTERINE HEMORRHAGE.

QUESTION. What are the indications for treatment in uterine hemorrhage?

ANSWER. The first indication is to moderate the force of the circulation so that the blood will not flow out of the vessels so rapidly, and afford time for and

facilitate the second indication, which is to induce coagulation in the mouths of the bleeding vessels. The third indication is to lessen the caliber of the bleeding vessels.

Q. What are the means for meeting the first indication?

A. The patient should be kept quiet in the horizontal position, and all bodily, mental and moral excitement avoided. Her drinks must be cold and unstimulating, and so of the diet. To these may be added sedative medicines, as the sixteenth of a grain of tartarized antimony every hour, given in solution. Digitalis, aconite and veratrum may often be used, or the nitrate of potassa in large doses.

Q. What local means may be used to check hemorrhage?

A. Ice to the hypogastrium, or introduced into the vagina; the limbs may be ligated to detain the blood in the superficial veins, and cut it off temporarily from the general circulation. An apparatus for protecting the surface of the limbs from atmospheric pressure would answer this purpose admirably.

Q. What are the means for meeting the second indication?

A. The general remedies for promoting the coagulation of the blood in the mouths of the bleeding vessels, are the different astringents — aromatic sulphuric acid in mild forms; acetate of lead and opium in cases of grave character. Two grains of acetate of lead, with one of opium, every four hours. Matico, catechu, and all the mineral and vegetable astringents, have been used.

Q. What local astringent may be applied to the os uteri?

A. Persulphate of iron may be applied in lint to the os uteri, to cause the blood that comes in contact with it to coagulate and act as a plug in the os uteri.

Q. Why are the local astringents not applicable to all cases?

A. Because they more or less endanger the expulsion of the foetus.

Q. How may their liability to produce uterine contractions be avoided?

A. The use of opium is the main remedy to avoid contraction.

Q. What is the tampon?

A. A plug used in the vagina to prevent the hemorrhage. Cotton, wool, lint, pocket handkerchiefs, or strips of cotton cloth oiled, may be used for the purpose.

Q. How is the tampon held in place?

A. By a T bandage, supporting a compress over the vaginal orifice.

Q. What is probably the best tampon, and within reach of the operator at all times?

A. The plug made of cotton wool, or small pieces of old rags, well oiled; and there is little danger of recurrence of the hemorrhage until it is removed.

Q. How long should we allow this to remain in the vagina?

A. It ought not to be left in the vagina longer than twenty-four hours, as the retained blood begins to decompose by that time, and places the patient in danger of toxæmia.

Q. How should the parts be treated when the tampon is removed?

A. The vagina should be washed out, and if the condition require it, a new plug may be immediately introduced.

Q. What is the gum-elastic air bag called?

A. The colpeurynter.

Q. What is the effect of the plug or tampon on the uterus?

A. It generally stimulates the uterus to contraction and thus brings on labor.

Q. To what class of cases is the tampon applicable?

A. It is applicable to all cases of uterus hemorrhage where the life of the foetus is abandoned in the urgent necessity of saving that of the mother, or where it has perished, if gestation has not advanced beyond the fourth month.

Q. To what cases is it never applicable?

A. It is never applicable to the empty uterus at term, as the tampon would merely convert the external or visible into internal or concealed hemorrhage.

Q. In what exceptionable case may we use the tampon at term or near it?

A. It may be used in central implantation of the placenta over the cervix, when it will often suffice to stop the hemorrhage, and enable the patient to progress in gestation, or if labor has commenced, it gains time for us until permanent relief comes from the fulfillment of the third indication.

Q. What is the arrangement of the blood vessels in the uterus that prevent bleeding when the placenta is detached?

A. The arteries enter the sides of the uterus, and

after penetrating its tissues, wind around in channels between the muscular fibres going up to the body and fundus and down to the cervix, across to the anterior and posterior walls, giving off branches, some of which in pregnancy become the placental arteries. In many places they are surrounded by vertices of fibre, so that the uterus in contracting compresses them in many places and lessens their caliber throughout.

Q. In what different ways do the means used to secure uterine contraction operate?

A. Mechanical pressure or kneading may act directly, while other methods act through the nervous system directly or indirectly; ergot, borax, etc., may act upon the nerve centres as vaginal rectal and mammary irritation act reflexively.

Q. What must be done before the uterus can contract?

A. The membranes must be punctured, the liquor amnii evacuated, the fœtus delivered and the placenta and coagula removed.

Q. What efficient means may be applied to diminish the force of the circulation in the uterus, after the fœtus is expelled?

A. The aorta may be compressed above the bifurcation by pressing it against the spinal column.

Q. Why does dilatation of the neck of the uterus stop hemorrhage when the placenta is implanted on the neck?

A. Dilatation of the cervix is a mixture of fibrous contractions and relaxations which compress the opening to the placental arteries as effectually as does contraction of the body or fundus.

Q. What causes syncope in excessive hemorrhage?

A. It is a result of withdrawal of blood from the brain.

Q. What valuable measures for its relief are always available?

A. The first is position; place the head low and elevate the limbs, that the blood may flow easily into the brain and sustain the vitality of that organ until the hemorrhage can be staunched by other means. A tourniquet may be placed on each thigh to diminish the flow through the femoral arteries.

Q. What part does the reaction and tumultuous arterial action take in the restoration of expended energies?

A. It is necessary in order to inject a sufficient supply of impoverished blood into the brain, to sustain the nervous system, until absorption of nutritive material fills the vascular system sufficiently to keep up the normal tension.

Q. What is the best means of supplying the fluid to restore the equilibrium of the circulation?

A. A large quantity of nutritious fluids, taken as nourishment will promote the repletion of the blood vessels.

Q. What are the stimulant medicines applicable to such cases?

A. Carbonate of ammonia, laudanum, and brandy.

Q. When should the stimulants be withdrawn?

A. When reaction is established.

Q. Why should the anodyne be continued?

A. In order to moderate the nervous symptoms that may accompany the reaction.

Q. What particular direction should be given in regard to the care of the patient?

A. Perfect rest, in a dark, noiseless room, with no one but a trusty nurse.

Q. What means of immediately supplying the circulation is now sometimes practiced?

A. Transfusion of blood.

Q. What modifies the hemorrhage occurring during the latter weeks of pregnancy, at term, and during labor before the expulsion of the fœtus?

A. The position of the placenta.

Q. What is accidental hemorrhage?

A. The hemorrhage arising from separation of the placenta not necessarily connected with labor, as from falls, jerks, or blows.

Q. What is unavoidable hemorrhage?

A. When the placenta is situated so that it is implanted upon the cervix, either by one edge reaching to the os uteri, or over it, or when the centre of the placenta corresponds with the os uteri, it is impossible for dilatation to proceed without separation of the placenta to a greater or less extent; hemorrhage thus produced, according to the nomenclature of Dr. Bigby, is unavoidable hemorrhage.

Q. What term is applied to the class of cases where the placenta is so situated?

A. Placenta prævia.

Q. How may slight blows, not sufficient to lacerate the placental substance, cause hemorrhage?

A. They may cause the uterine fibres to suddenly contract at the site of the placenta, and cause the uterine surface to slide over the placental surface and rupture blood vessels at that point.

Q. What condition may conceal the hemorrhage thus produced?

A. The effusion may be in the centre of the two surfaces, and not finding its way out, form a clot, plugging up the mouths of the bleeding arteries, thus stopping the hemorrhage.

Q. What are the symptoms of accidental hemorrhage?

A. The accident that caused it is generally appreciated and remembered by the patient. If it is before labor has commenced, it continues steadily, and ceases slowly, or by the influences of remedies; if labor has begun, the flow continues to show itself between pains, but ceases during pains.

Q. Why does the flow stop during a pain?

A. When the uterus contracts, the membranes are pressed down into the lower part of the organ, for a time preventing the escape of blood.

