

A

# Manual of Obstetrics :

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NEW YORK:  
SAMUEL S. & WM. WOOD,  
261 PEARL STREET.

1853.

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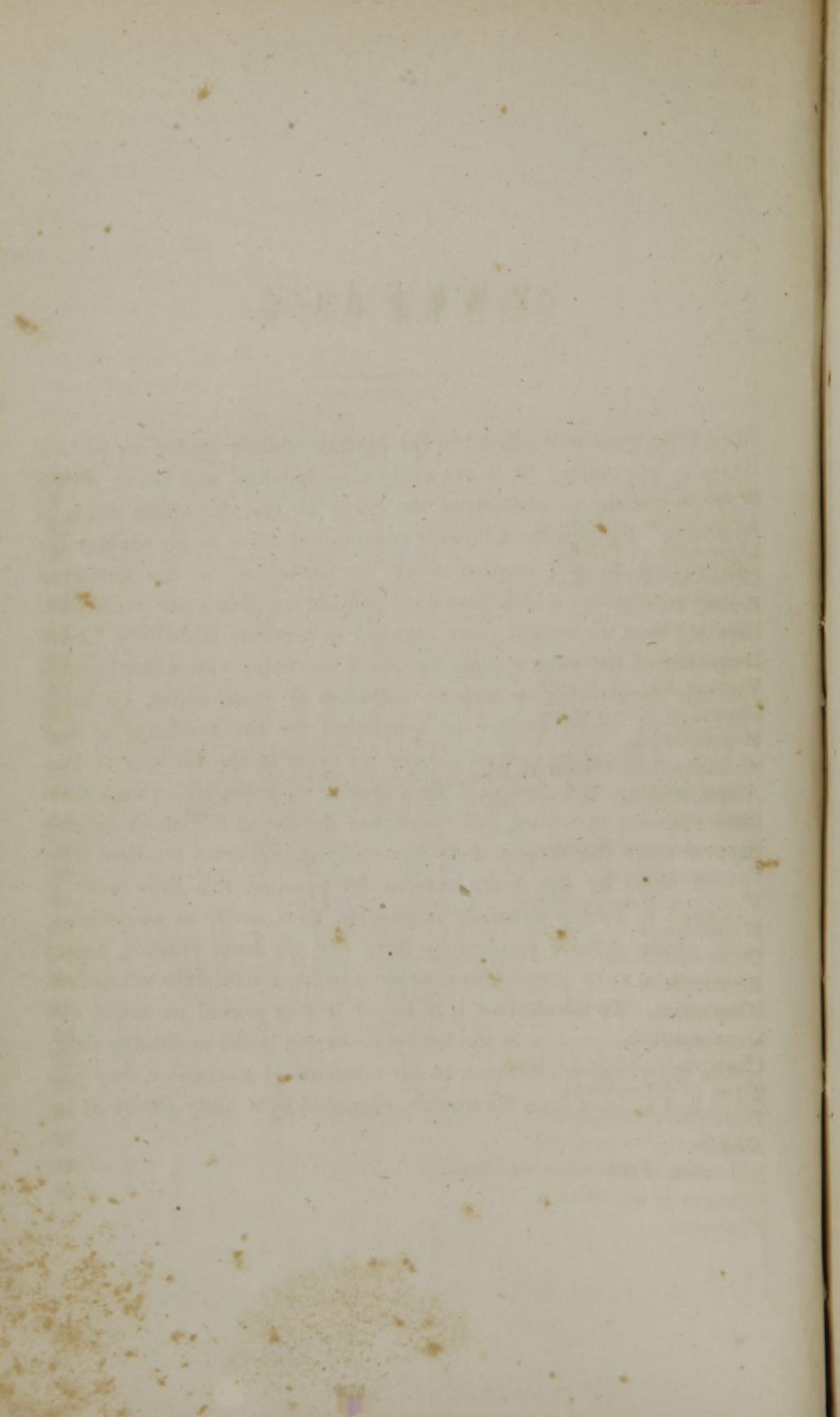
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## P R E F A C E .

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THE little work now offered to the Medical Public makes no pretensions to originality. It is avowedly a compilation, and hence, with a few exceptions, no authorities are given for the statements which it contains. Perhaps the following reasons may serve as an apology for attempting to add another work on Obstetrics, to the numerous excellent treatises which have been published within a few years past. Having been for several years engaged in teaching Midwifery, I have experienced the want of some handbook for students attending lectures on this department, a *skeleton collection of facts*, which, by being interleaved, might answer as a syllabus for the teachings of any school. I therefore took as a basis my notes of the lectures of Professor Gilman, and gradually, for a number of years, added such facts and opinions as reading and experience developed. Without seeking to turn aside the student from the study of elaborate treatises, from which alone he can learn reasons for practice, this little work is designed to convey as briefly as possible, *facts*, as far as ascertained; and, where definite conclusions have not yet been reached, recent *opinions*, so as to present, as near as may be, a miniature of modern Obstetrics. To the student, it is hoped it may prove a useful and acceptable companion, in the lecture room and in the examining class; while the young practitioner, in his moments of emergency, may perhaps find an issue from his trouble, suggested by a hasty glance at its pages.

*New York.*



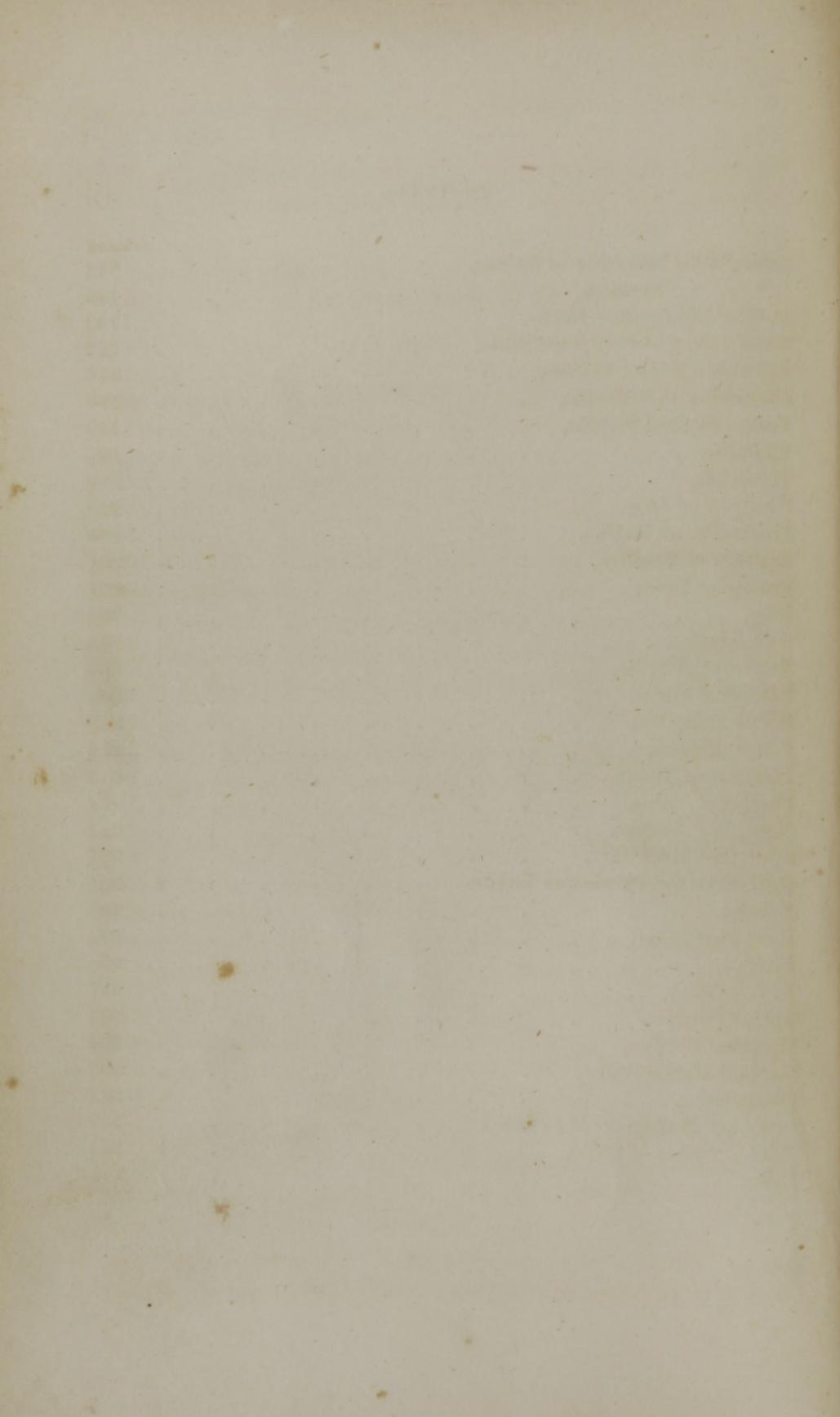
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# MANUAL OF OBSTETRICS.

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**Obstetrics** (from *obstetrix*, a midwife).—*Def.* Is that branch of science which treats of the Anatomy and Pathology of the genital organs of the human female.

**PARTURITION** (*parturio*, to bring forth). *Def.*—The term used to designate the act by which man is introduced into being.

**OBSTETRICAL ANATOMY.**—*Concerns* the pelvis and its contents, together with the Essential and Accessory organs of Generation.

**PELVIS.**—*Situation*: positively, in the trunk; relatively, so as to be articulated to vertebral column superiorly, and to ossa femoris inferiorly. Usually about middle of body—lower in foetal life. *Shape*, an irregularly conical cavity. *Derivat.* πελυς, a basin. *Uses*, to contain and protect viscera; to afford means of connexion between trunk and inferior extremities; and a point of insertion for muscles. *Number of bones* composing: in adult four, in early life more; for obstetrical purposes, four principal. *Names*: two ossa innominata; sacrum; coccyx. *Position of bones*: innominata on either side; sacrum posteriorly and between; coccyx inferiorly.

**Sacrum.**—So named from being offered in sacrifices anciently; also being the largest vertebra. *Synonym*; os basilare, os clunium. *Importance*; most important obstetrically. *Shape*; triangular base above, apex below; wedge-shaped

two ways ; concave anteriorly, convex posteriorly. *Analogous to* ; vertebræ—false vertebræ. *Number of surfaces* ; two. *Edges* two.

*Anterior surface*.—*Shape*, concave two ways. *Lines*, four ; mark, early divisions. *Foramina*, four pairs ; give exit to anterior sacral nerves, which assist to form great sciatic ; terminate in grooves. *Muscle arising*, pyriformis, or pyramidalis ; from between openings. *Synonyms*.—"Hollow." "Concavity." *Depth of arc*, ten lines ; has much influence on labor. *Promontory*, or sacro-vertebral angle, formed at union with last lumbar vertebra ; varieties, in projection ; influence, labor.

*Posterior surface*.—*Shape*, irregularly convex, two ways. *Spines*, along middle, four or five—diminish as descend ; analogues of spinous processes ; called the crista. *Canal*, contains cauda equina ; closed below by fibro-cartilage. *Cornua*, Horns, two, inferiorly ; unite to cornua of coccyx, form foramina ; give exit to fifth pair of posterior sacral nerves. *Foramina*, called posterior sacral ; four pairs ; emit, posterior sacral nerves ; smaller in recent than dry, also than anterior. *Groove*, outside of spines, for sacro-lumbalis, and longissimus dorsi. *Rough surfaces* near edge, for posterior sacro-iliac ligaments.

*Lateral surfaces*.—*Shape*, above, ear-shaped ; below, thin and sharp. *Ligaments attached*, sacro-sciatic. *Sacro-iliac symphysis*, or synchondrosis ; above, unites to ilium ; cartilage interposed ; almost, if not invariably, immovable ; in some inferior animals, is movable. *Base*, looks upwards ; rests on vertebra ; elliptical articular surface ; *thickness*,  $2\frac{1}{2}$  inches ; *breadth*, 4 inches. *Alæ*, triangular ; on either side of promontory, assist to form internal iliac fossa ; upper edges assist to form brim of pelvis. *Apex*, inferiorly ; *shape*, transversely oval ; articulates to coccyx ; motion, ginglymoid, impaired by age, and thus retards labor ; ligaments, 2 ; anterior stronger for the greater strain. *Size of sacrum* : length, 4 to  $4\frac{1}{2}$  inches ; breadth, 4 inches ; thickness,  $2\frac{1}{2}$  inches. *Composition* ; externally thin layer of compact tissue ; internally cancellated ; *weight*, very light. *Development* ; in foetus, 35 pieces ; at birth, 5 ; in adult, 1. *Con-*

<sup>+ cartilage</sup>  
*nexions*; to vertebræ, by inter-spinous and capsular ligaments; to coccyx, by ligaments and fibro-cartilage; to ilium by symphysis; to ischium, by ligament. *Difference in woman and man*: in woman, shorter, wider, and more curved.

**COCYX.**—*Synon.*, Huckle-bone. *Deriv.* *κωκκυζ*, cuckoo's bill. *Shape*: triangular, flattened. *Number of bones*: 3, 4, 5. *Situation*: articulated by ginglymoid inferiorly to sacrum. *Surfaces*: two. *Anterior*, smooth, concave; lodges rectum. *Posterior*, convex; separated from skin by posterior sacro-coccygean ligament. *Edges*: give attachment to anterior or smaller sacro-sciatic ligament; to ischio-coccygeus muscle. *Horns*: superiorly; attached to sacral cornua; form, foramina. *Apex*: inferiorly; external, sphincter ani attached; direction, usually obliquely anterior; variations, backwards, sideways, anteriorly at a right angle; shape, rounded; variation, bifurcated. *Development*: five or fewer pieces; rudiments of the tail. *Composition*: external, compact; internal, spongy. *Mobility*: one inch antero-posteriorly; continues through menstrual life; false anchylosis, sometimes in sedentary; fractured rarely in labor; treat by rest of bowels; injury not permanent. *Importance*: very great to accoucheur.

**OS INNOMINATUM.**—*Synon.*: Coxal, Iliac. Haunch bone. *Shape*: quadrilateral, twisted in middle. *Greatest breadth*, 6 inches; *height*, 7 inches. *Divisions*: Ilium, Ischium, Pubes. *Situation*: ilium superiorly; ischium inferiorly; pubes anteriorly; meet in acetabulum.

**ILIUM.**—*Synon.*, Hip or Haunch bone. *Size*: largest. *Shape*: quadrangular. *Position*: superiorly. *Surfaces*: *inner*, or internal iliac fossa; or venter. *Shape*: concave, smooth; filled by iliacus internal muscle. Supports large intestine; nutritious foramen at lower part. *Outer*, or external iliac fossa, or dorsum: shape, irregular, convex; marked by curved lines for origins of glutei. *Base*: thickest part enters into acetabulum, of which it forms two fifths. *Ala*: the flaring portion; direction, outwards, upwards; terminates in crista. *Crista*, or crest, surmounts ala; shape, twisted like an *f*. To outer lip

are attached, oblique external latis. dorsi muscles, and femoral aponeurosis. To inner, the transversalis and quadratus lumborum. To middle, the oblique internus. Terminates, anteriorly in anterior superior spinous process, to which are attached the tensor vag. femoris, sartorius, iliacus muscles, and Poupart's ligament. Ends, posteriorly in post. sup. spin. process, to it a ligament. Below each process respectively, a notch for nervous filaments; a notch for tendon of iliacus and psoas; the anter. infer. spinous process for rectus femoris. To poster. infer. spin. process, ligaments attached. *Sciatic, or ischiatic notch.*—Situ-ated posteriorly. Converted into two foramina by sciatic liga-ments. Upper foramen is larger, and emits three arteries, the gluteal, sciatic, and pudic; two nerves, sciatic and pudic; one muscle, pyriformis. Lower is smaller; emits one muscle, obtu-rator internus; through it re-enter the pudic artery and pudic nerve. *Internal face*: smooth, concave; filled by iliacus inter-nus; posterior part is rough, to form symphysis. *Sacro-iliac symphysis*, or synchondrosis, or junction. Formed by sacrum and ilium, with interposed fibro-cartilage, one eighth to one sixth of an inch thick; this always adheres to sacrum if wrenched asunder; object is to break shocks. *Linea-ilio-pec-tinea* forms the dividing edge between false and true pelvis; formed by sacrum, ilium, and pubes. *Connexions*, to ischium and pubes in acetabulum; to sacrum at sacro-iliac symphysis.

*Os ISCHIUM.*—*Synon., Sedentarium, Seat-bone.* Size, next to ilium. *Position*, below ilium. *Divisions*, base or body, spine, tuberosity, ascending ramus. *Base*, thickest; forms about two fifths of cotyloid cavity. *Spine*, the inferior termi-nation of great sciatic notch; half an inch long; direc-tion downwards, sometimes internally, and then interferes seriously with labor. Attached to it is anterior or lesser sacro-sciatic ligament; also ischio-coccygeus muscles. *Tuber*, or tuberosity, is inferior extremity. To it are attached posterior or great sacro-sciatic ligament; to the outside, the quadratus femoris and adductor magnus; to middle, biceps flexor, semi-tendinosus, and semimembranosus; to inside, the gemellus

inferior and great sacro-sciatic ligament. *Ascending ramus*, rises obliquely upwards and forwards; meets descending ramus of pubes. *Connexions*, to ilium and pubes in acetabulum; to pubes by the rami; to sacrum by ligaments. *Planes*, internally, are smooth; converge; give foetal head the motion of rotation.

OS PUBIS.—*Synon.*, *Pecten*, Share-bone. *Size*, less than two preceding. *Situation*, anteriorly. *Divisions*, base or body, two rami, spine, symphysis, crest. *Base*, thickest, assists to form cotyloid cavity, one fifth. *Horizontal ramus*, thin, narrow; breadth, half an inch; triangular; meets its fellow at symphysis; its superior inner edge forms part of linea ilio-pectinea. *Symphysis*, at junction of the two pubic bones; a layer of fibro-cartilage interposed; existence of synovial membrane doubtful; mobility in woman questionable; in some lower animals unequivocal; the cartilage in the pregnant state said to be swollen. *Descending ramus*, flat, thin, narrow; direction, downwards and outwards; unites to ascending ramus of ischium; to external lip is attached the gracilis, to internal the transversus perinei and pelvic fascia; to interstice above the corpus cavernosum and erector muscles; below, the prolongation of great sacro-sciatic ligament and the tendon of adductor magnus. *Spine*, near pubic end of bone; Poupart's ligament attached. *Arch*, the angle formed by rami; in woman,  $90^{\circ}$ — $100^{\circ}$ ; on its size greatly depends facility of parturition. Edges of rami are bevelled; assist exit of head. *Connexions*, to ilium and ischium, in acetabulum; to ischium, by descending ramus; to its fellow, at symphysis. Four muscles connected to upper edge, the oblique, transversalis, rectus, and pyramidalis.

OBTURATOR FORAMEN.—*Synon.*, *F. thyroideum*, ovale, sub-pubic. *Shape*, triangular; long diameter, down and outwards; edges, sharp. *Situation*, below os pubis, anterior to cotyloid cavity. Formed by the rami of pubes and ischium. *Filled*, in recent, by ligament, which consists of two layers of periosteum. At upper part is a groove from within outwards, which transmits the obturator vessels and nerves. Gives origin to

obturator externus and internus. *Object*, lightness. Said to be triangular in female, oval in male; recently doubted.

*Brim of pelvis* is composed by sacrum, ilium, pubes. *Outlet*, by coccyx, ischium, pubes. *Cavity*, by sacrum, ischium, pubes. Deformities of sacrum are most serious to brim; of ilium least. To outlet, deformities of ischium are most injurious, because immovable.

**Articulations**, or SYMPHYSES.—Four, viz. two sacro-iliac, symphysis pubis, sacro-coccygeal.

SYMPHYSIS PUBIS.—Each pubic face is covered by fibro-cartilage, thicker in front; the articular surfaces are covered by cartilage, and are said to have a synovial membrane. *Secured by* four ligaments, anterior-pubic, posterior-pubic, supra-pubic, infra-pubic. *Mobility*, doubtful.

SACRO-ILIAC SYMPHYSIS, composed of articular faces of bones; an intervening fibro-cartilage, one sixth to one eighth of an inch thick, and powerful ligaments; most conspicuous on posterior part. Sacrum acts the part of a double wedge.

SACRO-COCYGEAL, composed of a fibrous disc, like those between vertebræ, of anterior and posterior sacro-coccygeal ligaments, and a capsular ligament, that embraces whole joint. *Motion*, ginglymoid.

**Ligaments**.—GREAT SACRO-SCIATIC, or POSTERIOR sacro-sciatic ligament. *Arises* from posterior inferior spinous process of ilium, posterior tubercles of sacrum, inferior margin of sacrum, and border of coccyx; contracted in middle; inserted into internal lip of tuber ischii and its ascending ramus; direction downwards outwards. Protects internal pudic vessels and nerves.

LESSER SACRO-SCIATIC or ANTERIOR.—In front of last; crosses it. *Arises*, anterior lip of edge of sacrum and part of coccyx; crosses in front; inserted into summit of spine of ischium. These two ligaments convert the sciatic notch into two foramina: 1st. Large, irregularly oval; transmits, a muscle, four nerves, three arteries, and three veins. 2d. Small, long, triangular, transmits a muscle, artery, vein, and nerve.

SUB-PUBIC OR OBTURATOR.—Closes obturator foramen.

ARTICULATIONS WITH OTHER BONES.—Superiorly with vertebral column by amphiarthrosis. Outwardly and downwards with ossa femora by enarthrosis.

SACRO-VERTEBRAL by anterior and posterior vertebral ligaments; the yellow, the intervertebral substance thicker in front, the interspinous and two synovial capsules; also sacro-vertebral ligament, ilio-lumbar, and ilio-vertebral.

**Divisions of Pelvis.**—GREATER AND LESSER.—*Separated by linea ilio-pectinea.* FALSE AND TRUE.

GREATER OR FALSE.—All that above *linea ilio-pectin.*  
*Shape*, irregular. *Anterior wall*, wanting in skeleton; in living, formed by muscles, &c. *Posterior*, formed by projection of last lumbar vertebra; on either side of which is a gutter for psoæ muscles. *Lateral*, formed by internal iliac fossæ, which lodge the iliacus internus muscles.

LESSER OR TRUE.—*Situated* below *linea ilio-pectinea.*  
*Shape* seen best by removing the ilia by horizontal section; is then seen to be a curved canal; larger in middle than at extremities. *Is divided* into two straits and a cavity.

ABDOMINAL OR SUPERIOR STRAIT OR BRIM.—*Formed*, behind by promontory and anterior border of alæ of sacrum; laterally, by edge of iliac fossa; anteriorly, by superior edge of pubes and horizontal ramus. *Shape*, said to be heart-shaped; better a truncated triangle, with base behind, apex in front. *Circumference*, fourteen inches. Has four diameters:—1st. *Antero-posterior*, or sacro-pubic, or conjugate, or straight, four inches. 2d. *Transverse*, or lateral, or bis-iliac, five and a quarter inches. 3d and 4th. *Oblique*, or diagonal, five inches. *Sacro-cotyloid*, one on each side; from promontory to acetabulum, three inches ten lines.

INFERIOR OR PERINEAL STRAIT OR OUTLET.—*Boundaries*, the inferior part of symphysis pubis and the descending ramus; the ascending ramus and tuber ischii, by inferior margin of great sciatic ligament, and by the border and point of the coccyx. *Shape*, oval, interrupted by three osseous projec-

tions. *Circumference*, thirteen inches six lines. Has four diameters: 1st. *Antero-posterior*, or coccyx-pubic, four inches, increased to five by recession of coccyx. 2d. *Transverse*, or bis-ischiatic, four inches, immovable. 3d and 4th. *Oblique*, four and three quarter inches, increased by elasticity of sciatic ligaments.

CAVITY, the space between the superior and inferior straits. *Dimensions*.—Height in front, one and a half inch; on sides, one and three quarter inches. The chord of arc of sacrum, four and a quarter inches; following face of sacrum, five and a quarter inches. Has four diameters, taken at centre: 1st. *Antero-posterior*, four and three quarters to five and one eighth inches. 2d. *Transverse*, four and three quarter inches. 2d and 3d. *Oblique*, four and three quarter inches. By dividing the cavity equally, by sections at right angles, two sets of inclined planes are seen, which are supposed greatly to influence the changes in direction necessary for the foetal head to perform in its descent; some, however, say that the motion of rotation is executed when the head is below the influence of these planes. The *anterior planes* are directed from without inwards; from above, downwards; and from behind, forwards.

The *posterior* are from without inwards; from above, downwards; and from before, backwards.

ARCH OF PUBES.—The angle formed by the descending rami of pubes, and ascending rami of ischium;  $90^{\circ}$  to  $100^{\circ}$ . At base, is three to three and three-quarter inches broad; at apex, two inches.

BASE OF PELVIS presents, posteriorly, the notch filled by the promontory of sacrum; laterally, the iliac crests; anteriorly, the spinous processes; notches for muscles and nerves, the spine, horizontal rami, and symphyses of pubes.

APEX presents, posteriorly, the coccyx; laterally, the sacro-sciatic ligaments and tuber ischii; anteriorly, the rami of the ischium and pubes.

DIRECTION OF PELVIS is not horizontal, but the plane of superior strait inclines at an angle of  $55^{\circ}$  to  $60^{\circ}$  from above

downwards, and from behind forwards; its inclination alters with position and in gestation. *Advantages* of this position, to prevent protrusion of pelvic contents, and to afford support, both in pregnant and unimpregnated condition.

**AXIS OF SUPERIOR STRAIT** is a line drawn perpendicular to the centre of the plane of the strait; terminates anteriorly, near umbilicus; posteriorly, at union of upper two thirds of coccyx with its inferior third.

**AXIS OF INFERIOR STRAIT**, a line from above downwards, and from behind forwards, running from first piece of sacrum, and falling at a right angle upon the middle of the bis-ischiatic space. The axes of the two straits cross in the cavity, forming an obtuse angle.

**AXIS OF CAVITY**, a curved line parallel to curve of sacrum; is the curve the foetal head must follow in its expulsion; "curve of Carus."

By comparing the diameters of brim and outlet, it will be seen that a complete change is effected in the relative lengths, which necessarily influences the passage of the head. At the brim, the antero-posterior diameter is four inches; at the outlet it may become five. The transverse, at the brim, is five and a quarter; at the outlet, four. These changes are effected by degrees, so that the advancing head is gradually turned from having its long diameter in the oblique diameter of the brim to the antero-posterior or long diameter of the outlet.

#### OTHER DIMENSIONS.

Between two anterior superior spinous processes,  $9\frac{1}{2}$  inches.

Between highest part of crests of ilium,  $10\frac{1}{2}$  inches.

From crista ilii to tuber ischii of same side, 7 inches.

Symphysis of pubes, vertically 18 lines; thickness, 6 lines.

Base of sacrum, anteriorly posteriorly,  $2\frac{1}{2}$  inches.

“ transversely, 4 inches.

Coccyx in length, 11 to 12 lines.

From sacrum to pubes, externally, 7 inches.

From sacro-iliac symphysis of one side, to opposite tuber ischii,  
6 inches.

From sacro-iliac symphysis of one side, to opposite ramus ischii,  
5 inches.

From anterior margin of sacro-sciatic notch to opposite side,  
 $6\frac{1}{4}$  inches.

From anterior margin of descending ramus of ischium to oppo-  
site side,  $4\frac{3}{4}$  inches.

Circumference of superior strait, 13 to 17 inches.

DIFFERENCES OF MALE AND FEMALE PELVIS.

*Male.*

*Alæ of ilium*, more perpendi-  
cular.

*Sacrum*, straighter.

*Coccyx*, earlier united.

*Brim*, long diameter, anterior-  
posterior.

*Cavity*, deeper; funnel-shaped.

*Tuberosities* converge; three  
inches apart; outlet less ca-  
pacious.

*Arch of pubes*,  $70^{\circ}$ — $80^{\circ}$ .

*Foram. thyroid.*, oval.

*Depth of symphysis*, at least  
two inches.

A line drawn from sacro-iliac  
symphysis directly forwards,  
cuts off but little of superior  
strait.

*Female.*

*Alæ of ilium*, larger, wider,  
shorter, lighter. Capacity  
greater.

*Sacrum*, shorter, more con-  
cave, wider; not so thick.

*Coccyx*, more movable.

*Brim*, long diameter trans-  
verse.

*Cavity*, more shallow.

*Tubera ischii* further apart.

*Arch of pubes*, angle  $90^{\circ}$ —  
 $100^{\circ}$ .

*Foram. thyroid.*, triangular.

*Depth of symphysis*, 18 lines.

Cuts off much more.

RECENT PELVIS.—The soft parts entering into the composi-  
tion of the pelvis serve to smoothe angularities, to protect the

nerves and vessels during labor, to deaden shocks in moving, and at the same time materially change the shape.

The superior strait is influenced by the iliacus internus laterally, by the psoæ posteriorly; while anteriorly the abdominal muscles are inserted, which assist in expulsive efforts.

*Superior Strait.*—The psoæ, rising from the sides of the lumbar vertebræ, pass down, filling the fossæ alongside of the promontory, and are inserted conjointly with the iliacus internus into the trochanter minor. By them the shape is changed from oval to triangular, with the base in front; the transverse diameter is shortened half an inch; they can be compressed in labor, but in very muscular women their action may retard the process; they should be relaxed by flexing the thighs on the trunk. (In the recent state, the pelvis is widest between the iliopectineal eminences; the transverse diameter being four inches and some lines, while the bis-iliac is one and a half to four inches; beneath the promontory, the transverse is five inches.—*Velpéau.*)

*Cavity* is influenced *posteriorly* by the sacral plexus, the hypogastric vessels, pyramidalis muscle, and rectum; *anteriorly*, by bladder, obturator internus, obturator vessels, and nerves; *laterally*, by adipose tissue; *vertically*, by the perineum; composed of two layers, 1st, *superior*, concave above, formed by levator ani and ischio-coccygeus; 2d, *inferior*, concave below, formed by sphincter ani, transversus-perinei, ischio-cavernosus, and constrictor vaginæ. The perineum closes the inferior strait; is pierced by urethra, vagina, and rectum.

*Inferior Strait*, influenced by sacro-sciatic ligaments, coccygeus, adipose tissue, fascia.

USES OF THE PELVIS.—A foundation for the trunk; a fixed point for muscles; to protect the pelvic contents in the unimpregnated; to support the gravid uterus; to direct the fœtus in parturition. Two arches are formed: a posterior or superior by the ilia and sacrum; an anterior or inferior by ilia, ossa pubis, and ischia. The ilio-femoral articulation serves as an abutment to both.

**Deformities of the Pelvis**, may influence, first, the whole pelvis; second, some parts; third, may modify the inclination, and change the direction of the apertures and axes.

**DEFORMITIES OF THE WHOLE.**—First, by excess; second by diminution.

By **EXCESS**, *primâ facie* not objectionable, but is so; in the unimpregnated state the uterus is liable to ante, or retroversion, or prolapse. In pregnancy, the uterus falls too low, and compresses rectum, bladder, vessels, and nerves, producing rectal and vesical tenesmus, fecal accumulation, piles, varices, œdema, and cramps. Late in pregnancy, these symptoms recur with more or less intensity; in labor, the expulsive efforts may extrude the uterus, may lacerate the cervix or the perineum, may cause hæmorrhage by premature separation of the placenta, may rupture cord, may produce inversion of uterus.

By **DIMINUTION**, may be uniformly diminished.

**DEFORMITY OF PARTS.**—First, by excess; second, by diminution. May affect either greater or lesser pelvis. The diameters most affected are anterior posterior of the brim, and transverse of outlet.

**GREATER PELVIS**, affected, first, by too great curvature of the vertebral column, which causes obliquity, and delays labor; second, the *alæ* may be too wide; or third, too narrow.

**LESSER OR TRUE PELVIS**, affected in *Apertures, Cavity, or all parts.*

**OF SUPERIOR STRAIT.**—Cordiform shape, or reniform, figure , triangular; trapezium; more frequently than any other part. *Antero-posterior* diameter most affected, and all dimensions occur, from four inches to three lines. *Caused*, first, by projection of the base of the sacrum; second, by turning back of the horizontal rami of the pubes; third, by both combined. *Transverse* diameter affected, first, by approximation of the ilia; second, by projection of ossa pubis, both of which changes also increase the antero-posterior diameter. *Oblique* diameter affected, first, by projection inwards of ilia; second, by projection inwards of one side of pubes, while

the other bulges outward; produces the "obliquely ovate" pelvis; not uncommon. A woman thus affected may be readily delivered if the long diameter of the head presents in the great oblique diameter, and the bi-parietal in the contracted diameter; while the reverse presentation may require instrumental aid; in these cases, version may possibly remedy the difficulty.

INFERIOR STRAIT.—Affected, *antero-posterior*, by projection forwards of coccyx, by turning up the base of the sacrum; though a mobile coccyx relieves this. *Transverse*, by approximation of the tubera ischii; is the worst form, because of the immobility. *Oblique*, by vitiated direction of ischio-pubic rami. *Arch. of Pubes* may be contracted like male pelvis. *Spine of ischium* may curve inwards. The deformities of the two straits may be compensating; *i. e.* one enlarged and the other contracted, and *vice versâ*; so that labor delayed in one stage may in another stage be quite rapid. Sometimes, but rarely, both straits may be contracted, as when the sacrum has too great a curvature, the antero-posterior diameter of the cavity is increased, while the same diameter of each strait is decreased.

CAVITY, affected, first, by turning back of ossa pubis; second, by projection inwards of inter-pubic fibro-cartilage; third, by excessive length of symphysis pubis; fourth, sacrum too much curved, increases antero-posterior diameter; head rests too long, or else, occiput not advancing, produces extension, which results in face presentation; fifth, sacrum too flat, head cannot rotate, may cause death of child, or great compression of soft parts of mother; sixth, by morbid growths, exostoses, fibro-cartilage.

DEFECTIVE INCLINATION OF PELVIS.—Usually results from deformities. The inclination may be increased or diminished.

CAUSES OF DEFORMITY.—First, and most common, is *Rachitis*, or Rickets, a disease of early life, in which the earthy part of the bone is imperfectly elaborated; second, from *Malacosteon* (Osteo-malacia, Mollities Ossium); occurs later in life;

the earthy matter is deficient ; third, from exostoses, mal-united fractures, morbus coxarius, unreduced dislocation, ankylosis of sacro-coccygeal articulation from inflammation. *Known by.*— Inspection or Pelvimetry. A true pelvis should have well rounded hips, and of equal height ; the anterior spinous process, eight or nine inches apart ; from iliac crest to tuber ischii, seven inches ; tuber ischii, four inches apart, and on same line. If the hips are projecting and elevated, or the sacral region flat or convex, or arch of pubes narrow, or tubera ischii narrow, or unequal, suspicion will be excited. *Pelvimetry*, by Baudelocque's calliper, Couton's pelvimeter, or simply by the hand. By Baudelocque's, the limbs are placed on pubes and on sacrum ; should measure seven inches ; subtract two and a half for sacrum, and one and a half for pubic bones. For oblique, place one end on trochanter major, the other over sacro-iliac symphysis ; should measure nine inches ; subtract two and three quarter inches ; plus, twenty lines. Inaccurate.

*By the hand.*—Reach for promontory of sacrum ; if it cannot be reached, the antero-posterior diameter is probably sufficient ; exceptions to this rule occur. Examine height of symphysis, width of arch, spines of ischium, shape of the straits. Of course, manual examination is permissible only in the married, and in these alone is it likely to be required. Fortunately, American practitioners see comparatively few deformed pelves ; such abnormalities are almost invariably found among our foreign population.

#### VESSELS CONCERNED IN OBSTETRICAL PRACTICE.

*Ext. pudic artery*, a branch of femoral ; course transversely inwards ; distributed to labia.

*Gluteal*, a branch of int. iliac ; course backwards ; emerges from great sciatic notch.

*Vesical*, a branch of int. iliac.

*Vaginal*, a branch of int. iliac.

*Obturator*, a branch of int. iliac ; emerges from upper border of foramen.

*Uterine*, a branch of int. iliac; is very tortuous; ascends in the folds of broad ligament.

*Ovarian*, from aorta.

*Int. pudic*, branch of int. iliac; emerges through great sciatic notch; re-enters smaller foramen, crosses to the ramus ischii; supplies the vagina.

*Ischiatic*, branch of int. iliac; emerges from greater foramen.

*Veins*, usually accompany the arteries. The external iliac vein at the brim lies behind the artery. Pressure produces oedema or varices.

*Nerves*.—*Anterior crural*, arises from second, third, and fourth lumbar; passes outside of femoral artery; distributed to rectus, etc. Pressure on it produces cramps of inner and fore part of thigh, occurring during gestation. *Obturator*, from third and fourth lumbar; emerges from obturator foramina; distributed to abductors; pressure produces cramps of the inside of thigh, as head enters pelvic cavity. *Sciatic*, from fourth and fifth lumbar, and first, second, and third sacral; emerges by side of pyriformis; supplies posterior part of thigh, leg, and foot; is subject to pressure during parturition, and cramps are caused in calf of leg and sole of foot; relieved by pressure and friction, sometimes very severe. The *fourth sacral* supplies bladder and rectum; hence pressure produces irritation. *Pudic* from third sacral; supplies clitoris and external organs.

Certain *Muscles* are also interested. Pressure upon these causes pain on motion and in defecation.

*Levator ani*.—Origin, pubes below the brim, spine of ischium and obturator aponeurosis; direction, by side of vagina; insertion, sphincter ani.

*Obturator internus*.—Origin, obturator ligament and around obtur. foram.; direction, tendinous around spine of ischium; emerges by small sciatic foram.; insertion, digital fossa.

*Coccygeus*.—Origin, spine of ischium; insertion, coccyx.

*Transversus perinei*.—Origin, tuber ischii; insertion, sphincter ani, and vagina, and into perineum.

**Organs of Generation**.—*Divided* into EXTERNAL

and INTERNAL, or better into FORMATIVE and COPULATIVE. These may be divided into, ESSENTIAL and ACCESSORY.

ACCESSORY.—*Mons Veneris, Labia Majora, Labia Minora, Clitoris, Vestibulum, Meatus urinarius, Hymen, Fossa navicularis, Fourchette.*

ESSENTIAL.—*Vagina, Uterus, Fallopian tubes, and Ovaries.*

The term VULVA includes all the parts external to the vagina embraced by the labia majora.

PUDENDUM is applied to the whole external genitals.

MONS VENERIS.—A triangular prominence of fatty tissue; *situated* at lower part of hypogastrium; *extent*, three inches broad by two deep; *covered by* hairs after puberty; *composed of*, adipose tissue, vessels, and nerves from external pudics, by termination of round ligaments, skin, and sebaceous glands; *use*, in coitus; *subject to*, abscesses, eruptions, excessive growth of hair.

LABIA MAJORA, or EXTERNA, *are* two rounded folds, which *bound* orifice of vulva laterally; *direction*, from above downwards; *formed*, externally of skin, internally of mucous membrane, with adeps interposed, and vessels, and nerves from external pudics; *covered by*, hairs; *length*, three inches; *thickest*, anteriorly; *in contact*, anteriorly; *separate*, posteriorly; *their union*, anteriorly, *forms* anterior commissure of vulva; posterior, post-commissure or fourchette; *use*, to protect inclosed parts; in labor they distend greatly; *subject to*, excessive development, inflammation, abscesses, eruptions, pruritus, encysted tumors, lipoma, hernia, varix thrombus, œdema.

LABIA MINORA, or INTERNA, or NYMPHÆ, *are* two membranous folds, lying between labia majora; *arise*, just above clitoris; *descend*; *terminate*, near middle of vagina; *shape*, like a cock's comb; *cover*, vestibulum, meatus, and part of vagina; *unite*, superiorly, and *form* preputium clitoris; *composed*, externally of mucous membrane; internally of erectile tissue; *in young*, are smooth, rosy, and firm; *in old*, flaccid and pale; *in fetal life*, salient; *use*, supposed to be to direct the urine; do

not dilate in labor; *subject to*, inflammation, laceration in labor, enlargement, "Hottentot apron."

CLITORIS.—A small elevation, usually about one eighth of an inch long; *situated*, at the union of nymphæ, the lower edge of symphysis pubis; *composed of*, two corpora cavernosa, which arise from the crura of the pubes, embraced by erectores, ascend and unite below, and in front of pubes, to which a suspensory ligament *attaches* it; *terminates*, in a glans; *covered by* a prepuce, which is continuous with nymphæ; is *erectile*; *analogue of* the penis, but is imperforate; *vessels and nerves from* pudic; disproportionately large in fœtus; *use*, supposed seat of venereal gratification; doubtful; *subject to*, enlargement; one case osseous: is an element in cases of doubtful sex.

VESTIBULUM.—A triangular smooth space; *bounded*, above and in front by clitoris, below and behind by urethra, laterally by nymphæ; *length*, an inch. In this space Lithotomy.

MEATUS URINARIUS.—A rounded opening. *Situation*, an inch below clitoris; *diameter*, one fifth of an inch, edges thickened. Knowledge of its situation essential in introducing catheter. *Rule*: Pass the forefinger into the vagina, press it gently against the symphysis, then pass an *elastic male catheter* along the palmar aspect directly in the median line; patient should be supine, and no exposure should be tolerated.

URETHRA, the urinary canal. *Extends*, from meatus to bladder; *length*, twelve to fifteen lines; *diameter*, one fifth of an inch, but very dilatable, so much so as to permit impregnation in cases of uterus communicating with bladder; *direction*, back and upwards; variations in direction occur in pregnancy, retroversion, prolapsus uteri; *separated* from symphysis by lax areolar tissue; *subject to*, tumors, tumefaction, prolapsus.

HYMEN (*Flos virginittatis*, *Claustrum virginale*).—A membrane partially closing orifice of vagina. Not peculiar to human female. *Composed of*, mucous membrane, nerves, vessels; *shape*, crescentic, concavity upwards, circular, cribriform; *value as a test of virginity*, none; other causes besides coitus may destroy; *abnormalities*, imperforate, and thus prevent catame-

nial discharge, conception, or coitus; dense, thick, fibrous; may embarrass parturition. Meigs thinks he has seen it at a second labor.

CARUNCULÆ MYRTIFORMES.—Two pairs of round red tubercles at orifice of vagina; *supposed to be* remains of hymen, but sometimes the two organs said to co-exist; *use*, supposed to increase capacity of vagina in labor; *abnormity*, excessive development.

FOSSA NAVICULARIS.—A depression between the orifice of the vagina and the posterior commissure of vulva. *Extent*, six lines. Generally obliterated by first labor. A frequent seat of chancre.

FOURCHETTE.—A sort of bridle, forming the posterior commissure. *Consists* of a fold of mucous membrane, meeting the union of the labia; ruptured in first labor frequently, though not invariably.

PERINEUM.—The musculo-membranous floor of trunk. Extends from vulva to anus; *composed of*, skin, adipose tissue, aponeurosis, muscles, raphe on median line; *extent*, from anus to vulva, one and a quarter inch, but at instant of head passing, much more dilated, four to four and a quarter inches; *use*, to complete the floor of pelvis; *abnormities*, too broad, too thick, too narrow; the seat of hernia.

VAGINA.—A membranous sheath, extending from vulva to uterus. *Situation*, one and a half inch below symphysis; *shape*, cylindroid, anterior wall concave, posterior convex; *direction*, slightly oblique upwards and backwards; lies nearly in axis of inferior strait; *dimension*, from four to six inches long; one in diameter of orifice; is longer in girls; widest in middle, most contracted inferiorly; anterior wall the shorter. *Use*, to afford passage to and from uterus. *Relative anatomy*, anteriorly, with urethra and bladder; laterally, with ureters, broad ligaments, sacral plexus, levator ani; posteriorly, with rectum; inferiorly, guarded by hymen; superiorly, embraces cervix uteri, forming a cul-de-sac before and behind it; of these, the posterior is deeper, and hence the posterior lip of cervix feels

longer; *peritoneum* covers superior one fifth, and is thence reflected on rectum. *Assists to form*, in front, the vesico-vaginal and urethro-vaginal septa; posteriorly, the recto-vaginal septum. *Inferiorly* departs from rectum, leaving a triangular space. Its walls *are in contact*, and normally *secrete* mucus, in disease, give rise to "leucorrhœa." On opening, rugæ are seen disposed in columns, and also transverse; most distinct inferiorly, and in virgin; smoother by age. Numerous follicles exist, which may become enlarged. *Textures*: first, mucous membrane, pink color, in old yellow or bluish, covered by tessellate epithelium; second, areolar tissue; third, fibrous muscoid tissue, resembling that of uterus, pearly grey, one and a half lines thick inferiorly, less near uterus; above resembles uterus, below is more muscular and vascular; a congeries of vessels surrounding lower part exists, and is called plexus retiforme; fourth, areolar tissue; fifth, peritoneum over superior one fifth. *Arteries* from, the uterine, which are from internal iliacs. *Veins* go to plexus retiforme. *Lymphatics*, to hypogastric plexus. *Abnormities*, variations, in length and width, double; cicatrices, callosities, atresia, adhesion, cul-de-sac, imperforate hymen, inflammation, malignant disease.

UTERUS, ὄστερα, μετρα, *matrix*.—A hollow viscus, the use of which is to receive, protect, and expel the product of conception. *Situation*, in true pelvis, above vagina, below small intestines, behind bladder, in front of rectum; not to be felt superiorly in unimpregnated state, unless in very thin females, for fundus is below superior strait. *Direction*, of upper extremity, upwards and forwards; lower, down and backwards, *Shape*, like a small pear, flattened from before backwards. apex below, base above; posterior surfaces more convex, and covered throughout whole extent by peritoneum; anterior covered over superior two thirds. *Divisions*, into *Fundus*, *Body*, *Cervix*, and *Os*, also two regions, three margins, three angles. *Fundus*, that part above orifices of Fallopian tubes, a few lines high; *body*, between fundus and cervix is the largest; *neck*, below body, ten or twelve lines long; *os*, the

inferior opening in the cervix. *Two regions*; anterior, smooth, polished, slightly convex; posterior, more convex. *Three margins*, the upper convex, assists to form fundus; two lateral margins, irregular convex superiorly; in virgin drawn out at insertion of tubes analogous to cornua of inferior animals; concave inferiorly, located between the two folds of broad ligament. *Three angles*, the two superior, formed by the meeting of lateral and superior edges, are prolonged into the tubes; inferior, results from meeting of two lateral margins. *Dimensions, weight*, in virgin, seven to eight drachms; in multipara, one and a half ounces, the result of increased nutrition; just before menstrual period, weight is increased; *length*, two and three quarter to three inches; *breadth*, two and three eighth inches; *thickness*, eight lines; *superficies*, sixteen inches. *Cavity of body, shape*; triangular, superior angles leading to tubes, the apertures of which admit a bristle; capacity, about a drachm of fluid; usually contains mucus more or less sanguinolent. *Cavity of neck*, separated from that of body by a division marking "internal os uteri;" appearance in virgin, plaits, like a leaf called arbor-vitæ; often disappear after delivery; shape, oval; length, eleven to fifteen lines, five to six broad; one to two lines from front to rear. On this surface are seen *ovula Nabothi*, which are muciparous follicles, the office of which is to secrete the mucous plug which closes the canal of the cervix after impregnation. A viscid white of egg discharge indicates inflammation, and demands use of speculum. *Os uteri* or *os tincae*, the vaginal orifice of the uterus; appearance in virgin, transverse, smooth, regular, small, firm, thin, close, one to two lines in extent; in multipara, irregular, deformed, gaping, softer, thicker, fissured, especially on left side. Gives a sensation like the tip of the nose. Most authors say anterior lip is longer, but this arises from mode of touching; in autopsies the lips are usually found equal. The os in normal state is not sensitive. Os internum sometimes closed in old.

*Texture*. 1st. Peritoneum; rises over bladder, covering posterior three-fourths of it, thence reflected from neck to uterus,

and covers superior two-thirds, then over uterus and down over superior one-fifth of vagina, then to rectum; laterally forms the broad ligaments; connexion intimate above, loose below. 2d. Areolar tissue. 3d. Muscular tissue, resembling a network of fibres; color, dirty yellowish gray, with a tinge of red, but at menstrual period is deeper red (but the cavity of cervix does not participate); is difficult to be recognised in unimpregnated state; resembles middle coat of arteries; is unstriped; neck has more areolar and less muscular structure than body. As to muscularity, it is masked in unimpregnated, but manifest in pregnant state. Alleged layers are the product of dissection. 4th. Mucous membrane; denied by some. Is not arranged in folds like mucous membranes generally. Considered mucous from functions, and action during disease; *ex. gr.* catamenia, hæmorrhages, catarrh, decidua, dysmenorrhœa, polypus. Epithelium is of ciliated variety.

*Functions.*—First, to secrete mucus; second, to eliminate menses; third, to develop decidua; fourth, to receive and nourish embryo; fifth, to expel fœtus. *Arteries*, four in number, are very tortuous, anastomose frequently; *ovarian*, arising from aorta or renal supply of the body; *uterine*, from hypogastric go to cervix. *Veins*, called sinuses; have no valves; empty into internal iliac; increased greatly in pregnant condition. *Nerves*, not yet entirely settled. Robert Lee says are very numerous; first set arising from sacral plexus distributed to cervix; second from sympathetic.

*Lymphatics.*—First set run to lumbar and sacral; second through round ligament into groin; develop greatly in gravid state. *Abnormalities*, may be wanting, or strictured, or closed; canal strictured; malformations; imperfect development; double; displacements; flexious.

**BROAD LIGAMENTS** (*Alæ vespertilionis*) are quadrilateral folds of peritoneum; extending from uterus to sides of pelvis; divides pelvis into two compartments. Three folds; upper contains Fallop. tubes; posterior contains ovary and ligament of ovary; anterior has the round ligament; between these

layers run the vessels, nerves, and absorbents, in areolar tissue.

**ROUND LIGAMENTS.**—Two in number; *arise* on front of uterus, a little below Fallop. tubes; *contained in* anterior fold of broad ligament; *direction*, outwards, from below, upwards; *termination*, in areolar tissue of mons; *appearance*, greyish white, fibrous; *length*, six to seven inches; *structure*, as observed during gestation, contains vessels, nerves, absorbents, areolar tissue, and some striped muscular fibre. *Use*, to support organ forwards, prevent retroversion, a point of action during labor; does not depress uterus in coitu; are more manifestly vascular during pregnancy or inflammation; hence over them is a good place to apply leeches; affected in malignant disease; afford an explanation of pains in groins in course of uterine disease.

**OTHER LIGAMENTS.**—*Anteriorly*, vesico-uterine; *posteriorly*, recto-uterine. Are merely folds of peritoneum.

**FALLOPIAN TUBES** are two cylindrical canals; *calibre*, various in different parts, contracted near uterus, expanded towards ovary, admit a bristle, crow-quill; *shape*, conical, flexuous; *situation*, in upper edge or middle fold of broad ligament; *extent*, from lateral angles of uterus to near iliac fossa; *length*, four inches; *composed of*, externally, peritoneum, middle muscular, transversely and obliquely, erectile mucous lining, ciliated epithelium; *termination*, fringed, called “fimbriated extremity,” “morsus diaboli,” “infundibulum,” has one fringe attached to ovary; is *erectile*; by stimulus curves over, and embraces ovary; tubes *enter uterus* obliquely at fundus; *vascularity* manifest in menstruation and pregnancy; *function* to emit ova, to transmit semen; proofs of this by Haighton’s and Bischoff’s experiments; also by tubal pregnancy; *vessels*, ovarian; *nerves*, hypogastric, plexus, and sympathetic; *abnormities*, impervious, inflammation, malignant disease.

**OVARIES, testes muliebres.**—Two oval, flattened bodies; *lying in* posterior fold of broad ligament, *behind and below* Fallopian tubes; one and a half inch *from uterus* on either

side ; *length*, one and a quarter to one and a half inch ; *breadth*, one half to five-eighths ; *thick*, one quarter ; *surface*, in virgin smooth, in old numerous fissures, the result of oviposition ; *superior margin* is convex and loose ; the *inferior* is straight and attached.