Q. If any circumstance exists to obscure the symptoms, how may we satisfy ourselves it is accidental hemorrhage?

A. An examination by the fingers will be conclusive, as by it we may feel the smooth surface of the membranes in the cervical opening.

Q. What is the prognosis in accidental hemorrhage?

A. The prognosis in a general way is not serious, as the hemorrhage is comparatively easily managed.

Q. If the general treatment of this form of hemorrhage fails, and the safety of the woman is threatened, what must we resort to?

A. The membranes must be ruptured, to allow the uterus to contract upon the bleeding vessels.

Q. Why should we be sure it is the only plan to check the flow before resorting to this measure?

A. It necessarily interrupts gestation, and results in the expulsion of the foetus; hence we must be assured of the inefficiency of the general treatment and the danger of the woman before resorting to it.

Q. Need we hesitate as long when labor has begun?

A. In labor the measure should be adopted early, when the hemorrhage requires it, even before the dilatation of the os uteri.

Q. How is the rupture best produced?

A. A female catheter, guided by the forefinger of the left hand, may be passed inside the uterus through the membranes, and allowed to remain until most of the water passes through it, as it is desirable to have it flow away as quickly as possible.

Q. If this fail to cause contraction and stoppage of the hemorrhage, what resource have we left?

A. We should resort to delivery by turning, forceps, or otherwise, as the conditions require and justify.

Q. What are the conditions in which ergot is useful in such cases?

A. When the presentation is correct, and the os uteri dilated or dilatable.

### UNAVOIDABLE HEMORRHAGE; PLACENTA PRÆVIA, OR PLACENTAL PRESENTATION.

QUESTION. Why does hemorrhage occur during the latter months of pregnancy, when the placenta is situated more or less centrally over the cervix?

ANSWER. The development of the cervix is a species

of dilatation as well as hypertrophy; hence the placental attachment is interfered with, and bleeding occurs.

Q. When does it occur usually?

A. During the last four or five weeks of pregnancy the patient experiences more or less flow of blood from the vagina.

Q. How does it manifest itself?

A. It occurs suddenly, even when the patient is in bed and asleep. She may lose only an ounce or two, which is followed for a few hours by a little bloody serum. This generally occurs several times during the last month of pregnancy.

Q. What is usually the first symptom of labor in cases of placenta prævia?

A. A discharge of blood from the vagina.

Q. Why?

A. When labor begins the os uteri begins to dilate; the longitudinal extent, of the cervix is shortened, the transverse fibres relax, and the ring of the mouth of the uterus increases in size, causing a slight separation and rupture of placental vessels, and hemorrhage follows.

Q. What are the steps of progress in cases which terminate favorably?

A. As the dilatation increases, the loss of blood becomes greater, until the dilatation is sufficient to allow the head to be pressed strongly down upon the placenta, which lessens the quantity of the hemorrhage; and as labor advances, the placenta is wholly detached and thrown out of the organs before the head, or in some cases it is separated at one side, and the head passes it, and the labor terminates favorably.

Q. What condition admits of a favorable termination of such cases unaided?

A. When the pains are active, propulsive and strong, pelvis roomy, and the soft parts not too rigid, a favorable termination is not unfrequent.

Q. What changes are brought about in the cervical tissues by the process of dilatation, that renders it possible for these cases to terminate favorably?

A. As the longitudinal fibres contract, and the transverse relax, making traction upon the trunks and branches of the arteries about the cervix, they are drawn from their original course, and pulled in transverse directions with reference to each other, and made subject to pressure by sharp angles being closed by the crossing of the transverse and longitudinal system of fibres; and the greater the dilatation, the more effectually are the retardation and arrest of the current of blood toward the placenta accomplished.

Q. How is placenta præviâ diagnosticated?

A. The diagnosis is made out by the history of the latter weeks of gestation, the frequent occurrence of hemorrhage during that time, and the mode of its occurrence during labor. The hemorrhage is increased during the pain in placenta prævia, in accidental hemorrhage between the pains, and physical examination will fail to feel the smooth membranes, but come in contact with the fleshy irregular substances of the placenta.

Q. What is the prognosis of unavoidable hemorrhage?

A. The fatality to the fœtus is greater than to the woman. The less completely the placenta is implanted over the os uteri, the less the danger, and the converse.

Many patients die with the best management that can be devised.

### TREATMENT.

QUESTION. What is the source of danger in placenta prævia?

ANSWER. The loss of blood.

Q. What should be the main point in treatment?

A. To prevent loss of blood.

Q. When is bleeding likely to become dangerous?

A. When labor begins.

Q. If the patient has been the subject of suspicious hemorrhage, what may be done to prevent the further loss of blood and entirely avoid it?

A. Some intelligent person should be in constant attendance upon the patient, day and night, when she is near the time of labor, and should be instructed in the use of the colpeurynter; directed to immediately introduce and inflate it, or fill it with water, on the appearance of hemorrhage, and at once send for the medical attendant.

Q. What quality in the colpeurynter recommends it in such cases?

A. The ease with which it may be applied.

Q. When the physician arrives, should he remove the plug?

A. If the uterus is acting vigorously, and the hemorrhage checked, the plug should be left to be expelled in advance of the fœtus.

Q. If the physician is called for the first time after labor has begun, what is his duty?

A. It is his duty to learn the condition of things

precisely, and if it is a central implantation of the placenta, he should at once close the mouths of the bleeding vessels, and prompt the speedy expulsion of the contents of the uterus.

Q. If uterine contractions are not strong and vigorous, what should be done to arouse the uterus to action?

A. Ergot should be administered, and the uterus kneaded through the abdominal walls.

Q. What is the action of ergot which make it applicable in these cases?

A. Part of its action is to open the circular fibres of the cervix; it also causes elastic contraction of the longitudinal fibres, thus checking hemorrhage.

Q. How should the plug fit the vagina in order to be effective?

A. It should fill the vagina perfectly and firmly.

Q. What remedies should be resorted to when hemorrhage is checked?

A. Stimulants, restoratives and ergot should be administered, to encourage nature to expel the contents of the uterus.

Q. Should these means fail, what shall be done?

A. We shall be under the necessity of resorting to artificial delivery.

Q. Should the patient be so much prostrated as to make her incapable of enduring the fatigue and loss of blood from turning, what is the course to pursue?

A. The plug should be continued, and stimulants and restoratives used.

Q. Is there danger of over treating placenta prævia?

A. The teachings of the profession to the present

have inculcated too much interference in placenta prævia.

Q. What are three main indications that should be our guide in treatment?

A. We should stop the hemorrhage if it has begun, prevent it if it has not begun, and terminate the labor by interference, only because the powers of nature are insufficient.

Q. Why should the introduction of the hand and turning be avoided if possible?

A. The introduction of the hand necessitates a fearful loss of blood, and causes so much irritation and abrasion, as to give rise to subsequent inflammation.

Q. If turning is decided upon, when should the operation be commenced?

A. As soon as the os uteri is dilated enough to allow the hand to pass.

Q. If the mouth of the uterus is not open, what means should be used to hasten the process?

A. Dr. Barnes' dilators may be used, both to stop bleeding and open the mouth, or the ordinary tampon may be used, and wait until dilatation is sufficient to turn and deliver.

Q. At what part of the placenta is the hand to be introduced?

A. The hand is to be introduced into the uterus at the side of the placenta where the smallest amount of attachment exists, separating it from the uterus, so as to permit the hand to pass.

Q. What part of the foetus is to be grasped and brought down?

A. The feet are to be grasped and brought down

through the opening made by the hand, until the breech is engaged in the cervix, where it will maintain a large dilatation of the cervix and thus stop the bleeding.

Q. When is delivery to be completed?

A. Delivery is then to be effected as soon as the uterus can be made to act enough to keep proper contraction.

Q. How may delivery be effected without separation of the placenta?

A. By passing the hand through the centre of the placenta, rupturing a passage for that purpose.

Q. What plan is recommended by Sir James Y. Simpson?

A. He recommends the entire separation of the placenta and its removal from the cervix as the best method of stopping the hemorrhage.

Q. What other method does Dr. Barnes advise?

A. Dr. Barnes recommends the detachment of one side of the placenta only, leaving the other as a medium of support to the child, and assures us that the hemorrhage will cease.

Q. If the placenta is only partially implanted over the cervix, and hemorrhage is profuse, how may the case be managed?

A. The practice is to rupture the membranes and allow the escape of the liquor amnii.

Q. Should the uterine contraction be too feeble to control the hemorrhage, what ingenious plan recommended by Dr. I. H. Burge will supply the deficiency if persisted in?

A. The uterine tumor may be pressed steadily down into the pelvis in the direction of the os uteri,

keeping up the pressure between pains only, until the child is expelled.

Q. If evacuation of liquor amnii is deemed sufficient for central implantation, how may it be accomplished?

A. When the placenta is situated so the finger cannot reach the membranes, a female catheter should be pushed up through the placenta, and allowed to remain until the liquor amnii flows through it.

Q. If the os uteri is rigid, is there likely to be sufficient separation of the placenta to cause much hemorrhage?

A. There is not.

Q. How should such a case be treated?

A. Continue the plugging until the rigidity has passed away, or if there is reason for hurry, dilate the cervix with Dr. Barnes' dilators.

Q. Should impracticable presentation complicate the case, how should it be treated?

A. In such cases turning is necessary.

Q. In what class of cases would it be proper to induce premature labor?

A. In those cases where hemorrhage has continued many weeks, or is likely to continue until the patient is exhausted.

Q. Does nature, unaided, ever overcome the dangers of placenta prævia, with safety to both mother and child?

A. Such result occasionally occurs.

Q. How long may a patient be in labor with this complication?

A. From a few minutes to many hours or even days.

Q. To what is the severity of the hemorrhage proportionate?

A. The further the pregnancy has advanced, the greater the severity of the hemorrhage.

Q. How persistent or severe may be the hemorrhage?

A. The hemorrhage may persist for days, weeks, or even months, and may be slight or severe.

Q. To what is the consequent danger to mother and child related?

A. It is related either to the amount of blood lost, the suddenness of the flow, or the lengthened period over which the loss extends.

Q. What is the proportion of deaths?

A. In cases where turning is undertaken when the patient has been much reduced, it has proved fatal in one hundred and thirty-one cases out of five hundred and twelve — one in less than four, not to mention the amount of foetal mortality.

Q. What are the results to mother and child in artificial premature delivery, induced for other reasons than placenta prævia?

A. From large statistical inquiries it would appear that less than one mother in fifty-three cases lost her life, after this procedure, and two-thirds of the children were saved.

Q. From the foregoing facts, what does Dr. Greenhalgh, of London, recommend as the line of practice to be followed?

A. He recommends that in any given case of hemorrhage due to placenta prævia, occurring after seven and a half months' of utero-gestation, it is expedient both for the safety of the mother and child, to expe-

dite labor, unless the exhaustion of the patient be such as to preclude the step, and if so, then as soon as possible after she has recovered from the shock.

Q. What are the means employed by Dr. Greenhalgh to induce labor, and at the same time prevent hemorrhage?

A. The vaginal plug, elastic abdominal bandage and ergot of rye, with stimulating enemas, friction over the abdomen, and sometimes rupture of the membranes.

Q. What kind of a vaginal plug does Dr. Greenhalgh recommend as easy of introduction, comfortable for the patient, and most efficacious in its results?

A. It consists of an oblong India-rubber ball, larger at its upper than lower extremity, which terminates by a tube closed by a stop-cock; it is introduced into the vagina in a collapsed state, and subsequently distended with air by reason of a syringe.

Q. For what purpose is the elastic bandage used?

A. It is to make firm pressure over the uterus and prevent its filling up with blood.

Q. Of what use is the air pad described by Dr. Greenhalgh?

A. In the event of further pressure being needed, especially after the birth of the child, the air pad may be placed under the bandage, and then filled either with air or ice water.

Q. What form of enæma is particularly recommended by Dr. Greenhalgh?

A. It is a compound decoction of aloes, tincture of nux vomica and spirits of turpentine, in gruel.

Q. What is the argument in favor of artificial premature delivery in placenta pævia?

A. The mortality is less in induced labor for other reasons than in unaided labor at term in placenta prævia.

## HEMORRHAGE AFTER EXPULSION OF THE FÆTUS.

QUESTION. What conditions admit of hemorrhage between the expulsion of the fœtus and the delivery of the after birth?

ANSWER. Imperfect contraction of the uterus and partial or complete separation of the placenta from its attachment.

Q. What is the consistency and position of the uterus if it contract well?

A. If the uterus is contracted sufficiently to prevent hemorrhage, it ought to be firm in feel, round, and with the placenta still in its cavity, not large enough to extend above the umbilicus.

Q. When may atony of the uterus occur?

A. It may occur after exhaustion, or rapid labors.

Q. What treatment should be adopted?

A. The administration of ergot in full doses, while the uterine globe is grasped with much strength, and even rudeness; and if this is not sufficient, the hand may be introduced to stimulate the uterus to energetic action.

Q. When the hand grasps the placenta, shall it be at once removed from the uterine cavity?

A. It is better not to withdraw the placenta until contraction takes place.

Q. What effect has irregular contraction of the uterus on the delivery of the placenta?

A. In that particular contraction called the hour-glass, the placenta is retained above the central constriction, and its delivery delayed.

Q. Are these conditions of the uterus painful?

A. They are accompanied with severe cramping pains, and sometimes with copious hemorrhage.

Q. What probably gives rise to these irregular contractions?

A. The adhesion of the placenta is probably the most frequent cause. The portion of the organ on which the placenta grew, and in which it is imprisoned, is prevented from contracting.

Q. What is the treatment?

A. It consists in the dilatation of the constricted part and the removal of the placenta.

Q. How many kinds of placental adhesion are there?

A. There are two: One is an actual adhesion by the intervention of fibrinous effusion, generally small in extent, and is the product of inflammation; the other seems to be simple hypertrophy of the utero-placental tissues, which more than ordinarily resists the force exerted by the uterus on the parts to which it is attached.

### TREATMENT.

QUESTION. When the placenta is retained by irregular contractions of the uterus, and there is no hemorrhage, what will it become necessary to do?

ANSWER. Allay the irritability of the uterine muscular fibres by one or more full doses of opium.

Q. If this method fails, or if there is considerable hemorrhage, what must be done?

A. We must proceed at once to the delivery of the placenta.

Q. How is this accomplished?

A. We hold the cord in the left hand in such a way as to tighten it, using it as a guide to conduct the right hand to the placenta. The right hand, folded as in the operation of turning, is carried up through the vagina into the uterus along the cord to the constricted portion, through which we introduce, successively the fingers, and finally the whole hand.

Q. If the placenta is adherent throughout, what may we conclude?

A. We may conclude, with a great deal of certainty, that the adhesion is of the second, or less firm variety.

Q. If it is adherent only in a small portion of its circumference, what, probably, is the form of adhesion.

A. Probably the inflammatory or fibrinous.

Q. How can we separate the placenta if the adhesion is non-inflammatory?

A. We can usually cause a separation by placing the tips of the fingers, spread out, at the edge of the placenta, on one side, and the thumb on the opposite edge, and grasping the mass, and pressing again the side of the uterus, at the same time stimulate it to contraction.

Q. If the adhesion is of the fibrinous character, how are we to separate it?

A. The fingers are brought up between the separated portion of the placenta and uterus to the point of adhesion, and forcibly inserted between the two, the placenta thus peeled off.

Q. What care is necessary in this manœuvre?

A. The placental tissues are likely to tear or rupture, and we should be careful to separate it as completely as possible.

Q. What other form of irregular, or rather feeble, contraction of the uterus, is sometimes met with, usually accompanied with great hemorrhage?