The *ligament of the ovary* is a fibrous cord attaching the organ to the uterus ; *length*, one and a half inch ; is *impervious* and dense. Ovary is *composed of*, first, peritoneum shining and exhibiting linear cicatrices ; is called also "indusium ;" second, tunica albuginea ; the *proper coat* is an expansion of the ligament ; is *dense* and fibrous. It *forms* septa, which traverse the organ forming cells, in which, third, the "stroma," the true ovarian structure is found. The stroma is of pale rose color, and developes the ova or Graafian vesicles ; of these, there can usually be seen fifteen to thirty, varying in size, but to microscope they are innumerable ; the largest found near the surface. (The existence of "stroma" as a distinct form of tissue is questionable.) It is important not to confound the vesicles with the so called hydatids, which are frequently noticed in connexion with the ovary. *Blood* is *supplied* through the ovarian vessels, analogous to the spermatic of the male. The *nerves* are from the renal plexuses. *Function* to supply ova, the periodical maturation of which constitutes the effective stimulus to menstruation. When the ovaria are removed the female loses her sexual characteristics. *Subject to*, entire absence, few or no vesicles, inflammation, malignant disease, dropsy, hydatid cysts, displacement. Examples show that a very small portion of stroma suffices to afford an impregnable ovum.

**Menstruation** is the term applied to the series of phenomena that attend the rupture of a Graafian vesicle ; usually is said to be a periodical, sanguineous discharge from the female genitals. It is a natural function. An analogous discharge attends the period of heat in some of the inferior animals. *Synonyms*, *Menses*, *Catamenia*, *Oviposition*, *Ovi-ponte*, *Monthlies*, *Monthly Discharge*, *Show*, *Regular*, *Time*, *Periods*, *Unwell*,

“*Seen nothing*,” or otherwise “*So*,” *Flowers, Shedding*. The appearance of the menses is an evidence of capacity for conception, but instances of impregnation before menstruation are on record; again the discharge has been known to appear only during pregnancy. *Age of appearance*, usually fourteen; variations, nine years, twenty-four years. (Two cases of woman attaining forty-eight years and never menstruated, though possessing sexuality, uteri, and ovaries.—*Oldham*.) Instances of nine months, eighteen months, two years, three years, etc. (*Query*.—Should girls ever marry until menstruated?) *Influence of climate*, said to be delayed in cold, to be hastened in hot. Exceptional cases are found favoring such an opinion, but more accurate researches prove a decided uniformity of age of access. Nevertheless, extremes of climate make about three years’ difference. *Mode of life*.—Is later in country girls with laborious and simple habits; while luxurious life, balls, plays, exciting books, pictures, and the use of stimulants, hasten it. Factory girls, according to Whitehead, are not precocious in menstruation. Sanguineous temperament accelerates. In some families, a transmitted tendency to premature menstruation is noticed.

*Premonitory Symptoms*, inequality of spirits, headaches, lassitude, uneasiness, weight in loins or perineum, pain in back, tension in epigastrium, pruritus of vulva, mucous discharge, dark shade under eyes, pain in thyroid body, colicky pains, skin a peculiar odor, and disposed to eruptions; congestion of mucous membranes, as shown by epistaxis, &c.; irritation of breasts. More or less of these are usually noticed, in varying shades of severity, and some may attend each appearance of the discharge. To this assemblage of symptoms the term “menstrual molimen” or “menstrual nismus” is sometimes applied. *Variations*.—Sometimes menstruation commences without precursory signs. Not unfrequently the first few periods are irregular as to time of return and amount of discharge, so that the first period is not a type of future menstrual life. *Effect of Appearance*.—Even before the menses appear, the manifestations of

the approach of puberty are seen in the development of the mammæ, the expansion of the hips, the rounded contour of the body and limbs, the development of hair on the pubes, the development of voice, while the mental changes are equally striking; reserve takes the place of forwardness, and the plays of the child are exchanged for the pursuits of womanhood.

*Duration*, from a few hours to a week, or even more. Average 4 to 5 days.

*Quantity*, usually from 3 to 6 ounces. Variations are to almost any extent. Change of climate, from cool to hot, is said to produce excess. Change from country to city is said to increase. Women of bilious temperament said to menstruate most profusely.

*Nature and Color*.—Is blood mixed with vaginal mucus and uterine epithelium. Is thin, and of a dark venous blood color, with a faint unpleasant odor. Collected from the uterus, it is alkaline and coagulable; discharged from vagina, it is acid, not usually coagulable, and contains lactic and phosphoric acids. Is not liable to decomposition. The presumed characteristic of non-coagulability depends entirely upon the rapidity of discharge; if profuse, it has not time to mix with the acid vaginal mucus, which is the preventing agent to coagulation.

*Mode of Discharge*, guttatim. On the first day, it is quite fluid, less highly colored, and less in quantity; these properties gradually become more striking, and then decline in the same way. Many variations. Marriage frequently changes a woman's menstrual habits.

*Return* usually every 28 days. Varieties, 22 days, 20, 18, 15, or 32, 35, 40; these varieties are consistent with health; the most important element being the regularity of return. There are also variations in individual cases. Some women constantly anticipate their period; others are subjects of retarding menstruation. Instances of one year, or even two years' interval occur.

*Cause*, the maturation of a Graafian vesicle; cause of the

periodicity, not known farther than this. Menstruation depends on the ovaries ; the proof is, that when these organs are absent, diseased, or removed, even if the uterus be normal, the catamenia are absent, or cease ; while even though the uterus be absent, the menstrual molimen will give evidence of the existence of ovaries.

*Seat*, usually from cavity of body of the uterus, not of neck ; sometimes vaginal, as a compensating discharge. Proof of uterine origin, in Procidentia, Inversion, Occlusion of Os, by speculum.

*Source*, the uterine capillaries by rupture.

*State of uterus*, arteries and veins distended ; uterine tissue looser, more pink ; os more patulous ; Fallopian tubes more vascular ; hypertrophy of mucous membrane like decidua.

*CESSATION*, usually at 45 to 50 years. Variations, 36, 30, 26, 24, or 55, 60, 70, 91. Varies with general health, number and kind of pregnancies, trials, and perhaps precocity, or otherwise, of first appearance.

*Duration of menstrual life* about 30 years. A difference of one or two years only in hot and cold climates.

*Period of final cessation*, called also "*change of life*," "*turn of life*," "*critical time or age*," "*dodging time*," "*menopause*." *Evidences*, flaccid mammæ ; cheeks flaccid, wrinkled ; skin yellowish ; eyes lose brightness ; sometimes a quasi-beard.

*Influence on Longevity*.—Vulgarly is supposed to be a critical time. Women disposed to cancer are liable to develop it at this time, but this risk is more than compensated by the absence of the perils of childbirth. Fewer women than men die between 40 and 50.

*Varieties in mode of cessation*, sometimes gradually ; sometimes excessive at one time, and then scanty ; cease and return, even at considerable intervals ; irregular in time and quantity ; by a mucous discharge.

After cessation the health is established on a firmer basis.

"*Reciprocal influence of acute disease and menstruation*.—1st. All acute diseases exert a pretty similar effect on menstruation.

2nd. This influence varies accordingly as the disease is developed during an epoch or during an interval. 3rd. In the first, the menses are usually suppressed completely or incompletely, and may reappear after some hours or days, usually diminished. 4th. In the interval, if the next epoch is near, menstruation is favored by the increased hemorrhagic condition of the organs. 5th. The menses are usually absent, or notably diminished, at the periods that occur during the decline of disease or in convalescence; lasting from one to three months. 6th. The menstrual eruption nowise predisposes to disease. 7th. It exerts no appreciable influence on the issue of acute febrile affections. 8th. No special therapeutical indication in the treatment of acute febrile disease is derivable from the state of the menses, and we must act without reference to menses. 9th. Blood-letting does not in general prevent their appearance or continuance. 10th. Suppression by acute febrile disease, or consecutive amenorrhœa, does not, in general, call for special treatment."—HERARD.

**Disorders of Menstruation**, in four ways. OBSTRUCTION, SUPPRESSION, MENORRHAGIA, DYSMENORRHŒA: Some add a fifth, VICARIOUS OBSTRUCTION; more usually AMENORRHŒA is applied to cases in which there is no catamenial discharge. The maturation and elimination of ova, however, are essential features in the function, as much so as the discharge. But every failure of manifestation of this evidence of puberty at the usual age, is not to be regarded as a disease; for we meet with girls not menstruated at 17 or 18. Nevertheless, such cases frequently come under the notice of the practitioner, and require judicious advice, to prevent improper attempts to force the processes of nature. In such cases, it is important to ascertain whether the general health is suffering from the delay, before interfering; and also to ascertain whether the other evidences of puberty have begun to manifest themselves.

Again, the non-appearance may be due to *malformation*, and accurate investigation is necessary to determine its nature; for

while some abnormalities are remediable, others are beyond the reach of art.

It may depend, *1st.* On absence of ovaries by extirpation, or from atrophy occurring. Recognisable, by the unfeminine mind, coarse voice, hair on chin, masculine figure, undeveloped mammæ, indisposition to sexual indulgence, absence of menstrual molimen.

This condition not remediable. Should not marry.

*2nd.* On certain deviations of uterus, absent, or extirpated; distinguished from first, by menstrual nismus occurring, and presence of sexual characteristics. Two classes present.

*a.* Occluded os prevents exit of fluid. Sometimes from cauterization.

*b.* Occlusion of vagina. Sometimes follows severe labor; indicated by menstrual molimen and no flow; tumor felt per rectum and over pubes; sometimes fluctuation. Imperforate hymen.

If unrelieved, terminates fatally by rupture of uterus, or tube, or gradual breaking of health.

Operation.—Introduce a finger into rectum and a catheter into bladder; scalpel and trocar.

Use bandage to abdomen. Wash out vagina with tepid fluids.

Danger from peritonitis.—Is apt to close; requires careful use of bougie or cylindrical speculum.

Imperfect development of uterus—irremediable.

FUNCTIONAL AMENORRHŒA, is to be regarded not so much as a disease, as a symptom of constitutional derangement, or lesion of the organs, on which depends the stimulus of the uterine function; viz. the ovaries. Hence, in treating of it, more attention is to be given to its producing cause, than to the mere absence of the function. Nevertheless, inasmuch as we yet see obscurely the causes, we must treat effects.

Two forms recognised. *1st.* *Entonic*, or *Sthenic*, or *Active*. *2d.* *Atonic*, or *Passive*.

*Entonic form*, occurs in those in whom plethora is combined with irritability.

*Symptoms*, headache of upper and back part; flushing of face; active circulation; hot skin; pain in back, loins, legs; pruritus of genitals. Such symptoms manifest themselves in paroxysms, with rigors; lumbar, sacral, hypogastric, and femoral pains; sometimes a leucorrhœal discharge. In the interval pretty good health is enjoyed. If unrelieved, the patient's digestion becomes impaired; spirits dull; lethargic; complexion pale; constipation occurs; headache and backache constant; hysterical paroxysms. Passes into *Atonic* form, which is considered under the head *Chlorosis*.

*Treatment, when simply delayed*.—First, relieve any general or functional derangement. If weak and delicate, give the various preparations of iron, with full diet. If plethoric, use light diet, gentle exercise, and alteratives, or salines. Better at home than at school. These failing, more decided measures are justifiable, as noticed hereafter.

*Of Entonic Form*.—Sometimes a moderate venesection coinciding with menstrual nîsus may be of service, but it is important to recollect that some amount of hyperemia is necessary for menstruation. Better than general blood-letting is the application of leeches; the best situation is near the vulva; if these are not to be had, cupping to the loins, or sacrum, will be serviceable; and if the withdrawal of blood is not indicated, dry cups will be useful for revulsive effect. Follow these with the hip-bath, sinapised or not; and repeat this for three or four nights every four weeks. Large sinapisms to breasts and thighs alternately at same periods; left on but for short time. Pediluvia sinapised. Poultice over hypogastrium if there is pain—linseed and laudanum.

Aloetic purgatives may be used at these times.

In the intervals, the bowels should be kept free by laxatives; of which the best is Aloes in its various preparations, Mass Hyd., also Magnesia.

Free ablution, followed by the flesh-brush, or by towel, soaked in brine and dried, is useful.

Attention to regimen is of paramount importance.

Strict and systematic attention to exercise, which should be taken daily, and, if practicable, always in the open air. Walking is preferable to riding, though horse exercise is very useful, both for mental and physical effects.

Exercise should not be taken early in the morning, *without some trifling aliment* "to stay the stomach;" never immediately after a full meal; never to fatigue. Increase gradually.

Plethora is better subdued by exercise than by purging.

Diet should be light, unstimulating.

Mode of life should be regulated; a steady employment, which should not be sedentary, but active, so that exercise, *as a task*, shall be studiously avoided.

Travelling forms an excellent adjuvant to stricter remedial measures. Low miasmatic districts should be avoided.

If advice be requested as to marriage, the *cause* of non-appearance forms an important element in the decision.

CHLOROSIS, is a disease marked by a "pale yellowish green complexion, languor, debility, depraved appetite, with occasional nausea or sickness, and disorder of the sexual secretions; generally occurring about puberty or soon afterwards."

It is a blood disease, the most striking peculiarity being the deficiency in red corpuscles; the standard 127 in 1000 may be reduced to 60, or even 40, while the water may increase from 790 to 915.

It is not a disease of the uterus, but the usual attendant amenorrhœa is a mere symptom of the morbid state of the blood.

Is most frequent in girls about the age of puberty; sometimes occurs in married, especially widows; and has its analogue in the feebly-developed of the other sex.

PREDISPOSING CAUSES.—Feeble, undeveloped constitution; residence in damp, miasmatic countries; insufficient, unwholesome, watery, vegetable food; acid drinks; inattention to digestive functions; excess in warm bathing; tight lacing; factory life, amid high temperature and noisome smells; sedentary occupations.

EXCITING CAUSES.—The main one is the approach of puberty.

(To change the girl into the procreative woman, requires an exercise of vital energy that demands all the powers of the system; if the attempt fails, the health deteriorates, and the girl is left an invalid.) Depressing passions; disappointed affections; menorrhagia; excessive venery; manustupration; constipation. - madam  
tin

SYMPTOMS, may be described as *incipient* and *confirmed*. Often comes on insidiously; marked by gradual loss of strength; susceptibility to influence of cold; chilliness; languor; indisposition to exertion; dulness of spirits, with listlessness, and inclination to solitude; derangement of alimentary canal; constipation; appetite capricious and irregular.

As disease progresses, it is marked by pasty and harsh dry skin; hands and feet cold and clammy; exercise fatigues, and causes palpitation and dyspnoea; pulse quick, weak, and compressible; tongue white and pasty; breath offensive; sleep disturbed and unrefreshing; headache, and pain in the side, most commonly the left hypochondrium. Auscultation detects an anemic systolic bruit along the aorta and great vessels.

*Fully developed*, the skin has the peculiar yellowish dirty green color, is husky, and scales off; lividity is shown under the eyes and œdema; tongue pale, flabby, indented, or smooth and glossy, fissured; extremities cold; ankles œdematous; appetite depraved, and craves chalk, slate-pencils, pickles (*Pica*); nausea; cardialgia; sadness, and disposed to insanity, melancholy; finger nails brittle, and disposed to split; skin husky, scaly; hair dry, foxy, and falls out; pain in side; sometimes a cough; constipation alternating with diarrhoea, stools sometimes ochrey; emaciation; œdema; hysteria; hemorrhages, epistaxis, hemoptysis, hematemeses, melena, occur.

Towards close, inflammatory diseases are sometimes simulated; sudden and violent pain in head or side, sometimes with hot skin, and bounding pulse, with pain on pressure; induce incautious to treat for inflammation of brain, pleura, spleen, or peritoneum.

Patients sometimes die suddenly, and no lesion is found.

Sometimes effusions are found in the arachnoid, pleura, pericardium, or peritoneum.

Phthisis, however, is the great outlet of chlorotic life; the spanemic state highly favoring the development of tubercle.

DIAGNOSIS, mainly resembles *Anemia*, or rather *Spanemia*; but this may result from other and organic diseases; hence it is necessary to seek whether the cachectic state is the result of chronic hepatic, splenic, renal disease; or of digestive organs, of which pallor is a characteristic. A curious anæsthesia of one side of the body is said to occur in Chlorosis, but not in simple *Anemia*.

The most important error is, the mistaking the pseudo-inflammatory symptoms, and treating erroneously for these. Again, the effects of vs. often deceive; apparently at first beneficial, it only aggravates, and, if repeated, destroys.

Look carefully to history, constitution, and physical signs.

PROGNOSIS, is always chronic; is usually cured unless complicated; fatal from associated organic lesions. Unfavorable symptoms are, cough, dyspncea, emaciation, œdema, effusions, hemorrhages.

TREATMENT.—*Indications* are to remove the cause, and to induce the formation of normal blood.

Remove the patient from the influence of miasmata, and sleeping in low damp apartments; change occupation and mode of life.

Then regulate the alimentary canal by laxatives and diet; Aloes in its various preparations, Vinum Decoctum, Tinctura, Tinc. Comp., Aloes et Guaiac, Aloes et Assafet., Pil. Aloet. Comp., Pil. Prand.

When the tongue is clearer, and bowels are free, conjoin Iron with Aloes, Tinc. Ferr. Mur., Vinum Ferr., Mist. Ferr. Comp., Carbonate, Iodide, Sulphate, Acetate, Lactate, Citrate, Persesquinitrate, Pulvis Ferr., or "Quevenne's Metallic Iron," Vallet's Mass, Iron with Myrrh, Carb. Ferr., Pulv. Myrrh. et Pulv. Zingib., Sulp. Ferr. et Sulp. Quin., Ferri et Potass. Tartras.

The milder preparations of Mercury, as Pil. Hyd., or Hyd. cum Cret., are sometimes advantageously conjoined with Aloes, to regulate the secretions, but salivation is to be scrupulously avoided.

All drastic cathartics are objectionable. Where Iron produces headache, heat, and dryness of the skin, with flushes of heat, stop it; and substitute vegetable tonics, as infusions of Calumb., Gentian, Quassia, Anthemis, Quinine. Diet to be full and nutritious; travelling useful; chalybeate waters of service; sea-bathing also advantageous, and if the cold salt bath cannot be borne, as shown by producing persistent cold, chilliness, headache, and languor, after its use, a hot salt bath is beneficial, followed in both instances by free friction.

Flesh brush useful; hot salt pediluvia.

For cold feet, a tea-spoonful of Cayenne Pepper shaken up in the stockings, and worn, will counteract. It is of service to change both shoes and stockings during the day.

Clothing to be warm, and gauze flannel, or merino, next to the skin.

Exercise is essential; walking and horseback the most useful.

With these means the catamenia will frequently, perhaps usually, occur spontaneously.

If the menstrual effort is apparent, it should be aided by the means spoken of under Obstruction.

By some Tinc. Cantharid. is favorably regarded, beginning with doses of 30 drops three times a day, and pushed to strangury. Tinc. Guaiac Ammon. has been lauded. Galvanism may be of service.

The pseudo-inflammatory symptoms are to be treated; Blisters kept on to redness; Sinapisms; Turpentine; sometimes Cups or Leeches used with discretion; Aconite; Veratria; Chloroform externally; a liniment of Chloroform, Aconite, and Olive Oil, covered or not with oilskin, is a useful counter-irritant. Internally, Narcotics are the most reliable.

**SUPPRESSION OF MENSES;** disappearance of the

menses; independent of pregnancy, lactation, or menopause. Two forms, ACUTE and CHRONIC.

ACUTE, when the result of some suddenly applied cause.

CHRONIC, resulting from continued application of some persistent cause. May cease suddenly or gradually.

ACUTE.—*Is caused* mainly by cold or mental emotion. No cause is more common than wet feet, produced accidentally, or, as is sometimes foolishly done, by design. Cold by iced water, ices, insufficient clothing, bathing, &c. Emotions, as fear, grief, anxiety, also operate. Violence, by drastics, emetics, falls, blows, coitus during flow. Diseases, as fevers and acute diseases. A very common cause is recognised in immigrants in the sea-voyage and concomitants.

*Symptoms* will vary in different cases. In young and plethoric, congestion, or even inflammation, may result; a sensation of weight, and pain in head and loins; tension, and acute pain in uterine region, increased by pressure, and indicative of inflammation of uterus, ovaries, or ligaments; short breathing; hot skin; full, hard, rapid pulse; hysteria; delirium; apoplexy; epilepsy; transient paralysis; inflammation of brain, lungs, or alimentary canal; aphonia and nervous cough; vertigo; headache; retention of urine; sometimes vicarious hemorrhages; sometimes rapid effusions of serum into the great cavities, which may be fatal.

*Pathology*, metritis; os tincæ tender, and also hypogastrium.

*Diagnosis*, by history.

*Treatment*. Two indications. 1st. To treat existing symptoms. 2nd. To restore the menses.

If inflammation actually exist, a moderate venesection of six or ten ounces, followed or superseded by leeches to vulva, and warm semicupium. CC to sacrum, and bath. Active purging. Fomentations. Enemata.

The Acute form may occur, and more frequently does, in delicate, nervous, irritable females. In them the symptoms will be less indicative of inflammations, but abdominal pains may occur; fits of hysteria and syncope will be more marked

features. In these cases vs. is inadmissible, and even leeches are not usually advantageous. Active purgatives, but not drastics; warm baths; sinapised baths and poultices; with antispasmodics by mouth, or rectum, will constitute treatment. These means failing, as they often do at the period, reserve active measures till next month; meanwhile give Aloes twice a week, avoid cold, keep the feet warm, avoid emotion, use exercise on horseback, or by swinging, &c. As period approaches, increase Aloes; sinapisms to breasts, or loins, or thighs; pediluvia; semicupia, &c.

CHRONIC SUPPRESSION, may result from an acute attack, or gradually, as the effect of some permanent irregularity in the secreting power of the uterus, as ill health, organic disease, &c., preventing the maturation of ova by the ovaries; organic diseases of the uterus or ovaries; change in mode of life; a sea-voyage is a frequent cause.

May disappear gradually, with a scanty, irregular, painful pale, serous discharge. Sometimes a painful monthly nusus, but no discharge; sometimes leucorrhœa supersedes, which, at first, may be periodic, but becomes continuous and persistent.

*Symptoms*, connected with the head are noticed, in vertigo, headache, muscæ volitantes, dilated pupils; with the surface irregular, heat and chills, dryness, susceptibility to cold; bowels constipated from loss of muscular contractility; urine abundant and limpid; thoracic dyspnœa, palpitation, wandering pains; appetite depraved.

*Treatment*, essentially the same as for Chlorosis, into which this often merges.

**Emmenagogues**; are medicines which are supposed to excite the uterus to the production of the menses.

Whether such remedies exist, independent of the improvement that may be effected in the general health, is problematical; still it has been deemed advisable to present a summary of such medicaments.

*Value*.—If deficiency of ovaries or uterus, or malformations exist, they never do good. If puberty is slowly developed, and

no menstrual discharge occurs, it is improper to employ any other than the mildest emmenagogue. In amenorrhœa, with dropsy, or phthisis, or in Amen. with uterine plethora, they increase mischief. If the uterus is inactive, puberty having been established, and neither plethora nor debility exists, they may be used. May be useful in delicate, irritable, and hysterical, after tonics have failed. Used in chronic suppression, unconnected with organic disease. Are contra-indicated by plethora, loaded bowels, fever. Premise diet, purging, and local depletion.

*Two Classes.*—LOCAL, CONSTITUTIONAL.

LOCAL.—*Electricity*, in pallid and weak, after improving general health. Pass through the loins and pubes. Not usually effectual alone.

Galvanism by Electro-magnetic truss.

*Leeches to os*, of service in congestive state. Apply through a Speculum, and push up with cotton.

Sometimes enter os, remove by salt water.

Sometimes applied to the vulva, thighs, or knee.

Cups to sacrum, either dry or wet.

*Stimulating injections*, Aq. Ammon. ʒss. to milk ʒss. To be useful, must cause slight tingling. Not to be used in uterine congestion. Begin three days before expected period. Retain with napkin. Injections into cavity are hazardous.

*Sinapised baths* are amongst the most useful means; Semiscupium, Pediluvium.

Sinapisms to sacrum, thighs, or mammæ.

Fomentations, and sitting over hot water.

*Stimulating enemata* per rectum; Ol. Tereb.; Aloes.

*Iron*, exceedingly useful in anemic and delicate. Before using it, regulate the alimentary canal; the tongue should be clean, bowels regular, secretions healthy. If its use is followed by headache, giddiness, flashes, quick full pulse, stop it, and substitute a vegetable tonic. Commence with small doses, and expect to continue its use for a long time.

The compounds of vegetable acids are less apt to offend the stomach than of mineral.

Preparations, Acetate, Tinc. Dose, gtt. xx. ; Carbonas grs. v.— $\bar{3}$ ss. ; Citras. grs. v. ; Ammoniaë Citras. grs. v. ; Ferrocyanium grs. iij. ; Ferr. et Potass. Tartras. grs. x— $\bar{3}$ ss. ; Ferr. Ammoniatum grs. iv.—xij ; Ferr. Tartarizat. grs. v.—x. ; Ferr. Iodid. gr. j. ; Syrup. Ferr. Iod. gtt. xx.—L. ; Lactas Ferr. grs. ij. ; Liq. Ferr. Nitrat. gtt. x. ; Mist. Ferr. Comp.  $\bar{3}$ ss. ; Phosphas. grs. v.—x. ; Pulvis Ferr. or Quevenne's Metallic Iron grs. ij.—vj. ; Rubigo Ferr. grs. v.— $\bar{9}$ j. ; Pil. Ferr. Carb. ; Pil. Ferr. Comp. ; Sesquioxid.  $\bar{3}$ ss. ; Sulphas. gr. j.—iv. ; Tinc. Ferr. Mur. gtt. x.—xx. ; Valerianas gr. j. ; Vinum  $\bar{3}$ ss.— $\bar{3}$ j.

*Ergot*, in relaxed and debilitated, especially if a nismus is marked. Give 10 drops of the Tincture thrice daily for a week ; if no effect, stop.

*Strychnine*, said to be serviceable ; dangerous.

*Madder*, rarely used.

*Savine*, injurious in plethoric and irritable ; suitable for feeble and languid.

*Tansy*, in common use ; in infusion, unobjectionable ; in oil, dangerous.

*Nitre*, has some effect.

*Aloes*, one of most efficient. Preparations, Pulvis Aloes, Dose, grs. v.—x. ; Decoctum  $\bar{3}$ ss.— $\bar{3}$ ij. ; Extractum grs. v.—xv. ; Enema ad-libit. ; Pilul. Aloes grs. v. ; Pil. Aloet. Comp. grs. v.—xv. ; Pil. Aloes et Ferr. grs. v. ; Pil. Aloes et Assaf. grs. x.—xx. ; Pil. Aloes et Myrrh. grs. x.—xx. ; Pulvis Aloes et Canell grs. v.—xv. ; Tinc. Aloes  $\bar{3}$ ij. ; Tinc. Aloes et Myrrh.  $\bar{3}$ ss.— $\bar{3}$ j. ; Vinum,  $\bar{3}$ ss.— $\bar{3}$ ij. ; Pil. Prandii.

*Tinct. Cantharid.*, applicable to leucophlegmatic, irritable habit with slow languid circulation, not in nervous. Give 30—60 drops thrice daily, and carry up the dose to strangury.

*Tinct. Guaiac. Ammon.*, highly praised by Dewees, not so serviceable in other hands. Can be used in more delicate constitutions than Canthar. Thirty drops thrice daily in milk. If it purges, mix Tinc. Opii, or Sol. Sulph. Morph. ; if constipates, give Pil. Aloet. Continue for six weeks. If a nismus occur, aid it by pediluvia, &c.

*Seneka*, praised by Chapman ; but little used.

*Chloroform*, has been affirmed to have effect.

VICARIOUS MENSTRUATION.—A discharge, generally of blood, from some other part than the uterus ; superseding menstruation, and sometimes periodical.

*Occurs* usually in the unmarried ; and if in the married, conception is rare.

*Nature*, usually blood, sometimes leucorrhœal.

*Seat*, Nipples, Ears, Gums, Umbilicus, Bladder, Axilla, Ulcers, Wounds. Any part of skin or mucous membranes. Occurs as Epistaxis, Hemoptysis, &c.

SYMPTOMS.—Local pain. Hysteria.

CAUSES.—Suppression of accustomed secretion ; plethora.

PROGNOSIS.—Rarely, if ever fatal. Usually recover.

TREATMENT.—If there are premonitory symptoms, and no plethora contra-indicates, use Emmenagogues. If uterine engorgement, use Leeches locally. Sometimes an active Aloetic purge will anticipate and prevent.

Sinapised semicupia useful. If sudden and severe, use mineral acids, Acet. Plumb. et Opium ; Ergot ; Ol. Tereb. ; Tannin ; Gallic Acid.

MENORRHAGIA.—*Metrorrhagia*. Is profuse, prolonged, and too frequent menstruation ; either type separately, or all conjoined.

But all women do not menstruate alike ; a discharge normal in one female, may be menorrhagic in another ; each has her own standard. Dewees knew a woman regular two thirds of her menstrual life.

Climate exercises an influence ; hot increasing the flow, and vice versâ.

Occurs, 1st, as connected with a plethoric ; 2nd, with an exhausted state : hence divided into, 1ST, ACTIVE ; 2ND, PASSIVE. (But in reality excluding tumors, polypus, and cancer ; menorrhagia rarely exists for a continuance, without inflammatory disease of the cervix, or body, unless at the cessation : the divisions recognised depend upon the effect of the hemorrhage on

the constitution ; sometimes under the influence of transitory causes, profusion is noticed for one or two periods, but this is not permanent.)

ACTIVE OR ACUTE, occurs in early life ; and in robust ; but is quite rare.

*Symptoms* ; for some days are noticed headache, hot skin, full pulse, flashes of heat, pain and weight in the back, hips, and pelvis.

When the discharge occurs, relief ensues.

At the following period, the same premonitory signs occur ; and the same relief ensues ; and the normal type is resumed, or exhaustion is produced by the repetition.

PASSIVE FORM ; much more frequent.

*Causes*, assigned ; hot rooms, frequent abortions, uterine leucorrhœa, delicacy of constitution.

(Most usually, some uterine or ovarian lesion will be recognised by vaginal examination ; which, in the married, is indispensable in prolonged menorrhagia ; and, even in the virgin, is advisable under certain restrictions, whenever anemia threatens existence. Such lesions are found to be inflammation, congestion, enlargement of the body or cervix of the uterus ; endo-uteritis ; ulceration of cervix ; sub-acute oophoritis said to be a common cause. Congestion of the portal circulation, connected with hepatic or abdominal lesions, will produce menorrhagia.)

*Exciting Causes* ; blows, falls, excessive venery, long walk, constipation, prolonged lactation. Most frequently occurs in the married ; often originating after Abortion or Labor ; having its cause in ulceration of the cervix, with or without disease of the body of the uterus.

Connected with pregnancy, menorrhagia usually has its seat in ulceration of the cervix ; and such discharges are often mistaken for returns of regular menstrual periods.

When about to cease, the menses are often profuse and irregular ; the result of congestion and ulceration of the cervix.

The *mode of flow*, may be either in gushes, or continuous ;

the first being severer in its immediate, the latter in its permanent, effects.

The old distinction between menstruation and menorrhagia, as depending on the absence or presence of clots, is erroneous; the slowness or rapidity of discharge allowing or preventing the mingling of the dissolving element, the vaginal mucus.

*As it progresses*, the health breaks, and the symptoms are those of Anemia, often with Hysteria. The pseudo-plethoric signs are evinced in the pain in the head, flashes of heat, tinnitus aurium, throbbing carotids, &c.; or pain in the left side and dyspnœa, with hot skin and sharp pulse; derangement of stomach and bowels; palpitation of heart, and threatened syncope; hysterical mania; œdema, anasarca, and effusions into serous cavities; tuberculous developments often ensue. Late in life malignant uterine disease.

The DIAGNOSIS requires only a study of the history, and vaginal examination. Polypus uteri will be thus recognised, also ulceration, &c.

The most dangerous error is, in mistaking the pseudo-inflammatory symptoms of Pleuritis, Phrenitis, &c.

*Treatment* varies with form, also at the period, and the interval.

The first step is to regulate the posture, which is to be strictly and unhesitatingly horizontal, if the discharge is at all severe.

The bed to be hard; the covering light; all sources of external stimulation removed, as light, friends, &c.; the drinks cool, iced lemonade, Elix. Vitriol in water, "Cream of Tartar Punch," iced water.

Venesection in the active form may be practised to a moderate extent, ℥vj. to ℥viij.; but if the affection is of some standing, avoid venesection.

Purgatives are valuable; avoid drastics; salines useful, Seidlitz Powder, Bitart. Potass., Rochelle Salt, add a minute portion of Tart. Antim. if much excitement.

Digitalis is too uncertain and dangerous.

Ipecacuanha, in doses of half a grain or one grain every three or four hours, is useful.

Nit. Potass. ℥j.—3ss. ; in Barley water ℥ij.

Lead and Opium. After the force of the circulation is reduced, and the bowels unloaded, this is a most valuable remedy. To be used boldly, but not continued too long. Acet. Plumb. grs. j.—v., with Opium, gr.  $\frac{1}{3}$ — $\frac{1}{2}$ , every three hours. If severe, use a pill of Lead, grs. v., to Opium, gr. iss., every two hours, for three doses, then diminish. Solution, objectionable from its nauseating properties. If rejected from the stomach, use the combination as an enema with starch, Acet. Plumb. ℥j., Tinc. Opii ʒj. For vaginal enemata, other astringents are preferable to Lead ; ex. gr. Alum.

Ergot is useful, if the flow is rapid. Tincture ʒj. every half hour till pain in the back is produced.

Tinc. Cannabis Indica, has been highly recommended. Dose 5 drops.

Tannin, in doses of 1 to 5 grains ; and Gallic Acid, in 5 grain doses, are valuable astringents.

Tinc. of Matico, recently used.

Oxid. Argent., in doses of gr.  $\frac{1}{2}$  to grs. ij., is useful where no inflammatory action exists ; it blackens stools.

Savine, in powder, has been recommended.

Vaginal injections, are useful ; Sol. Alum ʒj.—0j. may be used during the flow. Cold water if vagina is irritable. To be efficient, the injection must be given in the horizontal position, the hips elevated, and the posture maintained.

Injections of the cavity of the uterus have been practised. A solution of Alum, ʒss.—0j. is made, and of this ʒij. injected through a bougie introduced into the uterus. Is appropriate only to extreme cases ; is dangerous from fluid passing through Fallop. tubes, causing peritonitis. There is no fear of "too sudden a check" in using remedies. If pain ensues, followed by expulsion of clots, it is a favorable sign. Cold to vagina, by pieces of ice, is preferable to use of cold cloths on the hypogastric region.

Cold enemata per rectum, are useful both for direct effect, and also unload bowels.

In the use of cold it is well, unless the hemorrhage be excessive, to wait until the normal duration of the catamenia has passed, lest, if the physiological afflux be checked prematurely, congestion or inflammation ensue.

The Tampon, as a last resort, is permissible, but probably instead of a vaginal plug, it would be better and neater to insert a few pieces of cotton into the os uteri through the aid of the speculum; to these should be attached a thread, by which they may be withdrawn. Sponge will answer.

An excellent local astringent, is a piece of alum, two inches long by one in diameter, pressed against the cervix, and suffered to remain 24 hours. I have known it cause intolerable irritation.

Blisters to the sacrum are useful as derivatives; and should be kept open with Ung. Sabin. alone or with Cantharides. Ung. Antim. Tart.

If much reduced, stimulants are required; of which Carb. Ammon. with Mist. Camph. is one of the best. Brandy in various forms.

During the interval, improve the general health and equalize the circulation. An emetic, followed by alkaline alternatives, then give light tonics. Keep the bowels regular; avoid coitus; cold hip bath, followed by active friction; sea-bathing; open blisters over sacrum; cold injections; wear flannel next the skin; avoid too much clothing about the hips; avoid the wearing of "skirts" maintained in situ by cinctures around the waist.

The various preparations of Iron are of service for improving the general health, and thus retaining the flow adapted to anemic cases. (See page 44.)

About the period of cessation, in some cases, the uterus seems to assume a function vicarious of the liver; the portal circulation being congested. After resisting ordinary treatment, such cases yield to brisk purging.

If inflammation of the cervix obtains, care as to diet will be requisite; too generous a diet will oppress the stomach. In some cases of this kind, a few leeches to the cervix, after the discharge has ceased, may prevent a recurrence of hemorrhage. Scarification and free cauterization, with Nit. Arg., will be useful in cases connected with ulceration.

Diet and exercise are of primary importance.

Diet to be easy of digestion and nutritious; eggs, oysters, light meats.

Exercise within the bounds of fatigue; walking or carriage; avoid horseback; avoid swinging.

**DYSMENORRHŒA.**—Painful and difficult menstruation.

In this disease, the usual symptoms of menstruation are greatly exaggerated; the pain in the head is distressingly severe, compared at times to the sensation of an iron band encircling the head; the pain in the sacrum, or extremity of the coccyx, is agonizing, and extends to the pubes and thighs; sometimes convulsions occur; not unfrequently the breasts are irritated and painful; and finally the discharge supervenes with relief.

*May occur* in plethoric, or in nervous and exhausted; most frequently in old maids; more in maids than in married; delivery usually cures, though dysmenorrhœic women are less liable to conceive. Severity of symptoms will vary with state of the system, whether plethoric or otherwise.

**CAUSES.**—Usually from cold at the menstrual epoch; shocks to the nervous system; sometimes no assignable cause; occasionally a constricted os or cervix, as set forth by Mackintosh. Not unfrequent after the new relations incident to marriage, depending on ulceration. Even in virgin state, ulceration may cause it. Dysmen. is a prominent and ordinary sign of inflammation and ulceration of cervix. Sub-acute ovaritis a not uncommon cause. Occasionally it is noticed after labor.

**SYMPTOMS.**—General restlessness; heat of system; flushed face; chilliness; pain, weight, and oppression of head; pain in the back, coccyx, pubes, thighs, sometimes constant, but more

usually paroxysmal, and sometimes so severe as to produce syncope; the pain in the back may alternate with pain in the head; the pain is not equally intense at every period, varying with hygienic and normal causes; sometimes it lasts a day or two, sometimes through the period; fatigue, anxiety, and excitement increase it; if plethoric, tenderness is noticed in hypogastrium; tympanitis is not unfrequent in this, as also in other menstrual difficulties.

After some time, the pain becomes "bearing down," and the discharge ensues, not usually profuse, but scanty, shreddy, and membranous; it gradually increases in quantity and the pain diminishes, but usually the amount is less than normal, sometimes in gushes.

Occasionally a substance is expelled in shreds, in membrane or sac, as described by Morgagni and Denman, which is but the exaggeration, under the influence of inflammatory excitement, of the deciduous membrane that occurs normally at the menstrual period; the expulsion of this gives rise to the distressing uterine tormina. These casts do not occur at each period, and are comparatively rare.

When the period is over, a sense of exhaustion is left, from which the system recovers more or less completely until the next epoch, when the symptoms recur, and under reiterated attacks the system succumbs. In some women the effects are less discernible; in some, and these are the young and plethoric, but little influence on the general health is produced. Not so, however, in the nervous and irritable; in them the effects are more decided; exhausted by the recurring paroxysms the strength fails, the health becomes shattered, the digestive organs become deranged, the appetite capricious, cachemia ensues, leucorrhœa, sometimes amenorrhœa occurs, also hysteria; with health, strength, and appetite gone, the woman falls a prey to phthisis, or general exhaustion. All menstrual disorders are apt to awaken phthisis in the disposed.

Women subject to Dysmenorrhœa, are liable to cancerous development after the cessation.

**PATHOLOGY.**—Some say *Neuralgic*: some *Inflammatory*. Inflammation of body, or cervix uteri, common. Physical imperfection of cervix, contraction of os internum. Sub-acute ovaritis. The decidua, and the dysmenorrhœal membrane, are structurally identical. As in pregnancy, ovarian congestion is followed as a sympathetic action by engorgement of the uterus, and by a rapid development of the uterine mucous membrane; so in membranous dysmenorrhœa, a primary morbid congestion and irritation of the ovary calls forth a local determination of blood to the womb, congesting it, and occasioning a similar enlargement of the uterine follicles. As the mucous membrane, when thus altered by the glandular growth, never shrinks again, but is cast off as a deciduum, leaving the uterus bared of mucous membrane till it is reformed; so in Dysmenorrhœa, this change of its membrane is followed by exfoliation in shreds, fibres, or moulds; and this moulting occurs monthly.

**DIAGNOSIS**, mainly from abortion, which it resembles in pain, bloody discharge, and membrane; differs in history. Patients with Dys. not unfrequently pass a period or two, and then a profuse discharge occurs with pain, closely simulating abortion. No inference can be drawn from the coagulability or fluidity of the blood; this depending on the rapidity of discharge. The sac of Dys. is said to be less dense, and less flocculent externally, than the true decidua. As to the absence of the ovum, it may occur from its dissolution of embryo, if small. Frank says, if discharge precedes pain, it is abortion; Dys., vice versâ; confirmed by Lachapelle.

**TREATMENT**; *that for paroxysm*—and *that for interval*.

*For Paroxysm.*—If plethoric, leeches to vulva, or cups to sacrum, followed by hip bath, and sinapised or simple linseed poultice to hypogastrium; confine to bed; Ipecac. or Ant. Tart. in nauseating doses, with Spts. Minder., Pill of Hyoscyamus. grs. iij., with Camph. gr. j. every two hours; Ext. Bellad. gr.  $\frac{1}{4}$ , with Ipec. gr. ss. every two hours; Starch and Laudanum Enema, excellent; Chloroform inhaled, or Chloroform with Camphor internally; Pulv. Doveri; Lupuline; Lactu-

carium ; Conium ; Musk ; Valerian. If more decided effects desired, Opium, Sulph. Morph., Acet., Morph.

Suppositories of Opium, Hyosey., Belladonna. Opium is the surest anodyne, but its constipating properties render it not so advisable in ordinary cases. If there is a distinct effort to expel coagula, Ergot may be of service.

Some advise Colchicum and Guaiac.

(Some formulæ. Rj. Gum. Camph. ʒij. ss., Ext. Bellad. ʒss., Sulph. Quinin. ʒss., Ft. pil. 80. One every two hours. Rj. Sulph. Quinin. grs. iij., Prussiat. Ferr. grs. iij. One such pill three times a day during interval). Tinc. Guaiac. Ammon.

*In the interval*, attend to general health.

Girls suffering from constitutional dysmenorrhœa should not be sent to boarding schools.

Mackintosh called attention to contracted Os, as a cause of Dysm. In many cases will be found a longer and more projecting cervix, of a peculiar conical shape ; also a contracted state of Os and canal of cervix.

This state is relieved by dilatation, and thus sterility is sometimes cured.

For dilatation, probes, metallic bougies, and sponge tents are requisite.

*Directions.*—Pass in axis of superior strait, if point becomes entangled, “ humor ” it ; a kind of nauseating sensation is experienced when the fundus is reached ; intervals about five days. During this mode of treatment coitus should be avoided, lest pregnancy, and subsequent unintentional abortion, should ensue.

**Leucorrhœa.**—“ WHITES ; ” “ a light colored discharge from the female genitals, varying in hue from a whitish or colorless to a yellowish light green, or to a slightly red or brown ; in consistence, from a limpid serum to a tenaciousropy substance ; and in quantity, from a slight increase of the healthy secretion to several ounces in the 24 hours.” The old opinion was that it was a catarrh of the uterus and vagina, but we now know that the discharge is merely a symptom of

irritation, congestion, inflammation, or ulceration of cervix. Ulceration does not always exist.

Sometimes, but rarely, a catarrhal affection.

*Divisions.*—ACUTE and CHRONIC.

ACUTE.—*Causes.* Cold; local irritation, by coitus or pessaries; violence; piles; calculus. Acrid injections may convert chronic form into acute. Important to recollect that coitus may cause, and thus in newly married, character may be saved.

*Symptoms.*—At first itching, heat, sense of fulness, weight in pelvis, pain in urination; sense of bearing down, relieved by sitting still, more by lying; swelling if from injury; febrile symptoms. In continuance, a thin acrid discharge occurs, which soon becomes thick and more bland, and relief ensues; but the sense of bearing down and of weight increases.

*Terminations.*—Resolution or Chronic.

CHRONIC; or Sub-acute is usually a sequel of Acute, sometimes primarily in leucophlegmatic.

The almost invariable *cause* is ulceration of cervix. Assigned causes: hot baths, working in hot rooms, coitus, frequent labors, pessaries, accumulations in rectum, cold, too free living, pregnancy, abortion, dysmenorrhœa, said to be endemic in parts of Europe.

*Diagnosis*, from Gonorrhœa only; and this at present is impracticable; the two discharges do not differ in seat, have no appreciable difference in appearance, as to cessation during menses it affords no proof, as to contagion both are capable of producing a urethral discharge. The only ground for diagnosis is the character of individual; and this, with all its fallacies, is the only reliance.

*Treatment.*—Requires to be adapted to each form and to constitution. If acute and no ulceration, use antiphlogistic measures, leeches or cups, and hip bath; afterwards saline cathartics, and repeat them. For married, use vaginal injections, tepid water, Sol. Acet. Plumb., flax-seed tea, &c.

Continue treatment for some time; cold injections for two or three months; avoid over-exertion; keep bowels free;

food light; dress lightly, and not too much about hips; avoid coitus rigidly.

In Chronic, make early examination for ulceration, and treat that if it exists. If cervix is healthy, attend to general health, to bowels, to appetite, to anemic state, and use vaginal injections.

If it resists these measures, use Tinc. Canth. pushed rapidly to strangury; if it fails, do not repeat it. Copaiba; Tinct. Mur. Ferr.; Lugol's Solution, Ergot.

Local.—Blisters dressed with Savine to sacrum; astringent injections; Sol. Alum. ℥j. to ℥iv.; Sol. Alum. ℥ij., Sulp. Zinc. ℥j. to ʒj.; Infus. Querc. Alt. ℥j. to ʒj.; Tannin ℥i. to ʒj., Sol. Nit. Arg. ʒij., ℥ij. to ʒj.; Green Tea, Cinchona, Logwood, Ergot, Catechu, Aq. Rosar., Goulard, Infus. Galls. Sponge wet with solutions and pushed up against os. Medicated pessaries.

Commence with weak infusions or solutions.

Always wash out with water before using injections.

Position recumbent; introduce slowly.

Oak bark will produce accumulations of coagulated albumen; Alum will coat vagina.

Stopping suddenly is not injurious unless the case be ill chosen; ex. gr., congestion of cervix.

Shower bath to loins and "pickled towels."

Open air exercise.

**Ulceration and Congestion of Os Uteri**, is the true pathology of the vast majority of cases of so-called Leucorrhœa. Exists in virgin, in non-pregnant, and pregnant, but most in multiparæ.

Much dispute recently as to existence of true ulceration; usually do not find loss of substance, but merely abrasion.

*Causes.*—Coitus; imprudence during menstruation, as working, standing, walking, lifting, &c.; very frequently from premature efforts after abortion or labor, a pathological state is induced, which want of care developes into ulceration.

*Symptoms.*—Most usual is leucorrhœa, which varies in quality,

mucous, purulent, starchy ; in color milky, greenish, yellowish, brownish ; often tenacious masses of mucus, like starch made with cold water, come away.

“ Falling of womb ” (a frequent expression) is denoted by pain in back and loins, increased by exertion ; pain in suprapubic region ; heat in vagina ; coitus painful, sometimes followed by blood ; menses disordered, painful, and often scanty ; bowels irregular, constipation and diarrhoea ; bladder irritable ; pain in left side a common attendant.

*Vaginal examination.*—Position on back ; covered *completely* ; aperture in sheet for speculum.

Examine first with finger, find cervix lower than normal ; lips large and tumid ; especially anterior, soft, spongy, hotter than adjacent part ; if ulcer, there is a feeling different from rest of cervix, said to be velvety ; pressure shows tenderness, though not always.

*Specula.*—Varieties of, glass, metal ; in shape, cylindrical, bivalved, tri-valved, quadri-valved. In using, always introduce finger first to find exact position ; use cotton or lint to clean surface of cervix ; not always easy to engage cervix.

Varieties of ulcers.—In size, from pea to half dollar ; may extend into cervix. In appearance, bright red, deep red, deep red granular and bleeding, whitish patchy, with base coated and edges angry.

Authors make divisions.—Granular, cockscomb, bleeding, superficial erosion, varicose ulceration, fissured ulcer, follicular.

Constitutional symptoms assume all varieties of dyspepsia, hysteria, neuralgic pains, cough, dyspnoea.

*Prognosis.*—Probably no disease so severe in effects is so easily cured.

*Treatment.*—If congestion exists, use leeches freely ; or equally well scarification, by cutting freely across in different directions, just through mucous membrane. Hip baths, warm, to follow depletion ; emollient injections ; saline purgatives repeated every three or four days ; rest and perfect sexual abstinence imperative ; blister to sacrum, kept open ; cold injec-

tions. Locally, iodine in ointment, or vaginal suppository; Tannin. Attend to general health. If ulceration exists with congestion, treat latter first by leeches or scarification; then use Nit. Argent. in substance to surface of ulcer, repeat every six days. Other caustics are, acid nitrate of mercury; caustic potass.; actual cautery. Collodion used to form artificial surface. If ulceration detected during pregnancy, this state does not interfere with treatment.

Adhesion may follow caustic.

**Reproduction.**—Comprises, 1st. Generation, or the formation of the germ. 2d. Fecundation, or the vivification of the germ. 3rd. Conception, the retention of the vivified germ. 4th. Gestation, or pregnancy. 5th. Parturition, the expulsion of the ovum.

FECUNDATION depends on some action of a fluid secreted by the male, exerted on an ovum matured by the female.

OFFICE OF THE MALE.—1st, To elaborate the semen; 2nd, To bring it into contact with the germ.

*Semen* is a thick, tenacious, whitish grey fluid, nearly inodorous when pure, but of a peculiar smell as ejected. Consists of, 1st, A viscid fluid (liquor seminis); 2nd, Spermatozoa; 3rd, Cells which form spermatozoa (granula seminis). Or of albumen, salts of phosphoric and chlorohydric acids, and an animal substance, spermatine. The relative proportions of its ingredients differ with age; and in inferior animals with season.

In the young few or no spermatozoa are found; while in vigorous and mature the whole mass seems made of them. The cells are seen in birds at the commencement of the pairing season, also in lambs. The spermatozoa were at first thought to be animalcula, but they have no organization; they are mobile particles, moving from side to side, and also progressively, resemble vibratile ciliæ; the mobility is retained seven or eight days in the female organs.

After coition, the semen traverses the Fallop. tubes, reaches ovum, and fecundation ensues in the outer third of the tube.

Of the office of these bodies: they have been supposed, 1st.

To penetrate ovum and form some constituent part, as the cerebro-spinal axis. A single observation by M. Barry is adduced to favor the idea of penetration. *2nd.* Thought to assist in converging sperm to ovary. *3rd.* That the mobility is essential to the vitality of the fluid.

Of the mode of action of the semen on the ovum, nothing is yet known, whether by endosmosis, catalysis, &c. The spermatozoa are essential to procreation; proved by experiment. They differ in appearance in different animals; but those of kindred genera resemble; consists of a broad part or head, and a long tapering tail; dimensions,  $\frac{1}{600}$  to  $\frac{1}{500}$  of an inch.

*Office of the female* is more complicated, and extends over more time. *1st,* To eliminate ova; *2nd,* To afford a nidus for their development; *3rd,* To expel the product of conception.

This process extends over about thirty years; is co-extensive with menstrual life.

*Graafian vesicles* are small cysts; shape, round; containing a fluid; size, varying from a pin's head (as seen by the unassisted eye), to a large pea, according to progress towards maturity; the largest are nearest the surface; number, 15 to 30 to naked eye. Negrier says they are found quite early in life; in old are not seen. Consist of two coats intimately adherent; the outer adheres loosely to the stroma by soft cellular membrane, in which the vessels ramify; is called the "*tunic of the ovisac*;" the inner is vascular, is called the "*ovisac*;" within each vesicle is a layer of granules, covered by a tenacious fluid, is called *tunica granulosa*; within this layer is an albuminous fluid; in this layer, just where it is in contact with the peritoneum, is the *ovule*. The *ovule* is rounded and very minute,  $\frac{1}{10}$  of a line; consisting of a *vitelline membrane*, *yelk granules*, the *germinal vesicle*, and *germinative dot* or *spot*. The *vitelline membrane* is an elastic, thick hyaline structure; it is filled by the vitellus, a granular viscous mass. The *germinal vesicle*, discovered by Purkinje, is seen within the vitellus as a clear spot,  $\frac{1}{60}$  of a line in diameter. The *germinative dot*, discovered

by Wagner, exists usually single, rarely double, within the germinal vesicle.

Mammalian ovule first described by Von Baer, of Koningsberg, in 1817. It appears as a dark sphere, the *vitellus*, surrounded by a ring, the *vitelline membrane*.