A. It is that form in which there is clonic contraction going on. The uterus will contract and feel very hard for a moment, but soon after expand and feel very soft, after a while contracting again, when clots and blood are thrown out in great quantity.

Q. What should be done for this form of hemorrhage.

A. The uterus must be stimulated to efficient contraction by grasping it with the hand, by the application of cold, and by the use of ergot. In rare instances it will be necessary to introduce the hand to remove the placenta.

Q. Why should the placenta be carefully examined after its removal?

A. In order to assure ourselves that it is entirely extracted.

Q. If a portion is left in the uterus, should further effort be made to remove it?

A. It would be better to re-introduce the hand, search for and remove it, than to subject the patient to the after effects of its retention.

Q. If only a small part is left, should we try to remove it?

A. We shall not be justified in risking the great irritation of a blind search for it.

Q. What are the effects of retention of a large portion of the placenta?

A. The first effects are painful efforts at expulsion; the secondary are such as arise from animal decomposition, giving rise to toxæmia and speedily fatal results, or protracted suffering from fever and colliquative discharges.

Q. What treatment should be adopted to prevent these general bad effects?

A. The daily injection of tepid water, carbolized, into the uterine cavity, and giving the patient, internally, the sulphite of lime or soda with nourishment, and, if need be, stimulants.

### POST-PARTUM HEMORRHAGE.

QUESTION. What is one of the most appalling accidents that can befall a woman, and that often comes on unexpectedly, resulting in death in a few minutes?

ANSWER. Hemorrhage after delivery of the placenta.

Q. What is the condition of the uterus in such cases?

A. It is in a state of atony, or want of contraction.

Q. What kind of labors are likely to be followed by this result?

A. Exhausting, tedious, or difficult labors.

Q. Is any case free from its liability?

A. No case is absolutely free from this danger, though it seems more likely to occur in patients who have suffered in previous labors, and in multiparæ.

Q. What symptoms indicate approaching hemorrhage?

A. The pulse is quick, sharp, hard, and generally

full, while the patient is restless, or very much prostrated.

Q. What is the object of treatment in such cases?

A. It is to secure permanent and complete contraction of the uterus.

Q. What are some of the means usually employed for this purpose?

A. Grasping the organ between the hands, kneading it, a full dose of ergot every fifteen minutes, cold water poured on the abdomen from a height, ice bags to the abdomen, ice in the vagina or uterus, or even the tincture of persulphate of iron in the uterus.

Q. What mixture does Dr. Barnes recommend as an injection into the uterus where flooding persists?

A. He recommends a mixture of four parts of liquor of the perchloride to twelve parts of water.

Q. When alarming hemorrhage occurs several hours after delivery, what condition of the uterus does it indicate?

A. It denotes relaxation from primary contraction.

Q. What do hemorrhages that sometimes occur even as late as the fifteenth day after delivery denote?

A. They show that the involution which is usually going on at that time has been delayed; that the circulation of the uterus is still large, and the mouths of the utero-placental vessels are still patent.

Q. What treatment should be adopted in these cases?

A. Perfect quiet, the administration of ergot, aromatic and sulphuric acid, cold applications, friction and pressure over the uterus.

Q. Should we suspect this kind of hemorrhage before labor is complete, what should we do to avoid it?

A. Give ergot immediately after the delivery of the head, and again before the placenta is delivered, and empty the uterus slowly.

### INVERSION OF THE UTERUS COMPLICATING LABOR.

QUESTION. What is inversion of the uterus?

ANSWER. It is the turning of the uterus inside out, with the fundus downward and the cervix upward.

Q. To what extent may this occur?

A. It may be complete or partial. When partial, the fundus is depressed from a mere indentation to a considerable protrusion through the cervix and os uteri.

Q. When inversion occurs as a complication of labor, what relation has it to the delivery of the placenta?

A. It almost invariably occurs either anterior to, or at the time of the removal of the placenta.

Q. What is probably its mode of occurrence when appearing later?

A. Sometimes the fundus is indented and depressed in the cavity of the body at the time of delivery, which depression gradually increases until the fundus passes down completely; at other times the whole of the fundus, and more or less of the body is firmly contracted, while the cervix is relaxed. In this condition abdominal tenesmus will complete the process of inversion.

Q. Are the causes of inversion always obvious?

A. There are cases in which neither patient nor physician can give a clear idea as to the time or manner of its occurrence?

Q. When the uterus is enlarged by recent expulsion of the fœtus, what influence may easily produce inversion?

A. Injudicious or accidental pressure on the fundus, or traction on the funis or placenta would produce inversion.

Q. What is spontaneous inversion?

A. When the irregular action of the fibres of the uterus cause the initiation and completion of the process of inversion, it is called spontaneous inversion.

Q. When does this occur?

A. The irregular contractions may commence before the expulsion of the child.

### SYMPTOMS.

QUESTION. What are the symptoms of inversion of the uterus?

ANSWER. Without warning the patient is seized with great pain, and symptoms of prostration rapidly supervene; she is indifferent to everything around her, or throws herself in every direction in paroxysms of agony. It is a shock not unlike that caused by severe accidents; but mingled with this there is generally exhaustion from loss of blood.

Q. When symptoms present themselves so as to awaken suspicion, how may the *diagnosis* be made?

A. The diagnosis of recent cases may be made clear by the descent of a tumor into or nearly through the vagina, and the absence of the uterine tumor above the pelvis. The uterus is sensitive, contracts and expands upon handling, and if the placenta is not expelled it may be felt or seen with the cord implanted upon it.

Q. What is the prognosis of inversion of the uterus?

A. The danger is great and imminent, in the majority of cases proving fatal; the patient dies within a few hours.

### TREATMENT.

QUESTION. What shall be done with the placenta when the uterus has not detached it, before, during or after its descent?

ANSWER. If it is wholly adherent, its attachment should in nowise be disturbed until the uterus is returned to its natural position; but if it is partially detached, it should be immediately removed, by peeling it off gently with the fingers, which will stimulate the uterus to contraction and suppress the hemorrhage.

Q. How should the reversion of the organ be begun?

A. Introduce the left hand into the vagina, carry it up to the commencement of the inversion, and steady and guide with it the direction and efforts of the hands from below, while with the knuckles and fingers of the right hand applied to the most dependent part of the fundus, steady and continuous pressure is kept up in the direction of the axis of the uterus until the fundus is pressed up, and passing through all the other portions, finds its way above the pelvic brim.

Q. If the placenta is still attached, how should it be treated?

A. It should be treated as though the inversion had not taken place.

Q. What shall be the after treatment?

A. The binder is applied, and cordials, stimulants, and nourishing food administered according to the exigencies of the case.

## RUPTURE OF THE UTERUS.

QUESTION. What grave accident sometimes occurs to the uterine tissues either during gestation or in labor?

ANSWER. The uterus is sometimes torn, so that its contents escape more or less completely into the peritoneal cavity, and the intestines and other of the abdominal viscera are permitted to enter the organ, and even to pass through it into the vagina.

Q. What class of pregnant women are more liable to the accident?

A. Any patient may be the subject of rupture of the uterus during pregnancy; but it is observed much more frequently during labors in primiparæ.

Q. What condition of the uterus renders the patient liable to it during pregnancy?

A. It seems to result from former disease of the uterus, as from inflammatory action the muscular tissue is infiltrated by fibrine, or the degeneration of the uterine tissue from insufficient vascular supply; abnormal conditions of the ovum also render its occurrence possible.

Q. What condition of the ovum may cause rupture of the uterus during pregnancy?

A. A dropsical state of the ovum necessitating a more speedy development than can be accomplished, or the development of more than one ova in the uterus.

Q. If this accident occurs during labor, to what stage is it confined?

A. It takes place almost invariably during the second or expulsive stage.

Q. What is the frequency of the occurrence of this accident?

A. It is computed to occur once in thirteen hundred and thirty-one labors.

Q. What are the causes of rupture of the uterus during labor?

A. Whatever resists the expulsive efforts of the uterus is a cause—as contracted pelvis, exostoses, obliquities of the uterus, bad formation of the fœtus, and occasionally the spontaneous action of the organ is sufficient. Sometimes the action of ergot may cause rupture.