Graafian vesicles rupture independent of coitus, and ova are discharged into the tube, as demonstrated in animals, and very recently by Lethby in two human females.

When successful coitus occurs, the germ is fecundated in the tube, and certain changes ensue; before its arrival in the uterus, a nidus is prepared for its reception and development.

In the uterus, at each menstrual period, the mucous membrane is hypertrophied and cast off; but on the occurrence of conception, the development is greatly exaggerated, the expulsion occurring subsequent to parturition. To this change the title *decidua* is applied.

*Membrana-Decidua*, called also *caduca*, *ankistous membrane*.—Is independent of the presence of an ovum, as shown in extra-uterine pregnancy, though not invariably.

The glandular utriculares become elongated, enlarged, and contorted, their secretion increases, the vessels of the mucous membrane become larger and more numerous, a substance composed of nucleated cells fills up the interfollicular spaces in which the blood-vessels are contained. The effect of these changes is an increased thickness, softness, and vascularity of the mucous membrane, which itself forms the *membrana-decidua*.

The structure exists over the internal surface of the uterus, except the cavity of the cervix, but extends into the oviducts. At an early period of gestation it is readily detached; as it becomes more vascular, hemorrhage occurs when it is separated. Is thickest during two first months. Its outer surface, when detached, is spongy and flocculent; its inner, smooth, with striæ and depressions which lead into canals.

The ovum enters the uterus, and becomes imbedded in the soft decidua; by a new action, excited by its presence at its place

of contact, a prominent ring rises over and incloses it, constituting the "*decidua reflexa*," so called to distinguish it from *decidua vera*. As the ovum grows, a new structure develops itself between the ovum and the uterine wall, called "*decidua serotina*." In young ova, examined in the uterus, both *decidua vera* and *reflexa* are found; but in aborted ova this is not the case, a portion is retained in utero. As the ovum grows, both the *decidua vera* and *reflexa* are brought into contact, and at the third month the cavity between them is obliterated.

To return to the ovum. The ovarian ovule exists in the Graafian vesicle, having in all mammalia the following essential parts, viz. 1st, The *vitelline sac* or *zona pellucida*, a structureless bag, which is seen in the fowl's egg inclosing the yelk; 2nd, Within this the *yelk*, consisting of fat globules and nucleated cells; also, 3rd, The *germinal vesicle*; 4th, Within this vesicle the *germinative dot*, which is a cell with a nucleus; in some ova several nucleated cells exist, as in those of fish.

Lining the internal membrane of the G. vesicle, is a layer of nucleated cells, forming a kind of tunic, called the *membrana granulosa*; this surrounds the ovule. At one part the cells are more numerous than elsewhere, forming the *protigerous disc*.

About the time the ovum leaves the ovary, the germinal vesicles disappear, and also the germinal spot. The cells of the *membrana granulosa*, near the ovum, become club-shaped, and subsequently quite round. The yelk also contracts, and leaves a clear space between it and the *zona pellucida*. As the ovum approaches the middle of the oviduct, an albuminous substance forms on the exterior of the *zona pellucida*; at the lower part of the tube it becomes thicker, and is converted, together with the *zona pellucida*, into the *chorion*.

During its passage along the lower part of the tube, the "*cleaving of the yelk*" occurs, breaking into 2 parts, 4, 8, 16, 32, 64, &c. Each segment contains a transparent vesicle. The cleaving ceases about the time of the ovum reaching the uterus, and it now resembles a granulated mass.

Soon each of these segments becomes surrounded with a membrane, and thus converted into a cell; these cells arrange themselves into a kind of secondary vesicle, the "*vesicula blastodermica*," or *germinal membrane*; this rapidly becomes thicker, and within its substance shortly appears the first trace of the embryo.

The time occupied in the transit of the ovum from ovary to uterus in the human female, is probably eight to ten days. Coitus, to be successful, must *probably* occur within this period after menstruation, or else a few days before a period.

**Changes by Impregnation.**—IN THE OVARY AND TUBES, vascular turgescence; one or sometimes both tubes firmly embrace their respective ovary, and the corpus luteum remains.

**CORPUS LUTEUM.**—A yellow body found in the ovary after oviposition; either connected with, or independent of impregnation.

At each menstrual period one or more Graafian vesicles mature, protrude from the surface of ovary, rupture, and become filled with blood. If successful coitus occur near this period, impregnation ensues; a yellow body of some considerable persistence remains in the ovary, the true *corpus luteum*: if no vivification occur, the ovum is discharged, and perishes, leaving in the ovary a yellow body, which rapidly changes, and is known as the *corpus menstruale*, the *corpus luteum of virgins*, or, as it is sometimes styled, a *false corpus luteum*. The connexion of the formation of these bodies with simple menstruation is a result of quite recent investigation, and perhaps is not yet definitively settled. It is believed that at each menstrual period an ovum matures, approaches the surface of the ovary, producing a well marked protrusion, it distends the tunica albuginea, pushes it aside for a space, so that the final rupture involves the peritoneal coat alone. At what period during the flow rupture occurs, is not known; probably at the termination. The appearance of the vesicle depends on the size and on the quantity of blood effused at the time of rupture, influ-

enced by the vital energy of the female. Soon after the rupture, the corpus begins to form; the proper membrane of the vesicle becomes hypertrophied, the growth being a soft, yellowish, friable substance, and the membrane folds upon itself, presenting convolutions. The blood effused into the cavity left by the escape of the ovum, has its fluid part absorbed, and becomes pale. The vascularity of the surrounding parts continues, and at three weeks after menstruation the corpus menstruale is complete. It is then recognised as a prominence on the ovary, ovoid in shape, with a small linear cicatrix marking the site of the peritoneal rupture; is soft and yielding; has no cavity, but an internal coagulum, grey or greenish, which is in contact with the yellow wall; this wall is quite thin. The yellow deposit consists of granular cells with oil globules, and is the growth of the proper membrane of the vesicle; it has not a lining membrane, but has an external, transparent, vascular membrane, which dips between the convolutions. More externally still, are vascular layers of areolar tissue, which formerly surrounded the G. vesicle. The substance of the corpus is not vascular. After three weeks the corpus menstruale begins to retrograde; it diminishes, the coagulum is absorbed, and it collapses laterally; the color becomes a brighter yellow, which depends on the presence of oil; it becomes softer and less convoluted, and a faint, whitish, stellate, central cicatrix is left. In about eight weeks it exists as a simple compressed sac. In connexion with these ovarian changes, at each period the uterus forms and expels a decidual coat. Several corpora menstrualia may be seen in various stages of retrogression under favorable circumstances. The corpus luteum of pregnancy, instead of reaching its maximum of development in three weeks, continues to develop, and is found after parturition. Other corpora are not found with it, for the function of the ovaries is suspended during gestation, and new vesicles do not protrude. The external wall is more thick, firm, and highly organized than in the corpus menstruale. The color is different; not bright yellow, but of a dull hue, and the central coagu-

lum is whitish. It is not known when it reaches its maximum of development, probably between three and six months. It is slower in development than corpus menstruale, and more persistent; is more highly organized internally; its convoluted wall may be  $\frac{1}{4}$  inch thick; is not so bright yellow; is not in company with unruptured vesicles in process of active development.

Some obscurity still shrouds this subject, from the rarity of favoring circumstances for its study; and this fact will be more obvious when we consider the short existence of the corpus menstruale, that grave disease always suspends the ovarian function, and that death during menstruation is of only occasional occurrence. Recent investigations, however, have sufficiently shown that the presence of a yellow body in the ovary, is no longer to be regarded as an evidence of pregnancy.

CHANGES IN UTERUS.—First effect is congestion. The DECIDUA is formed. The *uterine vessels* enlarge, and form an intricate network; the tortuous course more seen; they do not return to their ante-impregnated condition, for their coats are thickened; the calibre of the arteries is less than that of the veins, the effect of this is to retard circulation. The veins, called *sinuses*, have thin coats, and increase greatly in diameter, sufficient to admit the finger.

The *uterine tissue* is soft, succulent, and relaxed; is more manifestly muscular.

The *lymphatics* are easily traced in latter months.

The *nerves* are enlarged.

*In dimensions*, from a length of  $2\frac{3}{4}$  inches, breadth of  $1\frac{3}{4}$ , and thickness of 1 inch, with a superficies of 16 inches, the uterus develops gradually to 12 or 14 inches long, 9 to 10 broad, 8 to 9 thick, and superficies 339 inches. Its virgin capacity is  $\frac{3}{4}$  inch; at term, 408 inches.

The increase in size is not dependent on attenuation of its walls; for the three first months the walls augment a little; at five months they are as before impregnation; at term the organ is thicker at site of placenta than elsewhere, thinner at neck.

In weight, the increase is from eight drachms to two or even four pounds. The increase begins in the fundus, then in the body, lastly the neck is flattened down; the posterior wall increases most rapidly. By these changes the shape becomes "pear-shaped," subsequently ovoid.

*In Position.*—At first the uterus sinks, the os is lower than normal; fundus is tilted back: this occurs most with multiparæ of lax fibre. During first three months is in pelvis, the fundus at fourth month felt just above symphysis; at fifth month is midway between pubes and umbilicus; at end of sixth month at umbilicus, which begins to protrude; at seventh midway between umbilicus and xiphoid cartilage; at eighth at ensiform cartilage; fills abdomen, the intestines being above and behind; during ninth month does not ascend, and in latter part actually descends.

*In Os and Cervix.*—Soon after impregnation, the lips of os begin to soften, and this change gradually progresses upwards; less marked and slower in primiparæ.

The volume of cervix increases, but it does not elongate; the cervix does not shorten till near term; the os uteri internum does not open.

The shape of cervix at commencement in primiparæ is contracted and more pointed; the os from a linear slit becomes circular. A little later, the middle of the cavity of the cervix enlarges, giving a fusiform shape; the os is rounded and smooth. In multiparæ, the cavity resembles a funnel, the base below. Os uteri externum remains closed in primiparæ up to term; in multiparæ is widely open. The whole cervix disappears in the last fortnight, and until then preserves its length.

The canal of cervix is filled with a plug of tenacious mucus, the product of the ovula Nabothi, which are often felt like shot.

*In direction.*—At first the increase in size and weight tilts the fundus backwards; as it rises, it follows axis of superior strait till it reaches promontory, then turns towards right hypochondrium, influenced by the superior strength of the right round

ligament. The os at term lies backwards, and inclining to left. This position is of importance at times during parturition.

*In mucous coat.*—The decidua.

*In serous.*—Is extended, and the sub-peritoneal tissue seems looser.

*In function.*—The menses cease usually.

CHANGES IN VAGINA.—During first months, is shorter and wider, from depression of cervix ; later, the cervix is drawn upward, and the vagina is elongated and conical ; near term, becomes relaxed and secretes copiously.

IN TUBES.—Retained against sides of uterus by broad ligaments, which unfold ; are more vascular, especially the one which has transmitted the ovum.

ROUND LIGAMENTS.—Enlarged, redder, and muscularity more evident.

BLADDER.—Rises above the superior strait ; sometimes is bent over pubes ; sometimes depressed below cervix in vagina, where it has been punctured. In catheterizing, these displacements should be borne in mind.

URETHRA.—Becomes more vertical ; sometimes bent downwards, requires care with catheter ; use a male elastic catheter.

RECTUM.—From pressure on it, and hindrance to action of diaphragm, constipation occurs ; sometimes irritability.

SMALL INTESTINES.—Usually towards right lumbar region ; or directly upwards against colon ; or in recto-vaginal excavation ; sometimes pressure causes colicky pains.

DIAPHRAGM.—Towards close is pressed up, and sometimes dyspncea ensues.

STOMACH.—In latter months vomiting occurs from pressure.

SKIN.—Of abdomen is thinned ; cracks and silvery streaks called *lineæ albicantes* ensue, which are permanent ; the *lin. alb.* widen, and may separate ; and thus disunion may be persistent.

UMBILICUS.—Becomes more salient.

**VESSELS.**—Pressure gives rise to hemorrhoids, varices, œdema.

**NERVES.**—Cramps from pressure.

**PELVIS.**—Said to relax.

**ON GENERAL HEALTH.**—Sometimes improves; sometimes deteriorates. A hyperemic state seems to prevail; sometime anemia rapidly develops. Buffy blood is not always found, and is not pathognomonic of inflammation.

Temper, sometimes irritable; sometimes ameliorated; tendencies to insanity are matured.

The feverish symptoms, sensation of fulness, rapid pulse, dry skin, and deranged secretions, all indicate a reduction of aliment, which is often contravened by the erroneous impression that additional food is needed for the fœtus.

### Signs of Pregnancy.

*Importance.*—Opinion may affect, life, character, happiness, fortune. Pregnancy sometimes complicated by disease. Facts sometimes perverted without evil motive. Concealed in married or unmarried. Feigned to extort money. Difficult and obscure in early months.

**EFFECTS OF PREGNANCY.**—On *Vascular system*: Pulse fuller, harder, stronger, quicker. Fibrine increased. Blood sometimes buffy. Animal heat increased.

On *Nervous System*: Irritability increased, weariness, lassitude. Alterations in taste, disposition, intellectual power. Palpitations. Spasmodic cough. Vomiting. Faintness. Neuralgic pains. Antipathies. Longings. Sometimes freedom from spasmodic difficulties, as asthma.

On *Digestive function*: Dyspepsia, or improved digestion. Cardialgia. Acidity. Vomiting.

On *Alimentary canal*: Secretions altered in quantity and quality. Diarrhœa. Constipation.

On *Stomach*: Intense acidity. Ropy mucus copious.

On *Saliva*: Salivation. White, tenacious, frothy sputum.

On *Skin and Countenance* : Pale or florid. Sallow. Blotches. Nose sharper. Mouth larger. Eyes sunk, lividity around. Moles larger and darker. Odor peculiar.

On *Breasts* : Larger. Veins enlarged. Areola. Milk. Silvery lines.

On *Urine* : Increase. Kiestine. Albumen.

In detail.—CESSATION OF MENSES.—Calls attention early. Usually obtains.

*Fallacies*.—Next period after conception may be unusually copious. A bloody discharge may occur monthly for several months, or even through whole gestation. Source in these cases, ulcer or abrasion of cervix.

Menses during pregnancy only.

Pregnancy may occur before menses established ; without return since labor ; during suppression from disease.

Catamenia suppressed from disease, cold, mental causes, marriage relations, sea voyage, change of residence and mode of life. Uncertain at “change of life.”

Simulated by staining linen to avoid suspicion.

*Value* : A valuable, but not absolute sign. If pregnancy has been incurred, and general health is not impaired, woman is probably pregnant.

IRRITABILITY OF NECK OF BLADDER.—MICTURITION.

*Occurs* early. *Cause* : Partakes in general pelvic irritation ; not from pressure ; quantity not increased.

*Fallacies* : From other causes than pregnancy ; “a cold,” dysmenorrhœa, hemorrhoids.

*Value* : A good and common sign.

NAUSEA.—“MORNING SICKNESS.”

*Occurs* about third week. *Varieties* : Six days, fifth or sixth week. *Character* : As soon as erect in morning, sudden, without nausea, duration ten minutes to an hour, relief follows, appetite continues.

*Ceases* about fourth month. In some till term.

*Fallacies* : From other causes, diseases. In night only. Sometimes all day. May not occur, and yet pregnant.

*Value*: Valuable in conjunction; alone doubtful; majority have it.

Sudden and early cessation excites apprehension for ovum.

If absent, gestation thought not to be so regular as if present.

**MAMMARY CHANGES.**—*Three Varieties.*—1ST. ENLARGEMENT. 2ND. SECRETION OF MILK. 3RD. CHANGES OF AREOLA.

*ENLARGEMENT and Sensations.*—Occur about third month, sometimes not till eighth or ninth month, not till delivery. Sensations, uneasiness, fulness, shooting, prickling, tingling pain, tension, tenderness, knotty, “lumpy feel,” nipple puffy.

*Fallacies*: May proceed from acute suppression, dysmenorrhœa, polypus, fibrous tumors, fat, ordinary menstruation, uncertain especially at “turn of life.”

*Value*: Not much reliance.

**SECRETION OF MILK.**—Occurs about fifth or sixth month; varies; continues from time to time.

*Fallacies*: May exist in non-pregnant, in young girl, in the male, may continue for years, may occur at cessation of menses.

*Value*: None.

**AREOLA.**—*Def.* A circle surrounding nipple, somewhat darker even in the virgin than neighboring skin.

Color varies with complexion; in blondes a pink; in brunettes tawny. Hence, mere color no evidence of pregnancy.

*Changes by pregnancy*: Darkens progressively, follicles become developed and elevated. Areola seems puffed, emphysematous. A brownish yellow fluid exudes from follicles, stains linen. Nipple turgid, erect. Extent of areola, 1 inch to  $1\frac{1}{2}$ , or even 3. Begins to darken in second month; progressively varies in tint, from light brown till nearly black; in negress jet black. Permanency of discoloration; is to certain extent persistent; does not disappear in brunette.

*Fallacies*: Uterine irritation, as dysmenorrhœa may discolor.

Follicles often seen where neither pregnancy nor nursing.

Pregnancy may exist with but slight discoloration.

*Value*: Only in primiparæ.

If areola presents changes, pregnancy is probable; if no change, highly improbable.

Puffy emphysematous feel most unequivocal if present.

*Other mammary changes*: Silvery streaks appear after sixth month from distension; are permanent, and hence of no value after first pregnancy.

**KIESTINE.**—*Def.* A pellicle formed on certain varieties of urine; consisting of minute crystals of triple phosphate in fatty matter.

*Noticed first* by Nauche in 1821.

Said to *exist* frequently in urine of pregnancy; from fourth week to term.

*To procure it*: Expose urine in wide mouthed open vial to air at 60°.

Appears third or fourth day; on fifth and sixth, begins to break up and fall to bottom; odor cheesy.

*Fallacies*: Not peculiar to pregnancy.

Pregnancy may exist without it.

*Value*: Though not infallible, it is a fair presumptive proof.

Entire absence is good negative proof.

(Authorities differ as to value, and microscopic research fails to identify any peculiarity in the pellicle as indicative of pregnancy.)

**ALTERATION OF COLOR OF VAGINA.**—*I. e.* a bluish dark purple of the vaginal mucous membrane.

“Jacquemin’s test” confirmed by Parent Duchatelet.

*Fallacies*: Exists during menstruation.

Marks merely venous congestion, which may be independent of pregnancy.

*Value*: Not reliable; usually inapplicable.

**INCREASED PULSATION OF VAGINAL ARTERIES.**—Considered important by Oslander. May result from other causes.

**ENLARGED ABDOMEN.**—Vulgarly thought positive evidence. In two first months said to flatten.

Begins to enlarge about third or fourth month.

*Fallacies* : Enlarged from Ascites. Retention of urine or menses. Flatus. Ovarian disease. Hydatids. Fibrous and other tumors. Fat.

Ascites and pregnancy may co-exist.

Requires careful investigation of history, also by palpation and percussion.

Examine during expiration, both standing and lying, bladder to be emptied.

Volume different in primiparæ and multiparæ.

*Value* : If pregnancy is possible, enlargement is a probable sign.

*Feel of pregnant uterus* : Is peculiar ; firm, hard, elastic, well-defined ; preserves its form in all positions.

UMBILICAL CHANGES.—In *two first months* umbilicus sinks ; produces dragging pain, because womb descending drags on bladder, and that on umbilicus by means of urachus.

*Value* : Not often observed ; impaired by occurring from other uterine causes.

At *sixth month*, navel effaced.

At *seventh, eighth, and ninth*, various degrees of protrusion or "pouting."

*Fallacies* : Ascites may cause protrusion. May be no protrusion.

QUICKENING.—*Def.* The mother's first perception of motion.

*Sensation* : A feeble fluttering or pulsation, sometimes with nausea, faintness, or syncope.

*Cause* : While uterus is in pelvis which has not nerves of sensation, motion is not perceived ; rising into abdomen, motion is appreciated.

Not from life then imparted ; not from sudden rising.

*Occurs* : Usually sixteenth week after last menstrual period.

*Varieties* : Not at all ; not before fifth month ; different in different pregnancies ; varies with size of pelvis, quantity of liquor amnii, bulk of child.

*Value* : Woman's testimony not to be relied on.

**FÆTAL MOTION.**—Perceptible to accoucheur, also to woman; sometimes violent; perceptible under dress.

Examine by applying cold hand to abdomen, wet with cologne or water. By pressing sides gradually.

*Fallacies*: May deceive self and accoucheur by contractions of abdominal muscles. Flatus.

Also irregular contractions of uterus itself where menses retained.

*Value*: If *clearly* distinguishable, good presumptive proof.

**AUSCULTATORY SIGNS.**—Fœtal heart first noticed by Mayer in 1818; forgotten till Kergaradec, in 1823, noticed two kinds of sounds.

**1st. PLACENTAL MURMUR.**—Placental bruit, bruit placentaire.

*Resembles* ordinary cardiac systolic murmur.

*Situation*: At attachment of placenta, verified by Kohl in 90 autopsies. Usually in right iliac region, midway between umbilicus and anter. spinous process.

*Source* uncertain.

Thought to be from utero-placental circulation. Not so. Also in uterine arteries leading to site of placenta. Also from pressure on iliac arteries. Also from numerous vessels in abdominal parietes.

*Is synchronous*, with maternal pulse.

*Time of finding*: Tenth week, fourth month, fifth month. Difficult to detect; heard one day, and not next.

*Fallacies*, tumors may cause. May be heard after death of fœtus; after delivery when degenerated into moles.

*Value*: Authors differ. Some say unerring; others merely a bruit from an impeded artery.

**2nd. FÆTAL HEART, SOUND OF:**

*Resembles* ticking of a watch under a pillow.

*Situation*, usually left side, midway between umbilicus and anter. spinous process; sometimes over the whole abdomen.

*Number of pulsations*: 120, 140; synchronous with fœtal pulse.

*Time of hearing*: Depaul says at the end of twelfth week; seldom before fifth month.

*Obscured by* : Excess of liq. amnii ; thick abdominal parietes ; feeble foetus ; ascites.

*Value* : If heard, proof positive of a living foetus ; if not heard, pregnancy may still exist ; foetus may be dead.

*Rules* : Requires skill ; use a wooden stethoscope.

Empty bladder and bowels beforehand.

Woman to be on bed, on her back, with knees drawn up.

Press away fat by kneading ; press stethoscope firmly.

Do not lean over woman ; sit or kneel.

If cannot find, try another day.

FUNIC SOUFFLE.—Described by Naegele, Jr.

*Def.* : A sound synchronous with foetal heart ; caused by compression of cord between uterine walls and some part of the foetus.

*Value* : Not generally recognised.

SIGNS APPRECIABLE BY TOUCH.—Woman's position to be on side, or on back with knees drawn up ; or standing.

Operator to be sitting or kneeling.

He should be ambidextrous ; should wear no rings ; nails pared close ; use index finger, or ~~two~~ first ; oil well, both for woman's sake and also own.

*During two first months of pregnancy* : Uterus is heavier, lower in vagina, less movable, increased in volume ; uterine tissue feels softer and looser, spongy, compressible.

*Fallacy* : Just before catamenia may feel like pregnant.

*At third month* : Volume, weight, and fixedness increase ; fundus just felt in hypogastrio ; neck inclines backwards ; uterus must rise in axis of superior strait.

*At four months* : Fundus four fingers above symphysis ; neck a trifle higher than in third month ; direction same ; ballotement aids.

*At five months* : Fundus two fingers below umbilicus ; hypogastrium projects ; vagina elongated and narrowed ; neck more elevated. Foetal motions. Ballotement easy.

*At six months* : Fundus at umbilicus ; umbilicus begins to

project; vagina elongated and contracted; neck at superior strait, shorter, less firm, larger. Ballotement easy.

*At seven months:* Fundus two fingers above umbilicus; cervix disappearing.

*At eight months:* Fundus at epigastrium; os softens.

*At nine months:* Fundus sinks; cervix effaced.

The above scale of development is subject to numerous variations. X

**BALLOTEMENT.**—*Performed by* placing one finger on cervix anterior to os; the other hand on fundus, and communicating impulse to uterine contents with finger; foetus ascends in liq. amnii and returning causes a slight shock; woman's position to be standing.

*Period:* Best between five and six months, because before that foetus is too small to jar, afterwards too large to float in liq. amnii.

*Value:* Proves a body is in utero; that it is a foetus, but nothing as to life.

*Fallacy:* Placenta prævia obscures it; also a small foetus; a long cervix.

**TWIN PREGNANCY** may be diagnosticated if two foetal hearts are heard by *two observers* simultaneously, the beats *not being isochronous*. Not to be on same plane.

*Fallacy:* The foetal heart may be traced across median line.

TABLE OF THE SIGNS OF PREGNANCY.

1ST AND 2ND MONTHS.	3RD AND 4TH MONTHS.	5TH AND 6TH MONTHS.	7TH AND 8TH MONTHS.	9TH MONTH.
Micturition.	Suppression.	Suppression.	Suppression.	Micturition.
Suppression of Menses.	Vomiting.	Sickness ceases.	No nausea.	Suppression.
Morning sickness.	{ Umbilicus less de- pressed. }	Umbilicus effaced.	Navel begins to pout.	{ Vomiting. Dyspnoea. }
Depressed Umbilicus.	{ Breasts swollen. Changes in areola. }	Areola deeper, follicles.	{ Deep areola, follicles. Milk. }	Navel pouts.
Tumefied breasts.	Fundus above pubes.	{ Hypogastric pro- minence. Fundus at or above umbilicus. }	Fundus in epigastrio.	Changes more marked. Silvery streaks.
Augmentation of cer- vix in size and weight.				Fundus sinks.
Descent of uterus.				Cervix effaced.
Kiestine.	Kiestine.	Kiestine.	Kiestine.	Kiestine.
		Footal heart.	Footal heart.	Heart.
		Placental souffe.	Placental souffe.	Souffe.
		Feetal motion.	Motion.	Motion.
		Ballofement.	Ballofement in 7th mo.	{ Piles. Oedema. Varices. }

**Duration of Pregnancy.**—Is usually calculated from last menstrual period; from which 9 months are allowed, or 40 weeks, or 280 days.

By females the reckoning is corrected by the first perception of motion, which is considered to be  $4\frac{1}{2}$  months. That the duration may be less than 280 days, no one doubts; but much controversy has arisen as to the possibility of gestation being prolonged beyond 280 days. It may be prolonged. Desormeaux's case (single coitus), 9 months and a fortnight, 287 days; Girdwood, 274 days; Montgomery, 280; Rigby, three cases of single coitus, 260, 264, 276; Lockwood, four cases single coitus, 270, 272, 276, 284; Lee, a single coitus, 287 days; Dewees, one coitus, 286 days; Beatty, 291 days; Skey, 293; M'Ilvain, 293 or 296; Ashwell, 300; Asdrubali believes that a pregnancy of 13 months and 22 days, and Meigs, that 420 days does not vitiate chastity. Reid gives 25 cases of single coitus; of these labor occurred, 263rd day in 1 case; 264, in 1; 265, in 1; 266, in 2; 271, in 2; 272, in 1; 273, in 1; 274, in 6; 275, in 2; 276, in 3; 278, in 1; 280, in 2; 287, in 1; 293, in 1.

Dr. Reid, in another table, gives 500 cases of the days intervening between the last menstruation and labor, of these 23 terminated in 37th week; 48 in 38th; 81 in 39th; 131 in 40th; 112 in 41st; 63 in 42nd; 28 in 43rd; 8 in 44th; 6 in 45th week.

Merriman's tables of 114 cases show that the greatest proportion terminate in the 40th week; a considerable number in 41st.

Murphy, 182 cases; in 39th week, 24; in 40th, 25; in 41st, 32; in 42nd, 25.

In the case of animals, where accurate records are practicable, considerable variations occur.

**Diseases of Pregnancy.**—May be regarded under two heads. 1st. THOSE OF WHICH PREGNANCY *is the cause.* 2nd. DISEASES MODIFIED *by pregnancy.* Are mostly of 1st class. Ordinarily, are aggravations of ordinary symptoms.

The sympathy between uterus and stomach is well marked even in the unimpregnated state, for uterine derangements have usually dyspeptic symptoms. Of the gastric phenomena the most marked is

**NAUSEA.**—Occurs usually about fourth to sixth week. *Continues* six weeks to two months; not usually after four months. *Variations*, throughout; very soon after conception; not till seventh or eighth month; sometimes not till after meal; at bed-time; in night; all day; not at all; only from special articles. *Character*, occurs on assuming erect posture; sometimes nausea without vomiting; lasts from ten minutes to an hour; appetite undiminished.

*Bad effects.*—Miscarriage; want of nutrition may cause sinking; death. *Good effects*: Prevents formation of too much blood. *Nature of fluid*: Thin, watery, glairy, colorless, bile, blood, greenish or blackish, excessively acid. *General Symptoms*: Reduction of strength; pain in epigastrium; loaded tongue; constipation. *Causes*: In mild cases by sympathy; towards end from pressure; in violent by gastritis; sometimes odors, indigestible food, articles that readily acidify, acescent vegetables, salt meats; torpid bowels the great cause.

*Treatment.*—First regulate diet, then use *cathartics*; if these fail use *anti-emetics*. If plethoric or pain on pressure over epigastrium, with dry red tongue; leeches and blister, purgatives, seidlitz, magnesia, mass. hyd. and hyosey., ext. coloc. comp., salines. *Counter-irritants*, &c., to epigastrium: blister, sinapisms, hot turpentine and flannel, clothes wet with laudanum, mint poultice, spice plaster.

*Narcotics.*—Avoid constipation; effervescing draught with T. opii or sol. morph.; starch and laudanum enema.

*If acid*, use alkalies, and if these fail, use acids; charcoal ℞j, every two or three hours with or without soda or magnes., charcoal and milk, lime-water and milk. *Anti-emetics*: Hydrocyanic acid, kreasote, strong coffee, clove tea, 20 to Oss, ice, soda water, spearmint tea, ol. tereb., infus. calumbæ, mineral acids with bitter infusions, trisnit. bismuth., tinct. nuc. vomic.,

*or decoct. of cereus*

acet. plumb. et morph. *Diet*: Lightest kind; no stimulants; very little at a time; observe if stomach will bear better at some period of the day; solids sometimes best; quantity small, and position supine; sometimes total abstinence for 24 hours; sometimes a single article, cold arrow-root, gum arabic, iced water and cracker; lemonade; food cold; champagne.

In later months, the only resource is horizontal posture.

If all remedies fail and life is jeopardized, excite premature labor.

Dubois, in thirteen years, met with twenty fatal cases. Autopsy revealed no lesion. When gestation is arrested spontaneously or artificially, the vomiting ordinarily ends. He says: Do not perform it when the signs of extreme exhaustion are present, as loss of vision, cephalalgia, coma, somnolence, and mental disorder. Abstain from operating when the vomiting, though violent and frequent, allows some aliment to be retained, when the patient, though wasted and feeble, is not obliged to keep her bed, when the suffering has not yet induced intense and continuous febrile action, and when other means still remain untried. The proper time is marked by, *1st.* Almost incessant vomiting, by which all alimentary substances, and sometimes the smallest drop of water, are rejected. *2nd.* Wasting and debility, which condemn the patient to absolute rest. *3rd.* Syncope, brought on by the least movement or mental emotion. *4th.* A marked change in the features. *5th.* Severe and continuous febrile action. *6th.* Excessive and penetrating acidity of the breath. *7th.* Failure of all other means. Stoltz relates four cases, three of which proved fatal, the other was saved by the operation. He advises a timely interference.

Nutritious enemata will sustain life for a long time.

Transfusion might be demanded.

Emetics will frequently cause abortion, while puerperal nausea rarely does.

HEARTBURN.—Cardialgia, pyrosis, water-brash.

*Occurs* frequently; sometimes quite early; usually not troublesome till last months; often in hysterical and nervous.

*Causes.*—Sympathy; certain articles of diet; some say alteration of gastric juice; bile in stomach; affection of eighth pair of nerves; mental emotion.

*Symptoms.*—Pain and heat in epigastrio, extending along œsophagus; eructations of sour and bitter fluid; aggravated by eating; sensation of dragging from stomach towards spine; fluid bilious, clear, bitter, acid, acrid; usually no constitutional disturbance; appetite impaired.

*Diagnosis* from inflammation of œsophagus and stomach by absence of fever, also is intermittent. Pregnancy a presumptive proof of heart-burn.

*Treatment.*—Diet, exercise, attend to bowels.

One article of food, rice, oysters, milk, stale bread, sweet butter, ship-bread.

Counter irritation to epigastrium, blister, anodyne liniment.

*Antacids.*—Magnesia, ammonia, aq. calcis, carb. soda, liq. potass., mis. cretæ. The unlimited use of antacids is objectionable; magnesia may accumulate.

*Acids.*—Citric, elix. vitriol, ice water, soda water. Attend to bowels; give mist. eccoprot., magnes., ext. coloc. comp. May require opium. Mild bitters in enfeebled. Trisnit. bismuth.

*Constipation.*—A very common attendant. Duration: days, weeks, or months. In slight degree, inconvenient only; if prolonged, is injurious. No woman should be permitted to fall in labor with constipated bowels.

*Causes.*—Pressure, altered vitality.

*Attendant phenomena.*—In slight cases, uneasiness, discomfort, headache, increased heat; sometimes small, liquid, daily stools, and yet accumulation. If prolonged, headachè, sleeplessness, restless, sense of weight and fulness, irritability, nausea, vomiting, pains in abdomen, irritation of mucous membrane, tenesmus, bloody mucous discharges, scybalæ, false pains, abortion from straining, per vaginam can feel enlarged rectum, and sometimes a channel. Always inquire in the diarrhœa of pregnancy whether constipation has preceded.

*Consequences* during gestation, inflammation, fever, sphace-

lus, piles; at the time of labor, delay, peritonitis, convulsions.

*Treatment.*—Mild means first; manna, rhubarb, magnesia; mist. eccop. with tinc. jalap; ol. ricin. ʒj. every night; ext. col. comp.; coloc. and hyosc. seidlitz; confect. senn.; Johnson's pill  
 R Ext. coloc. comp. ʒj.; calomel grs. xv.; ant. tart. grs. ij., ol. carui. gtt. ij. Ft. in pil. 24, 2 for a dose; ext. juglans; fell. bov. insp.; warm enemata. Diet, gruel, mush and molasses, brown bread, fruits, vegetables.

If medicine is ineffectual, scoop out rectum.

DIARRHŒA.—Not so frequent as constipation. Those costive before pregnancy may be loose; vice versâ; constipation may precede; alternate, or co-exist.

*Occurs* at any period; often an early symptom of pregnancy.

*Causes.*—Constipation, quasi vicarious of menstruation; cold; emotion; intestinal irritation.

*Phenomena.*—Varieties in frequency and character of stools; watery, dark, offensive, acrid, pain, tenesmus.

General symptoms, in slight cases, languor, no fever; but in severe, especially if ulceration exists, great pain, burning sensation, quick pulse, dry tongue, hot skin, great thirst, anorexia, vomiting, frequent offensive stools.

*Sequences.*—Oftener than constipation it causes abortion, especially about third month; arises from tenesmus.

*Treatment.*—Not always wise to stop suddenly, especially if periodical. Mist. cretac. with kino or catechu; hyd. c. cret. et P. Doveri, opium; starch and laudanum enema; Ol. ricin. et t. opii; pil. plumb. et opii; blisters; flannel.

Diet mild, milk boiled, rice, arrow-root.

If the result of precedent constipation, use Ol. ricin. and enemata.

HEADACHE.—Cephalalgia; is very common.

Occurs in hysterical and nervous; in robust and plethoric; in early months is usually *nervous*; in later ones *from plethora*.

*Causes of nervous*, mental emotion, food, constipation,

fatigue. Of *Plethoric*: errors in diet, stimulants, warm bath, exertion.

*Seat* over part or whole: hemicrania, <sup>or hemicrania</sup> megrim, migraine; in vertex, occiput. *Kind of pain*: constant, paroxysmal, dull-aching, acute throbbing; without or with intolerance of light and sound.

In plethoric, pulse quick, full, strong, carotids throbbing; face flushed; eyes bright or suffused; eyelids heavy; photophobia. Pain dull or acute, over eyebrow; constipation may complicate either form, and then tongue is loaded, and bad taste in mouth.

*Prognosis*.—In *Nervous*, not dangerous; in *Plethoric*, to be guarded.

*Treatment*.—In *Nervous*, Valerian infusion or Tinc. Valer. Ammon., Hyosc. et Camph., Hops, Hop-pillows, Ether, Chloroform, Cologne, Blister behind ear. Brisk purge.

In *Plethoric*.—Venesection, Leeches, Antiphlogistic, Blister to nape. Special attention to diet and exercise.

PLETHORA.—A certain amount is normal, and needs no attention beyond a moderated diet and active exercise.

If more marked, use purgatives; ipecac.  $\frac{1}{2}$  gr. 3 times a day.

If manifested by headache, somnolence, flushes of heat, vertigo, dyspnœa, depressed spirits, high colored urine, and full frequent pulse; or by indications of uterine hyperemia, as sensation of weight in pelvis, groins, and thighs, tension, &c.; small venesections may be practised; if the uterine symptoms indicate threatening abortion, opiate enemata and venesection. Leeches are objectionable.

PILES.—Hemorrhoids; are frequent.

All the different forms are found. *Occur*: in relaxed, indolent, constipated. *Exciting cause*: pressure of uterus. *Period*: in early months, or in last, and again after delivery.

*Attendant Phenomena*.—Itching, weight; if inflamed pain, throbbing, heat, bearing down, pain in defecation, motion distresses, tenesmus, bloody discharge.

Rarely curable during pregnancy.

*Treatment*.—Open bowels; Sulphur, Bitart. Pot., Confect. Senn., Coloc., Mass. Hyd., Enemata.

Diet: bland without stimulants.

Anodyne lotions or ointment to external; return if possible; sometimes incision.

If inflamed.—Poultices; astringents; cold lotions; cold semicupia.

Avoid operations until after labor.

ŒDEMA.—Is frequent. Most *in latter months*.

*Extent*: Feet, legs, thigh, vulva, hips, face.

*Cause*: Pressure upon veins. Sometimes from renal congestion, then albuminuria exists; such dropsy manifests itself beneath the eyelids and upper extremities, and should always excite apprehension lest convulsions should succeed.

*Effects*: Are mechanical, interfering with motion; or if in labia, with labor. *Relieved by* horizontal posture. Sometimes complicated with Eclampsia, Erysipelas, or even gangrene from over-distension. Always examine urine if œdema of face is noticed.

*Treatment*: Rest, salines, diuretics.

If extreme.—Punctures, cold water, saturnine lotions.

If albuminuria.—Local depletion over kidneys, saline purgatives.

TOOTHACHE.—Odontalgia; not uncommon.

*Occurs in* early months. Sometimes an early sign of pregnancy.

May be *continued* or *paroxysmal*.

*Causes*: Neuralgia; Gingivitis; Catarrh; Carious tooth; Constipation; Breath is acid, reddens litmus.

*Diagnosis*: Whether from caries or merely sympathetic; pregnancy is a presumptive proof of neuralgic character.

*Treatment*: If neuralgic.—Oils of Cloves, Mint, or Cinnamon, &c.; Tannin, Kreasote, Stramonium, Valerian, Blister. Tinc. Aconit. beneath ear is very effectual.

If inflamed gums, scarify, leeches, warm water, purgatives.

Main point of interest is as to extraction. Authorities differ. Usually will not do good, and is likely to produce abortion.

**DYSPNŒA.**—Occurs sometimes in early from sympathy; at quickening; more in latter months from plethora and mechanical cause; most in primiparæ. Also from cardiac or thoracic disease, tumors, &c.

*Treatment*: In early.—Antispasmodics; Valer.; Ammon.; Ether. If from congestion, VS.; purgatives; Ant. Tart.; Ipecac. Mechanical; position. Attend to bowels. Avoid flatulent food.

**COUGH.**—Occurs sometimes in early months from sympathy; in latter, from pressure. Thoracic diseases.

*In early*: No expectoration; pulse unaltered; no feverish symptoms; subsides spontaneously.

*In latter*: The mechanical succussion may cause premature labor; shown markedly in influenza; loss of rest and headache also demand interference.

*Diagnosis*: By stethoscope.

*Treatment*: In early.—Antispasmodics; narcotics; bowels free. In later.—Venesection; Ant. Tart.; Ipecac.

*Diet*: Avoid flatus.

**PALPITATION.**—Very common, especially in hysterical.

Occurs just after conception; at quickening; towards close.

*Causes*: Sympathy; pressure; mental emotions; disordered stomach; flatus; fetal motions.

*Treatment*: In paroxysm.—Antispasmodics, Valer., &c.; Ether; Chloroform; Opiates; Sinapism between shoulders. If plethoric.—VS.

In interval.—Iron; antispasmodics; posture; exercise; dress not to bind.

**VERTIGO**, and dimness of vision, and faintings, are frequent.

*Arises from* nervous susceptibility or from plethora. Some women easily affected by moral emotions, as joy, anger, odors, unpleasant sights, fetal motion.

Syncope attacks while standing, tinnitus, vertigo, dimness of

vision, weakness of knees. Sometimes yawning, sense of heat, chills, pulse and respiration nearly ceases.

*Relieve by* Ammonia, cold water, horizontal posture, wine and water, &c.

INCONTINENCE OF URINE.—Enuresis.—*Occurs* early from pelvic irritation. In latter months, from pressure, especially in ample pelvis. Coughing causes expulsion.

*Treatment*: In early.—Fomentations; leeches; Belladonna; Hyoscyamus; Lupuline; astringents.

In latter.—But little can be effected; cold sponging; evacuate bladder frequently to prevent involuntary expulsions.

DYSURIA.—*Caused* by irritation; pressure; paralysis; piles; calculus; tumors; displacements.

*Diagnosis*: By vaginal examination.

*Treatment*: If from irritation, leeches, anodynes, mucilaginous drinks, fomentations; if from piles, leeches; from over-distension, inf. Uva Ursi; if from compression, position; to pendulous belly, a bandage; catheter.

PRURITUS.—Sometimes excessively distressing. Dewees found a few cases to arise from aphthæ. *Treatment*: Sol. Bibor. Sod. ʒj.—iij. to ʒss. If dry and red excoriations, dry Calomel; Decoct. Papav.; Acet. Plumb.; Sol. Alum; Sol. Sulph. Zinc.; cold water; Sol. Nit. Argent. grs. v.—x. to ʒj.; Ung. Cor. Sublim.; Sol. diacet. Plumb. tepid.; place compress wet with solution between labia; chloroform ointment.

Internally.—Pil. Plummeri; Elix. Vitriol; Hyoscy.; Cicuta.

ICTERUS.—Jaundice usually *in latter months* from pressure. Sometimes *in early* from sympathy.

Sometimes preceded by digestive derangement; vomiting; weight in epigastrio.

*Treatment*: Keep stomach and bowels free. Position on left side.

INSOMNIA.—Sleeplessness; agrypnia; pervigilium. Not uncommon. Most in hysterical. Sometimes in early, most in latter months.

*Causes*: Nervous; hot bed-room; too little exercise; foetal motion; plethora.

*Treatment*: Cold bathing to head; pediluvia (sometimes cause abortion); laxatives; mild anodynes; small venesection; avoid stimulants, tea and coffee; light diet.

Free air and exercise; sponging body at bed-time.

CRAMPS.—Are frequent and annoying. Most at fourth and fifth month, and at latter end.

*Causes*: Mechanical; muscular distension; stretching of ligaments; constipation; fatigue; pressure on nerves.

*Situations*: Along crista ilii; in symphysis, from round ligaments; in lumbar muscles, coccyx, sacrum; in inferior extremities, anterior and inner part of thigh from anterior crural nerve; in sciatic, along calf, heel, and sole; in large pelvis, pains are severe; interfere with walking; cause falls.

*Treatment*: Frictions; position.

RETROVERSION OF THE UTERUS.—Infrequent. May exist also in unimpregnated. The os is close behind symphysis pubis; fundus in hollow of sacrum; posterior wall of vagina is depressed, anterior carried forwards.

*Occurs* in those a short time pregnant; while uterus is yet in pelvis; before 18th week. Either *sudden* or *gradually*.

*Causes*: Large pelvis; projecting promontory of sacrum; most in thin women; moles; tumors; scirrhus; distended bladder; enlarged ovary. *Excited* by violent efforts, vomiting, defecation, falls, blows.

*Symptoms*: One of most prominent and distressing is retention of urine (hence in dysuria of early pregnancy always suspect retroversion); difficulty in defecation; both these are aggravated by efforts; weight and fulness of pelvis; bearing down; dragging pain in groins. If not relieved, violent pain, febrile symptoms, vomiting, peritonitis; fatal by irritation, inflammation, or sloughing. By examination vagina is directed forwards, posterior wall in folds, anterior stretched, a tumor stretching across pelvis. Sometimes Retroflexion, *i. e.* the os in situ, but fundus depressed, making uterus "retort shaped;" not in pregnancy.

*Diagnosis*: From *ascites*, by effect of catheterizing; from

*ovarian enlargement*, by suddenness and form of tumor; from *tumors*, by shape, position of cervix. Per rectum examination valuable.

*Treatment*: First, use catheter, male elastic preferable; if silver, direct backwards. Second, open bowels; Chloroform. Then begin with two fingers in vagina to pull down cervix; two in rectum to push up fundus. The supine position failing, place on hands and knees. Insert a bladder into rectum and inflate it. After reduction, keep patient on her side for some time; evacuate bladder frequently, and always stoop forwards in doing so. When the uterus rises above the promontory, this accident will not recur.

If uterus continues unreduced, inflammation is excited, adhesions form, and the attempts at restoration are hazardous.

If reduction proves to be impossible, it has been proposed to puncture membranes through os and procure abortion; or even through uterus.

Gastrotomy proposed as a last resort.

**ANTEVERSION.**—Fundus at symphysis; cervix in sacrum.

Is rarer and less serious than retroversion.

*Causes*: Empty bladder, relaxed abdomen, and some suddenly applied force; fæcal accumulations; chronic metritis; fibrous tumors; fall; diarrhœa.

*Symptoms*: Retention of urine rare; constipation occasional; weight; pain. Examination detects position of fundus and cervix.

*Diagnosis*: From Stone by sound; from Retroversion, tumors, and ovarian enlargement, by vaginal examination.

*Treatment*: If slight, relieves itself. Hook down cervix and elevate fundus.

Retroflexion and Anteflexion rarely concern the pregnant state.

**ANTERIOR OBLIQUITY OF UTERUS.**—"Pendulous belly" is of consequence in labor.

**Influence of Gestation on Disease.**—Two aspects.—*Are pregnant women more or less susceptible of epidemic dis-*

*eases? Does pregnancy aggravate, accelerate, or retard existing disease?*

Pregnant women are not generally so subject to *epidemic diseases*, but sometimes are more so, and then the proportionate mortality is greater.

*On existing disease.*—On *acute* diseases is unfavorable, for 1st. The vascular system is additionally excited. 2nd. The foetus is liable to be affected, and then abortion occurs under most unfavorable circumstances. 3rd. The treatment required to subdue inflammation is liable to produce abortion.

Hence, in *acute* diseases, *treatment* must be moderate but decided. Venesection should be used decidedly, but not repeatedly. Emetics are hazardous. Purgatives of a drastic character should be avoided.

On *chronic*, is not so prejudicial. Phthysical women conceive readily, and do not abort proportionably. Phthisis was supposed to be retarded by pregnancy. Grisolle, however, proves otherwise; the issue is precipitated; and Dubois' experience confirms this. The children of phthysical women are not imperfectly nourished. Phthysical women go to full term.

On *aneurism and cardiac disease*: Pregnancy is prejudicial; dyspnoea is increased during pregnancy, and in parturition there is danger.

*Regimen of Pregnancy*: Diet should always be light, especially in the first and last months; flatulent food should be avoided. Though no foolish concessions need be made to "longings," a woman's *dislikes* should be regarded.

*Atmosphere*: Low, damp, miasmatic situations to be avoided.

*Exercise* to be regularly taken daily in open air; walking best.

*Dress*: Avoid all tight dress, especially over breasts and around waist.

**Changes in the Ovum.**—The ovum progresses towards the uterus, under the ciliary influence, together with the muscular action of the tube, occupying seven or eight days at least in transitu. It acquires in the tube an albuminous envelope, which, uniting with the zona pellucida, forms the *Chorion*.

The ovum has *three envelopes*, CHORION, TUNICA MEDIA, AMNION; has also as accessories the UMBILICAL VESICLE, ALLANTOIS, PLACENTA, and CORD.

CHORION.—*Situation*: The most external covering. *Corresponds* to the membrane lining the egg-shell; *evident* soon after reaching uterus. Has *two surfaces*. Inner smooth. External covered with short cylindrical villi spongioses; these are solid, and frequently terminate in knobs. At about two months these villi begin to disappear from the general surface, and aggregate at the spot where the chorion comes in contact with the uterus; opposite to this spot the cord forms on the inside, and here is the future placental site. Divided into *two laminæ*, which are well seen over placenta; outer is *exochorion*, inner *endochorion*; more properly into an indefinite number.

*Structure*: Is said to be destitute of vessels, nerves, or lymphatics. Is developed thick, becomes thinner gradually, remaining thickest over placenta. Is separated from amnion by a gelatinous layer, which condenses into a thin membrane called *Tunica Media*. Between these a fluid sometimes exists in considerable quantities called "*false waters*;" successive discharges of this constitute "*Hydrorrhœa*."

*Abnormities*: Inflammation; vascularity; thickening; false membranes; "*vesicular mole*."

UMBILICAL VESICLE.—VESICULA ALBA.—*Situation*: In interspace between amnion and chorion. *Exists* only before third month. *Analogous* to yelk, but unlike it is not ultimately inclosed in abdomen. *Communicates* with intestinal tube, upon which it lies. *Shape*: Rounded or oval. *Size* of small pea. *Progress*: The small end becomes narrow and forms a canal; this gradually becomes impervious and threadlike at about two months; it shrinks, and remains flattened out along cord. *Contains* a yellowish, white fluid with granules and a few globules. *Composition*: An external vascular layer and an inner mucous. *Vessels*: Omphalo-mesenteric artery and vein. *Use*: To contain nutriment for embryo before placenta is formed.

ALLANTOIS, is a delicate membranous sac of an elongated form; *arising* from caudal extremity of embryo; lies between chorion and amnion. It is *observed* on 10th day, and grows rapidly; the base soon becomes applied to the chorion. As the mucous layer is closing to form the intestine, the sac becomes constricted into two portions; that within the body contains the urinary bladder: the portion between it and the umbilicus is the *Urachus*; the part beyond is the Allantois; through the urachus the urine in early embryonic life can pass; subsequently it becomes impervious.

AMNION.—*Amnios*, the envelope nearest the fœtus; “is *formed* by the inner lamina of the fold, of the cephalic and caudal hoods which constituted the external serous layer of the blastoderma around the embryo; is *continuous* with the margins of the ventral opening; its internal surface *exhales* a fluid in which the embryo floats.” *Structure*, thin and transparent, but firm and resists laceration; externally flocculent, internally smooth; as yet vessels and nerves not recognised. *Relation to fœtus*, early is close, later separated by liquor amnii. Is *continuous* with abdominal integument of fœtus. From outer coat of cord.

*Abnormities*.—Inflammation, thickening.

LIQUOR AMNII.—“The waters.” A fluid contained within, and secreted by, the amnion. *Quantity*: at first proportionately greater than fœtus, afterwards exceeded by it; at term about one pint, may be quarts. *Contains*, water, albumen, albuminate of soda, chloride of sodium, phosphate of lime, lime, extractive matter. *Source*: some say from mother, others fœtus, others both. *Color*: at first pellucid, becomes milky from intermixture with epithelium of fœtus, also viscid and unctuous; may be greenish, grey, yellowish, blackish. *Taste*: saltish. *Odor*: peculiar, disagreeable; sometimes is acrid. *Uses*: 1st, said to be for nutrition during early months. 2nd, preserves an equable temperature to fœtus. 3rd, diminishes shocks, allows motion to fœtus. 4th, prevents pressure on cord. 5th, acts as wedge during labor and lubricates passages. 6th, facilitates operations.

*Abnormities.*—Scanty, excessive, and delays labor; “dropsy of amnion.” Variety, in color, yellow, brown, red, green, black. From dead foetus offensive and sanguinolent.

**PLACENTA.**—(From *πλακως* broad.)—The organ of hematosis for the child; a spongy vascular mass; is a *flattened* body, about 6 to 8 inches in *diameter*;  $\frac{3}{4}$  inches to  $1\frac{1}{2}$  *thick* at centre; tapers to the edge. *Circumference*: 18 to 24 inches. *Shape*: oval or rounded, battledore. *Weight*: usually a pound or more. Is usually single, very rarely double for a single foetus.

*Two surfaces*: *Internal or Fœtal*, and *External or Uterine*, or *Maternal*. *Internal or Fœtal*: is smooth, shining; marked by radiations of vessels; covered by, 1st, chorion which is firmly attached, and sends processes between lobules. 2nd, by amnion nearest foetus, is loose. *Outer, Maternal*: is uniform but not smooth; is covered by decidua serotina; when this is separated are seen the lobules or cotyledons, between which the decidua serotina send processes; the vessels of one lobule do not communicate with those of another. *Situation*: any part of uterus, usually at fundus, mostly on left side, anteriorly or posteriorly; can be ascertained by stethoscope; verified by observing the part of membranes ruptured.

*Period of development.*—Does not begin till end of first month.

*Structure.*—The villi of the chorion that are in contact with the decidua increase, develop, interlace, and become inclosed by septa of the developed decidua which receive them; thus are constituted the foetal and maternal portions of the placenta which form in the human subject an indivisible mass, while in the bitch they are separable.

The two foetal arteries, emerging from the umbilicus, subdivide infinitely, and extend as capillaries into the villi, and here loop over and become venous capillaries, which converge, and form the umbilical vein. By examinations from without inwards, the uterus at the site of the placenta is found to consist of large cells or sinuses, which inter-communicate freely,

but do not pass beyond a membrane, the decidua serotina; into these cells, which are the uterine sinuses or veins, the blood is poured by the curling uterine arteries terminating in a capillary extremity. Into these cells from the placenta are intruded the capillary vessels of the fœtus covered by the decidua serotina, but no vascular inter-communication exists between the mother and the fœtus. At this part where the capillaries of the fœtus and the maternal vessels are in close contact, two sets of nucleated cells are said to exist, one belonging to the maternal portion of the placenta, the other to the foetal; between these two a space exists in which the materials secreted by the maternal cells are poured out and absorbed by the foetal cells.

*Abnormities.*—Malformations, displacement. May be seat of congestion into substance, on surfaces, between membranes. Inflammation (placentitis), which may attack one or more lobes, resulting in adhesion, pus, death of fœtus, and abortion. Hypertrophy of part or whole; atrophy; cartilaginous or calcareous deposits; fatty degeneration; vesicular mole.

**UMBILICAL CORD.**—“*The cord,*” *funis umbilicalis, navel-string.* Is the connecting medium between fœtus and placenta. Composed of two arteries, one vein, gelatine of Wharton, fine areolar tissue, a sheath of amnion externally; in embryonic life the duct of umbilical vesicle, urachus, omphalomesenteric vessels, and a portion of intestine (hence umbilical hernia). Visible, about end of first month; at first is thin and cylindrical, the vessels straight; between 3rd and 9th week appears like two vesicular swellings; after this the vessels run spirally, the arteries around the vein from left to right; swellings like knots exist on some cords, and sometimes complete knots are formed. Length, varies from 8 inches to 67 inches; average 18 inches. Some cases on record of 5 or even 2 inches.

The *vein* has no valves; its calibre equals that of both arteries. The *arteries* are branches of the foetal internal iliacs; doubt of existence of *lymphatics* and *nerves*. *Position,* usually

above head of child; *variations*, before head, around a limb, around neck (one case in 9 or 10), sometimes causes delay in labor, sometimes strangles child. Continues to pulsate sometimes 15 or 20 minutes after birth; even more; is weakest 3 or 4 inches from umbilicus.

*Abnormities*.—1st, vessels may divide before reaching placenta. 2nd, two veins and one artery; one of each; three arteries. 3rd, two cords and one child. 4th, knots which by being drawn during labor may stop circulation. 5th, vessels closed. 6th, absence of funis and umbilicus. 7th, insertion into some other part of foetus than umbilicus. 8th, may contain a portion of intestine. 9th, communication between two cords in twins. 10th, inserted into wrong part of decidua. 11th, twists impairing nutrition of foetus. 12th, varicose or hydatidic. 13th, coats rupture and hemorrhage. 14th, torn by falls.

In some cases a limb has been found almost, in some quite, amputated, by the encircling cord.

**The Embryo**.—The *ovum* exists before impregnation; then is called *embryo* till third month; *foetus*, as long as in utero; *child*, or infant, after birth.

Resuming the account from page 62, "The germinal membrane consisting of a layer of epithelium-like cells, incloses the yelk, lying in contact with the internal surface of the zona pellucida. Soon after its formation there is produced on its surface an opaque spot, the *germinal area*, and here the embryo is first developed. About this time the germinal membrane becomes divisible into two layers. The superior or external lies next to the zona pellucida, and is called the *serous layer*, from it are developed the organs of animal life, *e. g.* bones, muscles, and integument; the inferior or internal division in contact with the yelk itself is called the *mucous layer*, and forms the viscera. At first the area germinativa is rounded, but soon becomes oval, then pear-shaped, and during this change there appears the *area pellucida*, and between the mucous and serous layers, the *area vasculosa*, from which the blood-vessels are formed. The first trace of the embryo in the

centre of the area pellucida is a groove, the *nota primitiva*; formed in the serous layer, it is wider at the anterior or cephalic extremity, and tapers towards the other extremity. Coincidentally with the primitive groove are formed two oval masses of cells, one on each side of the groove, the *laminæ dorsales*; these rise into two prominent masses, turning their edges inwards over the groove. Their form changes from oval to pyriform, and finally guitar shape. The inner side of each of these masses adjoining the groove becomes pellucid and develops into nervous substance. The parts from the opposite sides unite and form a tube, which is the central canal of the cerebro-spinal axis; the nervous matter becomes the rudimental spinal cord, and these are the first parts developed. Three cerebral vesicles are formed before the primitive groove is closed over; the upper dilating into three pouches; the caudal extremity of the groove dilates into a lancet-shaped pouch corresponding to the cauda equina. The closure of the canal by the nervous layers begins at the middle, and at the same time the other parts of the *laminæ dorsales* unite and form the rudiments of the head and dorsal part of the body. Immediately beneath the groove is seen a linear mass of cells, the *chorda dorsalis*, around which the vertebral column is developed. The earliest indications of vertebræ are in square plates. While the dorsal *laminæ* are closing thick prolongations of the serous layer are given off from the *laminæ ventrales*; these bend downwards and inwards towards the cavity of the yolk, where they unite and form the anterior walls of the trunk. During these changes the area vasculosa forms, which may be considered the third or middle layer of the germinal membrane. At the circumference of the area isolated red spots are seen, which soon unite and form vessels; the margin of the vascular layer is at first circular, and bounded by vessels united in the *circulus venosus*. About the same time the heart is formed by the vascular layer bending down from the cephalic extremity so as to inclose the anterior part of the cavity of the body. The blood-vessels are developed from

nucleated cells, which send processes, unite, and thus produce a net-work. From this net-work in the area vasculosa, vessels extend into the area pellucida and join the incipient heart, which is at first a tube, prolonged inferiorly into two venous trunks, and superiorly into three or more aortic arches, which unite beneath the vertebral column and form the aorta. At first the aorta divides into two branches, the *omphalo-mesenteric*, which terminate in the *sinus terminalis*, and thence the blood is returned by the omphalo-mesenteric veins. Finally the sinus terminalis disappears and vessels cover the yelk-bag. Meanwhile the embryo becomes boat-shaped; the cephalic end bends down and forwards, the germinal membrane follows, and a fold is produced called *involucrum capitis*. Soon after another fold of the membrane is formed at the caudal extremity and presses from behind forwards. These two folds are connected by that part of the embryo which passes off from the structures of the axis on each side into the expanded germinal membrane. Thus the embryo is separated by a constriction anteriorly, posteriorly, and at sides, from the rest of the germinal membrane; the cavity is turned towards the yelk. The internal layer of the membrane forms the intestinal canal; the external layer subsequently develops into the walls of the neck, chest, and abdomen. Gradually the cephalic, caudal, and lateral edges rise and extend over the body from the abdomen to the back, meet, coalesce, and inclose the embryo in a sac—the *amnion*. The inner of the two layers forms the amniotic sac, the inner lines the internal surface of the chorion. The amnion is continuous with the skin at the umbilicus, which at first is wide, and gradually closes. The inner layer of the germinal membrane remains continuous with the intestinal canal; the constricted part is called the *omphalo-mesenteric duct*; the inner layer having at this period extended over the whole yelk has become the *umbilical vesicle*. By the constriction at the umbilicus the body of the embryo becomes mostly detached from the umbilical vesicle, though the cavity of the intestine still communicates with it through the duct.

The yolk sac contains nutriment for the embryo, but its function ceases early. On the walls of this sac the omphalo-mesenteric vessels ramify; an artery and two veins. While the vesicle is forming a pear-shaped mass of cells projects from the caudal extremity of the embryo and becomes the *allantois*, upon the walls of which the future umbilical arteries and vein develop. It grows rapidly, reaches the chorion, in the villi of which the umbilical vessels unite in the formation of the placenta. As the abdominal cavity closes, the allantois becomes constricted into two portions, the larger proceeding to the chorion, the less is retained in the abdomen, and becomes the *bladder*; the constricted part between the two is the *urachus*.

**DIMENSIONS OF EMBRYO.**—About the *third week*, it is oblong, swollen in the middle, obtuse at one extremity, and pointed at the other, somewhat curved forwards; color, greyish white; consistence, gelatinous; length, two to four lines; weight, one to two grains. The head appears as a small tubercle, separated from the body by a notch. No extremities seen. It is surrounded by the amnion. The abdominal cavity is open; the heart is beyond it, consisting of a single auricle and ventricle.

At *fifth week*: Head has greatly increased; eyes seen as two dark spots; superior extremities seen like two obtuse teats; length, two-thirds of an inch; weight, 15 grs. The funis can be seen; the inferior extremities seem rounded pimples; the divisions of the vertebræ can be seen. Heart, interventricular septum seen, but incomplete. Lungs seen as five or six lobules, in which bronchi terminate in cul-de-sacs. The Wolffian bodies, or temporary kidneys, constituted of an excretory canal, are seen along the vertebral column, extending from the lung to the pelvis. Alongside of this canal is seen another tube, which becomes either the oviduct or vas deferens.

Early in life are seen on the neck four fissures analogous to branchiæ, and to these the aorta sends four branches, but they become obliterated, and the vessels become the arch of the aorta and pulmonary artery. One branchial fissure is con-

verted into the external ear. The upper jaw is composed of two pieces, which close. The nostrils are separate; and if development is arrested, hare-lip follows.

*At seventh week*: Ossification seen in clavicle and lower jaw. The intestine still extends into the funis. The omphalo-mesenteric canal is almost obliterated. The anus remains closed. Kidneys and capsulæ renales begin to appear, and soon after the sexual organs. Bladder is seen as a tumor continuous with urachus. Length of embryo, one inch.

*At two months*: Forearm and hand seen, but not the arm; no fingers. Funis not spiral, four or five lines long, inserted low. Organs of generation seen, but difficult to discriminate from length of clitoris. Embryo  $1\frac{1}{2}$  to 2 inches long; weight, 3 to 6 drachms; head forms about one-third. Eyes seen, not covered by lids; nose an obtuse eminence; nostrils round and separate; mouth gaping. Epidermis distinguishable.

*At tenth week*: Length,  $1\frac{1}{2}$  to  $2\frac{1}{2}$  inches; weight 1 ounce to  $1\frac{1}{2}$ . Eyelids cover eyes. Lips develope. Parietes of thorax seen, and heart no longer visible. Fingers distinct, but at first are webbed. Funis becoming spiral, still contains intestine; not inserted so low.

*At end of third month*: Weight, 3 to 4 ounces; length, 5 to 7 inches. Eye-ball seen through lids, membrana pupillaris seen. Forehead and nose seen; lips well marked. Funis contains no intestine; spiral turns well seen. Nails appear. Integument rosy. Sex distinct.

*At fourth month*: Embryo becomes *fœtus*. Length, 6 to 8 inches; weight, 7 to 8 ounces. Fontanelles large, as also are sutures. Hair seen on head. Eyes, nostrils, and mouth are closed. Tongue and chin seen. Skin rosy, with down on it. Muscles capable of motion. Cord inserted higher.

*At five months*: Length, 8 to 10 inches; weight, 8 to 11 oz.

*At six months*: Length, 11 to  $12\frac{1}{2}$  inches; weight, 1 lb. Hair seen longer and thicker. Nails solid. Scrotum small, red, and empty.

*At seven months*: Length,  $12\frac{1}{2}$  to 14 inches. All parts more

developed. Membrana pupillaris disappears. Palpebræ partly open. Descent of testicles begins.

At *eight months* : Length, 16 to 18 inches ; weight, 4 to 5 lbs.

At *term* : Length, 19 to 23 inches ; weight, 6 lbs. to 7 (average) ; 10, 11, 12, occur, and even 16 alleged.

*Secretion of Bile* : Noticed at about five months, and continues.

*Meconium* : A dark green, semi-fluid substance, existing in the foetal intestines. At an early period the intestinal canal contains but little fluid ; about third month more abundant secretion occurs. Before fifth month the meconium exists in small intestine only, and is greenish brown ; after that it accumulates in large intestine and becomes darker. It is a mixture of bile with the products secreted by the mucous membrane ; said to be digested liquor amnii.

*Urine* : Never entirely fills bladder at birth ; sometimes not evacuated for several hours after birth.

CHARACTERISTICS OF FULL DEVELOPMENT.—Ability to cry ; moves limbs readily ; body clear red ; mouth, eyelids, nostrils, and ears open ; cranial bones firm, and edges of fontanelles not far apart ; hair, eye-brows, and nails developed ; discharge of meconium within a few hours after birth ; capability of sucking.

Of IMMATURITY.—Small in size ; motions feeble ; inability to suck ; skin intense red, with blue streaks ; head covered with down ; bones soft ; fontanelles wide ; nails not formed ; eyelids, nostrils, and mouth closed ; stools and urination imperfect.

*Vernix Caseosa* ; or Smegma : An unctuous yellowish white substance that covers foetus more or less completely ; in some almost absent ; most about head, axillæ, and groins.

Is the effete epidermis, with the secretion of sebaceous glands.

Is insoluble in water, alcohol, and oil, partially in potash.

*Position of child in utero* : Formerly supposed to be sitting, and that it revolved—not so. It is usually unaltered throughout gestation ; the arms are folded on chest, knees drawn up, feet crossed, back curved, head bent forwards. In first and second position, the back is partly forwards ; in third and

fourth, the chest is. But the determinate position is not assumed till about the sixth month, perhaps not till later.

**DIMENSIONS OF FŒTUS AT TERM**—*Length*, 18, 22, 24 inches. *Weight*, average 7 lbs.

**DIAMETERS OF FŒTAL HEAD.**—*Longitudinal* or *Antero-Posterior*, from forehead to occiput,  $4-4\frac{1}{2}$  inches; *Transverse* or *Bi-Parietal*, between parietal bosses,  $3\frac{1}{2}-4$ ; *Occipito-Mental* or *Oblique*, from posterior fontanelle to chin, 5; *Cervico-Bregmatic*, perpendicularly from highest part of sagittal suture,  $4-4\frac{1}{2}$ ; *Occipito-Bregmatic*, from anterior fontanelle to midway between occipital protuberance and foramen magnum,  $3\frac{3}{4}$ ; *Inter-Auricular*, 3; *Fronto-Mental* or *Facial*, from frontal boss to point of chin,  $3-3\frac{1}{2}$ .

**CIRCUMFERENCES OF HEAD.**—*Occipito-Frontal*; *Occipito-Mental*, the largest; *Sub-Occipito-Bregmatic*, runs through extremities of bi-parietal and occipito-bregmatic diameters. This and the preceding are the important ones. *Facial* or *Fronto-Mental*.

The diameters are not invariable. The head in difficult labors elongates in course of occipito-mental diameter, and flattens transversely. By instruments, the bi-parietal may be reduced one-third of an inch.

*Shoulders Transverse*,  $4\frac{3}{4}-5\frac{1}{2}$ . *Hips Transverse*, 4—5. *Thorax Antero.-Post.*  $4\frac{1}{2}$ .

COMPARATIVE VIEW OF PELVIC AND FŒTAL DIAMETERS.

	ANTERO-POSTERIOR.	TRANSVERSE.	OBLIQUE.	SACRO-COTTLOID.
Superior Strait,	4 inches.	$5\frac{1}{2}$ inches.	5 inches.	3 ins. 10 lines.
Inferior Strait,	4—5.	4	$4\frac{3}{4}$	$4\frac{1}{8}$
Excavation,	$4\frac{1}{2}-5\frac{1}{8}$ .	$4\frac{1}{2}$	$4\frac{1}{2}$	

FŒTAL HEAD.	
LONGITUDINAL DIAMETERS.	TRANSVERSE.
Occipito-Mental, 5 inches.	Bi Parietal, 3 inches.
Occipito-Frontal, $4-4\frac{1}{2}$ .	Bi-Temporal, $2\frac{1}{2}$ .
Sub-Occipito-Bregmatic, $3\frac{3}{4}$ .	Tracheo-Bregmatic, $3\frac{1}{2}-4$ .
	Fronto-Mental, $3\frac{1}{2}$ .

By comparing these diameters, it will be seen that, in order for the head to pass, it must present either the occipital or mental end of the long diameter.

Besides the diameters, the foetal skull possesses points of interest in the fontanelles and sutures.

**ANTERIOR OR GREATER FONTANELLE OR BREGMA.**—Formed at the junction of the sagittal, coronal, and frontal sutures; is quadrilateral with four angles, or lozenge-shaped; sometimes prolonged down the frontal bone.

**POSTERIOR OR OCCIPITAL FONTANELLE.**—Smaller than preceding; formed by union of the two limbs of the lambdoidal suture with the sagittal; is triangular with three angles; in rare cases has four, from non-union of occipital bone; recognize it by the acute angle of the lambdoidal suture.

The **SUTURES**, of interest, are *sagittal*, *frontal*, and *lambdoidal*, because they indicate the position of the head.

*Advantages of Sutures, &c.*: To allow edges to ride over during labor; again it is thought that compression of foetal head causes insensibility and prevents struggles.

The heads of boys are larger than those of girls,  $\frac{1}{8}$ th or  $\frac{1}{10}$ th; hence more males are still-born than females, 14 to 10. Labors with males are severer.

More males than females are born, 106—100. A country life seems to favor the production of males.

The relative age of the parents exerts an influence. Upon a mean number of births, the sex of the child is that of the parent whose age is in excess.

By Emerson in Philad., it was found that the maximum of conceptions occurred in winter and spring, especially the latter; the smallest number in summer and autumn, the minimum in summer. Abundance of food seems to favor male conceptions. Scarcity, female. The occurrence of epidemics induces female births.

**Sources of Foetal Nutrition.**—At first by *imbibition* through villi of chorion. The *umbilical vesicle* is thought to contribute. *Liquor amnii* most probable source. It is absorbed

by cutaneous surface, for a foetus has been found without placenta, funis, mouth, or anus. It is also swallowed, for hairs have been found in it and epithelium. The meconium is thought to be the result of digestion. Calves have been nourished for two weeks upon it. (How is nutrition effected in cases where liq. amnii is evacuated weeks before delivery?) *The placenta* is rather an organ of hematosis than of nutrition.

Other sources are said to be *milky juice of utricular glands, gelatine of cord, allantois.*

**Fœtal Circulation.**—The PECULIARITIES are the *ductus venosus, foramen ovale, ductus arteriosus, umbilical arteries, umbilical vein.*

**DUCTUS VENOSUS.**—Communicates between umbilical vein and inferior cava. Just at the point where the two fissures of the liver intersect, the umbilical vein divides; the posterior branch, called the ductus venosus, goes sometimes to the vena cava, sometimes, though rarely, to one of the hepatic veins, and then empties into the cava; the other branch unites with the vena porta, and ramifies through the liver, subsequently going to the cava.

**FORAMEN OVALE.**—*Foramen of Botal*: Exists in the interauricular septum.

**DUCTUS ARTERIOSUS.**—Communicates between pulmonary artery and aorta, entering aorta on its transverse arch.

**UMBILICAL ARTERIES.**—Two in number. Branches of internal iliac or hypogastric arteries; pass to sides of bladder, ascend through the umbilicus and along the cord.

**COURSE OF BLOOD.**—*Satatie's, or figure of eight theory.*—Blood enters by umbilical vein; part goes to vena cava through ductus venosus, part to liver and through portal circulation, thence through hepatic veins to cava, thence into right auricle, thence through foramen ovale into left auricle, thence into left ventricle, thence through aorta and its various branches, &c.; the major part returning by the umbilical arteries. The blood of the superior cava returns into right auricle, thence to right ventricle, thence to pulmonary artery, a little to the lungs, the

main stream through ductus arteriosus, where all the blood commingles.

*Winslow's theory.*—The blood passes into right auricle as in adult; thence a part through the right ventricle, pulmonary artery, and ductus arteriosus, into the aorta; another and larger part through foramen ovale into left auricle, thence to left ventricle, thence through aorta and its branches.

The foetal pulse is not synchronous with maternal; it beats 120 to 150.

*State of lungs before birth.*—Small, unaerated, dense and firm, small branches pass from pulmonary artery for their nutrition; function not yet required.

*Immediately upon respiration,* the current of blood is diverted to the lungs, the *ductus arteriosus* is useless, the *foramen ovale* is closed by the valve developed for that purpose, and the usual mode of circulation obtains.

The *umbilical arteries* close on the 2nd day, and in three weeks are converted into a cord.

The *umbilical vein* and *ductus venosus* are contracted on the 4th day, and closed on the 7th.

The *ductus arteriosus* and *foramen ovale* rarely persist beyond eight or nine days, but sometimes the foramen ovale is persistent through life; sometimes causes one form of the morbid state known as morbus cœruleus.

The ductus arteriosus and umbilical arteries become obliterated by hypertrophy of the walls; the ductus venosus and umbilical vein simply because no blood traverses them.

**Pathology of Fœtus.**—May be affected with numerous diseases in utero; either coincidently, or independently of mother. Instances known of Intermittent Fever, Variola, Rubeola, various cutaneous eruptions, Hydrocephalus, Pleurisy, Abscesses, Œdema, Tubercle, Peritonitis, Enteritis, Hypertrophy, Atrophy, Syphilis, Worms, Rickets, Caries, Necrosis, Pertussis.

**Death of Fœtus.**—A knowledge of it is frequently of importance, especially in reference to obstetric operations.

It is difficult to ascertain the fact.

*Signs.*—1. Cessation of motion. 2. Subsidence and flaccidity of abdomen. 3. Recession of umbilicus. 4. Loose feel of uterine tumor. 5. Sensations of rolling in abdomen, also weight and coldness. 6. Breasts becoming flaccid and milk suppressed. 7. Health deteriorated. 8. Appetite bad. 9. Countenance sunk, areola around eyes. 10. Fetid breath. 11. Rigors. 12. Loss of auscultatory phenomena.

Separately these signs are not reliable; a number conjoined makes death probable.

*Fallacies.*—*Motion* is frequently suspended without cause; woman's account not to be trusted. *Sense of coldness* no value. *Sense of rolling* may occur and yet fœtus alive; may proceed from loss of tone of abdominal muscles. *General health* deteriorated by other causes. *Breasts* seldom become flaccid after being tense without death.

A dead fœtus may be retained for months without these signs; or may be retained and motion fancied. *Auscultation* may not give information, for practical tact may be deficient, or sound inaudible.

*After rupture of membrane, liq. amnii* may be dark, thick, bloody, or even fetid, and child alive. *More certain signs are*—1. Emphysematous feel of scalp. 2. Peeling of cuticle. 3. Loose overlapping of bones. 4. A peculiar sharpness of edges of bones.

*In face presentations*, lips flabby, tongue flaccid and motionless.

*In breech*, sphincter ani readily admits finger; discharge of meconium in no presentation a sign of death.

*In arm presentation* pulse may cease, arm be discolored, and yet alive; but if cuticle peel, child is dead.

*In funis presentations*, absence of pulsation not always a sign of death.

**Superfœtation.**—*Def.* A second impregnation while the uterus contains an embryo or fœtus.

Much doubt as to its possibility.

*Cases giving rise to this opinion* are—1. A full grown foetus and a blighted ovum delivered together. 2. A twin birth, one fully developed, the other immature. 3. Twins of different colors. 4. Cases in which a mature child is born and some months after it a second mature child; instances of 4½ months interval, 3 months.

First and second classes *prove* nothing, only a blighting of one ovum in a twin conception, or else a difference of development; in such cases the living child is usually vigorous. Third class requires a speedy succession of coitions. Fourth class—one case explained by existence of double uterus.

*Obstacles to second impregnation* are decidua, plug of mucus in cervix uteri.

**Extra Uterine Pregnancy.**—Three forms said to exist.

*Ovarian, Tubal, and Interstitial*; some recognise a fourth, *Ventral*.

*Ovarian*; doubted by some.

*Tubal* most common form, for impregnation occurs in the tube.

*Interstitial* very rare.

*Causes* conjectural only.

**SYMPTOMS.**—Sometimes resemble disease of uterus or ovaries. Usually much suffering from an early period. Not easily made out before 3d month. Certain signs of pregnancy may be present, but irregular; thus, menstruation may be regular or suppressed, absent, profuse; the mammary changes occur; nausea may occur; foetal motion early perceived; abdomen increases on one side and pain localized in the tumor; sense of weight and uneasiness in kidneys and pelvis; *per vaginam* os is high or depressed, but not dilated; cervix undeveloped; a constant circumscribed pain in groin.

When cyst ruptures (which is ordinary termination) great uneasiness or pain suddenly occurs, languor, debility, extreme exhaustion, sometimes bloody discharge from vagina, dysuria, tenesmus, irritable stomach, collapse from loss of blood.

These symptoms more sudden in tubal; interstitial also rapidly; the crisis accelerated by violent motions, shocks, blows, coughing, vomiting.

*Termination.*—Commonly terminates before fifth month; sudden by shock, hemorrhage, inflammation; or survive and recover a measure of health; may even conceive again, instances one to seven times.

Fœtus may be retained from 3 months to 56 years. Montgomery, an instance, *woman lived till 94, had fœtus* in abdomen for 46 years, and during this time bore two children. A pseudo-bony cyst may form; abscess may form and fœtus be evacuated piecemeal through abdominal integuments, groin, umbilicus, epigastrium, colon, rectum, vagina, or bladder, in which last sometimes fragments have formed the nucleus of a calculus.

Fœtus *may live* till 9 months, rarely, however, beyond 3rd or 4th. The development proceeds as usual, and even a quasi decidua is formed. At term a pseudo labor may occur.

TREATMENT.—First *indication* is to retard rupture of cyst; avoid exertion, uterine irritation and pressure; if uneasiness occurs, VS. leeches, and *opium*.

If *rupture occur*, the indication will be to moderate effusion and to support strength. Hard bed, head low, binder to abdomen, ice, acet. plumb., broths, stimulants.

If inflammation set in, use *opium* as for peritonitis, VS., cal. et *opium*, blisters.

After rupture, fœtus dies; keep quiet, bowels open, leeches and anodynes for renewed pain.

If abscess forms, caution is requisite in opening, lest hemorrhage ensue.

Gastrotoomy has saved a few cases.

**Abortion.**—*Def.* Expulsion of the embryo before it is viable. Fœtus is viable at 7 months or 6½ months. Every fœtus that moves at birth is not viable—instances of children reared, born at beginning of 6th month, at 6 months and 10 days.

A case by Dr. Barrows of Hartford in Amer. Jour. of Med. Sciences for April, 1853, gives an example of a female child, born before the completion of the fifth month, 10 inches long, weight 14 ounces; evinced respiration, pulse, voluntary motion, and utterance of sound for forty-five minutes. The particulars are given with minute fidelity.

*Premature delivery* is applied to expulsion after viability. *Miscarriage* is the popular term for all immature expulsion.

*Danger*, popularly lightly esteemed. Ingleby records 4 fatal cases from hemorrhage, Denman 2, Whitehead 3.

FREQUENCY, 1 in  $78\frac{1}{2}$ ; is the most frequent form in which hemorrhage presents. Few women pass through menstrual life without aborting, 8 only in 64. Thought that first pregnancies most liable; doubtful, if the cases produced designedly are thrown out of consideration. Male conceptions supposed most liable, but it is difficult to determine sex.

DIVISIONS.—*Spontaneous*, arising without obvious cause.

*Accidental*, produced by injury, &c. *Designed*.

CLASS OF SOCIETY.—Most frequent in extremes.

KIND OF WOMEN.—Plethoric, nervous and irritable, indolent, dissipated. Constitutionally diseased, *ex. gr.* syphilis. Organic uterine disease. Polypus; tumors, especially of os. Adhesions; displacements; acute diseases, as variola, scarlatina, rubeola, typhus.

*Occurs at.*—About third month most common, coincidently with menstrual period; many women can recognise the catamenial period by an imperfect nismus for first three months, some throughout gestation. Reason, irritation of ovarian nerves causes a nismus, afflux of blood, separation of recently formed placenta, hemorrhage, and abortion.

CAUSES, PREDISPOSING AND EXCITING; or better, OVULINE  
—UTERINE—CONSTITUTIONAL—ACCIDENTAL.

OVULINE, very common. Still-born in Europe 1 in 22 births—of 935 cases analysed, 71 occurred or  $12\frac{1}{6}$  per cent. nearly. Hydrocephalus; pleuritis; peritonitis; variola even without affecting mother. Syphilis; Convulsions and Intermittent

said to occur in utero; plurality of ova; placentitis; placental congestion; fatty placenta; rupture of umbilical vein—diseases of chorion, of cord.

Easy to understand why death of fœtus gives rise to expulsion, a foreign body excites contraction. But considerable time may elapse between death and expulsion.

UTERINE CAUSES.—One said to be irritability of uterine fibre (a phrase to conceal ignorance). Retroversion; anteversion; adhesions; fibrous tumors; polypus; cancer; cauliflower excrescence; corroding ulcer; placenta prævia; ulcerations of cervix in various forms; endo-uteritis; dysmenorrhœa.

CONSTITUTIONAL CAUSES.—Syphilis—Tuberculous disease (phthysical women are peculiarly susceptible of impregnation), variola and other acute diseases. Uræmia said to be; miasmatic residence; Scorbutic diathesis. Tight-lacing; and analogously, abdominal tumors. Irritation of dens sapientiæ and extraction; protracted lactation; women advanced in life with first pregnancy said often to be the subjects of abortion. Cystitis; diarrhœa; dysentery; ascarides; constipation; piles; strangury.

MECHANICAL CAUSES.—Coitus; plugging vagina for hemorrhage; puncturing membranes; violent exercise, as horseback, jolting over rough roads; carrying heavy weights; blows; falls; sudden efforts; vomiting; dancing. The strong compression in convulsions, hysteria, or epilepsy; operations.

CERTAIN MEDICINES.—Emetics; emmenagogues, savine, ergot, tansy; mercury; bleeding; opium.

EMOTIONAL CAUSES.—Terror, &c.

Sometimes abortion seems epidemic.

ASSIGNED CAUSES.—Odors; sights; laughter; crying; itching; sneezing; hot rooms; hot baths; pediluvia.

Of these some are trivial, some mere coincidences. Some apparently likely to cause abortion fail in this issue. Strong examples by Lachapelle, Mauriceau, Davis, Whitehead, Meigs, and Lever.

The truth is, if the ovum is healthy, abortion is difficult to produce; if diseased, the ovum is shed, as decayed fruit falls.

The "*habit of aborting*" often assigned—a loose phrase—women will repeat these expulsions to a very considerable number; 10—20—22 repetitions are recorded.

[Tyler Smith's arrangement of causes. ECCENTRIC, CENTRIC, and EMOTIONAL.

ECCENTRIC.—1st. Irritation of mammary nerves—prolonged lactation.

2nd. Irritation of trifacial nerves by dens sapientiæ and extraction.

3rd. Irritation of vesical nerves by calculus.

4th. Irritation of ovarian nerves, seen at menstrual period.

5th. Irritation of rectal nerves, piles, ascarides, purgatives, enemata, diarrhœa, dysentery, constipation.

6th. Irritation of vaginal nerves, coitus, tampon.

7th. Irritation of uterine nerves, separation of membranes, disease of placenta, puncture of membranes, horse or carriage exercise, coitus, tampon, vascular irritation and inflammation, ulceration of os, uterine displacements, placenta prævia, tumors, injuries.

CENTRIC, are exanthemata, inflammatory condition of blood, as in fevers, syphilis, carbonic acid, albuminuria, savine, ergot.

EMOTIONAL. Terror, joy, &c.]

It is important to remember that usually several causes act together, and also that some space of time may elapse between the application of the cause and the production of the effect.

The application of some cause coinciding with a menstrual period is more likely to produce.

SYMPTOMS are modified, 1st, according to period of gestation; 2nd, whether preceded or not by death of fœtus; 3rd, whether caused by violence. In proportion as near term the ordinary phenomena of labor will present, serious or otherwise, according to complications.

In *early months*, especially if preceded by death of fœtus, but little noticed; it may seem merely a deferred catamenial

period, more pain and a greater discharge; such cases often seen in dysmenorrhœic women.

If pregnancy be somewhat advanced, foetal death will be discovered by Signs (as at page 101): death may occur and foetus be retained till term.

*From violence*, either accidental or designed; symptoms are more severe, legal medicine records many fatal cases. Sometimes a sharp pain occurs at the time of an accident, passes away, and pains are renewed after some days. Occasionally an injury produces an immediate effect, *ex. gr.* a fall, and a large issue of blood; this occurs in early abortions.

ORDINARY HISTORY is, some cause specified; and then pain in back, followed by hemorrhage, increase of pain extending into hypogastrium, expulsion. To these are often added rigors, lassitude, hot skin, accelerated pulse, thirst, palpitation, sense of weight in pelvis, loins, and about anus, vesical tenesmus.

The *pains of abortion* are often very severe, in fact are said at times to be more intolerable than those of labor.

*Vaginal examination* detects hemorrhage more or less profuse, clots, dilatation of cervix and os, protrusion of membranes, expulsion of ovum entire, rupture of membranes and escape of liquor amnii, expulsion of embryo or foetus, subsequently of secundines.

PROGNOSIS.—By far the majority of abortions do not jeopardize life immediately. A few cases are fatal at once. More secondarily.

The question of most immediate interest is, will expulsion occur. Consider, *1st*, the amount of hemorrhage, and *see* personally the clothes. *2nd*, if bleeding is continuing; (and to decide it, place a fresh napkin to vulva, having previously placed dry clothes beneath the hips.) If the hemorrhage is profuse, abortion will usually occur; but it may be very great and repeated, and yet pregnancy continue. It has been thought that if the bleeding commences at fundus, abortion is more likely, for more extensive separation occurs during the passage down of the blood; if near os, it readily escapes and uterus is

not distended. *If pains are regular, if they dilate os, if membranes protrude, abortion almost inevitable. If membranes ruptured, is unavoidable.*

As regards the *fatality*, hemorrhage is the most serious circumstance; phlebitis occasionally follows.

Occurring during acute disease, abortion adds to the gravity of prognosis. Few deliveries during variola recover. Same may be said also of scarlatina, rubeola, erysipelas, visceral inflammation. In typhus I have seen several instances of safe issue; in one case of acute rheumatism, abortion was followed by death. "When acute diseases are not intense enough to produce abortion, the patients are not in a worse condition for treatment than women who are not pregnant; but when abortion takes place before the disease is cured it is generally fatal." "Abortion or premature labor following acute disease is rather a measure of the violence of that disease than an active cause of the fatal result which may ensue."

*Accidental* is more serious than spontaneous. *Produced abortion* is dangerous, from hemorrhage, metritis, peritonitis. Difference of opinion as to comparative danger of early and later months.

DIAGNOSIS.—Principally from dysmenorrhœa. *Resembles* it in seat of pain, in effects, both are intermittent, and symptoms cease on expulsion. Pains of dysmenorrhœa are said to precede hemorrhage and mitigate in progress. Shape of clot said to be triangular in dys.; not so in abortion, but pressure alters shape. If a clot can be felt in os uteri, it may be confounded with membranes, but a clot does not become tense with pains. Attend to *history*, whether previous dys.; also to causes likely to produce abortion. Finally if regular previously, and then a cessation, if pains continued and severe, abortion is in progress. Later in pregnancy other signs will throw light.

Examine *all* substances expelled.

MODE OF EXPULSION.—Sometimes in early months entire; more usually separately; first liq. amnii, embryo, placenta; often a fleshy mass with membrane attached to edge forming

a cavity; embryo sometimes dissolved, leaving a cavity; placenta may pass in lochia, sometimes requiring a long time, keeping up hemorrhage, and causing mistakes for polypus uteri.

“Fleshy moles” occur from effusion of blood into placenta, and becoming organized. Moles are always a product of conception.

SEQUELÆ.—Irritative fever, Phlebitis, Peritonitis, Metritis, Ulceration of cervix, Organic disease of uterus, Anemia, Menorrhagia, Dysmenorrhœa, Phthisis, Sterility.

TREATMENT.—*Preventive*, adapted to threatened or commenced. *That for hemorrhage. That for sequelæ.*

PREVENTIVE: For *ovuline causes*, for intra-uterine diseases, no remedial means avail. For *uterine causes*, as malpositions, restoration must be effected; uterine sound inadmissible. For *tumors*, no remedy. For *ulceration of cervix*, resort to speculum and nit. argent., but avoid injections; rest; salines. For *plethora*, regulate diet and exercise; a small venesection especially at menstrual period; avoid coitus. For *anemic state*, use tonic regimen, mineral and vegetable tonics. For *constitutional causes*, syphilis alone is remediable; give mercury. Remove from *miasmatic* district. Avoid all *emotional* causes and all those called *accidental*. Stop *lactation*. For *vesical and rectal irritation*, use anodyne enemata or suppositories. For *piles*, use laxatives, enemata, diet, and avoid operations. *Constipation*, diet, enemata, laxatives; avoid retention of urine; avoid *coitus* strictly in habitual, even perhaps for a year; avoid *active medicines* and bleeding; avoid opium and mercury, unless for syphilis.

In regard to rest, opinions differ, but at menstrual period, a recumbent position should be maintained if abortion is threatened; long walks, severe exertion, and fatigue obviously should be avoided.

IN THREATENED ABORTION: If os is dilated and yields to pain, membranes protrude, and there is much hemorrhage, expulsion will seldom be prevented; but if os is closed, and

any chance left, give embryo the benefit of the doubt. Indications are, 1st, to allay pain, by stopping uterine contractions. 2nd, to control hemorrhage, by preventing farther detachment of ovum. Place patient on a mattress, lightly covered; but a single attendant; ensure perfect tranquillity; diet, cold arrow-root, jellies, gruel, crackers; drinks, lemonade, cream of tartar, barley water, iced water. Use blood-letting if strength permits, and opiates freely; opiates by mouth or rectum; excellent is starch and laudanum enema; opiate suppository; acet. plumb. et opii grs. v to gr.  $\frac{1}{2}$  varying the proportions every two hours pro re natâ; Tinc. Cannabis Indica, 5 to 10 drops; nauseants, ant. tart. or ipecac. Use opiates freely, and when pains have ceased, open bowels by enema or ol. ricini; not too early.

If *expulsion is inevitable*, an active purge aided by an enema of turpentine will often accomplish it.

For *the hemorrhage*, if not severe, cold, by cloths or ice to hypogastrium and pubes, or ice in vagina, or cold enema, aided by rest, &c., will often suffice. These failing, pass a piece of alum close against os uteri; if bleeding continues, add a vaginal tampon, of pieces of muslin, tow, silk-kerchief, sponge, or compressed sponge in cervix. A tampon must not be left too long, twenty-four hours usually sufficient; sometimes causes retention of urine; requires catheter. Ergot in tincture or infusion.

Sometimes vomiting will produce expulsion and stop hemorrhage.

In very early abortions the hemorrhage seldom requires interference; as pregnancy advances and vessels are larger, of course more discharge occurs; later still, however, though bleeding be severe when abortion takes place, there is less chance of flooding. Nevertheless even before four months, much blood may be lost. Ingleby says six quarts in one case. With dead fetuses there is usually but little hemorrhage. If pregnancy be advanced to six months, and bleeding is profuse, rupture membranes; and if urgent, deliver manually. Rupture of membranes *in early abortions* is at no time to be practised.

If a part of embryo is expelled and placenta remains, there may occur a draining hemorrhage lasting for weeks, or phlebitis, &c. Such cases may extend over weeks or even months. Examine os carefully with finger, and if ovum is partly within and partly without os, detach and remove it. If hemorrhage is threatening, press firmly with left hand over fundus uteri, and pass one or more fingers into vagina, and with one finger detach and remove. Instruments used for this purpose, such as Dewees' wire-crotchet, Bond placental forceps. Ergot rarely succeeds. Try turpentine enema. If cannot remove, use vaginal injections of tepid water, and if offensive odor, a dilute solution of chloride of soda.

In the exhaustion from loss of blood the diet must be improved and even stimulant allowed, as hereafter in uterine hemorrhage. A bandage and rest are proper, as after ordinary labor. Milk is secreted, and lochia discharged, as usual, if the gestation has advanced.

**Parturition** ; the function by which the product of conception is expelled from the mother.

*Occurs*, at 9 calendar months, and one week ; 10 lunar months ; 40 weeks ; 280 days ; (Variations, see Duration of Pregnancy.)

*To calculate* : Naegele says, note the last day of menstruation, reckon back three months, and add 7 days, this fixes the day—thus, menstruated June 10, 3 months backwards March 10th, add 7 days March 17th.

Meigs computes 3 months backwards from last day of catamenia.

**DETERMINING CAUSE OF LABOR**, not known—various theories. Most popular the coincidence of labor with 10th menstrual period—but some women menstruate every 3 weeks, others 6.

**EFFICIENT CAUSE**, in first stage, uterus—in second stage abdominal muscles aid.

*Evidences of uterine agency* : Strong contractions in version

—fœtus expelled in case of paralysis, of prolapsus, after death of mother, during syncope, asphyxia, convulsions.

“Labor may occur in cerebral paralysis where volition only is withdrawn—in coma, where volition and emotion are both withdrawn—in paraplegia, where volition, emotion, and respiratory reflex action are cut off. Sometimes, though rarely, where nothing but peristaltic action only remains.”

*Evidence of action of abdominal muscles*—affected by volition. Baudelocque’s case.

Anger, fear, surprise, will suspend labor.

**Mechanism of Labor.**—Presentations of the vertex in different positions are by far the most common. According to Merriman 1664 in 1800; Bland 1792 in 1897; Boivin 19,730 in 20,357; Lachapelle 14,677 in 15,652, and 20,698 in 22,243; Naegele 1210 in 1296; Lovati 61 in 67; Velpeau 392 in 400; Smellie 920 in 1000; Siebold 132 in 137; Kluge 257 in 298; Mazzini 439 in 452; Ramoux 266 in 275; Paccord 49 in 53; P. Dubois 10,262 in 10,742; Riecke 214,134 in 219,258.

*Of the vertex*, there are two fundamental presentations—the occiput either *anterior* or *posterior* to the transverse diameter, hence divisions OCCIPITO-ANTERIOR and OCCIPITO-POSTERIOR. Of these the Occip.-Anter. are much the most frequent.

Each of these presentations admits of three *positions*, or more simply two. They are, 1st, LEFT OCCIPITO-ANTERIOR; 2nd, RIGHT OCCIPITO-ANTERIOR, and 3rd, OCCIPITO-PUBIC; 4th, LEFT OCCIPITO-POSTERIOR; 5th, RIGHT OCCIPITO-POSTERIOR; 6th, OCCIPITO-SACRAL. Of these the 3rd and 6th occur so rarely as to be believed impossible by some. Other designations are given as, 1st, LEFT OCCIPITO-COTYLOID or ACETABULAR; 4th, is LEFT FRONTO-ACETABULAR; 6th, is FRONTO-PUBIC.

OCCIPITO-ANTERIOR POSITION, frequency supposed to depend on the weight of occiput inclining to the most dependent part of uterus, which is anterior by reason of the inclination of pelvis. Includes three varieties, 1st, OCCIPITO-ANTERIOR POSI-

TION. *Frequency* 69 per cent. (Naegele), supposed to depend on rectum pressing the face towards right side. *Position of child* is back towards front and left of mother's abdomen—foetal abdomen towards back and right—occiput behind ilio-pectineal eminence—anterior-fontanelle towards right sacro-iliac symphysis. Sagittal suture is in right oblique diameter, trace it forwards and find posterior fontanelle; trace backwards towards anterior fontanelle. On examination the finger touches the right parietal boss.

*To be expelled, the head requires three motions. 1st, FLEXION, 2nd, ROTATION, 3rd, EXTENSION. After expulsion, it executes another, 4th, RESTITUTION.*

*FLEXION.*—The child's chin normally is close to the chest, but uterine contraction acting on the foetus and resisted by the cervix, causes increased flexion; by this the occiput is depressed, the occipito-bregmatic diameter becomes parallel to one oblique diameter, and the bi-parietal to the other, the occipito-mental diameter parallel to axis of pelvic circle, the occipito-bregmatic circumference corresponds to plane of superior strait. Urged by contraction, the head now descends till checked by sciatic ligaments and anterior inclined plane, and a second motion is given, *ROTATION*. The occiput slides on the left anterior plane of ischium in order to place itself behind the pubes—the forehead slides on right plane towards hollow of sacrum. This motion is not completed till head emerges from bones. During it the sacral plexuses are compressed and cramps occur.

*EXTENSION.*—Hitherto flexion has increased, but now the chin quits the chest, and the head is slowly extended backwards; the object is that occipito-mental diameter may be parallel with axis of outlet, while the rest of body still follows central line of superior strait. The bi-parietal diameter corresponds to bis-ischiatric—occipito-bregmatic to coccy-pubal. The maximum diameters correspond. At this time straining and tenesmus occur—the perineum dilates. The transverse diameter of the shoulders still occupies the oblique diameter. The head now distends vulva, and slides along coccygeal and perineal plane,

labia majora are effaced, nymphæ pressed up, skin of thighs sometimes yields, parietal bosses pass the bis-ischiatic diameter, and head is soon expelled. Meanwhile occiput rests under arch of pubes, and the rest of head emerges in following order; sagittal suture, parietal bosses, anterior fontanelle, os frontis, orbits, mouth, chin.

RESTITUTION.—Free now from any force, the head resumes its relation to trunk, and face looks towards right thigh of mother. Shoulders follow head upon the planes—the great diameter corresponding to oblique of pelvis, the right rotates towards pubes and remains as a pivot, the trunk bends, and left shoulder emerges first.

The rest of foetus usually follows immediately.

2nd. RIGHT OCCIPITO-ANTERIOR.—*Frequency.* Naegele says .07 as an original position, though more cases terminate in this position.

Posterior fontanelle lies to right ilio-pectineal eminence. Occipito-bregmatic diameter in oblique diameter from right to left.

*Flexion* is as before. *Rotation* from right to left. *Extension* as before. *Restitution* towards left thigh. Shoulders the counterpart of preceding. Thought not to be so favorable as first.

3rd. OCCIPITO-PUBIC.—*Rarity.* Boivin 6 in 20.517. Dewees 3 cases. Bi-parietal diameter is in transverse. Occipito-bregmatic in the antero-posterior. Rotation is not necessary. Restitution doubtful which way.

OCCIPITO-POSTERIOR POSITIONS.—*Frequency.* Naegele 29 per cent. Are less favorable than Occipito-Anterior. *Reasons, 1st.* Occiput must pass over an extent of seven inches instead of two. *2nd.* Head is driven continually against the posterior wall of the pelvis at a right angle. *3rd.* Vertex cannot present at vulva until a considerable portion of chest is driven into pelvis, hence the antero-posterior diameter corresponds to a line drawn from anterior fontanelle to posterior part of thorax. *4th.* Part of the expulsive force is lost by the great

curving of the spine. 5th. Forehead is too broad for pubic arch, and hence coccy-pubal diameter loses half an inch.

*Causes* : Unknown. Occurs in succession to same woman.

*Varieties* : Three. *Left Occipito-Posterior*. *Right Occipito-Posterior*. *Occipito-Sacral*, or *Fronto-Pubic*.

*Right* 4th. **LEFT OCCIPITO-POSTERIOR.**—The most common. Most favorable. Back of fœtus is backwards and to right. Abdomen to front and left, left side to front inclining to right.

Occipito-mental diameter to one oblique; bi-parietal to other; anterior fontanelle behind ilio-pectineal eminence.

So far as favorable as first position. But after os is dilated, occiput passes rapidly along sacrum to perineum; now instead of extending, head must flex more; chest enters pelvis from right to left, and force lost by flexion of head. *Rotation* occurs. Forehead does not fit sub-pubic arch. Occiput presses strongly on posterior commissure of vulva. Posterior fontanelle first appears, then sagittal suture, ant. fontanelle, parietal bosses, frontal bosses, face. *Restitution*, face to left thigh. Left shoulder under pubic arch; right first delivered.

*Left* 5th. **RIGHT OCCIPITO-POSTERIOR.**—Rarity. .03 per cent. Back of fœtus towards left and backwards; right shoulder towards left and forwards. Bi-parietal diameter is in left anterior oblique. Occipito-bregmatic in right oblique diameter. *Rotation*, reverse of preceding. *Restitution*, also reverse. This position may be, and Naegele thinks generally is, converted into 2nd, or right occipito-anterior position.

6th. **OCCIPITO-SACRAL.**—Very rare.

No rotation. *Restitution* uncertain.

The presentations of the vertex may then be practically considered as only four; the 3rd and 6th from their rarity may be omitted. Of the 3rd I have seen but a single instance.

**Classification of Labors.**—First element is *part presenting*.

**PRESENTATION.**—That part of the fœtus on which the finger impinges while it is still at the brim. May have several positions.

**POSITION.**—The relation of presenting part to acetabulum and sacro-iliac symphysis.

Errors in diagnosis rectified by the position of *caput succedaneum*; *i. e.* the swelling of scalp where not covered by uterus.

*Fœtus may present* by **HEAD**. **BREECH**, including hips and loins. **INFERIOR EXTREMITIES**, including knees and feet. **SUPERIOR EXTREMITIES**, including shoulder, elbow, hand. Besides these are *presentations* of various parts of **TRUNK**; of **TWO OR MORE PARTS**; of **FUNIS**; of **PLACENTA**.

*Diagnosis of HEAD.*—Presentation determined by hardness; sutures; fontanelles. Easy at first, difficult after long delay.

*Fallacies*: Intercostal spaces mistaken for sutures.

Of **BREECH**.—By softness; cleft between nates; anus; coccyx; genitals. Difficult when swollen.

*Fallacies*: Cleft mistaken for sagittal suture; coccyx for occipital angle; ischia for parietal bosses; female genitals for mouth.

Of **KNEE**.—By roundness and hardness.

*Fallacies*: Mistaken for elbows; but never have *two* elbows.

Of **FOOT**.—By length; at right angles with leg; equal length of toes; narrow heel.

*Fallacies*: Mistaken for elbow.

Of **ELBOW**.—By sharp olecranon.

Of **HAND**.—Short; unequal fingers; thumb opposite.

*Fallacies*: From foot.

Of **FACE**.—By eyes; eyelids; nose and lips; tongue; chin; ears.

*Fallacies*: Chin mistaken for heel, knee, or elbow; mouth for anus; nose for genitals; cheeks for tubera ischii.

Labor is *divided* into **THREE STAGES**.

**FIRST STAGE** extends from commencement of dilatation of os to its full dilatation.

**SECOND STAGE** terminates with birth of child.

**THIRD STAGE** ends with expulsion of placenta.

Is also divided into **Regular, Irregular, and Complex**.

**Regular Labor.**—Head presents, and no circumstances occur essentially modifying or requiring treatment.

**Irregular.**—When some other part than head presents, but otherwise as before.

**Complex.**—When some complication exists requiring treatment.

**EASY.**—When no more than ordinary difficulty occurs.

**DIFFICULT.**—When more than ordinary difficulty occurs.

**Regular Labor** includes EASY and DIFFICULT.

**Irregular Labor** includes BREECH; KNEES; FEET; SHOULDER or ARM; TRUNK; TWO or MORE PARTS.

**Complex Labor** includes CONVULSIONS; HEMORRHAGE; PLACENTA PRÆVIA; RETAINED PLACENTA; PROLAPSUS OF CORD; PLURALITY; RUPTURE OF UTERUS; INVERSION OF UTERUS.