Q. What part of the organ may be involved in the rupture?

A. It may involve all the divisions of the uterus—fundus, body and cervix.

Q. What direction may the rent extend?

A. The longitudinal rupture is the kind always found during pregnancy; both the longitudinal and transverse may take place during labor.

Q. Are ruptures of the uterus incompatible with labor?

A. A small longitudinal rupture is not; but one that is transverse almost necessarily becomes extensive and disastrous.

Q. What are the *symptoms* of rupture of the uterus occurring during pregnancy?

A. There may be only pain in the part, while some patients speak of it as “tearing” or “giving away” sensation. Succeeding these local symptoms are general phenomena of significant character, as coldness,

faintness, excited pulse, rapid respiration, and all the symptoms of collapse, which may prove fatal in a few hours, or febrile reaction and peritonitis may ensue, destroying life in a few days.

Q. How is the foetus disposed of in the cases that recover?

A. It becomes encysted by the fibrine effused during inflammation, and may always remain so without proving inconvenient except by its bulk; or after a time suppuration, exulceration and discharge may rid the patient of her difficulty, though the exhausting process of suppuration may wear the patient out and prove fatal.

Q. What are the premonitory symptoms of rupture of the uterus during labor?

A. The pains are stronger, of more protracted duration, and occur more frequently than usual, while the presenting part is not adequately affected by them. The known existence of any obstructive causes, with these symptoms, would be reason for great alarm.

Q. If the rupture occurs, what change takes place in these symptoms?

A. The labor pains cease; no more bearing down or expulsion efforts are made by the uterus, but a fixed pain is experienced in some part of the abdomen, which continues and grows more severe until the patient goes into a state of collapse, and dies from the loss of blood, or from the effects of supervening inflammation.

Q. What are the diagnostic signs of rupture of the uterus during labor?

A. The presenting part no longer advances, and sometimes recedes beyond the reach of the finger. By

examining the abdomen externally, the parts of the fœtus that have escaped from the uterus into the peritoneal cavity may be felt with unusual distinctness. We may discover the rent by introducing the hand into the vagina, which is sometimes filled with intestines.

Q. What is the prognosis in these cases?

A. It is very grave, but not absolutely desperate, as many cases by skillful management recover, and some even without artificial assistance.

Q. What are the dangers in this accident?

A. The dangers are hemorrhage and inflammation, though some patients die of the shock.

Q. What are the objects of *treatment*?

A. They are first to prevent the accident, by removing the obstacle when this is practicable, by delivering the fœtus with the forceps, crotchet, or other means indicated by the circumstances attendant upon the case; and, second, to prevent and repair the damages that result after the accident has taken place.

Q. What is the first thing to be done to prevent and repair damages?

A. The delivery of the fœtus and secundines as the best means of permitting the uterus to contract, and check the hemorrhage, and prevent the inflammation of the peritoneum.

Q. If the head is presenting, what caution is necessary in applying the forceps?

A. The operator should be very careful not to press the head upward by the forceps blade, as there is great danger of its slipping through the rent and being lost in the peritoneal cavity. The head should be held firmly in position by an assistant.

Q. If we cannot draw the child through the pelvis in this way, how should we manage it?

A. The head may be held firmly in the forceps until perforated and lessened, and thus put in a condition to pass through.

Q. If the head is too high to be thus apprehended by the forceps, and the child has not wholly passed through the rent, how may it be delivered?

A. The practice is to pass the hand through the rent, if it is large enough to allow it, seize the feet and deliver.

Q. In what kind of rupture of the uterus is this generally possible?

A. In most cases of transverse laceration of the cervix this is still practicable, as this part does not contract so readily nor firmly as the longitudinal ruptures do.

Q. In what case is gastrotomy preferable to other proceedings?

A. In cases where the whole body has passed with the placenta into the peritoneal cavity, and in rupture of the uterus before labor has begun.

## RUPTURE OF THE BLADDER.

QUESTION. Does rupture of the bladder occur frequently as a complication of labor?

ANSWER. It is exceedingly rare.

Q. In what kind of labor is it most likely to occur?

A. In tedious labors where the condition of the bladder is neglected.

Q. What are the premonitory symptoms?

A. Frequent efforts at urination, pain in the region

of the bladder, inefficient labor pains, and tumefaction of the hypogastrium.

Q. What is the result of this accident?

A. It is always fatal.

Q. What should be the object of treatment?

A. To save the life of the child alone.

Q. If the position of the child is not favorable to a speedy delivery, what should be done?

A. The Cæsarean section should be performed at once.

Q. What is the only treatment that will benefit the woman?

A. Remedies that will make her comfortable while living, as chloroform and opium, which should be liberally used for that purpose.

### PROLAPSE OF THE CORD.

QUESTION. In what presentations may prolapse of the cord occur?

ANSWER. In any presentation.

Q. Is the degree of prolapse always the same?

A. It is not; sometimes the cord merely comes to the brim of the pelvis, or a knuckle of it may extend into the pelvis.

Q. Will prolapse take place before the membranes are ruptured?

A. No; but the cord may lie in the membranous bag formed by the liquor amnii before the head has engaged in the os uteri, or before this last is open at all.

Q. What are considered causes of prolapse of the cord?

A. Great length of cord, and proximity of placental attachment to the os uteri; when the os uteri is not filled by the presentation; and in twin labor, during the birth of the second child, the laxity of the soft parts permits the easy passage of the cord by the side of the presenting part.

Q. What are the consequences of prolapse of the cord?

A. The consequences are very serious to the child, and very often fatal on account of the arrest of the circulation between the foetal heart and placenta, by pressure on the cord during the transit of the foetus through the pelvis.

Q. May this pressure occur before the membranes are ruptured?

A. This may take place before the head has entered the pelvis, when the cord is below the head, lying on the bones of the pelvis, and before the membranes are ruptured.

Q. How long may a foetus survive a complete arrest of circulation in the cord?

A. It will survive an arrest of circulation about forty minutes; plenty of time to deliver by means of the forceps, or by the feet or breech.

Q. What presenting part of the foetus is most certain to produce compression of the cord?

A. The injurious pressure is almost always caused by the head, but in rare instances, the breech, and even other parts may do the mischief.

Q. What are the reasons why all cases of prolapse of the cord are not fatal to the child?

A. The cord may lie in an angle of the pelvis, by the side of the head, and escape injurious pressure;

or the head may pass through the whole pelvic cavity in less than forty minutes, and the child be born alive; or the head may be so small as not to exert sufficient force upon the cord to stop the flow of blood through it.

Q. When should the *diagnosis* be made?

A. It should be made, if possible, before the membranes are ruptured.

Q. What are the diagnostic signs which may be perceived before the membranes are ruptured?

A. The cord contained in the bag of membranes, below the head, imparts a peculiar sensation to the touch, not unlike the feel of intestines, and the cord may be pressed between the finger and the presenting part, when pulsation may be distinguished.

Q. Why should the presentation be definitely determined as soon as the prolapse is detected?

A. Because upon this will depend, to some extent, the treatment.

Q. By what means can we decide the condition of the child?

A. The pulsation of the cord is the only evidence that the child is living, unless we auscultate.

Q. If the pulsation in the cord has ceased, why should we not be in haste to abandon efforts to save its life?

A. As the cord may be prevented from pulsating, forty minutes before the child dies, we must not be too ready to abandon the fœtus to its fate.

Q. What is the prognosis in unaided cases?

A. If left to nature, the mortality is fearfully large — the largest in head presentations of all practicable natural labors.

Q. In what stage of labor can most efficient aid be rendered?

A. Before the liquor amnii has escaped, we can afford efficient and effective assistance.

Q. What effect has engagement of the head on the probabilities of management?

A. After the head has engaged in the pelvis the dangers are very much increased, as fatal delay in the transit of the head cannot always be avoided.