**Regular Labor, or Natural.**—*Head presents and no complication exists requiring interference; terminated within 24 hours with safety to mother and child; secundines expelled normally.* Authors differ in defining. *Frequency:* Smellie says 900 in 1000; Bland, 1792 in 1897; Clark, 9748 in 10,199; Merriman, 2607 in 2735; Lever, 4266 in 4666; Assalini, 205 in 269.

Ushered in by certain PREMONITORY SYMPTOMS; PRODRAMATA. 1st. SUBSIDENCE OF ABDOMEN. During last fortnight of gestation fundus sinks from epigastrium and tilts forward.

*Caused* by partial absorption of liq. amnii; relaxation of uterine tissue, also of ligaments and vagina. *Effects:* Woman feels better; moves more readily; relieves dyspnœa, digestion, vomiting. Sometimes said to be quite sudden, as in one night; usually gradual. Is an *evidence* of roomy pelvis.

2nd. MICTURITION. Caused by pressure diminishing capacity of bladder; also sympathetic irritation. Is not amenable to treatment. (Dysuria relieved by urinating while upon hands and knees.)

3rd. GRIPING, TENESMUS, DIARRHŒA, all result from sympa-

thy; but diarrhoea not inconsistent with fecal accumulation. As a sign of approaching delivery it is uncertain. Relieved by demulcent enemata with opiates.

4th. PAINLESS UTERINE OR FIBRILLAR CONTRACTIONS. *Occur* from one to three weeks before delivery; are sooner manifest in primiparæ than in multiparæ. *Sensation* of squeezing, momentary, without pain; uterus feels harder. Are of *service* to produce gradual changes in neck, and even to dilate os measurably before labor sets in. Such are the cases in which delivery said to occur in three or four pains. Ould thought they directed head to superior strait and thus influenced presentation. (In premature and forced labors mal-presentations are most frequent.)

5th. "SHOW," an increase of mucous secretion of vagina together with the plug of mucus that has been in cervix; is sometimes mixed with blood; sometimes considerable blood is discharged.

*Source of blood:* Small vessels in vicinity of os, most noticed at time of full dilation. *Occurs* about twenty-four hours before labor. *Object*, to lubricate passages. *Quantity*, varies, profuse or scanty. *Quality*, thin, or viscid almost like albumen, the latter most favorable. *Value*, the best test of near approach of labor.

6th. RELAXATION OF PELVIC SYMPHYSES, said to occur, but is doubtful; does in lower animals.

7th. UTERINE CONTRACTIONS.—LABOR PAINS. The periodical contractions of uterus. Commence in cervix (probably at first without pain). *First noticed* in loins, and then to extend around abdomen and down thighs. Early pains called "cutting," or "grinding." *Action of woman under them:* stops speaking, compresses mouth, grasps and squeezes some near object; as it passes off resumes ordinary behavior, or else complains and frets with short cry. In second stage are called "forcing," or "bearing down." *Cause of suffering.* 1st, forcible distension of cervix (Mad. Boivin, who ought to know, says cervix is seat of pain). 2nd, pressure on nervous

filaments during contraction. *3rd*, distension of passages. Great variety as to apparent suffering and mode of enduring. Pains are not uniform; gradually increase; then stationary and decrease; are periodical; interval of ease diminishes in progress of labor. Pulse at first increases, stationary, subsides.

**FALSE PAINS.**—Sometimes mislead woman and practitioners.

*Caused by*, over fatigue, affecting lumbar and iliac muscles; by indigestion, constipation, diarrhœa, cold, motions of child, organic disease of kidney, prolapsus of bladder, rheumatism of uterus. Are not unfrequently attended with feverish symptoms. May occur at any time during gestation; frequently at night; most in primiparæ.

<p><i>Diagnosis.</i>—<i>True</i>, commence in hypogastrium, felt first in back, extend round in front; recur regularly.</p>	<p><i>False</i>, commence at fundus; extent limited; erratic; recur irregularly.</p>
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<p>Dilate os; protrude bag of waters; contraction felt externally.</p>	<p>No show. Do not dilate os. Do not be deceived by contraction of muscles.</p>
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Insist on vaginal examination. Saves anxiety, time, watching, and accoucheur's character.

*Treatment.*—Rest; bowels must be opened; aromatic purgatives; then follow with opiates; opiated liniment to abdomen; for diarrhœa, ol. ricin. and laudanum; opiate suppository or enema. If plethora, VS. reduces temperature, relaxes soft parts, increases mucus. If rheumatic, laxatives, diaphoretics, warm bath, VS. if necessary.

Cases occasionally met with where sharp pains occur and dilatation takes place to some extent; labor seems imminent, but pains cease, and delivery does not ensue for days, and even two or three weeks.

Symptoms and evidences of labor vary in different stages.

**FIRST STAGE.**—Pains are "cutting," "grinding," short, severe, not very frequent, intervals decrease; oblige patient to

suspend occupation ; do not induce bearing down ; seat usually in back ; extend round ; cause much suffering ; cry short and fretful ; pain in back sometimes relieved by pressure ; sometimes not. Sometimes each pain commences with nervous shudder resembling a chill ; it varies in duration ; seems to relieve pain : faintness and nausea occur at times : vomiting occurs and is useful, relaxes os and removes indigestible matters ; state of mind irritable, restless, low-spirited, fearful ; as labor advances, courage improves. Roberton mentions a case of suicide in despondency of first stage. Great varieties in fortitude and resignation ; efforts at restraint objectionable. Surface of usual temperature ; no sweat ; pulse not quickened till second stage ; considerable variations noticed. Uterus hardens, tilts forwards to bring axis into axis of superior strait ; then relaxes ; by auscultation the uterine pulsations are stronger ; a rushing sound is heard from liq. amnii, or perhaps from muscular contractions of uterus ; at height of pain sounds become dull and return as declines. Vaginal examination detects os high up and towards sacrum ; in various degrees of dilatation and tension ; vagina in various states of heat and moisture.

Os dilates slowly at first ; more rapidly after size of a half-dollar from wedge-like action of "bag of waters ;" does not always dilate equably ; anterior lip often longer than posterior, and this delays advance of labor ; show becomes more sanguineous near full dilatation ; pains longer ; membranes rupture ; second stage sets in. Os now recedes up to top of sacrum and pelvis, encircling the neck of fœtus.

"BAG OF WATERS" is technical name for the segment of membranes protruding from os distended by the liq. amnii. Its shape varies from round to elliptical or elongated according to presentation. Is hard and tense during pain ; in interval wrinkled ; usually ruptures at dependent extremity, and then discharge is complete until head descending stops the egress ; if higher up liquor drains away at each pain, and in this form sometimes covers face as it emerges, and child said to be "born with a caul." Great variations as to time of rupturing ; if it

occurs early labor is delayed; is sometimes extended from vulva before the head; sometimes even a foetus at term is born enveloped in membranes; not always possible to tell if membranes are ruptured; examine for it during a pain.

DURATION OF FIRST STAGE.—Varies greatly; average six hours; is the longest part of process; labor may be suspended after os one-quarter dollar in size.

[In this stage “the ovarian nerves and the nerves of the os and cervix uteri are acting as spinal excitors; the only motor nerves involved are the uterine; the portion of spinal centre involved is the lower medulla; the medulla oblongata being not at all affected.”—*T. Smith.*]

SECOND STAGE.—A lull succeeds rupture oftentimes; but on recurrence, pains are longer and oftener; intervals shorter; suffering greater but better borne; pains are “*bearing down.*” Woman breathes deep, closes glottis, grasps something firmly, braces her feet, contracts abdominal muscles, strains violently until pain ceases, or she is compelled to cry out and the period of tension passes. Outcry is no longer fretful, but a straining, terminating sometimes in short cry and gasping for breath.

Appearance.—Skin florid, purple; veins turgid; eyes suffused; perspiration free; surface warm; pulse accelerated. Vomiting frequently occurs; its import varies with concomitant symptoms; if simply bilious or mere contents of stomach is useful; if dark, greenish, foetid, with abdomen tender, fever, uterine action suspended, it is unfavorable.

Tendency to sleep between pains often noticed, especially in protracted; generally useful, but if head aches and especially in primiparæ, guard against convulsions.

Cramps in calves noticed; result of pressure; relieved by friction. Rectal tenesmus occurs, bladder cannot be evacuated until pressure is relieved. Vaginal examination defines the head, its sutures overlapping; also the “*caput succedaneum,*” a swelling more distinct if labor is delayed and membranes have ruptured early (it is the scalp distended by a local effusion of serum); sometimes the scalp is much corrugated.

Head passes bones and distends perineum, but as contraction diminishes, again recedes; recession beneficial in relieving distension; gradually distends more and more. Perineum becomes thin, tense, elongated, and widened. Contractions become "double pains," and with an all absorbing effort and sharp shrill outcry, the head passes the vulva, and relief ensues, with panting and sobbing.

At the moment of extreme distension sometimes a transitory insanity is noticed; result of excessive suffering or else cerebral congestion.

["The excitor nerves are the ovarian, uterine, vaginal, and nerves of ostium vaginæ; the motor are the uterine, vaginal, and respiratory, and of the sphincters ani and vesicæ."]

An interval of ease almost invariably follows the expulsion of head; abdomen sinks; uterus diminishes. Pains soon recur, expulsive but not so violent, and shoulders followed by rest of child are expelled.

THIRD STAGE.—DETACHMENT AND EXPULSION OF PLACENTA.—Usually last pains also detach placenta; uterus contracts itself away from surface of the uncontractile placenta; sometimes it is expelled simultaneously with fœtus; oftener is expelled into superior part of vagina; often is partly within and partly without uterus; much depends on previous energy of contractions; where instruments requisite, more delay; vagina is an active agent in expulsion. Time varies; average ten minutes; if delayed over one hour there is abnormal cause. Emerges edgewise; with maternal surface first, if cord is not touched; but if it is pulled, the foetal surface tends to emerge, accompanied and assisted by voluntary expulsive efforts; by examining the rent of membranes, the placental site may be estimated.

Following the placenta is a gush of blood of variable amount; not abnormal unless excessive; more than a pint abnormal.

Frequently a nervous shudder succeeds; teeth chatter and tremulousness, but this is not from cold.

[During this stage the vaginal surface is intensely excitomotor. "The nerves involved are the ovarian, uterine, vaginal, mammary, and gastric."]

**DURATION OF LABOR.**—All varieties, from five minutes, or "two or three pains," to a week. Authors average it at four hours. Longest time is occupied in dilating os.

More births occur during night, 1·31 to 1 for day.

**MANAGEMENT OF NATURAL LABOR; or, DUTIES OF THE ACCOUCHEUR.**—The cardinal rule is, that it is not to a case of sickness the summons is; but to superintend the exercise of a natural function.

**DIRECTIONS.**—When summoned *go at once* and with "*obstetric haste.*" Provide a flexible male catheter, lancet, perhaps tinc. opii and chloroform if at a distance.

See the nurse first, and inquire of her, as to number of previous labors, whether easy or not, age, general health, show, waters, bowels, urine. Then enter lying-in room, avoid appearance of hurry. Inquire of patient as to general health, pulse, tongue, skin, previous labors. Then direct attention to pains, frequency, character, force, regularity, situation felt. Judge somewhat from outcry and effort. If woman is in bed, turn attention to vaginal examination, "taking a pain;" for a primipara *request it through the nurse*, and perform it in the presence of a third person always. Always make it as early as practicable with decorum—and invariably make an examination as soon as membranes rupture, in order to verify diagnosis of presentation, or to rectify untoward occurrences. Position of woman, generally on left side with knees drawn up and a little separated—varieties, right side, or supine "on broad of back"—the last preferable, must be near edge of bed. Hand to be used, *either one* according to position. *An accoucheur should accustom himself to have no choice of hands.* Smear index and second finger with lard, sweet-oil, or pomatum, to facilitate introduction, and to guard against contraction of disease. Arm enveloped in a towel or covered with oil silk sleeves. Pass index along cleft of nates to vulva, and insert during a pain—

follow curve of sacrum and bring finger a little forward to find os—then wait till pain ceases to get information—if one finger will not answer, use two. By vaginal examination you ascertain six points, *1st.* Is woman pregnant? *2nd.* Is she in labor? *3rd.* State of membranes; *4th.* Presentation; *5th.* How far advanced; *6th.* Size of pelvis, state of os, vagina, and perineum.

Examinations are to be repeated seldom—once an hour is sufficient. Too frequent cause dryness, heat, and tumefaction.

Having examined, wipe the finger under bed-clothes on a napkin provided—ascertain the nature of discharge. Then turn attention to room, &c., temperature cool, rather than warm, 66°—ventilation to be free—attendants, two sufficient.

Examine “the things” for child, a string to tie cord, of linen or cotton thread doubled three or four times. Scissors to cut cord; pins: for woman binder, a stout towel or unbleached muslin at least a foot wide and three feet long; strong and long pins.

Attention may be requisite in “making the bed.” Choose a cot or single bedstead, on it a mattress, over that a piece of india-rubber cloth, or thin oil-cloth, over it a folded blanket, then a sheet.

Woman’s dress—chemise and ordinary night dress—gathered above hips. Covering to patient to be light.

As to confinement to bed, it is to depend on advance of labor; if just commenced, sitting in a chair or walking about relieves tedium, useful in primiparæ. If os is considerably dilated, the woman should lie in bed, *in just that position that suits her feelings and wishes best*, without regard to the accoucheur’s tastes or convenience. Accoucheur should not *stay* in the room during the first stage, that all freedom as to usual evacuations may be enjoyed. Conversation to be cheerful. Avoid all prognosis as to termination to the woman and attendants, but for self you must form some opinion. Judge by, *1st.* What is presentation? Should be determined at first examination. Head known by hardness, fontanelles, and sutures. *2nd.* What position—known by situation of anterior fontanelle, should certainly be made out when membranes rupture.

3rd. As to number of labors—primiparæ more tedious. 4th. Size of pelvis. 5th. State of vagina. 6th. And especially the state of os. Most favorable state of vagina is cool; moist, and relaxed, with abundance of thick tenacious mucus; unfavorable if dry, hot, narrow, and constricted.

*States of Os.*—If lax, soft, thick, moist, cool, and not tender, may expect speedy termination. If thin, hard, unyielding, dry, tender, and as if bound with wire, expect protracted. Cervix thin, allowing presentation to be made out, and low in pelvis before dilating, usually denotes tedious labor.

*Return home*, to be governed by state of os, vagina, and perineum; if os size of a dollar and yielding, avoid any considerable absence. Before going direct diet to be light, toast and tea, crackers, &c., avoiding meat. Drinks, cold water or tea, avoid stimulants. If labor is protracted, better diet will be requisite.

Also attend to state of bowels. If labor is advanced and constipation exists, direct an enema; if in an early stage order castor oil, for it acts readily and quickly.

Attend to state of bladder; if it is stated that "the urine is continually dribbling away" pass the hand over hypogastrium, and if a tumor distinct from the uterus is felt, percuss it, and when satisfied pass catheter. If a male flexible catheter is used, there will be no difficulty in reaching the bladder, but when the head is far down and compresses the urethra, the thumb should be placed against the head and pressed up; the male catheter will take the proper direction. The female silver instrument is less efficient, more difficult to pass in obstructions, and less reliable for relief when passed. Repress all attempts to encourage "bearing down" in first stage.

Avoid any attempts to dilate os manually—except where anterior lip forms an obstruction. "*Meddlesome Midwifery is bad.*"

Avoid rupturing membranes, unless the os be fully dilated, and the presentation is ascertained.—Premature rupture retards labor.

DUTIES OF SECOND STAGE.—Patient to be in bed in the position most comfortable to her. Principal duty of accoucheur said to be supporting perineum. Most ruptured perineæ are particularly "*well supported.*" Object is to prolong curve of sacrum and coccyx, and prevent laceration. Not to be commenced until perineum is thinned out, and vertex is separating labia. A towel is to be placed in palm, and pressed moderately during a pain, merely to sustain structure. Strong bearing down to be discouraged when perineum greatly distended. Avoid retracting skin over head. On the whole it seems questionable whether this part of duty would not be better honored in the breach than in the observance; many, perhaps, most primiparæ lose their fourchette in the first labor, but the loss is scarcely appreciated. Estimate the advance of head, not by examining at the pubic arch, but at the perineum. Sometimes at this period pains fail, and may be renewed by pressing firmly on end of sacrum.

As soon as head is delivered support it in palm, and feel for the funis; if it encircle the neck, loose it and slip over shoulder. (In rare instances it may delay advance of shoulders, and may require to be divided.) This done, support the head with one hand, and place the other over fundus uteri, and press firmly and steadily, following the uterus as it expels the child. *Keep that hand on the uterus until the cord is to be tied.* Strenuously avoid pulling the shoulders, unless the child's life is jeopardized; for the risk of hemorrhage is great, irregular contraction, and retained placenta also result. If much delay occurs, if child seems inanimate, or after a few attempts at respiration ceases to breathe, assistance is to be given. Keeping one hand pressing on abdomen, insert the index of the other into the axilla nearest the perineum, and pull in the axis of inferior strait; the delivery of one shoulder usually suffices, and child is soon expelled. Some support perineum during expulsion of shoulders. Place the child with abdomen towards mother, close to her, and with its mouth away from the discharges, that its struggles may not pull on the cord.

Now the uterus is to be compressed by an assistant.

*Of Tying Cord.*—Wait till child cries freely, and pulsation ceases six inches from umbilicus; then tie the cord twice, and divide between the knots. Some use no ligature, some use a single tie. Tie at least  $2\frac{1}{2}$  inches from abdomen that no fold of intestine, abnormally in cord, be encircled if tied too close. Tie firmly, and leave a space of  $\frac{3}{4}$  of an inch beyond the ligature, that the gelatine of Warthon escaping from a thick funis may not loosen the ligature. Always see when the cut is made, lest the “penis” or “a finger” be amputated. Generally no hemorrhage from placental end of cord, but it may possibly occur. Chevreul relates three cases; source of exit the umbilical vein. Child to be taken by ankles in one hand and arms in the other, suffering the head to rest in the palm. (Accidents occur from carelessness.) To be received in flannel, and laid away till the nurse is no longer useful to the accoucheur’s requirements.

Next step is to ascertain if there is a second fœtus—examine per vaginam for membranes. A large placenta may cause suspicion of the existence of a twin.

DUTIES IN THIRD STAGE; DELIVERY OF PLACENTA.—*Never to be delivered unless the uterus is contracted.*—Place one hand on uterus, and if the woman is lying on her side direct her to turn on the back; grasp the uterus steadily, but without violence, to ascertain its contraction, and then with other hand trace up the cord. If the insertion of the cord can be felt in the vagina, it is generally, *not always*, safe to assist delivery. Feel for the rough or maternal surface of the placenta, with two fingers push it back towards sacrum, and at same time towards vulva; *if these tractive efforts depress the fundus uteri as felt by the other hand, cease*, for the placenta is still attached in utero, and its delivery is not to be hastened unless required by hemorrhage, &c. The effect of traction a better guide than mere lapse of time. If the placenta is felt per vaginam to be still in utero, and hemorrhage is not occurring, grasp and knead the uterus, and wait for the recurrence of contractions. If the placenta be pulled away before the uterus is contracted,

there is danger of hemorrhage, of inversion, of rupturing placenta.

*Direction of traction* to be, first, in axis of brim, finally in axis of outlet. When about to emerge, rotate the placenta several times in order to gather up membranes; if portions or shreds be left, they may cause fetor, hemorrhage, irritative fever, or merely alarm by subsequent expulsion. Place placenta in some vessel, and subsequently examine it, to see if entire; for this purpose put it upon a plain surface maternal side upwards.

APPLICATION OF BANDER.—Some think unnecessary, others highly useful in preventing hemorrhage, in relieving sense of vacuity, in preventing pendulous belly; comfort to woman a sufficient plea. Not to be relied on to *check* hemorrhage. Still keeping one hand upon the uterus, have the dress raised towards the face, and place the bandage, previously rolled up, next the skin; adjust it so as to cover the hips, request the patient to raise the hips, and rapidly encircle her with the bandage; now fold one or more napkins, place them over fundus uteri, and secure the bandage with strong pins, commencing over the epigastrium; (if there seems a disposition of the uterus to enlarge, envelope a small duodecimo volume in one of the napkins.) These manipulations to be executed under the bed-clothes, without exposure. Next direct the nurse to withdraw soiled clothes, and to place a dry blanket beneath the hips, without suffering the patient to rise, and then to place a folded napkin to vulva; *see that napkin before leaving the house*, that the mind may be at ease as to hemorrhage.

Next duty will be to dress cord; by taking a piece of linen about 7 inches square, cutting a hole in middle, and drawing the funis through; fold it and place upwards along abdomen and have it secured by a roller.

Stay in the house at least an hour—better two. Before leaving, direct patient “to be changed;” not, however, for two hours, and *insist* that she shall not assist herself, or be raised to semi-erect posture, for there is great danger of hemorrhage,

which may be speedily fatal. Also direct diet, the simplest—toast and tea, gruel, &c.

**Difficult or Delayed Labor.**—*Head presents ; not completed within 24 hours ; more than ordinary difficulty.*—*Frequency, 1 in 36.* Most in primiparæ, but multiparæ with large families not unfrequently have delay. Is more serious than natural labor, for mere protraction increases danger. The hazard is not in first stage, for as long as the membranes are unbroken, provided the normal quantity of liq. amnii is present, delay is of little consequence ; but in second stage much less time produces much more serious consequences. Hence, in estimating necessity of interference, less attention is to be paid to the interval that has elapsed since first access of pain, than to length of time since discharge of liq. amnii. With some families there seems a transmitted disposition to protracted labors ; with others the reverse. Women of delicate habit, those with deranged digestion, depressed mentally, debilitated by discharges, are all liable ; yet even grave disease does not always protract labor inordinately, *ex. gr.* Phthisis.

The two great CAUSES of delay are, *deficiency of expulsive power, i. e. Inertia of the Uterus ; and too great resistance, i. e. Rigidity of Soft Parts ;* other causes are of minor importance.

DEFICIENT CONTRACTION.—Cases of this kind are seen mostly in the delicate or exhausted ; in primiparæ usually.

They may usually, with proper hygienic means, be left to nature, for if the expulsive force is small, the resistance is equally so. Regimen a primary consideration. Apartment cool, an occasional cup of tea or some warm liquid, or light nourishment as a bowl of gruel ; cheerful conversation, with *special avoidance of bearing down ;* changes of posture from side to side, or walking about, ordinarily suffice to worry through. In some cases the moderate use of stimulants, as wine and water, or in gruel or arrow-root, &c., may be of service ; requires caution as to use. If pulse is weak and slow, surface cool, uterine contractions powerless, and no hemorrhage, they may be used.

The great remedy is Opium, to be given as near as possible to time of natural rest, and in efficient doses. Various forms. Laudanum best, at least 40 drops, sometimes ʒj; an overpowering dose suspends action completely. Oftentimes, when the pains are short, teasing, inefficient, giving the sensation of mere griping in abdomen, a dose of 40 drops will procure a few hours' rest, and patient will awake to renewed and effectual efforts. (Experience has taught me to stay for a little time after a dose of laudanum, for in some cases the beneficial effects have been manifested in a short time, in a change of pain, efficient action, and steady progress towards completion.)

Chloroform, by regulating nervous action, may be of service.

If on awaking, contraction is not resumed, or opium proves of no use, give an enema of salt and water, or Spts. Tereb., or Decoct. Senna, and these, or simple enemata, may be repeated from time to time. An active cathartic will be of service if the bowels are costive; black draught. These failing, the next medicinal means is Ergot, which may be given in fresh powder, in infusion or saturated tincture.

RULES FOR ERGOT.—*Not to be given:* 1. To relieve yourself. 2. Not unless os uteri is fully dilated. 3. Not in contracted pelvis. 4. Not if presentation is beyond reach. 5. Not in mal-presentation. 6. Not if obstruction in soft parts. 7. Not if foetal head is relatively too large, *ex. gr.* Hydrocephalus. 8. Not if head symptoms present. 9. Not in over excitement of vascular or nervous system. 10. Seldom in primiparæ.

*May be given:* 1. If labor ceases simply from want of contractions. 2. If head or breech presents. 3. If os is dilated. 4. Pelvis ample. 5. Parts relatively of correct size. 6. No excitement.

The use of forceps should be practicable before using Ergot, in order that if delay ensues, instruments may be used before child is poisoned in its blood. Examine the foetal heart repeatedly, and if lessened in frequency, depressed in strength, and if irregular, or intermittent, lose no time in terminating the labor. When reduced below 110, and at same time intermit-

tent, the child is rarely, if ever, saved; depression *without intermission* is no certain ground for apprehension. Children born two hours after Ergot *has acted* are usually still-born. Ergotised children are resuscitated with difficulty.

If Tincture is used, give ℥j. every fifteen minutes until four doses are taken; if this does not act, either abandon the remedy, or send for another sample. Of powder, give 15 grs. of freshly powdered every ten minutes till ℥j. is taken. Infusion, ℥ij. to ℥iv., take  $\frac{1}{4}$ . Ergot is very apt to spoil. Formula, R Ergot ℥j. to ℥ij.; Bibor. Sod. grs. x.; Aq. Cinnam. ℥iiss. The character of an "*Ergot pain*" differs from ordinary uterine contraction; it is energetic, continuous, and expulsive; it lasts till delivery is effected or effect of remedy passes off; child does not recede as in ordinary labor, but advances continually. *Bad effects on child*, by compression, asphyxia, toxemia. *On woman*, fistulæ from pressure, rupture of uterus or vagina, cerebral disturbance, delirium, coma, retention of placenta from irregular contraction. Galvanism has been tried as a remedy for inertia. If Ergot fails, delivery must be instrumental.

*Cannab. Indica, Indian Hemp*, is said to be oxytocic; Tinc. 10 to 30 drops, said to be more speedy than Ergot, more evanescent, but more energetic and certain. Borax also has reputation.

IRREGULAR AND SPASMODIC PAINS delay labor by want of consentaneous action of muscles; some parts rigid and contracted, some soft and yielding, with no distinct interval of contraction. If not treated, patient becomes exhausted; presentation may even become changed. Opium by mouth or rectum relieves. Chloroform meets the indication precisely.

PREMATURE RUPTURE OF MEMBRANES delays, by substituting for the elasticity and wedge-like action of the bag of waters, the rigid and irritating hardness of the head upon the sensitive os. Children are oftener still-born, and instruments oftener requisite, when membranes are ruptured early.

Lee thinks premature rupture almost always indicates pre-natural presentation.

FROM EXCESS OF LIQ. AMNII.—Contraction may be enfeebled, like as in over-distended bladder; but caution is necessary in assuming this as a cause of delay.

*Remedy*: Rupturing membranes. Not until, 1st. Os *fully dilated*. 2nd. Presentation made out. 3rd. No mechanical obstruction. To be done in interval of pain lest funis be washed down; puncture as high as possible.

TOUGHNESS OF MEMBRANES.—An analogous cause. Arises from disease of amnion; patches of lymph found.

*Remedy*: Rupturing membranes; sharpened finger nail or quill, probe.

OBLIQUITY OF UTERUS.—Retards; either anterior or lateral; left lateral the more common of the lateral varieties. *Anterior* exists in multiparæ with “pendulous abdomen;” os is high up towards sacrum. [Such cases mistaken for imperforate os. (Dewees.)]

*Remedy*: Change of position according to form. If position on back does not remedy “pendulous belly,” support it with towel. Avoid manual attempts to draw os into centre of strait, nature will accomplish it.

MENTAL EXCITEMENT OR DEPRESSION influences labor.

Such sources of delay are combated by judicious moral measures or Chloroform.

Second principal cause is too great resistance.

RIGIDITY OF OS.—*Occurs*: Most in primiparæ, especially in advanced life, of rigid fibre, and vigorous; in multiparæ, when severe labors.

CAUSES.—Premature rupture of membranes; stimulants; repeated examinations; excitement; plethora; full bladder or rectum; scirrhus; disease of os, as in dysmenorrhœa.

It makes a material difference in difficulty arising from rupture of membranes, if labor does not come on for two or three days after the rupture; the ill effects seeming to result from the mechanical irritation produced by uterine contraction.

Advanced age is usually a source of delay, not always; maximum of resistance between 30 and 38 years.

Sometimes the os sensibly contracts during a pain, and remains rigid even in interval; in such cases rupture of uterus is to be feared. Sometimes undilatability is so great that os has been torn off, and has come away like a ring.

TREATMENT.—*Regimen*: Very free use of drinks, cool; no stimulants; avoid bearing down; cool temperature; mental quiet. Bowels freed by saline laxatives or enemata. Watch bladder in all tedious labors; every six hours examine hypogastrium.

Most potent remedy is *Venesection*; especially in plethoric, with severe pains, hot and tender vagina, and full strong pulse; os thin and hard, head pressing it not only during a pain, but continuing after. Great objection to its use is woman must lose blood in later stage of labor, and then becomes prostrated.

As to quantity, must not be too great; for, if it diminishes rigidity, so does it the expelling force. Average, 16 oz. Only to affect pulse.

*Chloroform* acts well; adapted to cases where VS. unadvisable. *Ant. Tart.* in nauseating doses. Before using, be certain that os has dilated somewhat. Objection is harshness. *Emetics* also used, as *Ipecac.* *Belladonna ointment* by Chausier, ʒj. to ʒij. to ʒj. applied to os; is liable to produce faintness and vertigo; not to be used in debilitated or head affections; used in local soreness. *Warm baths* advised; liable to produce hemorrhage; warm *douche* has been advised to os in a continuous stream for an hour or more. *Fomentations.* Large and repeated *enemata* of warm water. Opiate *enemata* in dysmenorrhœic os, useful. Tobacco *enemata* too dangerous. *Sponge in vagina* with some emollient. *Lard* freely introduced into vagina is of some service. *Opium* by mouth is of questionable utility. *Manual dilatation* advised by Scotch school; condemned, and justly so, by Irish and English. One form of delayed dilatation is relieved by it, *i. e.* cases in which the anterior lip is caught between head and pubes; here the maintenance of the lip above the pubes for two or three pains expedites labor, but even this can be dispensed with. Where

rigidity is insuperable, incisions have been recommended. The use of *instruments* in rigid os not advisable.

RIGIDITY OF VAGINA AND PERINEUM.—Sometimes delays, in connexion with rigidity of sacro-ischiatic and coccygeal ligaments. Pressure may contuse; and inflammation, or even sloughing, result.

*Treatment*: VS.; opiate or simple enemata; fomentations; lard; sitting over warm water. Avoid frequent examinations. *Avoid Ergot.* Avoid stimulants. Chloroform.

CICATRICES OR BANDS IN VAGINA.—The result of sloughing in a previous protracted labor or instrumental delivery; are found in various situations and of varying extent.

*Treatment*: Dewees used VS. ad deliq.; propriety doubtful. Patience and time. These failing, notch the edges with a guarded scalpel or bistoury, avoiding bladder, rectum, and large vessels.

MORBIDLY THICK HYMEN.—Occasionally delays. Treat as a cicatrix.

Male children are of more tedious delivery than females, from the greater size of head. Circumference  $\frac{3}{8}$ ths inch larger; transverse diameter,  $\frac{1}{8}$ th; bi-parietal,  $\frac{2}{8}$ ths. More women die with male births. More complications occur with males. Fewer females are still-born. More males suffer injury during parturition. More males die in early childhood. Deaths in utero are equal in both sexes. First labors are more dangerous to both mother and child than subsequent. Duration of labor is longer with males.

LABOR DIFFICULT FROM DISPROPORTION. May arise, 1st, FROM TOO SMALL A PELVIS; 2nd, TOO LARGE A HEAD.

Two classes, 1st. *Those in which natural efforts will suffice to expel*; 2nd. *Those in which they are insufficient.*

If the antero-posterior diameter is less than three inches, a living child at term cannot pass. If less than  $3\frac{1}{2}$  laterally, by  $1\frac{1}{8}$ th antero-posterior, delivery cannot be effected *per vias naturales*.

*Rules for Action.*—Wait patiently to see effect of pain, and afford ample time, if there is a prospect of natural delivery. Avoid examinations. VS. may prove of service where febrile excitement obtains, abstract as little as possible. Ergot inadmissible. Opium will effect nothing. Various modes of instrumental delivery become requisite according to the degrees of deformity.—*See Instrumental Delivery.*

TUMORS of various kinds diminish pelvic capacity; fibrous, osseous, adipose, steatomatous, sarcomatous, or scirrhus. *Situations* behind rectum, in recto-vaginal space, or in vagina. The amount of obstruction will depend upon size, mobility, and compressibility. If large, they may require instrumental aid. If mobile, may be pushed out of the way. Polypus may be detached, or expelled still adhering. Examinations should be made in intervals of pains, and recto-vaginal touch practised.

Surgical aid by scalpel, trocar, or ligature, may be necessary, and to effect delivery may require instruments, or even in very rare cases the Cæsarean section.

DISEASED OVARY may interfere. If it cannot rise with the uterus, either by reason of size or from adhesions, it may protrude before the head.

*Treatment.*—If it cannot be raised beyond brim, use the trocar; if too solid for evacuation, embryotomy will probably be requisite.

PROTRUSION OF BLADDER, or *Vaginal Cystocele.*—From relaxation of vagina the bladder may get below the brim, and be pushed down into pelvic cavity. The most serious consequence is the danger of incautious puncture for supposed bag of waters; (this has occurred). Patient complains of fulness and tension, with desire and inability to urinate. In pelvis is found a tumor, elastic, covering the head anteriorly, but not posteriorly, catheter passes backwards.

*Treatment.*—Introduce an elastic male catheter—push up the head if necessary.

CALCULUS very rarely has been known to obstruct labor.

If it can be raised and kept above brim nothing else is requisite. Failing in this, vaginal lithotomy.

VAGINAL HERNIA may occur in recto-vaginal space, not of moment unless filled with scybala.

*Treatment.*—Reduce hernia early. Forceps.

FÆCAL ACCUMULATION in rectum very often occurs, but should be obviated before labor. Enemata, or scoop, if at time of labor.

PRETERNATURAL SIZE OF THE HEAD, arising either from advanced ossification, or from distension by fluid. At times head is firmly ossified, and the usual "moulding" is prevented. In such cases patience must be exercised, and if aid becomes necessary symptoms will guide as to the mode, by forceps, or craniotomy.

*Hydrocephalus* before birth is not very rare. Amount of fluid three or four pints—circumference of head as high as 24½ inches. Left to nature such cases terminate, by, 1st, slow and tedious expulsion; 2nd, bursting of head and scalp; 3rd, rupture of uterus; 4th, death without delivery. Most usually require aid.

Danger is from pressure, which is powerful and universal, and is very liable to eventuate in sloughing and fistulæ.

*Diagnosis*, by great volume of head, bones wide apart, fontanelles and sutures opened widely, fluctuation (but this may be absent). Imperfect ossification with tedious labor might deceive a careless observer.

*Treatment.*—Ordinary principles must be modified. The delay that in natural labor is requisite and advisable, is in these cases hazardous to mother, without corresponding benefit to child. If natural efforts cannot overcome, perforation is the alternative; though forceps may be tried, usually they slip. But it is necessary to be *absolutely sure* of the nature of the case before using the scissors.

Reason for such decision. 1st. Danger of contusion, inflammation, laceration, sloughing. 2nd. Exhaustion. 3rd. If born alive, child is likely to die. 4th. If alive, the disease

is likely to go on. *5th.* Child's value to society likely to be null. *6th.* Mother's life of paramount importance when life is at issue against life.

ASCITES AND TYMPANITES may occur, the first as the result of inflammation, the second from putrefaction. Delay takes place after passage of shoulders. Ascertain cause by digital examination. Child usually dead in, first, either from disease, or later from pressure on cord.

*Treatment.*—Labor to be assisted with fingers, blunt-hook, or perforator.

SHORT CORD.—Cords of six or seven inches are on record. Such may cause delay. After head has passed, complete expulsion may be prevented by actual brevity, or from twisting around the neck.

[A case where a cord was so shortened by being twice around the neck, that foetus was strangled in utero, and the child became putrid. On delay occurring, the cord was severed, and the body expelled with tremendous force. Amer. Jour. Med. Science, 1852.]

*Treatment.*—Give uterus time to contract. After head is expelled, if delay becomes hazardous, cut the cord.

**Face Presentations.**—*Frequency* 1 in 212½, or Cazeaux 1 in 250 to 300. Arneth 1 in 165, and also in 144,694 births, 732 face cases, 1 in 197½. *Mortality* to woman 1 in 50, to child 1 in 7; and more fatality has been noticed in assisted cases. Lachapelle in 72 found 42 safe to mother and child.

MECHANISM.—Four positions. *1st.* *Right mento-iliac.* *2nd.* *Left mento-iliac.* *3rd.* *Mento-sacral.* *4th.* *Mento-pubic.*

MECHANISM.—*1st.* *Right mento-iliac,* most common. Face comes down transversely, but the length of the neck is not sufficient to allow the chin to get as low as the tuber ischii without engaging the thorax in the superior strait, throwing the occiput back on the chest, causing a line through vertex and sternum to take the place of fronto-mental diameter; hence when rotation occurs, chin and front of neck slide from behind forwards on the anterior inclined plane; the bregma

slides on posterior inclined plane into the anterior surface of the sacrum. The right cheek is at first lower, and engages first at the superior strait, and remains behind left pubes while the left rotates from above downwards, and from right to left. The chin appears under pubic arch, and gradually rises, while the sagittal suture, &c., sweep the sacrum and perineum.

*2nd. Left mento-iliac*, differs from previous, in that the chin slides on the left anterior inclined plane, and the bregma on the right posterior one; the left cheek comes down, and remains behind the right pubal ramus, while the right cheek descends from right to left; the left cheek presents first under the ramus of the arch, and continues its motion till it reaches the left side of the strait. The chin under the symphysis tends slightly to the left.

*3rd. Mento-sacral*.—Very rare. Because, *1st*, the occipito-pubic position which gives rise to it is rare; *2nd*, it must soon become transverse, even if presenting in this position at first; *3rd*, if the chin was retained on the sacro-vertebral angle, it would cause the occiput to descend; *4th*, the chin could not descend to the perineum in this position unless in an immature foetus.

*4th. Mento-pubic*.—Rare at the beginning of labor, but it is the position in which the two principal positions terminate.

“When the face presents at the superior strait with chin to pubes, and forehead to sacrum, the fronto-mental diameter three inches is parallel to sacro-pubic four and a half inches; so far there is no disadvantage; but later, when the head descends, the chin gets below the pubes before the occiput reaches the excavation, and the breast is still at the superior strait while the face is engaging in the pelvic circle, then the front of the neck being stopped by the lower edge of the symphysis, compels the vertebral column to react upon the posterior part of the head, which it urges from behind forwards so as to force it through the vulva by presenting to that opening a series of circles whose principal chords are measured by the vertical diameter of the head.”

CAUSES.—Unknown.

The face does not always present full; the forehead often sinks lower than the chin; in some cases one cheek descends foremost; if face cases end speedily the child is not in danger; but prolonged pressure on the neck may cause intra-cranial effusion. Children are born greatly distorted; mouth pulled upwards, eye down, alæ of nose tumefied, and this should be told to attendants previously to the end of labor.

DIAGNOSIS by eyes, nostrils, mouth, chin; may be confounded with breech.

Care is requisite in examining that eyes be not injured.

TREATMENT.—Most cases do well if left to nature; special care to preserve membranes for sake of child's face; patience and time. Forceps or perforator may become necessary.

For child after delivery, leave swollen face alone or some evaporating lotion.

**Irregular Labors** include, 1st. PRESENTATIONS OF THE PELVIC EXTREMITY of the foetal oval. 2nd. OF SUPERIOR EXTREMITIES. 3rd. LATERAL presentations. 4th. OF TWO OR MORE parts.

OF PELVIC EXTREMITY.—Includes BREECH, KNEES, and FEET.

*Frequency*: Of breech, 1 in 52; (Arneth, 1 in 58; in 159, 593 births, 3000 breech cases, 1 in 53;) knees rare, 1 in 3445; feet, 1 in  $92\frac{1}{4}$ ; Arneth, 1 in 112 and 1 in 104. Are less common in primiparæ. Some women have a succession.

MECHANISM.—*Two presentations*. 1st. *Sacro-anterior* (more frequent). 2nd. *Sacro-posterior*. *Positions*, either hip, making 4 *varieties*. Originally all the varieties of feet, knees, &c., are simple breech presentations.

MECHANISM.—The nates present transversely in one of the oblique diameters; the anterior one being lowest, and becomes fixed under the pubes, and while the other buttock sweeps the sacrum and perineum; the arms, if no traction is used, remain folded on the chest, and are so delivered; the shoulders descend, and are extruded obliquely; the chin becomes strongly

flexed, and the head corresponds in its diameter to the vertex presentation, the face following the sacral curve. Either buttock may present, the left more commonly.

In the sacro-posterior position either buttock may present, the left more frequently; as soon as the ischia are delivered, if no interference occurs, the anterior surface of the child spontaneously becomes directed backwards, and delivery occurs as before. Sometimes the chin departs from the breast and the occiput presses on the nape of the neck; gradually the vertex turns more backwards, and gets into the concavity of the sacrum; the inferior surface of the lower jaw presses the pubic arch, while the occiput sweeps over the perineum.

**SYMPTOMS.**—*Pains* not so powerful, intervals longer; less reflex stimulation of vagina causes weaker pains. *Auscultation* finds foetal heat higher up than normal. *Meconium* covers finger, but is *not* diagnostic, as it occurs in other presentations. *Digital examination* finds a smooth, moderately soft tumor, in which by pressure is discovered the tuber ischii.

Breech *may be confounded* with head, tuber ischii with malar bone or shoulder; make diagnosis by softness, pulpiness, no sutures, no fontanelles, cleft between nates, genitals. Coccyx declares not only that the breech presents, but also its position.

Knees confounded with elbow, diagnosticate by size.

Feet to be distinguished from hand by heel, toes short and equal in length, no thumb; difference in articulation, the foot being at a right angle; phalanges of fingers may be readily followed; inner border of foot thicker than outer.

**PROGNOSIS.**—No danger to mother, only more tedious; but to child fatal 1 in  $3\frac{1}{2}$ ; 1 in 7; 1 in 11; according to various authorities.

**CAUSES OF DANGER TO CHILD.**—*1st.* Cerebral circulation impeded by pressure on body. *2nd.* Circulation of funis stopped. *3rd.* Placenta detached before respiration established.

Organs of generation have been known to slough away.

**MANAGEMENT.**—Inform some friend that a "cross birth" exists, and prepare for an asphyxiated foetus; especially in a

primipara. Meigs recommends to have forceps ready. Brandy, cold water, and a warm bath should be accessible. Ergot may be at hand.

*Indication* is to diminish the continuance of the stage of danger, which is after the umbilicus reaches the vulva.

Keep patient in bed to retard the rupture of membranes and avoid straining. Be careful in examining not to injure genitals. Allow the breech to come slowly, and *avoid drawing down the feet*, for as long as the legs are extended by the side of the cord they are a protection against pressure, and again the doubled breech prepares for the exit of head; again if brought rapidly down the chin leaves the breast, the arms are extended by the side of the head, and the occipito-mental diameter is brought into apposition with the transverse; delivery becomes difficult, and death of child is ensured. As soon as cord can be felt pull down a loop; if it pulsates strongly there is no need of haste; if putrid, of course leave to nature; if its beats are feeble, irregular, or intermittent, do not delay assistance; if convulsive attempts at respiration are noticed, hasten delivery, either by hand or by forceps. If delay occurs, pass two fingers up to the mouth and thus allow air to enter, or a tube might be used, *ex. gr.* a catheter. Again it is advised to draw child's head away from the perineum, and thus allow mouth to be extruded. The arms, by slipping up beside the head, cause delay; deliver either arm first by passing the finger over the shoulder and sweeping the arm across the *anterior* surface of the chest; a blunt hook is not advisable.

To deliver the head, have the uterus strongly compressed by both hands of an assistant, pass the right arm between the child's legs and let its body rest on the forearm, pass two fingers up to the child's superior maxillary bones on each side the nose, at the same time press two fingers of the left hand firmly on the occiput; draw steadily with the right hand, at the same time forcibly elevating the child's body towards the mother's abdomen, the left hand meanwhile assisting by pushing up the occiput. Bear in mind the axis of the pelvis.

If the presentation be sacrum to sacrum, the conduct of the case may, in the majority of cases, be safely left *entirely* to nature; nevertheless if the face does not rotate into the sacrum aid may be given gradually, even after the body is delivered; moderate and repeated efforts will suffice. If, as sometimes occurs, a hydrocephalic child presents by the breech, perforation may be resorted to, with less hesitation as the absence of pulsation of the cord evidences death. Instances occur where the body is pulled off from the head, and difficulty takes place in extraction. Pass the fingers into the mouth, and then apply forceps; have them held by an assistant while perforation is effected, and the craniotomy forceps applied. Before leaving a breech case examine the limbs and genitals of the child; if the latter have been injured apply a leech or simply a poultice or evaporating lotion.

PRESENTATIONS OF THE ARM include those of SHOULDER, ELBOW, and HAND. Originally are all shoulder. *Frequency* 1 in 260 $\frac{3}{4}$ . *Danger*, fatal to child one-half, to mother 1 in 9.

CAUSES.—1st. Excess of liq. amnii; 2d, faulty alteration of the shape of uterus by early contractions. Again, a hand coming down by the side of head may push it to one side.

POSITIONS, FOUR.—Either right or left hand, and either with foetal back towards maternal abdomen (2 to 1 in frequency) or with back to spine of mother. The right arm presents more frequently than left.

*1st Anterior Dorsal Position*; right arm and shoulder occupy the brim, occiput lying forwards, the head rests in left iliac fossa, back lies obliquely across lower segment of uterus, breech upwards and to right side, legs and other arm at the back of uterus.

*2d Anterior Dorsal Position*: left shoulder at the brim, head in right iliac fossa, breech to left side, feet and arms at back of uterus.

*1st Posterior Dorsal*: left shoulder and arm at brim, head with the face forwards in left iliac fossa, abdomen and limbs

obliquely across anterior wall of uterus, breech to right side.

*2d Posterior Darsal*: right shoulder and arm in pelvis, head in right iliac fossa, breech to left of uterus.

**SYMPTOMS.**—If high up it is difficult to feel a presenting part. If in a primipara the presentation cannot be felt, suspect malpresentation. *Shape of Uterus* is irregular, larger diameter, transverse, and if parietes flabby, the head can often be felt in iliac region. *Auscultation* finds the heart above iliac region. *Vaginal Examination* may find a “pocket of membrane” or a hand. (Cases known where a hand has been touched and yet withdrawn, and head presented.) Hand sometimes felt beside head. Make the knowledge of the presentation certain, and that early.

**DIAGNOSIS.**—*Hand may be confounded with foot*; but no prominent heel and round instep, fingers unequal, thumb, bend the phalanges of fingers. *Elbow confounded with knee*, patella flat and movable, olecranon sharp; and if there is doubt it is permissible to bring down the limb to assure the presentation, *but never to draw subsequently* if an arm. Bringing down a hand is of use to decide the position of the child, and also to fix which hand it is proper to employ in version. *Shoulder mistaken for nates or head*, not so large or so fleshy as nates, no arms or genitals, not so large or bony as head, no sutures or fontanelles, known by clavicle, ribs, spine of scapula, and acromion. *Main point to be decided* is position, whether back to abdomen or *vice versâ*. The palm of foetus corresponds to abdomen and limbs of child, the thumb points to the position of head.

**TREATMENT.**—Arm presentations require interference. If left to nature uterus inflames or ruptures, exhaustion and death take place, or, in a few instances, “spontaneous expulsion” occurs. First step is to tell friends of “cross-birth” and possible death of foetus. Keep membranes entire as long as possible. Confine patient to bed. Be assured of presentation, and then avoid examinations. Avoid straining.

Cases present under *four aspects*—1st. Membranes entire and os dilated. 2d. Membranes ruptured and os dilated. 3d. Membranes ruptured and os not dilated. 4th. Membranes ruptured, pains violent, presenting part closely impacted.

*Object of interference* is to substitute some other for the presenting part by which the progress of labor can be controlled. Version is the resource. Is to be attempted even before complete dilatation of os, size of half a dollar is sufficient. *Preparations*.—Empty bladder certainly, and rectum if there is time. Chloroform by all means. Accoucheur to *take off his coat*, to have an apron or sheet over his dress, to oil his arm or to fill vagina with lard. Woman to be close to edge of bed on the side, or preferably on her back with an attendant supporting each knee. An assistant steadies the uterus. Choice of hand to be determined according to which foetal hand is presenting, *i. e.* right to right; ascertain this by grasping it as in “shaking hands.” Some always use right, some the hand corresponding to the side on which the woman is lying. If there is no assistant place one hand upon the uterus to fix it firmly, and manipulate with the other; but if assistance is procurable, hold the presenting arm in one hand, and pass the other into *the vagina during a pain*, the fingers being in a conical form; *into uterus during an interval*; rest the bag of waters on the hand, and pass up if possible some distance before rupturing membranes; rupture them; pass along anterior aspect of child, which is ascertained by clavicle; pass to umbilicus, feel funis, and usually near it is a foot. If it is the foot opposite to the hand in vagina it is sufficient to turn by; ascertain this by great toe; if it is not, secure it between two fingers and search for other. During a contraction keep quiet. Get as much of the limb as possible in grasp. During a lull of contraction draw on the foot, being specially careful that version is attempted over the anterior and not posterior aspect of child. Cease during contraction, and straighten out the hand. *Turn toes towards sacroiliac synchondrosis*. (Where version was delayed I have found it of service to pass the hand over the breech and at the same

time to draw on the foot in the vagina with other hand.) Draw gently. Deliver hips, sweep arms over the face. Place fingers on maxillary bones and occiput, and *complete delivery* as in breech cases. Attendant must compress uterus firmly. *If membranes ruptured and os dilated*, lose no time. Early action finds more liq. amnii and corresponding ease in version. *If membranes ruptured and os not dilated*, rule is *never to force* the hand in. Chloroform or VS. and Antimony. *If membranes ruptured and pains violent*, if passages are hot and tender, os swollen and painful, uterus hard, intolerant of pressure, and irregular, pulse frequent, dry tongue and thirst, pains strong, and contraction about body firm, bleed; to 16 or 20 ounces; or give Chloroform freely before turning. Formerly Laudanum was given in doses 60 to 100 drops; also Sol. Antim. Tart., and after about an hour's delay commence. In such cases child rarely saved. If hand does not recede as it should, place a fillet on the foot in vagina, and press up axilla, observing the intervals of pains. If impracticable to push up, or as sometimes occurs to pass hand in, *never amputate arm*, for children have been born alive and even lived to maturity thus mutilated. Determine child's death by auscultation, and eviscerate if necessary. Delivery of placenta requires care, pressure, cold, Ergot.

SPONTANEOUS EVOLUTION, is the recession of the arm and substitution of the breech. This was Denman's idea in 1772. Said to occur, but very rare.

SPONTANEOUS EXPULSION, described by Douglas, 1811. Shoulder rests under pubic arch, powerful pains press down successively the thorax, abdomen, and nates, which sweep the perineum while the shoulder remains stationary. More cases occur thus, but most usually happens with premature. Is dangerous to mother, almost certainly fatal to child. (An instance of favorable issue to a second twin and also to mother, recorded in Charleston Journal, 1850.)

Trust to "spontaneous expulsion" only in premature labors.

TURNING BY EXTERNAL MANIPULATION has been recommended; is rarely of service.

PRESENTATIONS OF CENTRES.—Are rare. *Diagnosis:*  
By exclusion.

Of BACK.—Uncommon. *Known by spines* and origin of ribs. *Version.*

Of UMBILICUS.—Rarest. *Known by large, soft abdomen,* and no osseous prominence; funis felt. *Version.*

Of STERNUM.—A bony plane; cartilages of ribs; intercostal spaces. *Version.*

Of SIDE.—No round, firm head, sutures, or fontanelles; no rotund, fleshy breech, with genitals and anus; ribs and intercostal spaces. A single intercostal space might be taken for sagittal suture. *Version.*

PRESENTATION OF TWO OR MORE PARTS.—HAND AND HEAD.—Not very unfrequent. *Occurs usually in wide pelvis.*

*Treatment:* Watch carefully, and as soon as membranes rupture, press it upwards. But if too far advanced, avoid meddling, for its presence merely delays labor. It has been said that the sharp olecranon tends to rupture perineum.

ARM AND HAND.—Rare.

HEAD AND FOOT.—May occur in unskilful turning.

Put a fillet on foot, and press up the head.

HAND AND FOOT.—When they occur, such cases terminate by nates or shoulders. *Traction of Foot.*

FEET, HAND, AND BREECH. HEAD, FOOT, AND HAND.

HAND, FOOT, AND CORD.—These three require merely traction of foot.

**Complex Labors** include CONVULSIONS, HEMORRHAGES, PLACENTA PRÆVIA, RETAINED PLACENTA, PROLAPSUS OF CORD, PLURAL BIRTHS, RUPTURE OF UTERUS, INVERSION OF UTERUS.

PUERPERAL CONVULSIONS. (*Eclampsia puerperalis*).

*Def.* “Violent and involuntary contractions of a part, or of the whole of the body, sometimes with rigidity and tension (tonic convulsions); but more frequently with tumultuous agitations, consisting of alternating shocks (clonic convulsions);

that come on suddenly, in recurring paroxysms," "accompanied or followed with more or less suspension of sensorial and intellectual faculties for a variable period;" occurring before, during, or after labor. By some are considered analogous to infantile convulsions.

*Frequency*: 1 in 602. 1 in 485. Arneth, 1 in 502.

*Fatality*: To mother, 1 in 4. To child, usually still-born, not always.

*Occur*: Mostly in primiparæ; most in male labors; strong and plethoric. (Instance of multipara with twelfth child; fatal issue.—*Amer. Jour. Med. Sciences*, Jan. 1851. With tenth child.—*Lancet*, July, 1851.)

VARIETIES.—1ST. BEFORE LABOR. 2ND. DURING LABOR. 3RD. AFTER LABOR.—First is the least frequent; very rare before six months; if at all, about seven or eight months. (Cazeaux records a case in which in two successive pregnancies convulsions occurred at six weeks.) Second is most common. Third not so common, and more favorable.

DIVISIONS.—EPILEPTIFORM; HYSTERICAL; APOPLÉCTIC.

CAUSES.—Divided into *Predisposing* and *Exciting*.

PREDISPOSING may also be arranged under the heads of *Hyperemia*, *Anemia* or *Spanemia*, and *Toxemia*.

PREDISPOSING.—First labors; plethora; pressure on aorta; nervous temperament; atmospheric causes, as highly charged electrical state; damp, moist, and foggy weather; mental excitement, as in unmarried; plurality; dead child; excess of liq. amnii; disorder of primæ viæ; contractions of uterus; retention of urine; *albuminuria*; few cases unconnected with *constipation*; previous injuries of head. Epileptics are not more liable than others. Of all these asserted causes, probably no one plays a part so important as the non-elimination of urea, and its consequent circulation, causing toxemia. Dr. Lever, in 1843, called the attention of the profession to the frequent coincidence of convulsions and albuminous urine, and in but comparatively few instances since, where albumen has been carefully sought for, has it been absent. The converse,

however, is hardly true to the extent claimed for it by Dr. L. In some cases, where circumstances have induced me to examine the urine, I have found albumen, but convulsions have not occurred. Dr. L. found in more than fifty analyses that albumen was detected only in cases that were attacked with eclampsia. Perhaps future investigations may prove that in some cases the convulsions occurring during labor are merely convulsions symptomatic of the retention of urea that occurs either in Morbus Brightii or from a temporary congestion of the kidney, and consequent non-elimination of urea, arising from pressure upon the emulgent veins, as stated by Cormack.

EXCITING CAUSES.—Loaded stomach; indigestible food; labor pains; rigidity of os and whatever opposes the action of uterus; straining during labor; irritation to the uterine nerves by introducing hand.

[T. Smith makes two divisions of causes. *Centric and Eccentric.*—"1st. Causes acting on the central organ; as pressure on the medulla oblongata by congestion, coagula, serous effusion; loss of blood; morbid elements in the blood; the influence of emotion. 2nd. Causes acting on the extremities of excitor nerves; as irritation of the incident spinal nerves of the uterus and uterine passages; irritation of excitor nerves within the cranium; irritation of the incident spinal nerves of the rectum; irritation of the ovarian nerves; irritation of the gastric and intestinal branches of the pneumogastric nerve; irritation of the incident spinal nerves of the bladder. As probable causes, may be enumerated irritation of the cutaneous nerves, of the nerves of the mammæ, and of the hepatic and renal branches of the pneumogastric."]

EPILEPTIFORM VARIETY.—SYMPTOMS.—Some premonition seldom absent; as agitation; malaise; irritability; dyspnoea; pain, splitting, dull, sharp, beating increased by stooping; on one side of head, or one coronal boss, or in back of head, refractory to treatment; *pain like a nail driven in*; nausea; vertigo; dimness; tinnitus; pain in epigastrio; muscæ volitantes; temporary blindness, drowsiness; face flushed; twitching of muscles; œdema of

face ; extreme restlessness at each pain ; change of manner, dull, heavy, stupid, abstracted, loss of consciousness, impeded utterance ; rigors ; pulse slow or quickened ; horripilation ; furred tongue ; constipation of bowels ; tenderness of uterus. Some of these may precede for some days ; some a few hours.

While in labor, patient may suddenly complain, " I can't see," or " is dazzled," &c., or violent " splitting pain in head" or stomach, and then become convulsed ; face is bloated and livid, throat swelled, carotids throb, jugulars prominent ; eyes seem to start, while the cornea may be drawn beyond sight, sometimes one outwards and one inwards, pupils usually dilated, sometimes contracted, sometimes expand on approach of light during interval ; lips in continual motion, mouth drawn spasmodically upwards or to one side, jaws at first depressed and then firmly closed, frequently biting tongue ; bloody foam on lips ; respiration at first rapid but heavy, thorax heaves, deep, irregular, labored, hissing ; all the voluntary muscles in violent spasms, arms and legs in rapid and violent contortion ; pulse at beginning full, slow, and oppressed, afterwards rapid and small ; bladder and rectum sometimes expel contents ; so also uterus may contract and expel foetus during unconscious state.

Continues five minutes to half an hour ; gradually spasms less violent, face less livid, breathes easier, foaming ceases, eyelids close, and deep sleep ensues with stertorous breathing more or less, rolls and moans, sometimes yawning ; pulse quick (and if slow, indicates a repetition) ; skin hot and dry, becomes perspirable. Awakes unconscious of what has occurred, and surprised at confusion, &c. ; is dull and heavy ; suffers from pain and soreness from exertion ; voice hoarse and rough. May recover consciousness, and recognise friends without ability to express herself clearly. Intelligence without recollection, may remain till next attack, with weakness, headache, and confusion. If continue to recur, coma is continuous. As many as eighteen paroxysms noticed in twenty-four hours.

A single convulsion rarely proves fatal.

*Convalescence* is sometimes tedious and uncertain ; for a

long time the gait may be unsteady, memory perverted, and sight abnormal. Frequently on recovery of memory, the period of perfect recollection extends much further back than the access of the paroxysm. Mania sometimes remains. Subsequent pregnancies are not necessarily liable to recurrence. A proclivity to abdominal inflammation is noticed after labors with convulsions.

**HYSTERICAL FORM.** Cases merge into each other. This form *occurs* in weak and debilitated. During gestation usually, or in first week after labor, while milk is in early secretion.

Is **CAUSED** by want of sleep, fatigue, disordered digestion.

**SYMPTOMS.**—Sensation of tightness about throat, choking, globus, hands carried to throat, oppression in epigastrio, sobbing. Face pale or flushed, hot not livid, not distorted, no twitching, no foam, no hissing respiration, no convulsive movement of jaw. Muscles of back contract, and form an arch; opisthotonos, screams, sobs, sighs, weeping. Does not lose senses. Urine limpid and profuse.

**DIAGNOSIS.**—From epilepsy. Puerperal eclampsia is *similar* in violence of convulsions, in total loss of consciousness, in lividity from apnoea, in coma. Differ—in epilepsy an aura, fits return at long intervals, paroxysms seldom fatal, some pre-existing derangement, while in Puer. convulsions cerebral congestion precedes, hissing characteristic, rapid succession of fits, often fatal, attacks healthy.

*From Hysteria.*—In H. never total abolition of intellect; no coma subsequent, limbs flexed forcibly and writhing, globus, no throbbing. Cold dash produces sobbing. Resists vaginal examination.

*From Coma of Apoplexy.*—In A. no convulsive phenomena precede coma, extremities have lost sensibility and mobility, hemiplegia. History essential to diagnosis.

*From Concussion,* by history and marks of injury.

*From Intoxication,* by odor of breath and vomiting of alcohol.

**Prognosis.**—Average fatality one fourth. Collins 5 in 30.

Velpeau 8 in 21. To child, generally, but not invariably fatal, 34 in 51 Merriman. Apoplectic form worst. Hysterical by no means dangerous, unless they are the result of some great mental shock, and then they are so. In primiparæ more fatal.

Convulsions after labor are less dangerous than early. Early in labor are more fatal, or during pregnancy. If labor does not permit completion, are dangerous. If in interval coma is continuous, and no consciousness occurs, unfavorable.

Quickness, or slowness of the return of consciousness, is a better test of danger than violence of fits. If remission is long, and second spasm shorter and milder, favorable. Children are said to be liable to convulsions, and die in a few days after birth.

**PATHOLOGY.**—Hitherto no characteristic lesion, and the post-mortem appearances are thought to be the effects rather than causes of convulsions. Cerebral congestion, or effusion of *serum*, and in apoplectic cases a clot may be found, pulmonary congestion, or peritonitis. The true pathology of P. convulsions is yet unwritten, but may it not be because little or no attention has been paid to the investigation of *renal pathology* in this affection? How many cases of epileptiform convulsions do Hospital physicians examine, and find no cerebral lesion at all characteristic? and is not this because organic kidney disease is not looked for, and still more obscure functional disease unsuspected? Were the urine, as found in the bladder of such cases, invariably tested, how much light might be shed on P. eclampsia. With the light the microscope is shedding on this branch of morbid anatomy in the well known form of *Morbus Brightii*, and more recently in the almost unexplored aberrations of *fatty deposit*, may we not hope to read this disease aright, at first by its autopsic revelations, subsequently by being taught to look for such changes? *Impurity of the blood* plays the most important part in P. convulsions; whether the result of hyperemia, anemia, or *toxemia*; and how striking is the analogy that prevails between the symptoms of *Morbus Brightii* and of incipient eclampsia, in the headache, œdema,

coma, convulsions, muscæ volitantes, amaurosis, and albuminuria of the two diseases.

TREATMENT.—*Prophylaxis* ; regular exercise ; bowels free ; calomel et pulv. antim., followed by senna draught ; venesection, 10 to 14 ounces ; cups or leeches to lumbar region ; open air ; unstimulating diet ; loose dress ; pulv. antimonialis in increasing doses ; tartar emetic ; attend to renal secretion ; digitalis and soda.

*During fit.*—A roll of muslin between teeth, about six inches long ; prevent from injuring herself, but not restrain her ; dash cold water on face with a whisk.

As soon as violence abates, *bleed* ; *bleed freely* ; Denman, 40 oz., Blundell 70 ; take 32 oz., and if pulse not affected, 16 more, one or both arms. Cold to head by stream or ice-cap ; enema of turpentine or salt, and repeat it ; sinapisms to legs and feet ; examine state of bladder ; if full, catheter ; make frequent vaginal examinations lest child be expelled unconsciously. Watch if she is uneasy, gropes and writhes about, and moans ; and if these signs occur periodically, the uterus is contracting ; if head on perineum she strains. Give a cathartic early ; calomel ℞j. mixed with butter and placed on tongue ; ol. Tiglii gtt. ij. with butter ; follow with senna draught ; some give camphor with calomel. Repetition of venesection to 2<sup>nd</sup> or 3<sup>rd</sup>, depend on pulse ; depend on state of circulation in interval, rather than on violence of attacks. Sol. ant. tart. grs. ij. to ℥iv. ; dose ℥ss. every 15 minutes, ad nauseam. If pulse thready and convulsions recur, chloroform, CC, or dry cups, leeches ; shave head except front locks ; ice-cap.

*Shall labor be terminated artificially.*—"It is not proper in all cases to deliver ; other circumstances must be taken into account, as the situation of the head, state of os ; is better to leave a patient to her own resources than to kill her by an operation." In 200 cases, one-half were delivered by natural efforts, 22 died, 1 in 4½ nearly ; by forceps, 35 deliveries, 13 deaths, 1 in 3 ; by crotchet, 43 deliveries, 12 deaths, 1 in 4 ; by version, 14 deliveries, 8 deaths, 1 in 2.

Forceps or version if design to save child; Ergot proposed; Crotchet for mother's safety; Os not to be forcibly dilated; Sol. Ant. Tart.; not use Ung. Bellad.; Convulsions will continue after labor; look to bladder and rectum; retained placenta.

*When recur after delivery.*—Chloroform, Opium, Hyosc. et Camph., Sol. Antim.

*For Coma.*—Leeches or cups, ice-cap, blister.

“Opium to control hyperemic convulsions is improper, but for the convulsions of debility it acts as a stimulant to an exhausted nervous system, and arrests the fits.” Enema a good mode. Camphor, ammonia, wine, brandy, &c., are useful on the same principle; for inanition, nutritious diet is of more service than medicines.

**TREATMENT OF HYSTERICAL FORM.**—As soon as patient can swallow, give Spts. Ammon. Fœtid. in cold water. Chloroform, Camphor, Æther, Assafetida, Ammonia, Valerian, Cold dash.

If disposed to vomit, use warm water freely. Bowels often irregular and costive, with dark evacuations and scybala. Give Enemata of Assafetida or Turpentine; and, after relieved, give diffusible stimulants with Opium.

**OF APOPLECTIC FORM.**—Not different from ordinary apoplexy. Is seldom seen, and usually fatal. Cæsarian section to save child after death of mother. Forceps.

**AFTER TREATMENT.**—Head cool; bowels soluble; diet light; apply child to breast; if these are flaccid, apply sinapisms.

**SEQUELÆ.**—Paralysis said to be rare. Eclampsia seldom recurs subsequently. Unsteady gait. Headache.

**HEMORRHAGES IN GENERAL.**—Difficult to determine frequency, much depends on accoucheur.

Said to occur 1 in 146 $\frac{1}{2}$ . Collins, 1 in 125. Arneth, 1 in 41.

*Fatality.*—To mother, 1 in 5 $\frac{1}{2}$ ; to child, 1 in 4.

Not every effusion of blood after labor is hemorrhage, but rather that which affects patient. Before term, any except a trifling loss, is styled **HEMORRHAGE** or **FLOODING**.

*Amount.*—May be ounces, or quarts.

*Danger* is proportionate to amount of blood lost, but rather to effect; to state of patient at the time; some patients affected by a few ounces, others hardly by a quart or more; to suddenness of loss; sometimes, though rarely, a single gush proves fatal. A draining hemorrhage may continue a long time, the loss being supplied by new blood, but even here a single gush may terminate life.

*SYMPTOMS.*—Countenance pale, ghastly; pulse feeble, frequent, fluttering, sometimes intermittent; weariness, weight of limbs, fainting, sighing, vomiting, tinnitus; more aggravated signs are, surface damp and chilly; breath cool; pulse intermits or imperceptible; intolerable restlessness and tossing; involuntary jactitation; insists on getting up; deep, convulsive, gasping sobs; inability to see; syncope in reiterated attacks; convulsions; death.

*MODES.*—*By profuse gushes*, as seen in placenta prævia. Source the denuded maternal sinuses and ruptured placental vessels. *By draining*, or passive exudation, from partly closed vessels, as seen in secondary hemorrhages.

*MEANS OF SUPPRESSING HEMORRHAGE.*

*Nature's Modes.*—1st. *Syncope*, by allowing coagulation during imperfect action of heart.

2d. *Vomiting*, from sympathy between stomach and uterus; caused by loss of nervous energy from anemic condition of brain. Value is uncertain; if it does no good it produces positive harm by favoring exhaustion. Of service as a symptom in concealed hemorrhage.

3d. *Coagulation.*—A divided artery retracts within its sheath, and allows fibrinous particles to become entangled; clots form; moreover the vessel diminishes its calibre by circular contraction. As bleeding goes on, blood is more disposed to coagulate. Syncope favors coagulation.

Fibrin is poured out and closes vessel, becomes organized, and permanent closure occurs.

In the uterus an analogous process to ligation occurs. The

uterine sinuses do not retract or contract per se, but the system of "living ligatures," formed by the uterine fibres contracting, effectually secures the open mouths of the sinuses. If the existence of utero-placental vessels be admitted, their retraction may be of some service. Coagulation also occurs, but is of inferior moment; the only reliable means for suppressing uterine hemorrhage is contraction of the uterine tissue. Clots may increase flooding.

The danger of Syncope in flooding is its duration. But it also impairs nervous energy, and thus diminishes contractile irritability, our only reliance.

*Position, &c.*—If hemorrhage is sparing, the supine posture will be of service and is essential. Patient should be on a mattress, lightly covered. The apartment cool and dark. Body and mind to be at perfect rest. Attendants to be few and quiet.

*Regimen Essential.*—Drinks cool; iced water, lemonade, Cream of Tartar, Infus. Rosar. with Acid. Sulph. Aromat. Nitr. Potass. largely diluted.

If flooding be long continued the drain must be supplied by food, either in broths, soups, jellies, or solids; solids preferable, the lighter meats, eggs, &c.; fluids cause flatulence, and diarrhœa may succeed, which is prejudicial.

*To judge of continuance* is of importance. Clear blood away from genitals. Spread between hips and bed a sheet, or better a blanket; place a clean napkin to vulva. If bleeding has ceased napkin will be slightly stained; if continuing, clots, or a stain more or less extensive. If quantity is large the color will be bright, if pale the exudation is small, but when long continued the color may be pale.

*Venesection.*—Used in threatened abortion. In strong and plethoric, in early and middle months.

Beware of collapse. The usual loss at time of labor may prove serious if venesection of much amount has preceded.

*Medicines.*—A. *Aperients.*—Useful if constipation. Avoid medicines acting on lower part of intestinal canal. Ol. Ricini,

Sulph. Magnes., Cal. Magnes., Seidlitz Powder, Rhubarb and Magnes., Cool Enemata best.

B. *Astringents*.—Kino, Catechu, Hematoxylon, Tannin, Gallic Acid, Matico, Alum, Acet. Plumb.

With the exception of Acetate of Lead, astringents are of but little service. Lead should be given boldly, and in combination with opium. Five or three grains of lead hourly, with one or less of Opium, may be used for three doses, and then the quantity lessened.

C. *Opium*.—Great diversity of opinion as to its power to arrest; of its use in controlling the effects of loss of blood, restlessness, &c., there is no difference.

“After severe hemorrhage, when countenance is sunk, eye hollow and glassy, lips blanched, skin cold, the whole person corpse-like, pulse gone at wrist, beat of heart slightly heard, stimulants vomited or uninfluential, there remains yet one remedy capable of restoring patient to life, and that is Opium; acts by producing cerebral congestion.” Use Laudanum in teaspoonful doses. If vomited, use solid Opium, or Enemata with Laudanum or Black-drop.

Applicable to flooding after delivery; as a stimulant when nervous irritability of uterus is almost gone.

Used in abortion to allay uterine action; usually combined with Acet. Plumb.

D. *Digitalis*.—Recommended by Burns. But it is uncertain, capricious, requires too much time, depresses nervous system.

C. *Turpentine*.—Advised by Denman; useful in passive.

D. *Ipecac*, by its emetic effect produces contraction of abdominal muscles and compresses uterus.

*Antimony*, as a nauseant.

E. *Tinc. Cannabis Indica*, useful in menorrhagia.

F. *Ergot*.—Useful whenever uterine contraction is admissible. Not in all forms of hemorrhage. Not if desire to save child. Hazardous where great exhaustion of vital energy; for it is inefficient as a nervous stimulant, and even seems to have

a sedative effect on the heart. May be given for floodings at *three periods*; 1st, when head is on perineum and about to be expelled; 2d, between passage of head and shoulders; 3d, and most beneficial, when insertion of funis can be felt; acts through the blood; not to be used before version.

Compared with Opium, Ergot is useful to prevent hemorrhage, Opium to save patients from the consequences of extreme flooding.

G. *Stimulants*.—Not to be hastily given, for Syncope is of advantage in restraining the flow, and to promote coagulation, though not of reliable value.

If system sinks, instead of rallying, use stimulants. Sustain nerve force, and thus ensure contraction. Alcoholic preferable, brandy and water, sometimes brandy *per se* less liable to be ejected.

Attend less to quantity than effect; give a teaspoonful, watch effect, and repeat. Mist. Camph. and Carb. Ammon. Beef tea in small quantities. Arrow-root and brandy.

*External Stimulants*.—Hot bottles, bricks, irons, &c.; Sinapisms, Capsicum. If cold douche has been used and patient chilled, insinuate a warmed blanket under.

*Mechanical Remedies. Cold*.—As a refrigerant is not useful in Ut. Hem. but as a stimulant it is invaluable. When discharge is moderate the powerful application of cold is unnecessary; cloths wet in cold or iced water may be applied over hypogastrium; sprinkling not to be continued too long; chilliness depresses.

More powerful mode is ice in vagina, over pubes, or into uterus if demanded. Long continued use may freeze the parts and destroy vitality.

Most powerful is a cold douche from a pitcher held high and poured in full stream on naked hypogastrium. Cold injections into uterus are very efficient, somewhat hazardous secondarily. Cold Enemata useful. Evaporation of Sulphuric Ether is another mode of refrigeration.

If patient be much reduced, heat may be applied to extremi-

ties and præcordial region, and cold locally. By some, sinapisms advised between shoulders or to breasts; to the latter some object, as likely to stimulate uterus.

*Plug or Tampon:* Applicable, 1st. To early miscarriages, if there is no hope of saving ovum; 2nd. To accidental hemorrhage, as a temporary expedient; also, 3rd. To placenta prævia, but only pro tem.; 4th. To menorrhagia in married. *Not to floodings immediately after delivery.*

Object is to prevent exit, and allow accumulation of blood, and so clog up vessels.

Material.—Best is made of several pieces of muslin about four inches square, silk handkerchief, tow, sponge.

Must crowd fully up to os, and make vagina full, and then secure with T bandage.

Not to be left over twenty-four hours. Retention of urine will require catheter; and, on account of retention, it is better to have the tampon made up of several pieces, that a portion may be removed without disturbing the whole.

*Alum Plug:* A piece of alum, about three inches long and one thick, crowded up to os; will often restrain hemorrhage. Not to be left over twenty-four hours; coagula become putrid.

*Discharge of Liq. Amnii:* by rupturing membranes, is a very useful remedy in latter months, in accidental hemorrhage, and partial placental presentation.

Not difficult to accomplish; catheter, stilet. Uterine contraction usually soon commences. Has been objected to as insufficient; but the operator, who has attempted the version in an uterus where the liq. amnii has been long evacuated, will concede the capacity of the uterus to contract. Rigby had 64 cases successful without necessity of version in accidental hemorrhage; Merriman, 30; Ramsbotham, 23 out of 25.

*Emptying Uterus:* When discharge of liq. amnii has failed, the only resource is to empty uterus. According to position of child and its life, the choice will lie between version, forceps, or crotchet.

In earlier months, a finger only is applicable; before sixth

month, the whole hand should never be introduced into uterus.

*Introducing hand*, and irritating uterus with ends of fingers, is applicable after expulsion of child; is useful. Also if uterus is in semi-contractile state. Not in great exhaustion. Some disapprove *in toto*.

*Kneading and grasping* with hand over the fundus uteri is perhaps the most certain means of *securing* contraction. Pressure frequently is requisite even for hours; and it is better, in cases of emergency, to be done by the accoucheur himself.

*Pressure on the Aorta*: Is spoken of as useful.

*Tight Bandaging of Arms and Legs*: Proposed by Mauriceau, is of service in maintaining vitality in extreme cases.

*Bandage or Binder*: Is much relied on to prevent flooding; but if bleeding has occurred, it is better not to trust to it until contraction is made certain by the hand.

A small block or book should then be enveloped in a napkin, and bound firmly over fundus uteri.

*Galvanism*: Proposed by Ramsbotham in 1834, has found an advocate in Radford; for inertia. Simpson's trials of it resulted in no definite conclusions.

*Nursing the Infant*: Is highly praised by Rigby, because of the well known effect of nursing upon after-pains.

*Transfusion*: Highly lauded by Blundell in extreme cases; is seldom applicable; still less frequently useful.

### Forms of Hemorrhage.

**MENSTRUATION DURING PREGNANCY.**—Dewees records the case of a woman who had menstruated but twice; she became pregnant, and, after a suppression of six months, the menses returned, and continued monthly till delivery. Subsequently a return of catamenia proved the accompaniment of pregnancy.

Whitehead relates seven cases, three of which recurred up to

termination of gestation; and by speculum found it to exude from ulcerated cervix.

(One instance of menstruation in early gestation has presented itself to me. The lady had an abraded cervix; in three successive pregnancies she menstruated the ~~three~~ <sup>three</sup> first months. Leucorrhœa exists during intervals.)

The interest of this abnormality is, that one may be deceived as to the existence of pregnancy. A concurrence of signs is necessary for diagnosis.

TREATMENT.—Cauterization of os.

### HEMORRHAGE IN CONNEXION WITH ABORTION.

—Flooding may prove fatal in expulsion before fœtus is viable. Ingleby relates four cases fatal before four months; Denman, 2; Whitehead, 3 fatal in 602. I knew a case which occurred a few years since, fatal at fifth month from repeated hemorrhages; and, more recently, one fatal between second and third months.

*Frequency*: The most common variety of hemorrhage.

CAUSES.—(See Abortion.)

TREATMENT.—Rest; cool bed; cold drinks; Lead and Opium; Antimony; Ipecac.; Tannin; Matico; Cold; Alum Plug; Tampon; Ergot. Remove ovum by finger or placental forceps.

HEMORRHAGE WITH “HYDATIDS,” may occur in 3rd to 8th month of apparent pregnancy.

*Nature*.—“Uterine Hydatids” are not acephalocysts, but the degenerated and exaggerated villi of chorion. Are the result of successful coitus. More correctly termed *vesicular mole*.

The usual course is that flooding occurs, a portion of the mass is expelled, hemorrhage is repeated, and health becomes affected.

*History*.—Symptoms of pregnancy exist, but with some peculiarities; uterus disproportionately large for time of preg-

nancy; more elastic; not firm; no quickening; no stethoscopic signs; per vaginam, cervix is found not developed; ballotement cannot be produced; expulsion makes diagnosis evident.

*Appearance.*—A mass of vesicles like white currants floating in a pinkish fluid; amount, half pint to a quart; size, from pin's head to size of grape; attached by a pedicle; shape round or elongated.

Described as having *three coats*; the external, serous, thin, transparent; middle fibrous; internal mucous. Both white and red vessels seen on surface; contained fluid, in small is transparent; in larger, straw color or pink; not coagulable by heat.

Acephalocysts have been said to exist in utero.

While in utero the vesicular mole is said to be contained in decidua, and floating free, or attached to ovum, according to amount of fluid.

Hemorrhage usually attends expulsion, and may endanger life from profusion and repetition. If much developed the uterus may expel its contents *en masse*, but if small, a portion is expelled with bleeding, and symptoms recur.

Rather copious watery discharge is a frequent occurrence.

Vesicular moles may remain long in utero, five or six years, and may attain even 15 lbs. weight; from the fact of this long persistence hydatids are not always a proof of criminality when occurring under suspicious circumstances.

*Prognosis.*—Usually, though not always, favorable.

Varies with age; continuance of discharge; effect on constitution: anemia and phthisis induced.

*Treatment.*—Before 7th month no manual interference permissible. If hemorrhage threatens exhaustion, use tampon; cold; ergot. After 7th month introduce hand and scoop out contents of uterus.

Subsequently bandage and compresses.

Lochia and milk will appear as usual.

To prevent return, use tonics, iron, zinc, and regimen.

“FLESHY MOLES.”—The expulsion is attended with hemorrhage.

They result from blight of ovum, and infiltration of the placenta or membranes with blood.

Occasionally a single large cyst is expelled. Some years since I saw one capable of containing at least a quart.

ACCIDENTAL HEMORRHAGE.—Before delivery; after 6th month.

*Occurred*, in 68,962 cases, 85 times.

*Fatality*, of 85, 24 were fatal, 1 in  $3\frac{1}{2}$  nearly.

*Cause of Hem.*—Separation of placenta.

Amount of blood lost is in proportion to extent of surface denuded, but may be fatal from a single inch.

CAUSES.—Shocks, blows, falls, laughter, fatigue, mental emotion, straining at stool, lifting weights, plethora, irregular action of uterus at placental attachment, morbid state of placenta, coiling of funis around neck.

SYMPTOMS.—Sometimes as soon as cause acts hemorrhage appears; sometimes much blood is poured out, and but little apparent externally.

Faintness, sinking, vomiting, cold extremities, rapid feeble pulse, hurried respiration, sense of distension. (The quantity of blood discharged less a measure of the danger than the effect produced.)

Pain, *i. e.* uterine contraction may accompany bleeding or not; acts as a means of restraining by closing bleeding mouths.

Rarely fatal at once; syncope occurs, patient rallies; syncope recurs, surface blanched, cold sweat, countenance sunken, pulse quick, weak, fluttering. If not arrested, sight becomes dim, ringing in ears, sighing, intolerable restlessness, death preceded by syncope or convulsions.

Examine to satisfy as to state of parts, os, cervix, source of bleeding, whether placenta presents or not.

DIAGNOSIS.—Mainly from placenta prævia. Occurs independent of period of gestation, and usually from an assignable

cause. In accidental uterine, contractions diminish bleeding; in placenta prævia increase.

Examination finds no edge or surface of placenta, or thickened cervix.

TREATMENT.—If no pain attends, os not dilated, bleeding not profuse, allow time; horizontal posture on cool bed; cold cloths or ice. Elixir Vitriol and Infus. Rosar.; cold water, lemonade, cream of tartar, nitrate of potash largely diluted.

For nervous excitement use Opium Tincture, Acet. Plumbi and Opium.

Cold enemata for bowels.

Alum plug. Tampon.

If hemorrhage is serious, rupture membranes; successful in most cases. Difference of opinion among authors. Ergot useful.

If hemorrhage is alarming, version or forceps, according to situation of child. Perforation.

Tampon, as a means of *ultimate reliance*, unsafe; permits internal hemorrhage.

Artificial dilatation of os is dangerous.

If asphyxia occurs and threatens death, use means to rally before delivery. Transfusion.

Great care as to bandage.

EXCESSIVE "SHOW."—Usually show is but slight; sometimes  $\text{ʒj.}$  to  $\text{ʒij.}$

Appears early in labor. Arises from laceration of small vessels of membranes in vicinity of cervix.

May be mistaken for placenta prævia; determine it by vaginal examination.

REMEDIES.—Rest. Cold.

PLACENTARY APOPLEXY.—*Def.* An internal hemorrhage between the uterus and placenta, the latter continuing attached by its margin; liquor amnii colorless. May burst through placenta and appear externally. Amount of blood

17 ounces—5 lbs.—121 ounces; fatal from 4 ounces; is very dangerous. Fatal as early as six months.

Occurs during gestation, or in labor.

Is rare.

**SYMPTOMS.**—Sickness, faintness, paleness, cold extremities, pulse rapid and feeble, tossing, feeling of distension, “of bursting,” gasping; no external bleeding.

Locally, a swelling at placental site, elastic, conical.

**TREATMENT.**—Rupture membranes. Ergot. If contraction not rapid or sufficient, introduce hand and turn.

Tampon objectionable.

**PLACENTA PRÆVIA.—UNAVOIDABLE HEMORRHAGE.—PLACENTAL PRESENTATION.**—(See Turning, described under Shoulder Presentation.)—Not known to ancients as an original presentation, but Hippocrates recognised the danger of placenta coming first. Guillemeau, in 1609, advised prompt delivery in such cases, but without assigning reasons. Mauriceau thought the after-birth to have fallen down. So also La Motte. Portal, in 1672, described it as an original presentation, and advocates speedy delivery. Giffard, in 1731, describes a case. Smellie, in 1745, alludes to the possibility of this implantation. Røederer, in 1759, was the first to give a distinct and complete description. Levret, in 1761, describes it, and suggests delivery by version. Rigby, in 1775, published his classical essay on the subject, and since this treatise, the subject has always claimed much attention. In 1845, the views of Radford, Kinder Wood, and Simpson, were published, and attracted much notice, and gave rise to much controversy.

*Frequency.*—About 1 in 500.

Cases occur in groups. Sometimes in succession to same patient.

*Fatality.*—To mothers, 1 in 3; to child, more than half—65 per cent.

*Varieties.*—Partially or completely over os; no proportion

obtains between amount of blood lost and extent of implantation.

Hemorrhage is a necessary and almost invariable attendant, and *occurs* on an average three weeks before labor; *variety*, as early as sixth month, seldom before; as late as commencement of labor.

*Cause of hemorrhage.*—Is the withdrawal of uterine walls from a portion of the surface of placenta, and both uterine sinuses and placental vessels bleed.

PROGNOSIS.—If left to nature usually fatal; not invariably, for strong pains have been known to force away placenta, and subsequently foetus.

SYMPTOMS.—Hemorrhage during gestation without known cause, as exertion, &c.; usually without pain at first, but distinctly increased by each uterine contraction subsequently.

Amount may be slight, or enough to produce syncope. Rarely a first attack fatal. (Lee records one.)

DIAGNOSIS.—Resort at once, if hemorrhage is in progress, to vaginal examination; if it has ceased, take care to be immediately summoned on recurrence. Avoid relying on "no pain" as a test of labor, and of danger.

Examination will produce bleeding, hence *let it be sure*, and introduce two fingers, or whole hand if necessary, for os most probably will be high up.

A clot may give the sensation of the placenta, or may cover and obscure its surface; but a coagulum can be broken down; if in doubt hook it off if practicable, and examine it in water; cervix has thick spongy feeling. If centrally implanted no membranes can be felt; in partial cases they may be distinguished.

In early gestation ballotement is interfered with, if placenta involves anterior lip.

Rigby thinks amount of attachment influences time of hemorrhage; occurring early when partial, late when central implantation.

Labor pains increase the hemorrhage, but it may occur without pain.

TREATMENT.—*Varies with* actual existence of hemorrhage; period of pregnancy; amount of attachment; state of os.

*Indications in early*: to restrain bleeding by temporary expedients; *if in labor*, to promote evacuation of uterine contents and contraction of uterus.

*In early*, use rest in horizontal position, light covering, cooling regimen, saline aperients, cold enemata; avoid purging.

One or more such occasions will occur; leave special directions to be sent for on recurrence.

Generally at sixth month, nature will effect delivery unaided. Perforation of membranes with a stilet and elastic catheter has been advised. If attachment be partial, rupture membranes and give ergot. (Objection to ergot—difficulty in version if required.)

If os is dilated and hemorrhage profuse, version at once.

But if os not dilated, must wait, *but only till dilatable*.

Hand not to be thrust through os before some yielding, for dribbling hemorrhage may follow delivery.

*Size of os not to guide*, but *its dilatability*, for death may occur and os be but little *dilated*; sometimes placenta itself may prevent dilatation.

Occurring early, say at 7th month, os is not only not dilated, but cervix is *unprepared to dilate*.

*Time of interference*: to be guided by amount, frequency, and suddenness of hemorrhage, but especially by its effect on system; by *dilatability* of os.

Better be too early than too late.

If not dilatable, push an alum plug to os, and on this use a *full grown* tampon to vagina; but watch carefully, for hemorrhage is in progress internally, and delay is to be practised only till os is dilatable. Watch surface, countenance, and pulse; if a "sensation of bursting" is complained of, hemorrhage is occurring and is serious; not to be left longer than 24 hours; catheter requisite.

If great general relaxation occurs may be sure of dilatibility of os ; then it is time to interfere.

Be ready to turn on withdrawing tampon. (Directions for version, page 145.) Use left hand ; feet in 9 of 10 cases are found posteriorly on the right side of mother.

Avoid perforating placenta if possible ; if vitality is low choose the easiest mode of passing.

Dewees objects to passing through placenta, because, *1st.* It loses time. *2nd.* It augments flooding by detaching more of placenta. *3rd.* The aperture made is too small for foetus. *4th.* The opening made by child's body will not permit head to pass. *5th.* This increases hemorrhage. *6th.* Destroys vessels on which child's life depends. *7th.* Is sometimes impossible in central cases.

As soon as feet are brought down, give Ergot. May expect hemorrhage to moderate as soon as breech engages. Secure contraction by pressure, cold, and gradual delivery. Deliver placenta if delayed.

Sometimes patient is exceedingly reduced, has even fainted, and then bleeding has ceased, to be renewed on recovery. Danger is, if hand is introduced to deliver, flooding may be reproduced, and patient die ; or if undelivered, will die on recurrence. In such a case, use stimulants freely, externally and internally, but avoid delivery, unless hemorrhage is severe. Wait for reaction. As soon as flooding recurs, proceed. Material difference whether syncope is the result of sudden gush or a draining hemorrhage.

OF DETACHING PLACENTA AND LEAVING TO NATURE.—Proposed by Kinder Wood of Manchester, in 1822 ; advocated in 1845 by Radford and Simpson ; founded on the fact that placenta is sometimes expelled before foetus, and in such cases flooding ceases. Simpson brings 141 cases ; of these, 10 women died, 1 in 14. By old practice, 1 in 3. In 110 cases, 73 children were dead, 69 per cent., and 33 alive, 1 in 3. S. says in 19 in 20 cases, bleeding diminishes or is arrested on detaching the placenta.

*Applied* to cases where hemorrhage is great, puncturing membrane insufficient, and turning inapplicable, from undilated os or contracted pelvis; again, when fœtus is not viable, and version not applicable or demanded; when too much reduced to admit of version; when child is dead; in primiparæ; child is not to be extracted unless a mal-presentation requires version; the operation doubles the hazard.

*Objections*: 1st. Not applicable to that severe form which occurs about seventh month, when cervix not developed, and unwarrantable violence would be requisite to detach placenta. 2nd. Ordinarily as much violence is required for detaching as for version. 3rd. If left to nature, *some days* may elapse before expulsion, and irritative fever may arise, besides anxiety to accoucheur, patient, and friends. 4th. Fœtus dead, unless in exceptional cases. 5th. Loss of maternal life is not lessened, for though hemorrhage is relieved, irritation of nervous system is increased. 6th. Affords opportunity for indolent practice, and screening culpable inability. 7th. Increases difficulty in malpresentations.

SUMMARY OF TREATMENT.—1st. If no exhaustion, or it is just commencing, turn and deliver as soon as *os is dilatable*, even though size be only half a dollar. If not, use tampon, and watch the patient.

2nd. In extreme exhaustion, do not turn until reaction is effected.

3rd. If os is rigid, tampon. If exhaustion threatens, detach placenta and leave, rather than to *force* hand through *undilatable os*; bearing in mind distinctly the relaxing effects of bleeding on cervix uteri.

HEMORRHAGE AFTER BIRTH OF CHILD.—May occur from, 1st. Want of care on the part of the accoucheur, in not following down uterus as the child is expelled. 2nd. By imprudence in soliciting descent of shoulders. 3rd. By blood collecting behind placenta, as it clogs the cervix. 4th. From

inertia of uterus. *5th.* Irregular contraction. *6th.* Adherent placenta.

*Circumstances leading to Hem.*—*First*: To ensure safe expulsion of child, to promote expulsion of secundines, and to prevent hemorrhage, no adjuvant means is of more importance than steadily to crowd down the fundus uteri as the child is passing.

*Second*: Too often it happens that the wear of patience in a tedious labor, or the fear of asphyxia after delivery of head, prompts the “hooking down of the arms,” and permits a vacuum to occur in the non-contracting uterus, that is soon filled with blood.

*Third*: If the placenta be detached in such wise as to be rolled up longitudinally, a channel is formed that allows the blood to drain off, and no accumulation ensues; but if it is thrust down so that it completely closes os, blood may collect behind it, distension and concealed hemorrhage result.

**RETAINED PLACENTA.**—Occurs from inertia. Hour-glass contraction, or Adhesion. With each there may or may not be flooding.

Not every case of delayed expulsion constitutes retention of placenta. Often said so by young practitioners, and yet find the organ in upper part of vagina, or partly within and partly without os, or lying loose in uterus. Simple expedients relieve these delays, as coughing; bearing down; grasping uterus firmly; “blowing into the hand;” or, as I have seen, putting a finger down the throat to excite retching. Blundell says: “In these cases you act very unwisely in leaving a patient, instead of waiting to procure further assistance, and while you are away, perhaps some old woman comes into the room, puts a candle in her throat, excites retching, and liberates the placenta at once.”

A placenta may remain several days in utero and produce no bad symptoms, but the patient is never free from apprehension of danger, from pains, from hemorrhage, or constitutional irritation.

*A foreign body in utero gives rise to, 1. Pains, dull and heavy in lumbar region, such as are called "after pains;" to these no objection, but the contractions of which they are the evidences are useful to expel.*

2. To *Hemorrhage*, which may be more or less copious, and constitute the great danger; such may occur even after two weeks' interval of quiet, and for relief removal alone suffices.

3. *Discharges*, often excessively fetid, though sometimes retention occurs without offensive discharge. Why some are fetid and others not so, is uncertain.

For this, the only remedy is delivery, either manually or otherwise.

4. *Constitutional Irritation* is apt to result, marked by purging, vomiting, and typhoid symptoms; in some autopsies, where the placenta was not expelled, I have found pus in the veins of broad ligaments.

Not always so; sometimes no ill effect.

**INERTIA.**—A state of loss of contractility frequently succeeds tedious labor. Is equally the cause and the effect of flooding. After expulsion of head, there is a cessation of effort; and if placenta has become detached, flooding ensues. Excess of liq. amnii, or plurality, by over distension, impairs contractile power, as in paralysis vesicæ. Too ample a pelvis, allowing sudden evacuation of uterus, takes the organ by surprise, and before contraction occurs, flooding ensues.

*Symptoms*: Recognise state of uterus by finding it through the abdominal parietes, a large flabby bag, wanting the firmness of normal contraction.

If placenta is attached throughout, there is no flooding; but if partially or wholly detached by uterine efforts, or by officious meddling with cord *before* uterus is contracted, flooding ensues, and may be internal or external, *i. e.* "concealed hemorrhage."

Grasp uterus, and blood gurgles forth. Patient is watchful and restless, pulse "hemorrhagic."

*Treatment*: Friction over uterus; cold cloths; cold sprinkling; ice externally and internally; cold douche; ergot;

manual delivery of placenta. Not to wait more than an *hour and a half* ordinarily; if hemorrhage demands interference, proceed sooner; if labor has been tedious, a longer delay is permissible.

*Objections to long delay.*—1st. Patient is not safe till placenta is delivered. 2nd. The moral influence on patient; delay excites apprehension of inefficiency or incapacity of accoucheur; patient is restless and anxious, and friends increase her discomfort by suggestions. 3rd. Soon after delivery parts are relaxed and manipulation is easy; a few hours' delay interferes with introduction of hand. *Placenta never to be removed without ensuring contraction of uterus.* As long as uterus is inert, the placenta serves as an irritant to produce contraction, and if withdrawn, its place is soon supplied with blood. *To deliver placenta from uterus*, press one hand on the fundus to keep it steady, pass the other along the cord, grasp placenta, and usually the irritation induced will expel the whole uterine contents; if so, there is no danger: if no expulsive efforts ensue, the hand must be retained in utero, and uterine walls irritated with tips of fingers, while cold, ergot, and external pressure, are used.

If patient is in syncope, it is better to use means to rally, than by interference to be "unhappily auxiliary to her destruction."

Some recommend compressing the bleeding surface between the hand in utero and that on abdominal parietes; questionable.

IRREGULAR CONTRACTION.—*Hour-glass contraction. Encysted Placenta.*

True hour-glass contraction, *i. e.* stricture of uterus in middle, seldom exists; most cases of this so-called, are strictures of the os; but irregular contraction may affect any part.

*Causes:* Rapid delivery; tedious labor; over-distended uterus; irritation of os by interfering with cord; ergot; friction just over pubes, not over fundus uteri.

Exists in three situations, perhaps in any part of uterus,

though not always detected. *1st.* Contraction of cervix at os may enclose part of placenta. *2nd.* Contraction above cervix, hour-glass form. *3rd.* Cylindrically. Sometimes two strictures; probably os contracted and a stricture also in body of uterus.

*Symptoms:* External examination could detect only the third state, and here would find uterus rolled up and extending to epigastrium. Per vaginam, may find placenta closely embraced by cervix, or if not here, hand passes into uterus, and tracing the cord, detects an aperture which leads into a chamber in which is the placenta (this sensation may be mistaken for ruptured uterus and escape of foetus; but it is to be recollected that while the child escapes through rupture, the placenta seldom does.)

This aperture may be easily dilatable, or spasmodically and firmly contracted on being touched.

With these states, there may or may not be flooding; and on this depends necessity of interference.

*Treatment.—Indications,* are to relieve spasm, and to produce uniform contraction.

If no special reason for hurry, friction gently and wait, recollecting likelihood of hemorrhage; anodyne. But if flooding occurs, proceed to delivery of placenta. If strictured part is dilatable, pass through and remove. If it is like an irritable stricture, assuming a "whipcord-like feel" when touched, give chloroform. Former practice was to bleed  $\text{ʒxij}$ . to  $\text{xx}$ ., to give an efficient opiate, and then, after half an hour's delay, to dilate and remove; of course presuming the absence of flooding. Chloroform supersedes this practice. Ergot has been suggested. Opium in large doses is objectionable: may prevent the subsequent contraction, which is essential to safety.

**ADHERENT PLACENTA.**—Ordinarily the last contractions that expel the child also detach placenta; but if morbid adhesion, either partial or complete exists, this is prevented. If adhesion is entire, there is no flooding; if partial, some of the uterine

sinuses are enclosed, and dangerous hæmorrhage ensues. Often this complication co-exists with irregular contraction; also with inertia, adding greatly to hazard.

Adhesion may be *partial or entire*. Burns has a case which proved fatal, the placenta being retained four days by an adhesion not larger than a shilling. Sometimes adheres in several spots. May be intimate or loose; sometimes so complete as to be inseparable after death, not even by maceration.

This abnormality is apt to recur in same woman; the knowledge of such a probability will ensure a more than ordinary celerity when summoned to such patients; a few minutes decide the question of life or death.

*Causes*: Usually said to result from inflammation, but it is doubtful. This form may occur altogether independent of mismanagement.

A peculiar and perplexing mode of adhesion is when an edge is attached, and a portion is protruded through os; and even, as I have seen, through vulva. The situation of placenta influences this, *i. e.* if near os. Danger is, that reliance on the rule of feeling the insertion of cord being an indication for delivery, misleads; if the placenta is torn off, secondary hæmorrhage may occur, or possibly inversion of uterus be produced.

*Symptoms*: Cannot suspect adhesion till delivery attempted; then traction causes descent of whole uterus, the placenta receding on relaxing the efforts.

*Treatment*: If no hæmorrhage, wait and use frictions, grasping and kneading uterus. Ergot.

Flooding requires interference. Pass hand into uterus, insinuate fingers between uterus and placenta, and move them from side to side till all is detached. Of course flooding ensues. Some advise to pass hand along cord to placenta, to expand fingers over the edges, and so squeeze it off. If the cord is followed the foetal surface is touched, and membranes embarrass; if so, withdraw hand to cervix, feel for the bare uterus, pass fingers along it to placenta, detach it, and *suffer uterus to expel* the mass and hand.

(Always examine the placenta after manual delivery.)

(Portions of membrane are apt to remain and cause secondary hemorrhage.)

If adhesion is so strong as that no justifiable force will detach it, possibly some parts may be removed.

*If placenta be left in utero* the case may terminate in three ways.

*1st.* Placenta expelled in 12 to 24 hours without putrefaction or having caused irritative fever. *2nd.* Expelled putrescent with injury to general health. *3rd.* No placenta ever cast off, and no evidences in lochia.

*In 1st.* Putrescence probably weakens attachment, and there is sufficient energy to expel.

*In 2nd.* Putrefaction advances rapidly, favored by heat and moisture; absorption of putrid matter occurs, and irritative fever of a dangerous form ensues.

With this may occur hemorrhage, either immediate or remote, as late as 38 days, and one by Ingleby fatal at end of 5 weeks, from recurrence of bleeding.

*In 3rd.* It is supposed placenta is absorbed; such cases are recorded by Naegele, Salomon, &c.

If the disrupted portion escapes notice, suspect its existence in utero from pains, and from lochia at first normal, afterwards dark and fetid; also hemorrhage.

*Treatment.*—*Indications* are to arrest hemorrhage; to detach placenta; to correct fetor of discharge; to support constitutional energy; to check inflammation.

To remove detached part, Burns suggests tampon. Objectionable.

Cautious attempt to separate remnant is justifiable; but violence is to be deprecated.

Ergot, if no constitutional contra-indication.

Bandage and compress over fundus.

To correct fetor of discharge use vaginal injections; chamomile tea; Sol. Chlorid. of Soda.

For local inflammation, Leeches ; Poultices ; Cal. et Ipecac., or Pulv. Dover. ; Opium.

Special attention to ventilation and cleanliness.

To support strength by diet and tonics.

#### HEMORRHAGE AFTER DELIVERY OF PLACENTA.—

Extremely dangerous ; often insidious ; may occur unexpectedly ; generally within half hour. No symptom gives warning, and attention less called because danger appears over.

May be either *external* or "*concealed*."

*Led to suspect* internal form by pallor and faintness, nausea, vomiting, pulse feeble and fluttering, restlessness, tossing ; desires fresh air and to be fanned ; respiration quickened ; sighing ; such exclamation as " Oh, I shall die," &c. ; and death.

Lay the hand on abdomen, and instead of firmly contracted uterus, find belly nearly of the size preceding delivery, soft and fluctuating ; pressure produces a gurgling sound, and blood gushes from vulva, either in clots or fluid.

Examination of the napkin detects the external form.

CAUSES.—Inertia, either from constitutional or local inaptitude to contraction of muscular fibre. Sometimes the debility after an ergot labor ; or reaction from use of stimulants ; painful mental emotions ; heated atmosphere ; too much clothing ; excitement ; clot plugging os.

TREATMENT.—Steadiness and energy on the part of accoucheur are the first essentials. *Press firmly* over fundus uteri, *for hours* if necessary, *with your own hand*. Conjoin cold douche, from as great a height as possible on naked abdomen. Ergot. Less efficient means are ice to hypogastrium introduced into vagina or into uterus. Inject cold water into the uterus. After the flooding is controlled, but *not till then*, use a bandage with firm compresses ; but if it returns, trust only to manual pressure.

Alum plug. Compression of abdominal aorta.

Sometimes coagula distend uterus, and gradually increasing, great flooding ensues ; pass in the hand ; detach and scoop

out clots; conjoining cold, pressure, and ergot. (Authorities differ as to inserting hand.)

Tampon advised by some; is bad practice.

If patient seems just hovering between life and death, give Ergot or Tinc. Opii, but not introduce hand or apply cold.

Brandy, Carb. Ammon.; Aq. Ammon. to nostrils.

Opium in Tinc.; dose, a teaspoonful.

Hot bricks or bottles; Sinapisms; Capsicum.

Transfusion.

Nursing the infant.

**Hemorrhage with Firmly Contracted Uterus**, is mentioned by Gooch, and considered to be result of excessive vascular action. He found it accompanied by "red face and throbbing pulse," and suppressed it by introducing the hand and applying cold. Subsequently he prevented it by venesection, and strict antiphlogistic regimen before labor.

May it not arise from attachment of placenta *near* the os uteri, producing great vascularity, and possibly imperfect contraction? Has been found where a small piece of placenta had been left; also in lacerations of os; with intra-uterine polypus.

Montgomery thinks it may arise from thrombus near os uteri.

*Remedy*.—Alum plug.

**Hemorrhage with Polypus**, rarely occurs. The following case will serve to elucidate this form. In May, 1852, I was called to see a primipara flooding after delivery. The labor had been normal, the placenta being expelled spontaneously. Flooding followed, but the uterus was small and firm. On inserting the finger between the labia a tumor was found, which being traced up was found to be attached to the anterior lip of the uterus; hemorrhage became very considerable (about two quarts). The treatment pursued was, Tinc. Ergot in drachm doses, firm manual pressure over the uterus, and the introduction of the hand. The hemorrhage did not recur.

Three weeks after, I examined the uterus and found the tumor diminished to a mere excrescence on the uterus; the length at the time of the hemorrhage was at least three inches, and the tumor very much resembled a virgin uterus in size and shape. The main point of interest is the propriety of operating. The hyper-nutrition of all parts connected with the uterus in its impregnate condition, admonishes of the propriety of waiting till the organ returns to its physiological state before attempting the removal of the abnormal growth.