Q. What is the treatment?

A. It consists in preventing fatal pressure by returning the funis into the uterus and retaining it there until the head has passed, or cause the head to pass so rapidly as to get through the pelvis in less than forty minutes.

Q. What advantage of position may be given before the membranes are ruptured?

A. The pressure can sometimes be avoided, and the position of the cord changed, by placing the patient on her knees and chest until the head has engaged.

Q. When the membranes have ruptured and the cord has floated out with the liquor amnii, in what position should it be placed?

A. If the cord is placed in the left sacro-iliac angle of the pelvis, the pressure may, to some extent, be prevented.

Q. What efforts should be made to return the cord into the uterus?

A. The patient should assume the knee-elbow position, and the operator should introduce the whole hand into the vagina, press the head a little upward and pass the cord above it with the fingers and keep

the hand in this position until several pains have transpired, and the cord passes beyond reach.

Q. Should it be found impossible to return the funis with the fingers, what plan may be adopted?

A. Guillimot's plan of passing a tape through the eyes of a flexible male catheter, may be adopted; the cord should be embraced by a loop in the tape and the whole introduced beyond the head; the stylet should be left in the instrument to keep it firm to be used well.

Q. In what position should the patient be for this manœuvre?

A. The knee-elbow position.

Q. If the head has engaged in the pelvis, how should the case be treated?

A. The forceps should be applied in preference to any other mode of treatment.

Q. What danger is to be carefully avoided in the use of the forceps?

A. The operator should be very careful not to pinch the cord between the forceps and the head, and the instrument should not be closed until the cord is tried by pulling up on it, to see that it is not included in the grasp of the instrument.

Q. If the hand of the child is applied to the side of the head, and expelled with it, in what condition will the prolapsed cord probably be found?

Q. The cord is apt to be situated close by the hand, and remain there without much pressure.

Q. If prolapse of the cord complicates a breech presentation, how should the case be managed?

A. There will not be any need of interference, should the cord be between the legs, which it is gen-

erally, until pressure begins to intercept the circulation, which is not often the case. If the cord is pressed we may facilitate the delivery by inserting the fingers in the bend of the thighs, as in difficult breech presentations.

Q. Should prolapse of the cord complicate impracticable presentation, how is it to be treated?

A. Turning on account of the presentation will be necessary, and the prolapse of the cord can scarcely be considered an important complication.

Q. Should the prolapse be corrected if the child is dead?

A. We need not interfere in any way if the child is dead.

## PUERPERAL CONVULSIONS.

QUESTION. What three kinds of convulsive movements are observed more frequently than others in pregnant women?

ANSWER. Hysterical, choreal and epileptic.

Q. Are hysterical convulsions any more important when occurring during pregnancy than at other times?

A. When hysteria does occur in pregnancy or parturition, it is attended with all its characteristics, and is of no more importance than at other times, and as a complication is embarrassing, not dangerous.

Q. Why is epilepsy of more importance, at such times, than hysteria or choreal contractions?

A. It is of more importance because not so easily differentiated from eclampsia parturientium, as the other affections.

Q. What are the symptoms by which we distinguish epilepsy?

A. The patient is generally known to be an epileptic, and the paroxysms do not occur with the frequency of the eclamptic spasms.

Q. What is the cause of eclampsia puerperalis?

A. It is the result of cerebro-spinal hyperæmia, the puerperal condition of the genital apparatus and uræmia.

Q. How does pregnancy cause cerebro-spinal hyperæmia?

A. As pregnancy advances, the uterine tumor exerts more and more pressure on the abdominal circulation, causing the congestion by pressure?

Q. What is the condition of the blood in the latter weeks of pregnancy that gives rise to eclampsia?

A. It is surcharged with urea and its elements, and still further vitiated by the retention of excrementitious material that is ordinarily eliminated during a free state of the abdominal circulation.

Q. What change is found in the constituents of the urine?

A. It has less urea than normal urine, and contains albumen.

Q. These conditions existing as predisposing causes of convulsions, what may act as exciting causes?

A. Labor pains, mental emotions, and affectional excitement are supposed by some authors to be exciting causes.

Q. Is the morbid anatomy of puerperal convulsions constant?

A. It is constant only in the changes that occur in the kidneys.

Q. What is the extent of the changes in the kidneys?

A. They are hyperæmic or congested, sometimes inflamed, scarcely ever any structural changes, unless when complicated with Bright's disease.

Q. What changes are sometimes found in the brain and spinal cord, in *post mortem* examinations?

A. Hyperæmia, congestion, effusions, serous or sanguineous, are the most common changes observable, but often they are entirely wanting, these organs presenting a perfectly healthy appearance.

Q. What would the manner of death tend to show?

A. It would tend to show that death begins at the brain in most cases, and in some the lungs are overwhelmed with mucus effusions in the air-cells and minute bronchi.

Q. Why may the brain cease to act?

A. It may cease to act because the blood is too vitiated to sustain its functions.

## SYMPTOMS AND TIME OF OCCURRENCE.

QUESTION. When do puerperal convulsions occur?

ANSWER. They occur during the latter months of pregnancy, seldom before the eighth month, during labor, more frequently in the first stage, or after labor is over.

Q. What are the premonitory symptoms?

A. They are such as denote imperfect excretion of urea, as œdema, scanty and high colored urine, pain and heaviness in the region of the kidneys, and symptoms denoting cerebral disturbances.

Q. When may these symptoms show themselves?

A. They may appear several days, or even weeks, before the attack of convulsions takes place.

Q. What confirmatory evidence is afforded by an examination of the urine?

A. Albumen will be detected, and there will be an absence or scantiness of urea, while, with the aid of the microscope, we may detect tube casts and altered blood corpuscles.

Q. When all these predisposing causes exist, does the patient always have the convulsions?

A. The patient may pass through the remainder of gestation, labor and the puerperal state without having convulsions.

Q. What phenomena of terrible significance often precede the paroxysm?

A. Incoherency of mind, deafness, blindness, or perverted sensations of other kinds, as noises, bright light, etc., often precede the paroxysms.

Q. What are the symptoms of the convulsions?

A. The attack may be unheralded, the patient becoming unconscious suddenly; the face is distorted, the mouth and eyes open widely, the tongue is protruded, the arms drawn forcibly against the chest and bent upon themselves, the whole spine rigidly fixed, and generally drawn backward; the muscles of the chest are rigid, the walls of the chest are held immovable, while the legs and feet are extended to their utmost, and held tense and hard.

Q. How long will this state continue?

A. It remains for an uncertain length of time, seldom more than sixty seconds, generally a shorter time.

Q. What changes occur as this condition is passing off?

A. Convulsive twitching supervenes upon this state

of rigid contraction, which slowly subsides, leaving the whole body in a state of absolute relaxation.

Q. What effect does the perfect relaxation produce on the breathing?

A. Each effort at inspiration draws the velum, tongue, and uvula toward the glottis, partially impeding the ingress of air, giving rise to stertor and hissing.

Q. When is the discoloration of the face greatest?

A. It is apt to be greatest in the first few paroxysms, and is deepest at the end of the stage of rigidity.

Q. What is this condition, apparently and really?

A. It is one of asphyxia.

Q. What is the inter-paroxymal condition?

A. The patient remains cheerful, perhaps converses, and possibly feels no approach of the convulsion for several hours; but as the number increases, the stupor lasts longer, until she cannot be aroused between them, and finally dies in a paroxysm.

Q. When the case terminates favorably, what is the phenomena observed?

A. The paroxysms become less severe, and the intervals more protracted, until they cease, and the patient sleeps for twenty-four, thirty-six, or more hours, and gradually awakens to consciousness and convalescence.

Q. What two circumstances would tend to show that the morbid congestion and effusions sometimes found are not the causes, but the effects of the convulsions?