**Secondary Hemorrhage**, though not very frequent, occurs more frequently than systematic writers lead us to believe. I have met with several cases, some of them of severity. Robertson records 14 cases.

*Occurs* at any period after delivery up to 30th day. Dr. Putnam mentions a case at 6 weeks after delivery.

*Fatality*: Not frequently fatal. Robertson relates a case fatal at a month after delivery. Boivin a case fatal at 30th day.

CAUSES.—Relaxation of uterus. (Inertia may last for several days.) Retention of clot, or membranes, or placenta. Premature exertion in rising, walking, &c. Polypus. Inversion. Mental emotion (a case by Murphy). Excitement from visits of friends. Softening of uterine fibres and subsequent sloughing, a kind of aneurismal sac forming in uterine walls. Dr. Montgomery alludes to a form of thrombus situate in uterine walls near the os, and relates, on the authority of Dr. Johnston, a case of hemorrhage fatal in one and a half hours, occurring five days after delivery. A fatal case from same cause related in Med. Exam., Oct. 1851. A draining may follow in cases of placenta prævia where the hand has been forcibly introduced. Inversion should be inquired after.

TREATMENT.—Rest; Ergot; Alum plug; Pressure. As a last resort, Tampon. Be sure that no portion of membranes or placenta is retained.

**States of Uterus after Delivery**.—If labor has been well conducted, the uterus will generally be about size of foetal

head, firm and hard. It is possible for hemorrhage to occur in this state. (Gooch, Ingleby, Porter.)

Again, uterus may be contracted, but large, as in multiparæ. Not a dangerous state.

Another form, is large, doughy, and indisposed to contract, and even under friction sluggish in action, and not firm. Often connected with serious flooding.

Occurs in feeble constitutions; protracted illness; over-distension by plurality, or liq. amnii; multiparæ.

A fourth variety, alternately contracting and relaxing. Always dangerous.

**After-Treatment of Flooding.**—Insist on horizontal posture.

Rising up has often proved fatal. Maintain for 24 hours.

Gently insinuate dry clothes under; a blanket best.

Head to be kept low.

Drinks and food cold, but not innutritious.

Sleep not to be prevented, but nutriment to be given frequently.

Watch pulse carefully; if quick, compressible, and jerking (hemorrhagic); be on guard for recurrence of flooding.

## TABLE OF THE TREATMENT OF HEMORRHAGES.

Before Normal Labor.	MENSTRUATION DURING PREGNANCY.	Cauterized os; Gallic Acid; Tannin; Matico; Oxid. Argent.; Acet. Plumb. et Op.
		Horizontal posture; Slight covering; Cold drinks; Plumb. et Opii; Antim.; Ipecac; Tannin; Gallic Acid; Matico.—Cold; Alum plug; Tampon; Ergot; Removal of ovum by finger or placental forceps.
During Labor.	HEM. WITH ABORTION.	Tampon; Alum plug; Cold; Ergot; Removal by hand introduced.
	HYDATIDS.	
	ACCIDENTAL HEM.	Complete rest of body and mind; Lead and Opium; Alum; Tannin; cold Enemata; Alum plug; Tampon;
	EXCESSIVE SHOW.	Rupture membranes; Ergot; Version; Forceps; Perforation; Bandage and compress; Transfusion.
	PLACENTARY APOPLEXY.	Rest; Astringents; Cold.
	PLACENTA PREVIA.	Rupture membranes; Ergot; Version; not Tampon.
	AFTER BIRTH OF CHILD.	Rest, &c.; <i>If partial</i> , rupture membranes; Tampon; <i>if Central</i> , Tampon <i>Version</i> ; detach Placenta.
	After Placenta.	<i>From Inertia</i> .—Friction; Cold cloths or Aspersions; Ice; Cold dash; Ergot; Introduce hand.
		<i>With Irregular Contraction</i> .—Friction; Cold; Introduction of hand, preceded by Chloroform.
	With Firm Contraction.	<i>With Adherent Placenta</i> .—Detach and remove; Cold; Pressure; Ergot.
Cold douche; <i>Firm and prolonged pressure manually</i> ; Ergot; Introduction of hand; Firm bandage; <i>Tampon never</i> ; Opium; Stimulants external and internal; Nursing; Transfusion.		
After Delivery.	Ice in Vagina; Alum plug; Bandage.	
	Ergot; Pressure; Introduction of hand; Alum plug.	
After-Treatment.	SECONDARY HEMORRHAGE.	Be sure that the whole of placenta and membranes are removed; Watch lest Inversion; Pressure; Ergot; Ice; Alum plug; Lead and Opium.
		Insist on horizontal posture; Head low; Cold drinks and food; Allow sleep, but feed often.

**Remote Effects of Loss of Blood.**—*In Head*: Throbbing of temples; pain; sense of a band; vertigo; tinnitus and other noises; intolerance of noise, more rarely of light.

*In Circulation*: Fluttering or palpitation; sense of faintness and of impending dissolution; throbbing of carotids and of aorta; sense of fainting on being raised; starting in sleep; hurry and alarm on awaking; demand for air or smelling-bottle.

*In Respiration*: Panting; hurry; sighing; heaving; moaning; catching; gasping; sometimes an irritating, hacking cough, paroxysmal.

*In Stomach*: Retching; vomiting; hiccup.

*In Bowels*: Constipation; diarrhoea; flatulence.

Various inflammations are simulated, as of head, pleura, peritoneum.

Sudden death may occur from suddenly assuming an erect posture.

**TREATMENT.**—Restore the functions of the alimentary canal, enemata, aromatic purgatives, &c.

Give anodynes to allay irritation.

Nourishment in small quantities, and frequently.

Fresh air an essential.

Quiet of body and mind to be ensured.

### PROLAPSUS OF CORD, LABOR WITH.

*Occurs*: 1 in 240 or 1 in 282; Arneth, 1 in 200. To child it is a serious complication; in 392 cases 245, or over half, still-born; "12 in 37 alive." To mother, no influence in labor.

The close embracing of child by uterus is chief obstacle to prolapsus; hence, whatever prevents this, acts as a cause.

**CAUSES.**—*1st.* Malposition of child, as belly presenting; is doubtful. *2nd.* Sudden rupture of membranes, and profuse gush of liq. amnii. *3rd.* Small child and excess of waters. *4th.* Feet or knees presenting; which do not fill strait. (Does

not occur most with footling presentations. More cases occur with the head, for this is the commonest presenting part; relatively most with breech or trunk.) 5th. Excessive length of funis, an important feature; denied by some. 6th. Placenta inserted low in uterus. 7th. Large or deformed pelvis. 8th. Irregular or spasmodic contraction of uterus.

*Period of Danger*: Begins with pressure of head upon cord, and, if left to nature, case seldom terminates favorably to child.

*Causes of Death*: Asphyxia. A case recorded in which cord burst, fatal.

*Favorable Circumstances* are a large pelvis and small child; active and expulsive pains; cord situated at sacro-iliac symphysis.

**DIAGNOSIS.**—By pulsation of cord, which is to be appreciated during interval of pains. Before rupture of membranes, it feels like a ridge across os.

**TREATMENT.**—Depends on indications from cord. (By no means is every pulseless cord connected with a dead child.) If putrefied or pulseless, leave case to nature. Prevent rupture of membranes as long as possible.

*Pushing up Cord*: Rarely succeeds. *Hooking cord around a limb*, is hazardous. If attempted, place the patient on the side opposite the cord; use the hand, the dorsum of which best fits the sacrum; introduce two fingers, and, during intervals of pains, draw the cord forward to get it to the most shallow part of pelvis, then press up the most dependent part first. *Mechanical Expedients*: Enclosing funis in a bag; pushing up and inserting a sponge; a flat steel rod; all prove futile. Meigs suggests a piece of ribbon made into a pocket at either end, into the lower insert the cord, and into the upper a thin rod, and push up.

Arneth introduces the whole hand, and succeeded in ten of eleven cases.

*Forceps*: If os is dilated and head engaged.

If present when membranes rupture, *Version*, if liq. amnii drained away, avoid turning. For Version requisites are, 1st,

Pulsation of cord ; 2nd, Head not entered pelvis ; 3rd, Pains not strong ; 4th, Pelvis ample ; 5th, Accoucheur an expert. Multiparæ may bear version ; but in primiparæ the only resource is placing cord near sacro-iliac symphysis. Such is the advice of British authors. Of 33,435 cases, the funis prolapsed in 200, of the children 147 were dead. In France, 42,760 cases, 62 of prolapsed funis, 17 born dead ; version employed 31 times. Of the risk to mother, no mention is made in the French table ; in the British, no mother was lost.

### PLURALITY, LABOR WITH.

*Occurrence* : Twins in British, 1 in  $65\frac{1}{5}$  (in Dublin, 1 in 64) ; in 455,632 cases from various sources, 1 in  $77\frac{3}{4}$ .

Triplets, in 5,840. Quadruplets very rare ; in Dublin, 1 in 129,172. A quintuple premature birth is recorded in *Obstet. Review*. (A Belgian paper states, that a woman 33 years old was confined of triplets, being her 22nd, 23rd, and 24th children. In nine years she has had 24 children, all in good health, all girls.)

*Danger* : Is more than in single pregnancies. To mother, 1 in 20. To child, 1 in  $3\frac{1}{3}$  ; but frequently premature births occur. More fatality among boys, and particularly when opposite sexes.

*Signs of Existence* are uncertain. Two foetal hearts, not synchronous, and distinguished by two auscultators simultaneously, would be certain evidence. Increased size may proceed from ascites ; enlarged ovary ; excess of liq. amnii ; flatus ; adeps ; too prominent lumbar vertebræ.

Each child possesses a separate envelope and separate placenta, though often there is but one placental mass. With such cases as Siamese twins, probably but a single set of membranes existed. Labor is often premature. Children smaller than in single births ; though I knew of one case where each child weighed over eight pounds. Unequal development not infrequent.

Opposite sexes are most common. Of presentations, both are head most frequently. Commonly thought that if opposite sexes, the female is sterile; is not so. The cow alone, as far as known, is a "free marten."

*Symptoms*: Labor is slow notwithstanding that pains are good, because uterine force does not act directly.

After the first birth, there is usually an interval, generally less than half an hour; but it may be 2—10 hours, 8 days, 14 days, 6 weeks. In one case of triplets, six days intervened between the first and other two births. In two cases, I noticed 38 and 48 hours respectively between twins.

The second child is the more easily delivered. Of presentations, the breech is the best for second child.

After the birth of one, a second foetus may be simulated by a large placenta, an accumulation of blood behind a clot or the placenta, enlarged ovary, kidney, or spleen; flatus.

Vaginal examination decides such questions. Sometimes the membranes of a second child can be distinguished, but presentation not manifest.

*Treatment*: Never leave one foetus in utero (as has been done).

Some advise a binder immediately after the first birth.

Avoid traction on cord of first child, lest bleeding be produced; and even the second do not hasten, for the uterus requires more time to contract than in single birth.

Authorities differ as to the propriety of informing mother of the existence of a second child.

*The main point for decision* is, when, and how, interference is necessary for delivery of second child. If delay of more than half an hour, commence friction. This failing, rupture membranes. No objection to ergot, for passages are dilated. If presentation is natural, membranes may be ruptured at once, but if patient be faint, wait. If superior extremity presents, turn at once; is not unfrequent. If first birth is artificial, second will require aid. If head is low, forceps. Child is likely to be still-born if left more than 3 or 4 hours. Delay

increases risk of hemorrhage. Bandage is to be applied after birth of first child, and tightened after second. Retention of placenta and hemorrhage, more common than with single births.

Management of placenta requires care. Leave cord of first foetus entirely, for there may be but one placental mass, and traction may detach it.

Two ligatures are essential in tying funis.

When necessary to detach placenta manually, do not withdraw hand till both are separated and contraction occurs.

Plural births are more frequently followed by danger than single, from over distension, preternatural presentations, hemorrhage, hysteritis. Convulsions also more frequently complicate.

Occasionally the head of one and the feet of a second foetus present; sometimes two heads; sometimes the feet of separate foetuses.

### RUPTURE OF THE UTERUS.

May occur during gestation, though rarely; in labor, 1 in 657 cases; in advanced life occasionally.

Not unfrequently in primiparæ, but comparing first labors with subsequent in a group, more ruptures occur in multiparæ. Of 155 cases, 24 were primiparæ, 131 multiparæ, varying from 2nd to 13th pregnancy.

More frequent in male foetuses; more in lower classes.

In a large proportion labor has been of short continuance.

*Fatality.*—In by far the greater number is mortal.

*CAUSES.*—1st. *During gestation*, interstitial foetation; softening; abscess; blows; without known cause, *ex. gr.* during sleep. Fatty degeneration?

2nd. *During labor* contracted pelvis; in 79 cases 68 were contracted; disease of uterus by inflammation, thinning, softening, gangrene; large foetal head; oblique position of the head at the brim; transverse presentation of trunk; obliquity and retroversion of uterus; previous Cæsarian operation; polypus

uteri ; excessive uterine action either natural, or stimulated by ergot or stimulants ; violence, blows, falls, forcible attempts at delivery, violence in turning ; rigidity of os (cases of os completely torn off) ; violence in removing placenta ; imprudent use of forceps ; excess of liq. amnii ; plurality ; mental emotions, as anger. Arneth says hypertrophy of muscular fibres of fundus, thus overpowering the resistance of cervix.

*3rd. In advanced life* os may become obliterated, mucus accumulates, distends uterus, and causes absorption and opening.

*Seat*, usually at junction of cervix uteri and vagina ; cervix alone ; or through cervix and vagina. (When cervix is torn it is usually either opposite pubes and linea ilio-pectinea, or posteriorly opposite sacrum.) At sides ; through to fundus ; direction obliquely upwards or transverse ; ruptures of vagina alone may occur. Of 128 cases, 15 involved uterus from cervix to fundus ; 14 the anterior part, 7 left side, 2 body, 7 transverse, 10 of fundus, 13 posterior part, 8 of right side, 2 of vagina, 2 involved bladder, 47 were at cervix either involving vagina or a separation from it.

Laceration may be partial or complete, *i. e.* involving muscle and leaving peritoneum intact, or peritoneum alone ; sometimes peritoneum fissured, curved, convex towards fundus ; edges of laceration ragged.

*Pathology.*—States of uterus, thinning ; hypertrophy ; softening, partial or general ; pulpy ; deep red ; odor offensive ; blood in peritoneal sac ; evidences of peritonitis ; lacerations ; fissures.

*Character of labor.*—Not confined to severe and protracted.

*Presentations.*—In 303 cases, 16 were of shoulder, arm, or side ; 2 of breech ; the others head, or not specified.

*SYMPTOMS.*—Not uniform ; almost never before rupture of membranes ; view a fixed “ crampy ” local pain in uterus with apprehension ; most usually violent action of uterus with intense pain gives warning. When rupture occurs there is violent intolerable pain ; a sense of bursting or tearing ; some-

times accompanied by noise; contractions cease; countenance pallid, anxious, and alarmed; clammy sweat; lips livid; cheeks cold; violent retching, and vomiting of mucus, sometimes of coffee-ground fluid; surface cold; respiration laborious; pulse thready and rapid, fluttering; inability to lie down; faintness; convulsions; hemorrhage; recession of presenting part; altered shape of abdomen; uterus as a round ball in one iliac region and child plainly distinguishable through parietes; if collapse does not prove fatal, peritonitis ensues; in rupture of peritoneal coat only, labor may go on; sometimes the last pains may both rupture the uterus and expel foetus.

DIAGNOSIS.—Two diagnostic symptoms. 1st. “Recession of presenting part, which occurs almost always when rupture is at fundus or in body; very often when at cervix, and sometimes when confined to vagina;” *unless* head is impacted.

2nd. Ability to feel foetus with abnormal distinctness *unless* parietes are very thin. Continued foetal pulsation is an argument against rupture, for foetus usually soon dies. Suspension of pains even when sudden does not always betoken rupture. Sometimes neither stomach, pulse, nor respiration is affected; patient lies quiet, and symptoms gradually develope. Hemorrhage is no proof.

PROGNOSIS.—“If left to nature the chance of recovery is almost nothing.” Slight lacerations of os have proved fatal. If the peritoneum is intact, the risk of peritonitis is diminished. If the serous coat is ruptured, the extent of rupture has but little influence on mortality. Lacerations of muscular coat expose to the risks of metritis. Lacerations of cervix are quite as fatal as of body of uterus.

In reference to child, the foetus has been found living 15 minutes after death of mother.

TERMINATIONS.—Fatally by hemorrhage from lacerated walls; peritonitis; strangulation of intestine; psoas abscess. Favorably, by foetus becoming encysted, and remaining for years, 20 or even 40; (pregnancy has occurred meanwhile;) débris of foetus discharged through abdomen, vagina, or anus.

TREATMENT.—If rupture is apprehended from any well founded reason, speedy delivery will be advisable; a consultation should be called, labor pains should be moderated, chloroform may be thought of; opium, venesection, and forceps; if the child be dead, perforate. *If rupture has occurred and head is in pelvis, deliver immediately if possible; by forceps if head is sufficiently fixed to prevent recession; by perforation, and direct perforator from before backwards, lest the head be pushed up; firm pressure by an attendant; remove placenta, follow up funis, and solicit placenta by it, so as to avoid increasing the rent by the hand; avoid any attempt to replace the intestines.*

If *child has escaped into abdomen* the uterus is usually contracted, and if so, *gastrotomy* is preferable to version, or to absolutely abandoning the case to nature, especially if pelvis is contracted.

Thus, of 118 cases—

23	were delivered by gastrotomy,	16	saved,	7	lost.
49	“ “ turning,	19	“	30	“
46	undelivered,	12	“	34	“

Women delivered survive longer than those who die undelivered. In proportion of 22 hours to 9.

Advantages of Gastrotomy.—The original wound is undisturbed; the child is delivered more easily and quickly than by turning.

*Version* is the mode of practice usually pursued.

If there is great depression, give Opium with Ether, Ammonia, or Brandy, and external stimulants before operating; and as soon as reaction occurs, operate.

Treat subsequent peritonitis by heroic doses of Opium, poultices, blisters, &c.

## INVERSION OF THE UTERUS.

*Def.* (A turning inside out of the whole organ, by its passing successively through the os tinæ, converting the mucous mem-

brane into an exterior covering, and creating a new cavity lined with peritoneum and communicating superiorly with the cavity of the abdomen.)

*History* : Paré first described clearly. Baudelocque lectured specially upon it. Newnham in 1817, and Crosse in 1845, wrote treatises, the latter of which sums up our knowledge.

*Occurrence* : Rare. No case in Dublin Lying-in Hospital in 71,000 labors.

*Danger* : Above one-third prove fatal, either very soon, or within a month after displacement.

Four degrees.—1st. *Depressio* : A portion of uterine wall becomes convex towards cavity of uterus; any portion may be affected, but fundus most. (Even this form may prove fatal.)

2nd. *Introversio* : A portion of fundus is displaced so as to be grasped by an inferior part of the uterus.

3rd. *Perversio* : A more or less inverted portion projects through os; in the greatest degree the whole body passes through os, the cervix remaining *in situ*.

In 4th. *Total Inversion* : The cervix, as well as body, is inverted, yet may be retained within the labia. (Prolapse is not a necessary element in inversion; it aggravates danger.)

Inversion usually commences at fundus, and is propagated downwards, rarely from cervix towards fundus.

*Occurs* : 1st. Immediately after delivery. 2nd. A few days after, having probably commenced at the time of labor, and been completed subsequently by uterine and abdominal nismus.

3rd. Gradually, from presence of polypus.

CAUSES.—Predisposing, are delicate and relaxed fibre, large pelvis, erect posture; plurality not a cause; primiparæ more subject. Inertia uteri a decided cause; the round ligaments are passive. Women not liable to repetition. Dilatation of os is essential. Hemorrhage a cause through inertia, and again by sudden expulsion of coagula. Attachment of placenta to fundus. Traction on funis. Very short funis. Rapid delivery of fœtus. Adhesion of placenta to fundus. Violent straining during last pains.

Often commences at, or just before birth of child, and progresses by straining.

GENERAL SYMPTOMS.—Sense of exhaustion ; sinking ; pallid face ; pulse rapid, small, fluttering ; nausea ; hemorrhage ; absence of flooding may occur if uterus contracts strongly ; violent bearing down and straining.

(*N.B.*—Persisting hemorrhage after delivery demands the introduction of the hand to ascertain if *depression* is not the cause).

*Special Symptoms.*—Of *Depressio* : May be no pain ; hemorrhage ; sinking ; palpation over fundus discovers a cup-like depression ; in uterus is felt a prominence.

Of *Introversio* : Sudden failure of pulse ; approaching syncope ; distress and fulness in vagina ; pain in loins ; flooding ; through abdomen is felt a depression ; per vaginam and os is felt the fundus uteri filling the lower part of the uterus, as a tumor, symmetrical, liable to bleed, elastic, more or less painful ; the placental site indicated by a rough surface with coagula upon it ; per rectum may be felt the uninverted part of the uterus.

In *Perversio* : The fundus is found in vagina as a soft convex body, and the hand can be passed up to the encircling cervix ; by a probe, the depth of the uninverted portion may be traced as even in all parts ; above the pubes is a vacuity, or it is possible for inverted uterus to rise so high as to be felt in hypogastric region. By inspection, a florid vascular velvety tumor, bleeding at touch.

In *Total Inversion* : A tumour is felt in vagina, with a cul-de-sac around the neck ; color not purple, because no constricting cervix. Sometimes is incorrectly diagnosed as *in situ*.

DIAGNOSIS.—Has been mistaken for head of another foetus, for another placenta, a mole, an excrescence, a polypus, a tumor, a clot, aneurism of uterus, protrusion of rectum mistaken for inversion.

PROGNOSIS.—Exceedingly dangerous. Of 109 fatal cases, 72 died in a few hours, most within an hour ; 8 in from 1 to

7 days; 6 in from 1 to 4 weeks; total, 86 within a month. Of the 23, one died in subsequent four months. But danger recommences with menstruation.

The uterus may be easily reducible, because *in articulo*. The less the degree of inversion, and the slower it advances, prognosis is improved. Rapid inversion and atonic uterus increase danger. Cases occurring spontaneously are more perilous than those produced by traction of funis. Hemorrhage and nervous shock are the causes of death; in the chronic form, hemorrhages and hectic. Success in reduction can be expected as a general rule only within a few hours. Cases on record of success after 11 weeks' continuance; one 16½ months. Gangrene of the uterus has sometimes proved a means of safety. Spontaneous reduction of *depressio* and *introversio* may occur, but not of total inversion. Cases recorded of chronic inversion spontaneously reduced.

Sterility is a consequence of persistent inversions; but pregnancy has followed after reduction.

TREATMENT.—("Maltreatment has often proved so injurious that it has been asserted the patient has a better chance where the disease is entirely overlooked, provided the inverted organ remain in the vagina."—CROSSE.) Indication is immediate reduction. Oil both hands; grasp the uterus; press up steadily, and remember the axis of both straits; press the perineum back.

Another mode, with the fingers in a conical form, indent the fundus and press upwards.

Of detaching placenta before returning, much diversity.

English authors mainly object to it; the French mainly advocate it; will depend on degree of contractibility; if energetic, probably peeling off will not increase hemorrhage, and will facilitate reaction; if loose, flooding will be made more serious.

Dewees recommends in *introversio* to draw down the uterus and produce *perversio*.

If uterus has been long down, still attempt reduction, but

with great care ; empty rectum and bladder, and give chloroform before operating.

If irreducible, palliatives and bandages.

Extirpation, by knife or ligature, has been recommended.

In 34 cases of extirpation, 19 were successfully treated by ligature, 5 unsuccessfully (3 died) ; by excision, 1 successful, 2 unsuccessful ; by ligature and excision combined, 5 successful, 1 unsuccessful.

**Syncope.**—Besides from hemorrhage, may arise with the nervous and hysterical, or those exhausted by intemperance and bad ventilation ; also, and more seriously, in cases of cardiac or pulmonary disease, or aneurism, or abscess ; also in rapid labors where pressure is suddenly removed ; in despondent.

**TREATMENT.**—Fresh air ; stimulants ; binder.

**Sudden Death.**—Sometimes occurs soon after delivery without hemorrhage. One such case I attended, where recognised cardiac disease was the cause of death. By some it has been thought that air entering the uterine sinuses, denuded of the placenta, has caused the fatal issue. Some deaths occur immediately after birth of child, or soon after delivery of placenta ; more within a few days after a labor attended with hemorrhage, sudden rising in bed being the immediate *causa mortis*. Meigs thinks the last form arises from “*heart clot*.”

### Management of the Puerperal State.

Requires less the interference, than the superintendence of the accoucheur. A natural process has been performed, no aid is requisite to restore to normal health.

The symptoms occurring after labor may be included under three heads. *1st.* Those immediately succeeding parturition. *2nd.* Those having for their object the restoration of the uterus to its ante-impregnate condition. *3rd.* Those which attend the secretion of milk.

Of 1st. *A. Muscular Fatigue*: Caused by efforts during labor; affects not only shoulders, but also abdominal muscles; sometimes lasts two or three days. Requires repose simply.

But it is important to distinguish from peritonitis; by absence of fever, pressure does not increase, pulse not accelerated.

*B. Vascular Excitement*: During the second stage of labor the pulse increases; after completion diminishes, to increase again on secretion of milk.

Avoid confounding with pulse of peritonitis. A pulse above 100, though not always indicative of danger, should be watched. A quick pulse immediately after delivery often indicates hemorrhage. A quick pulse often co-exists with severe after-pains; may occur with a large clot in utero, with diarrhoea, gastric disturbance.

A quick, weak, fluttering pulse occurs in collapse from nervous shock, &c.

*C. Derangement of Nervous System*: Varies from mere restlessness to absolute hysteria. Usually requires rest only.

The nervous shock may be severe, marked by exhaustion, aberration of senses, panting, respiration, countenance anxious, pulse either slow and labored or rapid and fluttering. Avoid mistaking this for peritonitis. Opium 1 to 3 grains; Hoffman's Anodyne; moderate stimulation; nutritious diet. Avoid nursing for a few days. Perfect quiet essential.

*2nd Class*: Those tending to restore uterus.

*A. AFTER-PAINS* are caused by the contractions of the uterus in expelling coagula, and also the fibrinous clots which plug up the sinuses, these also come away in the lochia; pieces of membranes also.

Occur slightly in primiparæ, occasionally, though sometimes well marked. Said to be in dysmenorrhœic women. Almost always in multiparæ.

Vary greatly in intensity and duration; often 24—48 hours. A tedious second stage usually has less severe after-pains.

Aggravated by nursing, warm drinks, clots in uterus.

Useful by expelling clots, and thus preventing irritating

fever; by preventing hemorrhage. Hence always to give opiates, is injurious.

*Objectionable* by constant irritation and preventing sleep.

*Point of Most Interest*: Is not to confound with peritonitis. Are paroxysmal; lochia and milk continue; no fever; pain on pressure does not increase distress, except such as arises from mere soreness of abdominal muscles; pulse not excited.

*Treatment*: Unless severe, none. Early nursing diminishes intensity. If severe, Mist. Camph. with 20 drops of Laudanum; Pulv. Doveri; Op. et Camph. gr. j. to grs. ij.; Sol. Sulph. Morph. 5 to 10 drops; Opiate suppository. (Objection to Opium is the constipating effect.) Ext. Hyoscy. grs. iij., with Camphor gr. j.; Ol. Ricin. with Tinc. Opii.

Liniment with T. Opii to abdomen; or, still better, to breasts.

If peritonitis threatens, use a Turpentine stupe.

An early and effectual cathartic will often stop after-pains. If clots distress, give Ergot.

A SEVERE PAIN sometimes occurs IN COCCYX after delivery very intense. Opiate suppository.

FLATULENCE sometimes causes severe pain; known by distension; relieved by turpentine or assafetida enema.

STATE OF UTERUS.—A day or two after delivery, it appears internally loose, corrugated, covered with patches of decidua, especially in relief at the placental site; *color* pinkish or grumous, red, sometimes greenish (this is not gangrenous); *texture* loose, sinuses evident; *os and cervix* bruised and ecchymosed, often greenish; abrasions and lacerations seen, that often degenerate into ulcers.

*Vagina*: Soon recovers its dimensions, but is more or less sore.

*Abdominal Integuments*: Remain long flaccid; lineæ albicantes evince the abrasions produced by distension, and are indelible marks of pregnancy.

B. LOCHIA.—*λοχεύω*, to bring forth; “*Discharge*,” “*Cleanings*.” The discharge succeeding parturition. *Nature*: At first is bloody, then sero-sanguineous; serous; muco-purulent;

pus. *Source*: The mouths of vessels opened by the detached placenta. *Odor*: Peculiar; disagreeable. *Color*: Red; yellowish; brownish; greenish; "green waters." *Duration*: Six days to three weeks, or even more. *Useful*: To relieve congestion and to diminish the risk of inflammation; also as a sign of the non-existence of fever, for fever checks the flow.

*Treatment*: Cleanliness. Wash with cool water three times a day.

*Alterations*: Offensive sometimes, especially in hot weather from want of cleanliness; decomposition of portions of placenta or clots. Soap-suds, Sol. Chlorid. Sod. ℥j. to ℥iv. If longer than ten days profusely, it is mischievous. Sol. Alum as injection, ℥ss. to ʒj.; or Sol. Acet. Plumb. grs. x. to ℥j. If vascular excitement co-exists, use a cooling purge, as Crem. Tart.; cool bed; cold drinks; lower diet. If suddenly profuse, may arise from premature sitting up or walking; if it is bright red, watch against secondary hemorrhage. Ergot.

If continued by debility, skin is moist and cool, pulse feeble; use tonics; Infus. Calum. with Elix. Vitriol, &c. Attend to bowels.

Occasionally the lochia continue purulent long after delivery, accompanied by lumbar pains, sense of weight, and bearing down. Look to state of os and cervix by speculum. Ulcers often found, or unhealed abrasions of vagina. Treatment as for ulceration.

Is *suppressed*, usually as symptomatic of fever or inflammation, and excites anxiety. I have known it checked by cold, causing febrile excitement, headache, and abdominal distress; relieved by sinapised pediluvia, and a large poultice sprinkled with Pulverised Camphor applied to vulva and abdomen.

STATE OF SECRETIONS AND EXCRETIONS.—*Skin* is moist and perspirable, sometimes a greasy feel and sickly odor.

*Kidneys* secrete freely, from the liquid diet used.

*Bowels* sometimes unaltered, usually costive.

C. SECRETION OF MILK.—Usually takes place before delivery; diminished, but not entirely suspended, by excitement

of labor. Is said to "return" on the third day, but this is not strictly true.

The early secretion called *colostrum* is peculiar, by microscope globules are seen larger than of milk, is yellow, serous, sweetish, and laxative.

**MILK FEVER.**—Is usually the result of mismanagement; too long delayed nursing; too much clothing; too stimulating diet. To avoid it, direct the child to be nursed as soon as the woman is a little rested after labor. Give a purge early.

When it occurs, it may either simulate or mask puerperal fever. Shown in shiverings, hot skin, headache, quick pulse, furred tongue, pain, tumefaction, and hardness of breasts; usually soon subside. In the graver affection, the breasts are frequently flaccid.

Saline aperients, low diet, cool temperature, and efficient nursing, constitute *treatment*.

### Attentions before Leaving.

Delay one or two hours, longer if flooding. Be sure there is no Inversion or Rupture of Perineum. See the "napkin." Examine the pulse, and press the uterus; if gurgling is felt or heard, or the napkin is saturated, there is flooding.

Direct the room to be darkened. No company whatever. To remain at least two hours before being "made comfortable." Patient by no means to assist in the changes necessary.

*Diet*, to be black tea and toast, gruel of Oatmeal or Indian, soda biscuit, cold water. No change in diet for three days in ordinary circumstances.

*Sleep* all important; to be watched, however, lest in profound sleep the uterus relax, and unnoticed hemorrhage occur. Examine child's navel lest it bleed.

*Second visit*, always within 12 hours.

*Inquire* as to sleep, urine, after-pains, discharge, pulse, tongue, bandage, uterus, skin, above all the countenance.

*Of the child*, as to bowels, urine, if it has sucked; if not put to breast. See it attended to.

At next visit if no urine passed, as may be caused by tumefaction of meatus, apply a flannel cloth wrung out in hot water, over abdomen and vulva; pour water from one pitcher to another in woman's hearing; these failing use Catheter. Do not allow urine to distend the bladder; it causes subsequent trouble. Inflammation or paralysis may result. If Catheter required once, repetition will be requisite twice a day for some days.

Direct a purge for the *third morning*. Ol. Ricin., Senna in fluid extract, Rhubarb, Seidlitz, Ext. Coloc. Comp. Salines if breasts distended. Enema, if no piles.

REGIMEN.—Woman to be kept in bed until after 5th day; prejudice in regard to 9th day to be respected only as a means of keeping quiet. If prolapsus has occurred previously, a prolonged recumbency will contribute to a radical cure; 8 or 9 weeks. If lochia profuse and red, the patient should not rise. Not, however, to be confined too long. To sit up first in bed, for 10 minutes, then half hour, finally in chair brought to side of bed. Expect to be about the house in 3d or 4th week.

*Diet*, for first four days, slops, tea and toast, soda biscuit, bread, panada, arrow-root, oatmeal or Indian gruel, tapioca, sago, chicken or mutton broth. This liquid diet is not usually as digestible as solid food; after ascertaining this, use mutton, chicken, oysters, game, beef, eggs. Gradually return to ordinary diet, avoiding acid articles for sake of the child.

*To prevent milk*, in case of child's death, &c. Keep shoulders cool, give salines frequently; diet abstemious and not liquid; cool lotions to breasts; breasts to be drawn moderately three times or twice daily.

*To promote milk*, attempts are made by using fermented liquors and stimulating food, which cause a febrile state and diminish milk; in such case evacuants are desirable.

A poultice of Castor bean leaves is said to possess galactagogue properties.

### Laceration of Perineum.

Extensive is not common, of posterior commissure frequent, in fact usual in primiparæ. Said to be prevented by support. (*See Management of Labor.*) If slight, is of no moment; if extensive, life is rendered miserable. Mucous membrane of the posterior vaginal wall is often everted and torn, while true perineum remains intact.

*Extent.*—Appear more extensive at first than after the distended state has passed. 1st. To an inch from fourchette, occasions no serious inconvenience. 2d. From fourchette to rectum but not through sphincter ani or recto-vaginal septum. 3d. Rent between constrictor vaginae and sphincter ani without lacerating either; even permitting a small child to pass. 4th. Through constrictor vaginae, through the whole perineum, sphincter ani, and even through recto-vaginal septum.

*Direction,* along raphe, in form of Y or V.

*CAUSES.*—1st. Violent and sudden action of the uterus before the os externum becomes dilated. 2d. More moderate pressure in some cases. 3d. Instruments. 4th. Too broad perineum. 5th. Rigidity of an old cicatrix. 6th. Occlusion of vagina by hymen. 7th. Mal-position or mal-presentations, as face or breech. 8th. Excessive bearing down efforts.

*SYMPTOMS.*—If slight, but little ill effect; if extensive, involuntary discharge of fæces; sense of dragging down of pelvic viscera; procidentia uteri; inability to stand.

Cicatrization is prevented by motion and lochia.

*TREATMENT.*—*Preventive,* by proper support, not retarding advance of the head, *not retracting the perineum*; warm and unctuous applications to rigidity; incising hymen; avoiding straining severely. Chloroform said to favor dilatation.

*Curative.*—Perfect rest and cleanliness; tie knees together, and draw urine by catheter; suture, quilled best; cold water dressing; Opium to constipate for 11 to 15 days; catheter

every 5 or 6 hours for 10 days; urine to be kept carefully from wound; to lie on the side; Collodion suggested. Diet to be not productive of feculent evacuation, as gum, rice.

### Vesico-Vaginal and Recto-Vaginal Fistulæ.

Are not very rare. The first more common, sometimes the two forms co-exist. Either form is extremely distressing; either difficult to cure; the vesical being more refractory.

CAUSES.—Instruments; long retained pessary; delay of head and pressure; retained urine; corroding ulcer, or cancer. Sometimes rupture of uterus extends to bladder, but rarely.

SITUATION.—Important. At junction of urethra and bladder; in the neck of bladder; in some portion of posterior wall; in rectal form any part may be the seat.

*Shape*, circular, longitudinal, transverse. *Size*, pea, to half dollar.

SYMPTOMS.—Inability to retain urine, or to retain fæces. But usually not till 3d or 4th day after delivery, when slough separates. If in cervix vesicæ, urine flows constantly; if in body, occasionally. Introduce catheter into urethra, and a finger into either vagina or rectum, and trace along. Speculum. Easy to ascertain if old cicatrices do not obscure sensation.

TREATMENT.—Rarely succeeds in vesico-vaginal. A fundamental rule is the *prone* position for a long time, which allows the urine to drain off without touching the rent. A catheter constantly worn. Cauterization by Nit. Arg., Mineral acids, Acid Nit. of Mercury. Actual cautery. Suture. Elythroplastie. Closure of vagina.

For incurable, a plug or India-rubber bag. For recto-vaginal, the same methods. Easier to cure.

### Inflammation of Vagina.

Vaginitis. Usually some after parturition, which rest and

quiet remove. If severe, use saline purges, and poultices, and perfect cleanliness.

If pain is persistent, and becomes throbbing, sloughing is to be feared, to which will succeed contractions.

Leeches, scarifications, poultices.

To prevent adhesion, use a cylindrical speculum, rectum bougie, or a candle, twice a day, and persevere a long time.

### **Echymosis or Thrombus.**

An extravasation of blood in one, or more rarely, both labia, from a ruptured artery. Sometimes size of an orange. May also occur in substance of uterus. (*See page 178.*)

Excessively painful.

Left unaided it will slough, and extreme fetor ensue.

TREATMENT.—Early and free incision.

For small, a cold lotion.

### **Paralysis of Legs.**

Occasionally occurs after labor; to various extent.

Most after tedious and painful labors; sometimes after rapid.

CAUSE.—Not cerebral, but from pressure on nerves in pelvis.

*Characterized by*, pain, numbness, and inability to move limb.

Usually *lasts* but a few days; sometimes for weeks.

TREATMENT.—Fomentations; stimulating liniments; douche; tonics; gentle motion.

Sometimes after a first and tedious labor, pain occurs in defecation, arising from stretching of coccygeus muscle.

### **Laceration of Vagina.**

Often complicates rupture of uterus; but may occur while

uterus escapes, but child still passes partially into abdominal cavity; rarer than rupture of uterus.

Such cases resemble ruptured uterus, and require same treatment; are nearly as dangerous. But sometimes rupture of mucous and muscular coats of vagina occurs while head is in pelvic cavity. Most in first labors with rigid parts.

May cause but little increase of pain. Inflammation supervenes, and a cicatrix results.

TREATMENT.—If trifling, leave to nature; if threatens to extend, use forceps; care to perineum; poultice; enemata; opium.

### Rupture of Bladder.

More fatal than of uterus. Sometimes the two co-exist. Is very rare. May result from inattention, or rash use of instruments.

SYMPTOMS.—Violent and severe pain; sensation of something burst; rapid sinking; tumefaction; tenderness; recession of presenting part, but no preternatural distinctness through abdomen.

TREATMENT.—Prevent by catheter (flexible). Save child by version or forceps; gastrotomy.

### Prolapsus Uteri.

Not uncommon after labor.

*Arises*, usually from rising too soon; vomiting; sneezing; coughing; purging.

Varies *in degree*, from depression to complete procidentia.

*Occurs from* relaxed ligaments and vagina; in women of lax fibre; multiparæ; tedious or instrumental labors; among poor.

SYMPTOMS.—Sense of weight and pressure aggravated by

standing; lumbar pains; aching in iliac regions; increased lochia; vesical and rectal tenesmus; tumor in vagina.

TREATMENT.—Perfect rest.

Bowels to be regulated; tonics internally; not use pessaries or injections.

### Hemorrhoids.

After labor are frequent, and very painful. Sometimes attain considerable size.

TERMINATIONS.—May recede; may inflame; slough.

SYMPTOMS.—Dull, heavy, sometimes acute pain at anus; tenesmus; bloody passages; to the sight, bluish, livid tumors.

TREATMENT.—Avoid operations, return a protrusion immediately after labor; Leeches; Poultices; Fomentations; Injections; Opiate ointments.

### Sore Nipples.

Are exceedingly distressing, and are frequent, especially with primiparæ.

Beginning as a simple crack, the excoriation sometimes extends to destruction of the nipple; sometimes involving simply the base, or extremity of nipple.

Along the lactiferous tubes inflammation may pass backwards and produce mammary abscess.

Child swallows blood and pus, and vomits; is injured by nursing.

TREATMENT.—*Preventive*: Frequent washing during pregnancy in cold water; in a weak solution of alum; brandy and water; green tea; exposure to cold air.

*After occurrence*: If recent, emollient oils; butters; Glycerine ʒj. with Aq. Rosar. ʒj. Bibor. sod. in water in slippery elm tea or rose water. Sulp. Zinc. in Aq. Rosar. or Sulp. Cupri. Sol. Chlorid. Sod. Linen cloth constantly wet with

rum. Kreasote in Sol. gtt. iij. to vi. in water ℥j. Tinc. Catechu. Sol. Tannin. Tinc. Gallar. with Friar's balsam, equal parts. Nit. Argent. in fine pencil, or in solut.

℞. Liq. Plumb. Diacet. ℥ij. ; Solut. Opii ℥j. ; Ung. Simp. (fresh) ℥j. M.

℞. Bibor. Sod. ℥ij. ; Cret. Præp. ℥j. ; Alcohol et Aq. Rosar. āā. ℥iij. m. Applied alternately, with the following, ℞ Ceræ Alb. ℥ivss. ; Ol. Amygdal. dulc. ℥j. ; Mel. Despum. ℥ss. ; dissolve et adde Bals. Peruv. ℥ijss. M. ; Ft. unguent.

Collodion.

A prepared cow's teat. Nipple shields of sheet lead.

### Retracted Nipples.

Often occur from tight dressing.

Best treated by breast pump; in the absence of a pump, fill a quart bottle with hot water, pour it out, and then as soon as it is sufficiently cool apply it to nipple.

### Puerperal Fever.

*Child-bed fever.*—*Puerperal peritonitis.*—*Peritoneal fever.*—A severe disease, causing seven eighths of all puerperal deaths; proving fatal in a large majority of those attacked.

Was known by ancients; noticed by Plater, 1602, as child-bed fever. In 1746 visited Hotel Dieu, and frequently since. Many epidemics are now on record. Extends over a considerable country; is epidemic; worse in hospitals; occurs most in lower classes.

*Divisions:* Many by different authors. INFLAMMATORY and TYPHOID.

*CAUSES.*—Very various assigned. Difficult labor is *not* a cause; but manual operations are a frequent source, especially in cases of hemorrhage; portions of placenta retained; mental

emotions; most in unmarried; cold; intestinal irritation; purulent absorption; stimulants; is communicable.

Most in cold months; damp, moist weather.

Non-pregnant females while menstruating, if in attendance on those affected, have been attacked with a quasi fever.

**INFLAMMATORY FORM.**—Occurs mostly sporadically, and in vigorous. Attacks before the 4th day; sometimes 2nd or 3rd (the earlier the worse); sometimes as late as 10th or 12th, though in general if a patient escapes for 10 days she is safe.

First symptom usually a *chill*, or chilliness, partial or general, of variable severity. (Supposed by Denman to indicate by its violence the subsequent severity, or lightness of the attack, but erroneously.)

Next is usually *pain*, though this may have existed moderately before the chill; at first *localized*, usually in one iliac region; sometimes sudden; oftener insidious; aggravated by pressure, and by the cough which frequently attends; at first moderate, it increases and spreads as from a focus over abdomen; is persistent, but subject to exacerbations, probably after-pains.

*Fever* succeeds the chill; skin hot and dry; pulse quick, rarely as low as 115 (always watch a puerperal pulse over 100); thirst distressing; nausea and *vomiting*; *pain in head*, sometimes *delirium*; more usually mind is clear and apprehensive; *respiration* rapid and thoracic; *cough* common.

*Countenance* peculiar, anxious, distressed, pallid, and ghastly; eyes livid beneath; defined crimson patch on one or both cheeks.

*Decubitus* dorsal; knees drawn up; *meteorismus*, great tenderness.

*Tongue* no uniform appearance; moist, white, creamy; deep brown or red centre, with yellow or brown edges.

*Urine*, scanty and high colored. *Lochia* suppressed, diminished, offensive, or unaltered. *Milk* sometimes secreted; suppressed, and breasts flaccid.

*Hiccup* sometimes, denoting extension of disease to diaphragmatic peritoneum.

As disease progresses (and 24 hours may finish it), pulse increases in rapidity, 140—160, or more; weak and thready; vomiting at first bilious, then green, brown or blackish; diarrhoea thin, watery, dark; respiration hurried, and thoracic; delirium; tongue dry brown; flush circumscribed on one cheek; decubitus dorsal; finally collapse, with cold extremities, partial and offensive sweats; subsultus tendinum; carphologia; sliding down in bed; death.

Between the stage of inflammation and of collapse there often occurs a delusive calm, which Ferguson supposes to indicate the stage of effusion; the pain abates; mind is tranquil; respiration less rapid, *but the pulse retains its frequency*; the abdomen its distension. The change is too sudden, the case will be fatal, often within 24 hours.

All the above phenomena do not occur in one case; the frequent pulse is perhaps the most uniform. Apathy towards child is common. Rigors, pain, vomiting, peculiar aspect, are generally noticed.

DIAGNOSIS important but not easy.

From *After-pains*, by tenderness *localized*. Pulse rapid in one, unaltered in other; lochia and milk; chill.

From *Hysteralgia* and *Hysterical tenderness*.—In these, the attack is very sudden, very severe, rapidly reaching its acme; but there is no chill, no hot skin, no rapid pulse; the patient tosses about, which does not occur in inflammation; again the tenderness is exaggerated, and by withdrawing the attention is found to be imaginary.

In a case of doubt, a full opiate with a poultice and a visit in three or four hours, will often assist the decision.

From *Depraved Secretions and Intestinal Accumulation*, most difficulty is experienced. These are the “violent cases of peritonitis in which the patient dies between the stage of excitement and of effusion, and no effusion or signs of inflammation are found;” they are mistaken in diagnosis.

The puerperal state is one of great susceptibility to morbid impressions, and irritating causes produce exaggerated effects; hence sources of irritation (of which fecal accumulation is one of the most common), occurring during gestation, produce severe effects after parturition. When to this is added the exhaustion of labor, and still more especially that arising from considerable losses of blood, symptoms arise which make the discrimination between irritation and inflammation a matter of much doubt. In both there is chill, heat of skin, abdominal pain with tenderness, furred tongue, headache, and rapid pulse. Still farther is the diagnosis obscured by the effect of loss of blood, for venesection temporarily relieves, but the symptoms soon recur, and with renewed force.

In the enteric lesion the attack is more sudden, and sooner reaches its height; the cephalalgia sooner occurs, and the abdominal pain, instead of *creeping over*, involves the whole abdomen, and is at once equally diffused; the pulse does not creep up, but rapidly increases, and is variable in frequency; though distended, the abdomen is not tympanitic, but soft and puffy.

If the headache arises from loss of blood, it is increased by raising the head.

The position also assists, for the patient is not supine and motionless, but tosses about the bed.

The effect of medicine will assist; a large enema ℥j.—℥iij. of simple water will frequently bring away black and fetid and enormous discharges, and decide the question.

Do not allow previous supposed evacuations to deceive; a dose of Calomel, grs. xv. to ℥j, followed by Ol. Ricin., will often clear up the case.

TREATMENT.—Two plans, *Antiphlogistic* and *Narcotic*.

Blundell says, "In less vehement attacks if you bleed within six hours after the chill you will save the patient *often*, if within 12 *not unfrequently*, if not till 24 hours epidemic cases usually die. Sporadic cases are frequently, perhaps usually curable."

At the first visit bleed  $\frac{3}{4}$ xx. or more, until an effect is pro-

duced, give Calomel ℥j, and combine with it, if the visit is late at night, Pulv. Dover., grs. v. to x. Bran poultice over abdomen. If the skin is hot and dry, and mouth unpleasant, order effervescing draughts with excess of Soda; if they make the mouth more clammy, and cause abdomen "to bloat," substitute warm tea or small bits of ice.

*Visit again* in three or four hours. *Indications* are to extinguish abdominal pain, and to open bowels. If pulse is firm, skin hot and dry, and pain has returned, bleed again. If VS. is doubtful use leeches, 15 to 20, insinuate under lifted edge of poultice. Give Ol. Ricin. if stomach will tolerate it, if not, repeated Enemata; if Enemata produce but little fecal discharge do not repeat. After free evacuation avoid purging.

*For tympanites*, Ol. Ricin. or Ol. Tereb., Enema of Ol. Tereb. or Assafet.; a long tube passed up anus.

*After opening bowels* give Calomel with Pulv. Dover. or Opium, and push to salivation, assisting by Ung. Hydrarg. Watch abdominal tenderness, and use relays of leeches. Use poultices of bran, linseed wet with Ol. Tereb., Hops, &c.

*Blisters* not to be used till an impression is made; objectionable, 1st, as masking progress of disease; 2d, as preventing examinations; dress with Ung. Hydrarg.

*Vaginal injections* essential, uterine injections objectionable. Various other remedies proposed; *Ipecac* by Doulcet. *Turpentine* by Brennan. *Stevens' Saline* mixture. *Ice* internally and externally. *Digitalis*.

*Second method.*—*Opium to full narcotism*, by Sol. Sulph. Morph., Opium, Tinc. Opii, &c. Begin as soon as pulse begins to rise, or immediately after chill; give Sol. Morph. 20 drops, repeat it every hour, varying the dose and interval till full narcotism is produced, the evidences of which shall be a semi-stupid state, contracted pupil, moist skin, and above all slow respiration. I have seen respiration reduced to 7 in the minute, in one case to 9 in two minutes, and this state maintained for one or two days. The pulse does not diminish with respiration, but when it begins to decrease in frequency, gradually

diminish Opium. Do not give evacuants, allow the Opium to regulate the bowels, unless diarrhœa comes on. Such treatment may be continued for days, with ice or iced-water as only nutriment. As disease declines, improved diet succeeded by tonics. The Opium treatment requires assiduous and intelligent watching, and in fact throughout a case of Puerperal Fever the practitioner must almost be the nurse also.

**TYPHOID FORM OF PUERPERAL FEVER** is by far the most fatal. Prevails especially in hospitals; is usually endemic, sometimes epidemic, and very extensive; during its prevalence not only puerperal, but even pregnant women are in danger. This is the most markedly contagious form, and in some occult way is connected with Erysipelas, especially of phlegmonous form; other diseases, as Scarlatina Maligna, Typhus, &c., give rise to it; also it is communicated after making autopsies even of those not dying of the disease. Strongly marked evidences of this have been elicited in the Vienna Lying-in Hospital.

1. The hospital at Mayence possesses no clinique for students, and no epidemic has ever been noticed.

2. Routh says, that in one of the Paris hospitals, which is situated near an abattoir, P. fever prevails while the wind blows from the abattoir, but is not noticed while it is in the contrary direction.

Inference from such facts is clearly that the practitioner attending Puerperal Fever should suspend obstetric practice, that nurses should be interdicted from their occupation, that friends should avoid visits, that students and others should abstain from attending women soon after making autopsies. Immediate washing after an autopsy with Sol. Chloride of Soda, carefully cleansing the nails (which should be kept short), and changing the dress, are indispensable after autopsies or dissections.

*Approaches* insidiously; pain not marked and severe (I have seen it without any); skin moist, not flushed; chill usually but not always, sometimes not severe; pulse soon rises and becomes

very rapid, 140 to 160 or more, soft, compressible, sometimes variable (a bad sign); skin dirty, sallow, brown, leaden; countenance not that of pain, but anxious, imploring; sometimes, if nervous centres are attacked, stupid; debility great; sometimes restless, sometimes calm; stomach easily affected, vomiting, green or brown, diarrhœa; lochia and milk, unchanged or suppressed, former fetid; tympanitis.

As disease progresses, respiration anxious and rapid; eyes livid beneath, leaden hue extending over face; circumscribed flush on one cheek; delirium; tongue dark sometimes and dry; head rolling from side to side, gulping up, not vomiting, a greenish or coffee fluid; extremities and surface cold and clammy, pulse thready; coma sometimes precedes death, more frequently dies by exhaustion.

Runs its course in 24 hours. In one case I saw only 15 hours elapse between chill and death. Sometimes occurs during labor. I have seen the peculiar vomiting and countenance of well-marked fever, while woman was actually in labor.

Usually makes attack within three days; in one case I saw 12 days elapse between labor and the attack.

There are many varieties, and each epidemic has its peculiar features. When the digestive apparatus is specially disordered, vomiting, diarrhœa, and tympanites are most marked. In nervous apparatus are noticed starting, tremors, insomnia; delirium, and coma precede death. In respiratory system, cough, pain in side, bronchial affection, and serous effusion. Phlebitis, whether as the origin of the disease, or as a subsequent affection, is one of the worst forms; metastatic abscesses occur. The secondary affections are arthritis, abscesses in the muscular and cellular tissues, and in parotid; pleuritis, inflammation of the eye, with purulent deposits; ulceration of the intestines; eruptions of large bullæ or miliary vesicles; ulceration of cartilages, of hip, knee, and shoulder; deposits, in lungs, liver, spleen, sub-peritoneal tissue.

Erysipelas frequently prevails simultaneously, and the two diseases will reciprocally communicate each other.

PROGNOSIS, very bad, and friends should be so informed, both because patients usually die, and because delusive calms occur and treacherous changes.

More fatal in epidemic; in typhoid, to earliest attacked. Endemic worse than epidemic, epidemic than sporadic.

*Prognosis from Special Symptoms*: Lochia not always suppressed, sometimes recur, and yet die.

Pulse over 160 frequently. I have seen one fatal case in which the pulse was barely 100.

Tympanites is unfavorable, and intestinal disorder also.

Delirium is very bad; mental depression, as in illegitimate births, is very unfavorable; so also the alarm that occurs in a hospital on the appearance of P. fever.

Respiration, if over 50, is grave.

Vomiting green is significant, but not so bad as coffee ground.

Tongue dry and rough, with cerebral symptoms, bad.

Immediately preceding death, are cold, clammy skin; thready, fluttering pulse; involuntary stools; and dilated pupil.

Most fatal periods are beginning of third and end of fourth day.

*Favorable symptoms* are pulse *gradually* less and *gaining in volume*; ability to turn in bed, lie on side, and take a full breath; stomach ceasing its irritability; bowels free, but not watery; skin warm; perspiration not profuse, not partial; clearness of skin returning.

TREATMENT.—Usually in vain. Venesection not tolerated; leeches sometimes useful. Always evacuate bowels. Calomel followed by Ol. Ricin.; avoid salivation; bran poultices; turpentine stupes; vaginal injections; relieve tympanites by enema of turpentine, or assafetida, or by tube.

Copland, in the malignant form, gave immediately a bolus of Camphor, grs. viij.—xvj., with Calomel, grs. x.—ʒj., and Opium, grs. j.—ij., repeated every four, five, and six hours. After the second dose, Ol. Tereb. and Ol. Ricini āā. ʒss., and

repeated to purging. Hot turpentine epithems constantly to abdomen. He lost two of thirty cases.

Study the special organ affected. If from gastro-intestinal irritation, Ipecac. followed by Ol. Ricin., may do good; ice; morphine. For diarrhœa, Pulv. Dover with Hyd. cum Cret.

When purulent deposits form, usually fatal; fomentations; open abscesses early.

POST-MORTEM APPEARANCES.—*Abdomen*: Usually swollen and tense; gas escaping on incising.

*Peritoneum*: Both parietal and visceral most affected, especially over uterus and broad ligaments; simple redness; opacity. Effusions, serum; sero-purulent pus; lymph, from consistence of curd to firm membrane; pus in sub-peritoneal areolar tissue. Adhesions, from slight to complete agglutination. (In those who escape death, these adhesions may cause strangulation, and usually do cause sterility.) Gangrene said to occur, but erroneously.

*Intestinal Canal*: Inflammation in patches; softening; perforation; usually distended with gas.

*Stomach*: Contains brownish or green fluid; altered blood; ulcers.

*Liver*: Most affected of parenchymatous organs; inflammation of its serous coat; congestion; softened; metastatic abscesses.

*Spleen*: Increased vascularity.

*Kidneys*: Not often affected; purulent deposits are found in vicinity on psoas; subsequently abscess may point in groin.

*Uterus*: Volume increased; sub-peritoneal deposits; substance gorged, flabby, markedly softened.

On inner surface, a thick layer of reddish brown, brown or dark green, shreddy material; most marked at placental site.

Cervix ecchymosed, and even greenish; is not gangrenous, but merely a result of labor.

*Ovaries*: Enlarged; softened; inflamed; pus on surface or in substance.

*Fallopian Tubes*: Injected; pus; sero-pus.

*Pleura*: Effusions; sero-purulent.

*Pericardium*: Effusions sometimes.

*Heart*: Softened; abscess has been found.

*Veins*: Usually affected; pus usually found in veins of broad ligament, especially just at the junction with uterus, and if no pus, vascularity exists; coats thickened; cavity obstructed by coagula or lymph.

*Lymphatics*: Sometimes contain pus; at intervals like beads.

**PATHOLOGY.**—The post-mortem appearances do not give the pathology. Behind these lesions there is a malignant form of fever, which has some consanguinity to erysipelas. Is it, as has been said, a malignant erysipelas, having its origin in the placental site, where the veins of the uterus are bathed in pus, purulent absorption being thus facilitated, and pyæmia resulting?

Puerperal fever and puerperal peritonitis are distinct diseases.

So frequent are cases of puerperal fever in lying-in hospitals, so fatal are they when they occur, that it has been doubted whether the advantages derived by the parturient woman are compensated by the increased risk of confinement in such institutions. Constant vigilance is requisite to discover the threatenings of an outbreak, and most energetic measures are demanded to prevent extension on its first manifestation. As far as possible to avoid its occurrence, but few recently confined inmates should be allowed in a ward, and wards should be used in rotation. The medical attendant should not make autopsies, and should not attend severe cases of erysipelas. When the disease has appeared, the ward should be immediately vacated, and both medical attendant and nurse changed. The ward should be thoroughly cleansed, ventilated, and whitewashed, and chlorine be freely used; after this, it should remain vacant for a considerable space of time, at least a month. Recently it has been proposed to keep up a sustained heat of at least 150° by means of stoves, for at least two days, as a means of purifying the ward.

### Pelvic Cellulitis, Inflammation of the Sub-Peritoneal Tissue.

Occurs usually later than peritonitis, about twelfth or fourteenth day, even as late as third week; being often a mere extension of disease from uterus.

May be a sequel of metritis, oftener extending from uterine appendages. Either after abortion, or full term of labor.

Is frequently overlooked or mistaken. Apt to come on while puerperal fever prevails.

SYMPTOMS.—Often distinguished by precedent inflammation. Thus an attack of metritis seems to yield, uterus may be free from pain on pressure, abdomen soft, patient unable to move, pulse frequent, and slight rigor occurs. Rigors recur with irregular perspirations; sleeps badly; pain in defecation; sometimes diarrhœa carries patient off. Lever says decubitus is peculiar; lies on back or on sound side, thighs flexed, limbs of affected side resting on limb of sound side, and rotated inwards as in morbus coxarius. If pus finds its way to surface, either in groin, hip, or rectum, case becomes clear; if it pass along iliac vessels into abdomen, the case will terminate fatally.

*Per vaginam* the uterus will be found displaced, less movable than it ought to be. Swelling found in posterior part of cul de sac like a retroverted uterus, or the anterior wall depressed into vagina; pain on pressure, and doughy œdematous feel; fluctuation.

TERMINATIONS.—Resolution; suppuration; absorption of inflammatory deposit; abscess may burst externally or internally, into vagina and surrounding viscera, sometimes burrows deep into pelvis and bone becomes diseased.

TREATMENT.—*Two Indications*: 1st. To prevent formation of pus. 2nd. To evacuate it early.

For 1st, Apply leeches through a speculum to swollen part, fomentations, and warm vaginal injections. Hyd. cum Cret. with Pulv. Doveri given moderately.

As soon as pus is evident, support strength with diet and tonics, and evacuate speedily.

Blisters are useful for subsequent induration, also Iodid. Potass.

### Pelvic Abscess.

Attention drawn to it only recently.

*Occurs* : Not only unconnected with parturition, but even in unmarried; in some cases from local irritations, as uterine sound, pessaries, &c. ; as complicating or terminating an attack of hysteritis; in certain epidemics of puerperal fever; may follow labor or abortion; with either small or large child; not necessarily from mismanagement; most on left side.

*CAUSES*.—Mechanical injuries; metastasis of inflammation from uterus; cold; extension of diseased action in puerperal fevers.

*PATHOLOGY*.—A phlegmonoid inflammation.

*SEAT OF ABSCESS*.—1st. A tumor just above brim of pelvis, connected with it, immovable, extending downwards internally, outside the vagina, and felt through vagina, involving the lining of pelvis.

2nd. Distinct from pelvis, rounded, movable; limited to ovary, broad ligament, and tubes.

*SYMPTOMS*.—Usually commences with fever; rigor and heat following; pain or uneasiness in lower part of abdomen. By careful examination, a tumor either just above Poupart's ligament, of varying size, and firmly fixed; or else a movable tumor, rounded, firm, and elastic, lying in abdomen. In this latter variety, an examination per vaginam traces a swelling in pelvis, very tender; uterus pushed to one side, not tender, but pained by moving. In the former class, there are pain, tenderness, and inability to stretch limb out straight; and patient, in standing or walking, bends forward.

Tumor varies in size; is sensitive; may irritate bladder or rectum.

*Constitutional Symptoms* : Sometimes slight ; sometimes pulse rapid, night sweats, anorexia, irregular bowels, no sleep, emaciation ; in puerperal epidemics, the disease partakes of the general affection.

*Duration* : From one to three or four months.

*Terminations* : By resolution or suppuration.

1st. By *Resolution*, after more or less duration ; liable to exacerbations.

2nd. And usually by *Suppuration*, attended by rigors, &c.

Situations of Openings.—1st. Into peritoneum ; is rare ; peritonitis.

2nd. Into bladder.

3rd. Through vaginal parietes.

4th. Into rectum ; most common in spontaneous opening.

5th. Through abdominal parietes.

DIAGNOSIS.—By tumefaction ; pain down the limbs, and difficulty of extending limb.

PROGNOSIS.—Not usually fatal. Is tedious, and reduces strength ; may excite other disease.

TREATMENT.—Leeches to tumor ; bowels kept free ; diet low ; confine to bed ; poultices.

Open by exploring needle and bistoury, in vagina ; above Poupart's ligament.

Improved diet ; blisters ; Tinc. Iodine ; hip baths.

### Phlegmasia Dolens.

“ *Milk Leg* ;” “ *Œdema Dolens* ;” “ *Œdema lacteum* ;”  
“ *Depôt du lait* ;” “ *Metastasis lactis* ;” “ *Crural Phlebitis*.”

Was early known, but not well understood.

*Def.* A swelling of one or both legs, occurring shortly after delivery, with pain and tenderness.

May occur with primiparæ, but most in multiparæ.

A similar swelling noticed in non-puerperal, in connexion with menstrual disorder or malignant uterine disease, or after injury, or as a sequel of typhus.

Also is noticed in arm unconnected with pregnancy. A unique case of occurrence in arm after delivery, in London Lancet, Oct. 1852. Is seen in men. But though analogous, the lesions of these affections are not identical, and as phlegmasia dolens is usually, if not always, connected with puerperal metritis, a palpable distinction exists.

*Occurs*, most in delicate constitutions; after lingering labors; hemorrhagic labors; those whose limbs have been anasarctous and painful during pregnancy; non-nursing.

*Commences*, usually from 10th to 16th day; variations, 4th—20th.

**PATHOLOGY.**—Mauriceau thought it arose from reflux of matter that ought to have passed in lochia; Puzos and Levret, that dépôts du lait existed. In 1784, White considered that obstructed lymphatics caused it. In 1792, Trye, that lymphatics were ruptured at the brim of pelvis. Ferrier, inflam. of absorbents. In 1800, Hull thought it inflammatory, producing serum and lymph. In 1817, Davis made an autopsy, and found inflammation of veins, and published in 1823. In 1823, Bouilland found crural veins obliterated. In 1829, Lee traced inflamed veins to uterus, and called it crural phlebitis. Crural phlebitis usually is found, not invariably, nor is it the totality of the disease. Objection to the doctrine of Phlebitis has been urged that this disease is rarely fatal, while venous inflammation usually is so; but there is marked difference between adhesive and suppurative phlebitis; often coincides with puerperal fever, especially if it appears early.

**CAUSES.**—Exciting, usually cold; disease of uterus; injury; absorption of putrid matters; a sequel of fever.

**SYMPTOMS.**—*Premonitory* pains or uneasiness in lower part of abdomen; patient irritable, depressed, and feeble.

*Appears* about 15th day; 12th to 20th usually; with rigors; heat; headache; tenderness in the limb; disorder of digestive organs; fæces pale and clayey.

*Pain* sometimes sudden in calf of leg; back; hip; when commencing in the pelvis it soon descends; pain is constant,

not relieved by change of posture ; is increased by dependent position ; is all over the limb, but chiefly along the large vessels.

*Swelling* may begin at groin and extend down ; in calf, and extend up ; in popliteal space.

*Temperature* is usually increased.

At the commencement, and towards close, pressure produces pitting ; but at height it does not pit ; is tense, white (exceptional cases red), shining, and elastic. Puncture will not discharge more than a few drops of fluid.

The *femoral vein* can usually be felt, hard, rolling under the finger, and painful.

The *glands* are swollen, hard, and painful ; rarely suppurate.

*Leg attacked*, mostly the left ; sometimes both ; usually when both are affected it is not simultaneously, but the disease subsides in the first attacked ; this is not the result of metastasis ; patients are more apt to succumb under second attack.

*Mobility* is lost, not simply from pain, but want of power.

*Constitutional symptoms* : Pulse quick, often 140, weak ; tongue coated white ; thirst ; headache ; anorexia ; derangement of bowels ; urine turbid ; restlessness ; sleeplessness, with morning sweats profuse.

*Lochia* offensive, or unaltered.

*Continuance* of acute stage, 10 to 14 days ; may become chronic ; swelling and lameness remaining for months or years.

*Terminations*. 1st. In resolution. 2nd. Gradual subsidence with thickening, varicose veins and lameness for months. 3rd. Suppuration in patches, rare, dangerous. 4th. Death, sometimes suddenly. 5th. Toxemic phlebitis. 6th. Gangrene.

POST MORTEM APPEARANCES.—Limb distended with serum.

*Veins* : Inner coat deep red, clots of blood adhering ; fibrin, pus ; veins attacked are, femoral, iliac, epigastric, uterine, saphena, cava. *Absorbents*, pus, like a string of beads ; abscesses in limbs, or joints.

PROGNOSIS.—Not usually fatal. Commencing in the calf it

is usually light; coming on early, say fifth day, it is more likely to be connected with metritis.

TREATMENT.—Venesection not usually required; leeches along the course of veins, in relays, and followed by poultices; (care is requisite lest leech-bites bleed too much.)

Bowels to be opened, but active catharsis not advisable.

After bleeding, blisters along veins; turpentine fomentations sometimes useful; also bran fomentations or Goulard's extract and laudanum; a flannel roller covered with oiled silk.

Opiates for pain; Pulv. Dover, with Calomel; Antimonials with Diuretics; Mercury pushed to gentle constitutional effect recommended by some. Horizontal position to be observed with limb elevated.

Diet antiphlogistic.

*Chronic stage*: Flannel roller; frictions; Camphorated oil; Ung. Hydrarg.; Iodine; Blisters. Tonics; Bark; Quinine with Acid. Sulph. Dil.; conjoin diuretics.

For lochia, vaginal injections.

Improved diet, very gradually; exercise; sea-bathing.

### **Puerperal Mania, rather Insanity.**

A serious and alarming affection. By no means rare.

Not confined to puerperal state, but *occurs* before delivery, and subsequently during lactation. Occurs most in nervous and irritable, those with acute feelings and excitable temperament; more in unmarried.

*Duration* may be for a few days, or many months, rarely permanent. Two forms, MANIA and MELANCHOLIA.

MANIA.—CAUSES.—*Predisposing*.—During gestation the mind is in a state of great susceptibility, and impressions more easily become morbid; anxiety; fright during gestation; mental emotions; depression; disorder of digestive functions a very common cause; hereditary predisposition commonest of all.

*Exciting*: Uterine irritation; suppression of lochia; company.

**MODE OF ATTACK.**—Sudden, as in a single night, or gradual.

**SYMPTOMS.**—Usually there are precedent symptoms, as alteration of manner, odd, unnatural, sharpness of tone of voice; headache; sleeplessness; incessant talking; incoherency; vacillation; sullenness; listlessness; jealousy; suspicion, especially of those most loved previously; obscene language singularly common; apt to assume suicidal form, or to kill child; lochia may be suppressed; milk usually deficient; voids urine and fæces in bed.

Two opposite states of sanguiferous system. In *one*, pulse runs 120 to 140 with headache, throbbing of carotids, flushed face, intolerance of light, great mental excitement, incessant raving, difficult to restrain, thoughts on genital function; is frequently fatal.

In the *other*, pulse but little quicker than natural, and weak; surface natural; very little headache; tongue white and loaded; stomach disordered; bowels confined.

**MELANCHOLIA.**—Rarely sudden, premonitory symptoms for some days. Sits quiet, moves mechanically, nights sleepless, pale sunken or placid aspect, pulse not accelerated, skin natural, tongue unhealthy, bowels costive, loses flesh. Loses interest in all things. Is aware of insanity; mental apprehension; religious mania; tendency to suicide marked; irresistibly driven to commit.

**DIAGNOSIS.**—Most apt to be confounded with, 1st, Phrenitis; 2d, Congestive Headache; 3d, Delirium Tremens.

*From Phrenitis.*—By pulse not so sharp and hard, skin not hot, pain not marked. Phrenitis presents fever, pain in head, vertigo, tinnitus, congestion of adnata, intolerance of light and sound, is rarer even than mania, appears sooner, occurs in full habits, plethoric or imprudent.

*The 2d*, does not commence with delirium.

*From 3d.*—Delirium tremens after labor usually occurs within three days, sometimes 24 hours. Mania rarely before three days to three weeks. Del. Trem. not sudden; has profuse sweats, cold clammy skin, tremulous tongue. History and

habits good guides. Are similar in character of delirium, restless, impatient of restraint, incessant talking, same capacity to return a correct answer when roused, same recurrence to one subject.

**PROGNOSIS.**—One of the most curable forms of insanity, except in that variety where pulse ranges 120 or more, with constant undeviating rapidity, and great restlessness, insomnia, warm profuse sweats and prostration occur; these usually die. Mania is more dangerous to life, melancholy to reason. If the pulse is regular, patient sleeps, and not much exhausted, usually recover. A frequent and increasing pulse is probably connected with Puerperal fever, and indicates fatal result. Free discharge of fetid fecal evacuations indicates favorably.

*Terminates in death, recovery, permanent madness.*

*Is it liable to return in a subsequent delivery?* Not except hereditary or injudiciously managed.

**TREATMENT.**—*Preventive, Medical, and Regimenal.* Indications are to combat morbid symptoms as they arise, to allay excitement, and to husband strength.

*Preventive.*—If reason to anticipate it, as in hereditary, attend specially to state of alimentary canal, and early remove all sources of irritation; keep from mental excitement; relieve insomnia by anodynes; do not allow the system to run down in any way; be cautious as to company, yet do not allow solitude. Occupy, without exciting, the mind, by exercise, and moderate occupation in household duties.

*Medical.*—VS. less required in this than in any other form of mental derangement. As a general rule do not draw blood in insane, when you would not if sane. Even if pulse is rapid, and somewhat firm, local bleeding by cups or leeches is preferable.

Antim. Tart. is useful when pulse is quick, but not if skin is cool, &c.

Purgatives are very useful to remove intestinal irritation, but not violent remedies. Ol. Ricini, Rhubarb, Senna, Aloes, Calomel, Mass. Hyd., combination of Mass. Hyd., Ext. Coloc., Comp., and Ext. Hyosey.

First clear the bowels, then keep in a soluble state. If medicines by mouth are refused, give enemata of Turpentine or Assafetida.

Counter-irritants are of great value. Begin with warm bath and soap, Ung. Antim. Tart., Blisters, and Ung. Sabinæ.

Narcotics are the sheet anchor. Not before bowels thoroughly cleared out; not while cheeks are hot and flushed, and thirst. Best form is Hyosey. and Camphor, Opium, Pulv. Doveri at night with an alterative; doses must be full, *ex. gr.* Morphine gr. i. to grs. iss.

If sleep ensues patient will do well. Keep up the influence by smaller doses. If excited on waking, wait till night, and then give a warm bath and Pulv. Doveri.

*Regimènal.*—Remove from home and place in an asylum. Requires constant care to prevent suicide; never to be left alone; windows to be secured; knives, &c., to be removed. Experienced nurse requisite.

In regard to seeing husband and friends, in early stages forbid it strictly, much more injurious than useful. In chronic and passive stage sometimes interviews are advantageous, but should be short and distant. Child is to be removed.

*Diet*, at first, is to be unstimulating. Get digestive organs into good condition. But it is very important to keep up the strength, hence diet is soon to be improved.

### Mammary Abscess,

Is liable to occur late during gestation, though very rarely; or during lactation, not unfrequently. Most in primiparæ, and during first three months.

*CAUSES.*—The congestion that normally attends the secretion of milk may run on to inflammation and abscess. Some women are more disposed, as those with sore nipples, the breasts not being fully drawn; in those in whom some of the lactiferous tubes have been obliterated by sore nipples, &c., in

former confinements, it is apt to recur. Tight lacing; not nursing either because of sore nipples, or its interference with visiting, &c.

*Exciting causes.*—Cold, wet, mental emotion, blows, compression, cold applied to drive away milk.

SYMPTOMS vary with extent involved. When skin and areolar tissue only involved, there are localized pain and soreness, circumscribed hardness and tension, and flush of inflammation on the skin. If the gland is interested pain is severe. Swelling, tension, constitutional symptoms, pulse quick and full, skin hot, headache, thirst, sleeplessness, uniform dusky red appearance, nodulated feel, hot and shining.

When both structures involved, some parts harder, some softer.

*Progress to suppuration* is rapid, even on third day, when in areolar tissue. Is marked by shivering, heat, perspirations, œdema, fluctuation, and enlargement.

In simple and superficial variety, pus is laudable; in more extended, sloughs present.

In scrofulous the disease is protracted and even fatal. Gradual loss of strength, appetite, and flesh; daily rigors, unrefreshing sleep, profuse night sweats, and diarrhœa.

PROGNOSIS.—Not often fatal, but tedious and difficult to cure, and very distressing. May excite lurking predisposition to disease.

*Treatment.*—*Indications*, 1st, To promote resolution; 2nd, Promote suppuration.

In mere congestion, simple and continued frictions with the hand, and Camphorated Oil or Soap Liniment; free purge with salines; cover with oil-skin; support with bandage.

If much heat and pain and some duration, resolution is rare; use Linseed poultice sprinkled with Goulard's Extract; tobacco poultice requires care for child; Collodion painted thoroughly has been advised; Leeches, six to ten, not more. (Leeching the inflamed mammæ requires caution, lest bleed too much.) Continually wet with warm vinegar and water, and covered

with oil-silk. Internally, Salines with Antim. Tart.; Vin. Antim. et Spts. Nit. Dulc. If tongue is foul, Calomel followed by Ol. Ricin. If early seen, an emetic of Ipecac. and Ant. Tart. Diet to be bland. Breasts to be drawn thoroughly. Support by long adhesive strap.

If not seen for two or three days, fulfil second indication. Emollient poultices; bran; hops; poppy; linseed. Poultices long continued produce eruptions. Modify this, 1st, By oil-silk covered with hot salt; 2nd, Oil-silk and poultice alternately; 3rd, Lint wetted, and oil-skin over; 4th, Spongio-piline. Exposure to cold while nursing is hazardous.

Keep in bed. Keep bowels free.

*Of Opening:* Variety of opinion. Some say early; others not till skin is thinned. Abscess near the nipple not to be opened so early. Compress breasts by straps. Sometimes sloughs stop the exit of the pus.

Sinuses result from too early opening, and leaving unsupported. Keep orifices open and use compress. This failing, put in seton, and keep in until some time after laudable pus is formed; use well graduated pressure by straps.

With suppuration, the diet must be improved and tonics soon given; tonics and anodynes.

A breast once the seat of mammary abscess, requires careful watching to prevent re-accumulation of milk.

Though long unhealthy, cancerous degeneration is not apt to follow.

*Of Nursing the Child:* Before suppuration, keep breast empty by nursing; if child is ineffective, get an older child, or a puppy, or breast-pipe. If actual suppression has occurred, weaning will become necessary, and is better for both; it relieves mother of a double drain, the child of taking insufficient nutriment, and perhaps pus into stomach. There is no use in attempting to continue nursing with one breast and at the same time to cure a diseased one.

## OPERATIVE MIDWIFERY.

**Operations for Premature Labor.**—This proceeding was suggested by cases occurring in which a viable foetus was prematurely expelled through a deformed pelvis. In 1756 a consultation was held in London to decide upon the morality of the operation. By the English it has been advocated; by the French, until recently, condemned, owing to religious motives.

Is now admitted.

*Danger*: Females undergo no special immediate danger. To child, less than half fatal. Danger arises from, 1st, Compression of cord; 2nd, Irregular presentation.

*Objections*: 1st. Difficulty of appreciating size of pelvis. 2nd. Difficult to ascertain precise period of gestation. 3rd. Abnormal presentations are more frequent in premature labors. 4th. Cervix uteri not being unfolded, child dies from long labor.

*Utility*: Saves more than half of children, 1 in 16 mothers only dies; while by Craniotomy, infants are of course all dead, and 1 in 5 mothers are lost; by Cæsarian, 1 child in  $3\frac{1}{2}$  dies, 1 mother in  $2\frac{1}{3}$ .

*Available*: 1st. Where the pelvis is too much deformed to allow a full grown, but yet will permit a viable foetus to pass.

Two and a half inches in antero-posterior diameter will permit a viable foetus; through three and a half a living child can pass.

Bi-parietal diameter from 32nd to 33rd week, measures  $2\frac{3}{4}$  inches; from 34th to 35th, is  $3\frac{1}{8}$  inches; from 36th to 37th, is  $3\frac{1}{4}$  inches.

If antero-posterior diameter is 3 inches, wait till 38th week or 8th month; if  $2\frac{3}{4}$  inches, wait till  $7\frac{1}{2}$  months; if  $2\frac{1}{2}$ , wait only till 7th month. If less than two inches, the decision lies between abortion and the Cæsarian section.

Is not to be used in primiparæ; nor if twin pregnancy be clearly ascertained, relying on the small size.

*2nd.* In certain cases, death of the foetus occurs at a time when extra-uterine life is practicable; in a succession of such cases, the operation is admissible.

*3rd.* Where mother's life is endangered by excessive vomiting, effusion into serous cavities, strangulated hernia, convulsions, cardiac disease, aneurism, uterine hemorrhage

Other reasons are, narrowing of bis-ischiatic diameter; exostosis in pelvis; fibrous tumors of uterus, which during pregnancy sometimes suppurate; cancer; rupture of uterus in previous labor, occurring from some mechanical obstacle.

*Modes of Operating:* *1st.* Separating membranes in the vicinity of os; frequently fails.

*2nd.* Rupture of membranes by catheter or trocar. Is effectual but hazardous.

*3rd.* Sponge tent of compressed sponge inserted into cervix, and then plug the vagina. (To make a sponge tent.—Soak a piece of fine sponge in Mist. Acaciæ, wrap it round an awl, and then around it a string, very tight; when dry, cut into any desired shape.)

*4th.* Use ergot for a day or two, and then rupture membranes.

*5th.* Injection of cold or warm water; sometimes succeeds.

*6th.* Galvanism.

Labor usually comes on in from 24 to 96 hours, and is ushered in by nervous symptoms.

A wet-nurse should be provided for the infant.

## Version.

*Turning:* (See also under Shoulder Presentation.) First applied to living child by Paré.

*Advantages:* *1st.* Enables the operator to control the whole labor. *2nd.* Though inferior in safety to head presentations, the breech is superior to others. *3rd.* Is sometimes the only alternative of evisceration. *4th.* In some cases affords a probability of saving mother.

*Disadvantages* : 1st. All introductions of the hand into the uterus enhance the danger of mother's life. 2nd. Mortality to child, one in three. 3rd. The difficulty of effecting it in certain circumstances.

*Applicable* : 1st. In irregular presentations. 2nd. In all cases of placenta prævia ; in many of ruptured uterus ; convulsions ; prolapsed funis ; hemorrhages ; great debility ; syncope ; danger of suffocation.

Simpson proposes it in cases of slightly deformed pelvis, but it would be objectionable in primiparæ ; again, in ordinary version, one-third of children are lost ; if the size of the pelvis be over-rated, the difficulty and danger would be increased, for embryotomy must then be performed under unfavorable circumstances, danger of contusing the maternal soft parts by dragging through a narrow pelvis.

Mode of Operating. (See page 145.)

### Obstetrical Instruments.

Are, 1st, those intended to benefit both mother and child, *i. e.* Vectis and Forceps ; also Tractors ; Blunt hook.

2nd. Those to benefit mother at expense of child, *i. e.* Perforator ; Crotchet ; Craniotomy forceps ; Cephalotribe.

*Operations in Paris*, 1 in 78 cases ; in *Vienna*, 1 in 50 ; in *Dublin*, 1 in 72½.

**Vectis or Lever.**—Invented by Roonhuysen in 17th century. Kept secret till 1753, when de Vischer and Vander Poll bought and disclosed the invention.

*Value* : Is unsettled.

*Recommended* to rectify malpositions, and as a tractor in face or breech cases.

The facility of application constitutes an objection, from the temptation to concealment.

**Forceps.**—Were invented prior to 1647, by Dr. Paul

Chamberlen. The original instruments were obtained by Mr. Cansardine, in 1818, and described. Chapman, in 1733, first published a description of the instrument.

The *value* of the invention may be appreciated, by considering that before their use, craniotomy with all its horrors on the child's account, and all the dangers from delay to the mother, was the only resort in difficult labors; yet Blundell says the total evil has considerably exceeded the advantages of forceps.

*Varieties* are principally *Long* and *Short*. Long are 16 to 18 inches; short 10 to 12. The long are applicable at either superior or inferior strait; the short only at the inferior.

The distance between the blades, or clams, is liable to variation; about 3 inches is advisable.

The blades have a "first" curve to apply to the head, and in long forceps a "second" curve to accommodate to axis of pelvis.

Some forceps have solid blades; others a fenestra to admit the parietal bosses.

Formerly leather coverings were used, but are objectionable, from difficulty of introduction, and possibility of conveying contagion.

Varieties of lock are, the French with a screw pivot on the male blade, fitting into a mortise on the female blade; the English has a notch with a shoulder fitting a corresponding and similar notch.

USE OF FORCEPS.—1st. To deliver in cases of inert uterine action.

2nd. To save mother from consequences of too prolonged labor.

3rd. To deliver in emergencies, as convulsions, hemorrhages, &c.

4th. To deliver head left in utero, *ex. gr.* in breech cases.

The *power* of the instrument is, 1st. To grasp and compress the head (though some deny the propriety of compressing).

2nd. To act as a lever of the first kind, and as an extractor. Baudelocque's experiments reduced the bi-parietal diameter not more than four lines.

*Frequency of use:* In British practice 1 in  $362\frac{3}{4}$ ; French, 1 in 162; German, 1 in  $153\frac{1}{2}$ ; In whole, 1 in  $168\frac{1}{2}$ ; Voightel, 1 in 8; Siebold, 1 in 9.

Arneth says, in Paris, 1 in 257; in Vienna, 1 in 80; in Dublin, 1 in  $343\frac{1}{2}$ .

*Results:* In British there were lost of mothers, 1 in  $20\frac{1}{2}$ ; of children, 1 in  $4\frac{1}{2}$ ; in French and German, 1 mother in  $13\frac{1}{2}$ ; of children, 1 in 5. Total: loss of mothers, 1 in 15; of children, 1 in 5.

The frequency of craniotomy in British practice makes more favorable results to mothers.

APPLICABLE.—1st. To the head only. 2nd. Never to save ourselves trouble. 3rd. Not unless there is a certainty that natural efforts will not effect delivery safely to mother and child. 4th. Os must be dilated and membranes ruptured. If the whole circumference of the os can be felt, forceps are not advisable, and even if the posterior lip cannot be felt, if the anterior is distinguishable, great care is requisite. 5th. Not to be used in “impacted,” or “locked head.” If the head fits closely, but is not locked, they may be used. 6th. Sometimes in face presentations. 7th. And most favorably, if labor is delayed, simply from want of uterine contraction, while there is sufficient space, and the parts are dilatable. 8th. Hand with the head occasionally; also Prolapsed Funis. 9th. In Convulsions, Hemorrhage, Ruptured Uterus, Syncope, Great Debility, Diseases of the Respiratory Organs, Impending Suffocation, Obstinate Vomiting.

10th. In breech cases where there is delay of head. 11th. To head retained in utero after avulsion of fœtus.

NOT APPLICABLE.—1st. To breech. 2nd. In deformed pelvis; tumors. 3rd. Rigid and undilatable os; or swelled and inflamed soft parts. 4th. If child is certainly dead. 5th. Hydrocephalic or firmly ossified head.

PERIOD FOR OPERATING.—Before rupture of the membranes it is unnecessary. When constitutional symptoms appear, interference is requisite. Symptoms are a better guide than

mere lapse of time. Do not, however, wait *too long*, till the passages are dry and inflamed, and the perineum and labia are infiltrated with serum and "will tear like wet paper," for laceration is inevitable.

Consider, *1st.* The previous state of health of the woman, if she has been confined by long illness, and also if it is a first labor. *2nd.* The duration of labor; if 24 hours elapse *after the rupture of the membranes* without advance for 4 hours, the soft parts will be endangered. *3rd.* The progress of the head; if it advances at all, and the strength and spirits remain good, and the pulse does not rise, temporize: (the caput succedaneum sometimes misleads as to apparent advance).

*4th.* The strength and capacity of endurance. Exhaustion will be known by quick pulse (under 100 usually no danger); by cessation of pains; by olive colored discharge, faint, unpleasant, but not putrid; anxious countenance; hurried breathing; eyes sunken; tongue loaded and dry; vomiting; shivering; cold extremities; muttering delirium.

*5th.* The state of passages; if dry, hot, swollen, and painful, labor must be terminated.

*6th.* State of abdomen; if pressure gives great pain, deliver.

*Summary.*—If pains have subsided; strength is failing; spirits sinking; countenance anxious; pulse over 100; tongue slimy, dry, brown; rigors; pain on pressure; green discharge; soreness, heat, and tumefaction of vulva and vagina; no progress of head for 4 to 6 hours; vomiting of dark fluid; hurried breathing; delirium; cold extremities; instruments should be used; but it would be injudicious to wait for dark vomiting, dyspnoea, delirium, and coldness.

But if the uterus is acting with energy, the strength and spirits good, the countenance natural and cheerful, pulse under 100, tongue moist and clean, no vomiting or rigor, no heat, swelling, or tenderness of parts, the head advancing and retreating, assistance may be delayed."

"No woman should be left in strong labor for more than 24 hours *after the discharge of the waters.* *1st.* Because it is

unreasonable to expect that the natural efforts will expel the child. 2nd. Dangerous symptoms may suddenly appear."

*Preliminary Preparations.*—Evacuate bladder by the catheter; the rectum by an enema; have a consultant if there is time, and inform the patient of the necessity and nature of the operation; warm the forceps by warm water, not by fire; arrange your own dress and protect the bed, furniture, &c.; chloroform. Know certainly the position of the head.

*Position.*—English on left side; French on back. Must be quite at the edge of the bed.

*Introduction.*—Pass in three fingers, to guard the blade from inclosing the os; (at the superior strait the whole hand is requisite.) Introduce the male blade first, and along the left side of the pelvis.

Keep the blade constantly in contact with the head, and guide it forward by an insinuating, wriggling motion, *without force*. Use the left hand and female blade correspondingly. If properly applied, they will lock without force; if not, withdraw the second blade, which is the one usually at fault.

Clear the hairs and soft parts from the lock; screw down the pivot; grasp the handles firmly together, to be sure nothing extraneous is included before moving. Motions to be from handle to handle; two-thirds lateral and one-third extractive force. Do not tie the handles, but relax at intervals. Do not draw continuously, but imitate the uterine efforts. Keep the forefinger of the left hand against the head, to know if the forceps are slipping. *Observe very carefully the axis of the pelvis*, and vary the motion so as to correspond with the part of pelvis over which the head is passing. As extension begins, carry the handles up towards the abdomen with the right hand and stop pulling; with the left protect the perineum. Do not remove the blades till the head is delivered.

*SPECIAL RULES.*—*In Occipito-Posterior Positions.*—The blades are applied and locked as before; but traction is not to be made towards the perineum; on the contrary, increased flexion is produced by raising the handles carefully, and as

soon as the occiput passes the perineal commissure traction is to cease, or the handles to be moderately depressed.

*At the Superior Strait.*—The whole hand must be introduced to guide, so as to introduce the blades within the os. The first tractions are to be downwards and backwards. Much care is requisite, for it is both difficult and dangerous.

*In Face Presentations.*—Apply the blades so that the concave edge looks towards the chin in the mento-anterior position. In the mento-posterior, Dubois suggests that a straight forceps might be used to bring the chin in front.

*Where the head remains* after the body is expelled. Raise the child well upwards, and apply upon the sides of the head as in ordinary cases, sliding the blades beneath the body.

*After Separation of the Head,* the forceps may be used to restrain the head while using the perforator. The hand introduced, brings the occipital foramen within the grasp of either the forceps or the craniotomy forceps, first, and while the head is secured by the latter, the former instruments may be applied as preliminary to the scissors.

**DANGERS.**—*To the Mother:* Laceration of vagina, including cervix uteri; bruising soft parts; laceration of perineum.

*To the Child:* Ear or scalp bruised or cut off; head may be too much compressed; paralysis of facial nerve of child from pressure.—(Cazeaux.)

**CAUTIONS.**—*Avoid force;* do not apply while the parts are rigid or the os undilated; know certainly the position of the head; do not oscillate too extensively; observe intermissions; avoid severe and continuous pressure on the handles; avoid hurrying the head through the outlet; remember the perineum; bear in mind the axis of the pelvis.

**Embryotomy.**—*Varieties:* Embryulcia; evisceration; craniotomy; cephalotomy.

*Def.* The reduction of the size of the child, whether living or dead.

*Necessary Instruments:* Smellie's scissors, or Naegele's; crotchet; bone forceps; craniotomy forceps; cephalotribe.

*Object*: To save mother when the pelvis is too small to transmit a living child.

*Conditions necessary*: 1st. That a head, even when compressed, will not pass. 2nd. Distortion not too great to prevent a mutilated child passing. 3rd. Delivery impracticable to forceps. 4th. Hydrocephalus.

*Dimensions requiring it*: Osborn says, antero-posterior diameter of  $2\frac{3}{4}$  inches; Clarke,  $3\frac{1}{2}$ ; Burns,  $3\frac{1}{4}$ .

*Admitting*: Baudelocque,  $1\frac{2}{3}$ ; Dewees, 2; Davis, 1.

*Statistics of Mortality*: All the children of course dead; mothers, 1 in 5. Allowance must be made in estimating the severity of the operation, for the feelings of humanity that defer it as long as possible.

*Frequency*: In British practice, 1 in  $201\frac{3}{4}$ ; French, 1 in  $1205\frac{2}{3}$ ; German, 1 in  $1944\frac{1}{3}$ ; total, 1 in  $803\frac{3}{4}$ .

(Arneth says, in Paris, 1 in 1628; in Vienna, 1 in 688; in Dublin, 1 in  $127\frac{1}{2}$ .)

As compared with forceps operations, it is less favorable; but the alternative operation is the Cæsarian section, which is fatal to mother 1 in  $3\frac{1}{2}$ ; or premature labor.

*May be used*: 1st. When strong labor has existed and no advance. 2nd. After failure of forceps. 3rd. Exhaustion, the child's life being doubtful, and also use of forceps.

*Must be used*: 1st. For dead child. (Signs of death.—1st, Loss of foetal motion; 2nd, Sense of weight in uterus; 3rd, Sense of coldness; 4th, Meconium in head presentations; 5th, Putrescent discharge; 6th, Flatus from uterus; 7th, Want of cerebral pulsation; 8th, Loss of funic pulsation; 9th, Desquamation of cuticle; 10th, Looseness of bones; 11th, Emphysema; 12th, Loss of stethoscopic signs.) (If you anticipate that perforation will become necessary, watch the foetal heart closely.) 2nd. Antero-posterior diameter less than three inches. 3rd. Bis-ischiatic less than three inches. 4th. Fibrous and other tumors. 5th. Hydrocephalus. 6th. Convulsions, rupture, and hemorrhages. 7th. Hand with head in too narrow a pelvis. 8th. In breech cases. 9th. Head left in utero.

*Period*: 1st. If pelvis is very much distorted, operate as soon as os is dilatable. 2nd. If there is doubt of capacity, wait awhile; also in tumors, &c., wait. 3rd. In convulsions and such like emergencies, circumstances must regulate.

*Every one who employs the perforator, should remember that he designs to kill a human being; whether that murder be justifiable or otherwise, must be answered by each one's own conscience.*

MODE OF OPERATING.—*Preliminaries*: Os to be dilatable; bladder and rectum to be emptied. Position as for forceps. Dress to be arranged; also cloths, &c., to receive brain. Instruments to be warmed. Consultation. Chloroform. Introduce two fingers, and upon them the scissors; avoid a suture or fontanelle; rotate steadily, but with moderate pressure, until the bone is perforated; be sure you are through the caput succedaneum; push scissors up the shoulder; make an assistant separate them; make another opening at right angles, and then twist the scissors around so as to make a large hole; push the instrument thoroughly through *all* the brain; withdraw, and with the finger make sure of the medulla oblongata; wait ten minutes for the brain to exude; pass in the crotchet, and fix it to either the base or facial bones; fold the scalp over to protect; guard the point of the crotchet with the other hand, and pull with both, so that if a slip occurs both hands slip together; pull during a pain; remember the axis of the pelvis; take care of spiculæ. Some prefer craniotomy forceps, which should be introduced one mandible into the skull, the other outside, and fully up to the face.

If great difficulty is experienced, a delay of some hours will weaken the structures, allow of moulding, and facilitate extraction.

*Dangers*: The perforator may merely penetrate the infiltrated scalp, and slip on the skull. The crotchet may slip, and wound vagina. The shock is great from the condition of the patient; is diminished by chloroform. Inflammation not unfrequent subsequently. The child has been born living.

*After Treatment*: A full dose of morphine; and, if threatening symptoms arise, Narcotism.

The CEPHALOTRIBE is a pair of long and very strong forceps, which close much more than the ordinary instrument. The blades, which are very thick and strong, are introduced separately, and then approximated by a screw, thus crushing the head.

**Symphyseotomy, the Sigaultean Operation.**—Devised by Sigault, in 1768; was highly lauded, but is now abandoned.

*Statistics*: 49 cases, 16 mothers died. An analysis of the cases shows that 16 mothers were sacrificed to save 5 children.

**Cæsarean Section, Gastro-hysterotomy.**—An operation to extract the fœtus from the uterus of the mother through the abdominal parietes.

Was known to the ancients as a means of saving the child after the death of the mother. Scipio Africanus, Claudius Cæsar, Julius Cæsar, are said to have been so born.

First performed successfully on a living woman about 1500, by a cattle-gelder on his own wife. In several cases it has been repeated on the same patient. Rousset mentions a case operated on 6 times.

**OBJECTS.**—1st. To afford to mother a relief from destruction, to the child a chance for life, when even the dead fœtus cannot pass per vias naturales; antero-post. diameter under  $1\frac{1}{2}$  inches by 3 in transverse.

2nd. To extract a child after sudden death of the mother; even as late as an hour after death.

3rd. To extract fœtus after extra-uterine pregnancy, or ruptured uterus. Is rather gastrotomy.

**STATISTICS.**—Are not reliable from the suppression of unfavorable cases, while successful are probably all reported.

British and American practice 52 cases, 14 mothers saved, 4 lost. In 49 cases, 28 children saved—1 in  $2\frac{1}{3}$ .

Foreign: 382 cases, 223 mothers saved—1 in  $2\frac{1}{2}$ . In 200 cases, 147 children saved—57 lost.

Total results: 434 cases, 237 mothers saved—197 lost. 249 cases, 175 children saved—74 lost.

PERIOD.—Early, if there be no doubt of necessity. The duration of labor over 72 hours is unfavorable to both mother and child. The greater the time after rupture of membranes, the more hazard.

MODE OF OPERATING.—*Preliminaries.*—Evacuate bowels and bladder; ascertain position of placenta; apartment heated to 80°. Chloroform. Incision from 6 to 10 inches along linea alba or by the side of rectus, or horizontal above pubes; through integument and peritoneum; not so long in the uterus; draw out liq. amnii by syringe or sponge, then enlarge the incision; remove child quickly, and membranes by twisting, especially from near os, and be sure that os is pervious for the lochia; (uterine contraction detaches the placenta); uterine wound of 5 or 6 inches will contract to 2 and requires no suture; the abdominal parietes are to be kept close to the intestines.

Dressing by twisted, or by quilled suture, and long straps; water dressings; lower angle to be free.

*After Treatment.*—Opium.

*Dangers.*—Shock; hemorrhage; strangulation of intestines; metritis and especially peritonitis.

**Vaginal Hysterotomy.**—Incisions into the uterus *per vaginam*. Has been practised in cases where closure of the os has occurred after impregnation, as the result of inflammation, either from disease, or as a sequel of attempts at abortion.

Incisions to be made, so as to avoid bladder in front, and rectum posteriorly.

### Chloroform.

Has been objected to as “immoral,” as “indecent,” as

“annulling only a physiological phenomenon,” but more especially as being hazardous to life. Of these, the last only deserves consideration. Its hazard in careless hands is freely admitted; fatal results have followed, and doubtless will follow, the use of chloroform, even in midwifery, though as yet no such event has occurred in its obstetrical employment. But are there not concomitants and consequences of labor, as perilous to life immediately, as deleterious to enjoyment of life subsequently, often seen in labors distressing by severity at the time, and entailing sufferings, which a lifetime does not suffice to remove? The nervous shock attending labor is frequently of great severity, its effects often very persistent; and from this shock what agent yet discovered offers the immunity given by anæsthetics? In all cases demanding operations, the use of chloroform is the obstetrician’s most valuable adjuvant, and especially does it disarm version in severe cases of its terrors; and to nothing does irregular or hour-glass contraction yield so ready an entrance. Forceps and embryotomy operations are equally facilitated. The employment of anæsthetics in operative midwifery meets with but limited opposition, but more objections are urged against their use in regular labor; even here, however, there are many cases where relief can be given, and should not be withheld.

1st. Severely felt but short and ineffectual pains which restrain voluntary and bearing down efforts—here chloroform acts as a co-ordinator of forces, blunts abnormal sensibility, renders contractions longer, steadier, and more efficacious, and sometimes remarkably accelerates labor.

2nd. In muscular women of rigid fibre the dilating of the soft parts is often extremely painful.

3rd. Delicate and nervous women, worn out by not excessively long labor, are relieved by the rest obtained by chloroform.

4th. Of its use in convulsions (*see* page 172).

Not, however, in all cases, *ex. gr.* :

If strong objections are offered, anæsthetics should not be

forced, and even if moderate aversion exists it should be respected.

**TIME OF GIVING.**—Ordinarily not till 2nd stage; if pains are very severe, this may be anticipated.

**MODE OF GIVING.**—A handkerchief or towel, sprinkled with about half a drachm of chloroform, is to be held near, but not upon the mouth, and the patient encouraged to take long and deep inspirations; atmospheric air is to be admitted; deep snoring anæsthesia *must not be reached*, but a bare sufficiency to mitigate suffering. While this is in progress the patient may be quite sensible. In the intermission of pains the towel is removed, and reapplied as the pain approaches.

**CAUTIONS.**—One hand is to watch the pulse *constantly*.

Allow plenty of atmospheric air. Temperature not to be high. At no time overwhelm the patient; do not commence with a full dose.

Keep inside of anæsthesia.

Administration soon after a meal is objectionable, or after a long fast.

### ORDINARY MANAGEMENT OF CHILD.

As soon as cord is divided (for time of which see Management of third stage of labor, page 128), place one hand under head, and grasp the shoulder with the thumb; with the other hand grasp the thigh furthest from the operator, so as completely and securely to hold the infant, and then place it in a blanket, or some flannel provided for the purpose, and confide to the nurse.

**WASHING THE CHILD.**—Should be in *warm* water, and not in the lying-in chamber. If much vernix caseosa is upon it, lard or sweet oil is to be freely smeared over it, and then with a flannel cloth and soap the child is cleansed thoroughly; the eyes are to be washed with warm water without soap; cleanliness is not so essential as to risk the integrity of the skin—*nimia diligentia nutricis*.

**DRESSING THE CORD.**—When the child is fully dried, take a piece of old linen about seven inches square, cut a hole in the middle, through which pass the cord, and envelope with the linen; then place upwards along the abdomen and have a flannel roller applied *loosely* around to secure the cord. Avoid the filthy burnt rag usually suggested by the attendants.

The cord usually falls off by the fifth day. To facilitate its removal apply a bread and water poultice over night.

I have seen the cord still attached on the fifteenth day.

**CHILD'S DRESS.**—Essentials are, *warmth*, *looseness*, and without pins; tapes being preferable. Caps are to be avoided. Long sleeves ought to be worn, but fashion is omnipotent against health. Dress should cover chest, and be high on the neck. The diapers or "squares" should be soft, and of old preferable to new stuff; excoriation sometimes ensues from stiffness.

**MEDICINE.**—A teaspoonful of cold water: the colostrum. The practitioner's voice should always be raised against the various compounds of butter and sugar, molasses, &c., that are usually given. If the bowels are not freely opened by the second day (provided imperforate anus is not the cause), a small teaspoonful of castor oil is sufficient.

**FOOD.**—None equal to the natural supply. Always have child nursed within two hours after birth, provided great exhaustion, as by hemorrhage, &c., has not occurred. Assurances of "no milk in the breasts," are frequently falsified by the child's swallowing immediately. The best substitute is one third of cow's milk and two thirds of water sweetened with loaf sugar.

Until teeth appear, milk should constitute the infant's food.

Child should be taught early not to nurse at night. Intervals of two or three hours, according to the nutritive properties of the milk, will suffice during the day.

Experience soon teaches the injuriousness of "night-nursing."

**SLEEP.**—Not in a cradle. Not by mother if practicable. But children of feeble vitality require the heat of mother's

body. It should always be borne in mind that the new-born child has much less capacity to resist the influence of cold than the adult. An apartment comfortable to an adult is often far too cool for child's comfort and well being.

### MORBID STATES OF THE CHILD AFTER BIRTH.

1st. In a state of ANEMIA, SYNCOPE, or ASPHYXIA.

CAUSED by, too early detachment of placenta; uterine hemorrhage; defective nutrition.

SYMPTOMS.—Very feeble if any respiratory efforts; no pulsation of cord; foetal heart weak.

TREATMENT.—Tie and divide cord; warm bath; cold affusion; friction with brandy and flannel; titillating nose and fauces with feather; electricity; artificial respiration.

2nd. ASPHYXIA.—CAUSED by prolonged labor; abnormal presentation; &c.

SYMPTOMS.—Weak pulsations of funis; color natural.

TREATMENT.—Wait before dividing cord; frictions; cold dash; alternate warm and cold bath; inflation; these failing, divide cord and bleed  $\zeta$ ss.

3rd. APOPLEXY.—CAUSED by prolonged labor; narrow pelvis; delay to passage of shoulders.

SYMPTOMS.—Pulsation of cord feeble and oppressed; surface and face livid.

TREATMENT.—Divide cord; bleed  $\zeta$ ss.; baths; friction; inflation.

The first step in the process of the revolution was the formation of the Continental Congress in 1774. This body of representatives from the colonies met in Philadelphia to discuss the grievances of the colonies against the British government. The Congress adopted the Declaration of Independence in 1776, which declared the colonies to be free and independent states.

### DECLARATION OF INDEPENDENCE

The Declaration of Independence was a formal statement of the colonies' reasons for separating from the British Empire. It was signed by representatives of the colonies on July 4, 1776. The document is one of the most important in American history, as it established the United States as a sovereign nation.

The Declaration of Independence was a landmark event in American history. It was a bold statement of the colonies' desire for self-governance and independence from the British crown. The document was signed by representatives of the colonies on July 4, 1776.

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