A. The supervention of stupor and the obliteration of the mental faculties.

Q. What is the condition of the pulse at the commencement of the attack of puerperal convulsions?

A. It is usually corded and frequent, but sometimes natural in all its qualities.

Q. What changes does it show during the course of the attack?

A. It becomes more frequent the more numerous the convulsive attacks.

### PROGNOSIS.

QUESTION. What is the average mortality to the mother in puerperal convulsions?

ANSWER. Thirty per cent.

Q. When are they most fatal to the fœtus?

A. When the attack comes on before delivery.

Q. When is it most dangerous for the mother?

A. It is more dangerous when it occurs before than during labor, and less so after labor is completed.

Q. What three symptoms, when present, indicate great danger?

A. Profound coma, rapid pulse and embarrassed respiration.

Q. What is the prognosis if the respiration remains good?

A. Clear and perfect respiration is one of the most encouraging symptoms, and very few patients die when respiration is not embarrassed.

### TREATMENT.

QUESTION. How should the premonitory stage or symptoms be treated?

ANSWER. The bowels should be kept open by the bi-tartrate of potassa, citrate of magnesia, or some

other of the acid salts; colchicum should be given perseveringly, as much as the patient is able to bear, once a day.

Q. What benefit is probably derived from colchicum?

A. It acts, probably, by increasing the excretion of urea by the kidneys.

Q. What symptoms would indicate blood letting?

A. When there is evident hyperæmia of the head, as evinced by headache, vertigo, or perverted sensation, especially if there is a full, slow pulse, blood letting will do good.

Q. When there is much nervous suffering, what remedies will afford relief?

A. The tincture of calabar bean in from twenty to thirty drop doses, bromide of potassium, Indian hemp, hyoseyamus, the ethers and chloroform.

### TREATMENT DURING A PAROXYSM.

QUESTION. What treatment is necessary during a paroxysm?

ANSWER. The clothing of the patient should be loose and light; she should be placed on her back, near the middle of the bed, no restraint being used but such as is necessary to keep her on the bed. Only one movement should in any way be controlled, and that is the closure of the jaws. As soon as the mouth is thrown open, and the tongue thrust out, a piece of soft wood or India-rubber should be placed between them, and kept there until the convulsion is over. The face should be sponged with cold water, and the frothy mucus removed from the mouth and nostrils.

## TREATMENT BETWEEN PAROXYSMS.

QUESTION. Why is it of the first importance to prevent the recurrence of the convulsions?

ANSWER. Because they undoubtedly do great damage each time they recur.

Q. What remedy is most efficient for this purpose?

A. Chloroform.

Q. How should it be used?

A. It should be administered by inhalation, and the patient kept under its influence *all the time*.

Q. Why should it be continued so long?

A. We cannot anticipate a return of the paroxysms after the initiatory symptoms appear.

Q. Why not administer vapor of chloroform during the paroxysm?

A. Because the patient is already asphyxiated.

Q. What stage of the attack is chloroform only adapted to?

A. It is useful only in the early stages; after coma, stertor and difficult respiration become marked, no good can follow its use.

Q. What condition of the pulse contra-indicates its use?

A. When the pulse is rapid and feeble it is not advisable.

Q. If it is thought best to bleed for the cerebral hyperæmia, how should it be done?

A. The patient should be raised to sitting posture, a large opening made in one of the veins of the arm, and the blood allowed to flow until there is an approach to syncope.

Q. If the patient is weak and feeble, what substitute may be used for bleeding?

A. *Veratrum viride*.

Q. How should it be given?

A. Dr. Herbert Fearn, of Brooklyn, says, "if the convulsion has passed, and there is sufficient time to wait for small doses, fifteen drops may be sufficient, if repeated often enough to obtain its influence before the time for the convulsion to recur; but if the patient is in convulsion at the time of his arrival, or it occurs during his presence, he would not hesitate to give half a drachm at once."

Q. When should these large doses be withheld?

A. When the pulse becomes soft, and reduced to about forty-eight or fifty, or when vomiting occurs in either case, it will generally be advisable to stop the medicine, at least for a short time, and watch its effect.

Q. When would morphia be indicated?

A. If the pulse manifests a tendency to go below forty-eight, it will be best to give a quarter of a grain of morphia, and give it often enough to stop the vomiting.

Q. When should the *veratrum* be repeated?

A. Whenever the pulse manifests a tendency to increase either in force or frequency, the *veratrum* should be repeated; it is better to keep the patient under the moderate influence of the medicine for twenty-four hours.

Q. When should measures be applied to cause delivery?

A. When all other efforts seem to have only a temporary influence over the convulsions, we should induce premature labor.

Q. How extensive, and to what parts, should cold be applied?

A. Ice bags should be applied to the spine, especially the upper part of it, and to the head; and the colder the temperature, short of freezing the scalp, the better.

Q. What brisk cathartic is useful in these cases?

A. An emulsion of croton oil is useful in producing free evacuation.

Q. What effects has colchicum, that fits it for this condition?

A. It is revulsive, diuretic and diaphoretic.

Q. In what size doses should it be given, if borne well?

A. It may be given in drachm doses every four hours.

Q. What kind of foot baths will do good?

A. A hot foot bath, with mustard in it, often does a great deal of good.

Q. When will opium be beneficial?

A. After the effects of the cathartic have been decided and sufficient, some form of opium will be beneficial, unless coma or mucus effusions in the lungs are strongly marked symptoms.

Q. How should chloral hydrate be used in puerperal convulsions?

A. It may be administered in fifteen grain doses every hour, in syrup, for twenty-four hours, watching and graduating the amount according to its effects.

Q. In place of what remedies may it be used?

A. Chloroform and morphia.

Q. What condition of the patient indicates the use of bromide of potassium?

A. When the patient is plethoric, and there is a strong determination of blood to the head, or in connection with depletion.

Q. In what doses should it be given?

A. We may give it in sixty grain doses, dissolved in a large quantity of water, every hour.

Q. If the convulsions occur during the progress of gestation, and there are no symptoms of labor, are we justifiable in producing premature labor?

A. We are not.

Q. Why?

A. Because an average number of these cases recover with medical interference alone; and after the eighth month the pressure upon the renal vessels is diminishing by the development of the cervix, allowing the contents of the uterus to settle lower in the abdominal and pelvic cavities.

Q. If premature labor is initiated during an attack of convulsions, how should it be treated?

A. If nature initiates this process, the indication to aid her becomes clear, and we should act upon it.

Q. In what condition should we keep the patient during any of these operative procedures?

A. We should keep her profoundly under the influence of chloroform, to neutralize the nervous irritation caused by the operation.

Q. If labor has begun before or during an attack of puerperal convulsions, what should be done?

A. We should encourage the expulsion of the foetus when going on well, or accelerate it as much as possible when tardy.

Q. Would turning be justifiable in such cases, merely to accelerate delivery?

A. Turning should not be attempted, unless some circumstance attends, that in itself requires this operation.

Q. After the convulsions subside, what treatment is necessary?

A. Usually the only treatment necessary is quietude, light diet, and a suitable state of the bowels.

Q. What condition of mind may be left as a consequence of puerperal convulsions?

A. The brain may be so injured as to produce mania of longer or shorter duration.

Q. What treatment will this condition require?

A. Alteratives, derivatives, and quiet.

Q. What treatment will the various consequences of puerperal convulsions require?

A. A slight paralysis, that is caused by congestion, and effusion in the brain, will require the usual remedies for such states of the nervous system; congestion of the lungs or passive pneumonia, will require special remedies, such as blisters, alteratives, expectorants and anodynes. The various forms of puerperal, abdominal and pelvic inflammations and fevers require energetic treatment to arrest them; the patient should be guarded against all these formidable consequences of puerperal convulsions.

# INDEX.

<b>A.</b>	
Anæmia, general.....	65
Anæsthetics in labor.....	177
Accidents to the fœtus.....	126
Artificial respiration.....	187
Age, its effects on labor.....	165
Attention to the child.....	181
Apnœa.....	185
Allantois.....	71
Amnion.....	78
relations of.....	78
dropsy of the.....	125
Amniotic sac.....	71
fluids.....	71
After-pains.....	191
prevention of.....	195
Alcohol, its effect on the fetal heart.....	103
Abdomen, enlargement of the.....	92
Abortion.....	123
symptoms.....	126
diagnosis.....	127
prognosis.....	128
treatment.....	128
ergot in.....	131
Accidental hemorrhage.....	290
Affections of the ovum.....	124
Anatomical causes of mammary inflammation.....	201
Application of the forceps while the head is within the pelvic cavity and before the vertex has turned toward the symphysis.....	230
when the occiput is to the right groin.....	231
when the vertex is to the right sacro-iliac junction and the forehead to the left groin.....	231
when the occiput is to the left sacro-iliac junction.....	233
at the brim of the pelvis.....	233
in breech or footling cases.....	235
<b>B.</b>	
Blastodermic membrane.....	68
changes in.....	69
office assumed by the.....	70
Ballotement.....	99
position for.....	110
Breasts, changes in.....	91
management of the.....	196
Breech, knee and foot presentations.....	151
feet and knee presentations.....	173
Bladder, paralysis of the.....	267
rupture of the.....	121, 316
Blunt hook in embryotomy.....	240
Barnes', Dr. dilators.....	271
<b>C.</b>	
Colostrum.....	196
Catheter, use of the.....	192, 213
Child, attention to the.....	181
Chloral in labor.....	179
in puerperal convulsions.....	331
Causes of mammary inflammation.....	200
Chloroform in puerperal convulsions.....	328
Cervix, shape of the.....	32
relative position of, during pregnancy.....	52
Convulsions, puerperal.....	64
Chorion.....	71
relations of.....	78
Craniotomy.....	239
instruments employed in.....	240
Cathartics in pregnancy.....	111
Crochet.....	240
Conception, seat of.....	50
Cord, how secured.....	171
separation of.....	183
Cold in treatment of mammary inflammation.....	205
Colpeurynter, use of, in retroversion with impaction.....	122
Chronic inflammation of the milk glands.....	206
Concealed hemorrhage.....	283
Colchicum in puerperal convulsions.....	330
<b>D.</b>	
Decidua.....	77
relations of the.....	78
Decidua-vera, what it becomes.....	79
Decidua reflexa.....	57
Ductus venosus, when closed.....	86
Displacements of the uterus in pregnancy.....	119
diagnosis.....	122
prognosis.....	122
treatment.....	122
Diameters of the fetal head.....	21
Diagnosis of labor.....	155
examination in.....	156
Diagnosis of face presentation.....	162
Diagnosis in the third stage of labor.....	163
Damage to the perineum.....	179

Difficult labors .....	207
treatment .....	208
Deformity of the pelvis .....	210
Difficult labor from complica- tions .....	282
Difficulties requiring instru- mental delivery .....	220
Distention of the alimentary canal with gas after tedious labor .....	266
Diseased rigidity of the os uteri .....	215

## E.

Embryonic spot .....	69
Ergot .....	209
Embryotomy .....	238
Extractor, Evans' .....	237
Extra-ventral pregnancy .....	116
Effects of difficult labor .....	265
Exhaustion after labor, treat- ment of .....	266
Efforts to draw the breasts inju- rious .....	206
Extension, when it occurs .....	144

## F.

Face presentations .....	147
diagnosis .....	162
management of .....	173
Forceps, indications for use of .....	224
as an extractor .....	226
position for use of .....	228
application of, while the head is within the pelvic cavity, before the vertex has turned toward the sym- physis .....	230
when the vertex is to the right sacro-iliac junc- tion, the forehead to the left groin .....	231
when the occiput is to the right groin .....	231
when the occiput is to the left sacro-iliac junc- tion .....	233
above the superior strait .....	233
in breech or footling cases .....	235
Fœtus, when viable .....	269
anatomical peculiarities of the .....	84
accidents to the .....	126
Fœtal circulation .....	87
heart sound .....	101
head .....	19
Fallopian tube .....	35
Foramen-ovale .....	86
Fontanelles .....	20
Frail condition of the mem- branes .....	218
Fillet, use of, to secure the feet .....	262

## G.

Generation .....	50
------------------	----

Generation, organs of .....	23
internal organs of .....	29
Graafian vesicle .....	43
Gestation, duration of .....	104
Glandular abscesses of the mam- ma .....	199
General management of tedious and instrumental labors .....	264
Gastro-hysterotomy .....	274
operation .....	277
General symptoms of hemor- rhage .....	282

## H.

Head, fœtal .....	19
how it enters the pelvis .....	140
diameters of .....	21
impacted .....	223
Heart, fœtal, sound .....	101
Hemorrhage, general symptoms of .....	282
uterine, treatment of .....	284
from separation of placenta .....	125
concealed .....	283
unavoidable .....	290
accidental .....	290
after expulsion of the fœtus .....	302
treatment .....	303
post-partum .....	306

## I.

Impacted head .....	223
Instrumental delivery, difficul- ties requiring .....	220
indications for .....	221
Involution .....	189
Inflammation of the nipple .....	197
of the uterus following tedi- ous labor .....	266
Induction of premature labor .....	268
mode of operating .....	270
Inversion of the uterus compli- cating labor .....	308
symptoms .....	309
diagnosis .....	310
treatment .....	310

## K.

Kiesteine .....	94
-----------------	----

## L.

Liquor amnii .....	78
source of .....	79
Labor missed .....	117
Labor .....	133
diagnosis of .....	155
symptoms .....	134
duration of .....	138
mechanism of .....	139
third stage of .....	163
diagnosis .....	163
prognosis .....	165
natural management of .....	168
anæsthetics in .....	177



Q.		U.	
Quickening .....	98	Uterus .....	29
R.		changes in the lining of the	56
Rosenmüller, bodies of .....	37	diameters of, during gesta-	52
Restitution, when it takes place	145	tion .....	58
Retroversion of the gravid uterus	120	muscular fibres of the .....	60
Retroflexion of the gravid uterus	120	blood vessels of the .....	61
Rupture of the bladder .....	121, 316	nerves of the .....	63
of the uterus .....	121, 311	relations of the .....	119
of the perineum .....	170	displacements of the .....	216
Rotation of the long forceps .....	232	obliquities of the .....	216
Rigidity of the os uteri .....	214	Uterine hemorrhage, treatment	
Respiration, artificial .....	187	of .....	284
S.		souffle .....	183
Segmentation .....	67	Urea .....	64
Superfetation .....	107	Uremia in pregnancy .....	64
Spurious pains, where situated ..	158	Umbilical vesicle .....	71
Sounds of the foetal heart .....	101	contents of .....	72
Symptoms of abortion .....	126	cord .....	72
of pregnancy .....	88	Unavoidable hemorrhage .....	290
of labor in placenta prævia ..	293	prognosis .....	294
Stages of labor .....	135	treatment .....	295
Show .....	136	V.	
Signs, physical, of pregnancy ..	95	Vagina, the .....	26
T.		changes in, during gestation	63
Tampon .....	286	Varices .....	65
when applicable .....	287	Vitellus, changes in the .....	66
Traction on the body of the child		Vitelline nucleus .....	67
to be avoided .....	177	membrane, changes in the ..	73
The mechanism of labor .....	139	Vectis, in retention of the head ..	237
The puerperal condition .....	188	Version .....	253
The after-pains .....	191	external, position for .....	254
Turning in contracted pelvis ..	248	Vomiting of exhaustion .....	222
Tumors in the pelvis obstruct-		of pregnancy .....	89
ing the descent of the head ..	212	Veratrum viride in puerperal	
The vectis in retention of the		convulsions .....	329
head .....	238	W.	
Treatment of uterine hemor-		Warm bath in apnœa .....	185
rhage .....	284	Z.	
Transfusion of blood .....	290	Zonum pellucidum .....	68











MAR 7 1972



NATIONAL LIBRARY OF MEDICINE



NLM 00580496 7