Management of Pregnancy.

By Paul F. Mundé, M. D.

A SKETCH

—OF THE—

MANAGEMENT OF PREGNANCY, PARTURITION AND THE PUERPERAL STATE.

—BY—

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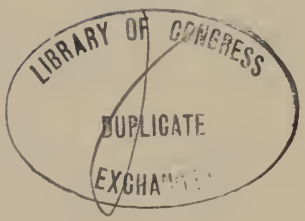
SECOND EDITION.

1888:
GEORGE S. DAVIS,
DETROIT, MICH.



PREFACE.

It is evident that a monograph of the size of the present one can contain but the merest outlines of the subjects mentioned in the title, and must, for want of space, omit many points of theory and practice peculiar to the writer, who can but crave indulgence on this score. I have prepared this pamphlet at the request of the publishers, who hope by it to furnish the practitioner with a ready pocket companion for his obstetric use. For many details and references, I must refer the reader to the larger text-books.

PAUL F. MUNDÉ.

20 WEST 45TH ST., NEW YORK, Oct. 1, 1888.

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PREGNANCY.

NORMAL.

Diagnosis.—The importance of being able to form a correct opinion regarding the existence or absence of pregnancy can scarcely be overestimated, both in regard to the reputation of the physician himself and to the possible consequences to his patient; so that a thorough knowledge of its signs and symptoms is of paramount necessity.

By far the safest plan is to consider every woman, whether married or single, who comes to you for the diagnosis of this condition, or for treatment of uterine disease during the child-bearing period, as pregnant until you have satisfied yourself to the contrary. Of the many signs which point to the probable existence of gravidity, but few taken alone have a positive significance, so that while in some cases we may be certain at the 6th or 8th week that conception has occurred, in others we cannot be sure of its existence until the 14th or 16th week, or even later. Patients should be questioned concerning the presence of the more important subjective symptoms—menstrual suppression, nausea, dyspepsia, and morbid longings, unusual sensations in the breasts, increase in size of breasts or abdomen, quickening—this information being *always* supplemented by inspection of the breasts and a vagino-abdominal examination, to de-

termine the objective signs—changes in the shape, size, and consistence of the uterus; intermittent uterine contractions; fetal heart sounds and movements; uterine, placental and funic murmurs; ballottement; changes in color of vaginal mucous membrane; striæ in integument of abdomen; changes in size and consistency of breasts; pigmentation of areolæ of nipples, and development of Montgomery's follicles; pigmentation of face, etc.

Menstrual Suppression is the rule after conception, though exceptionally menstruation and even ovulation (as in cases where superfetation occurs) may continue for several months, cases being even reported where irregular hemorrhages have continued all through pregnancy, the blood in these instances probably coming from a lacerated or eroded cervix. Conception *may* occur before menstruation has appeared, or after the menopause. Menstrual suppression may be caused by anæmia, plethora, by mental emotion or fright, by exposure to cold, etc.

Nausea, Dyspepsia, and Morbid Longings.—These symptoms, especially nausea more marked in the morning or evening, are very common during the first two or three and the last months, may be entirely absent or may last all through pregnancy, and are of value only when taken in connection with other signs.

Mammary Signs.—The breasts, which are the seat of tingling or pricking sensations, become larger,

firmer, more movable, and more nodular to the touch from the development of the gland tissue; the superficial veins become more prominent; the areolæ become turgid and undergo a progressive pigmentation with development of the glandular follicles around the nipples, which become longer, more easily erectile, often covered with thin, branny scales, and from which a drop of lactescent fluid can be squeezed. The value of these signs is lessened by the fact that they do not become well marked until after the second month, when we have more reliable evidence to guide us; that they may be caused by uterine or ovarian disease; that they may be in great part the relics of a former pregnancy, and that exceptionally they may all be absent.

Uterine Signs—Hegar's Sign.—Immediately after conception the uterus begins to change in form, size, and consistency, and, in primigravidæ, in cases where the abdominal walls are thin and the uterus readily palpable, these changes become so marked by the 5th or 6th week that by them alone one skilled in uterine palpation can make the diagnosis; and even when the uterus is not so easily palpable we can detect the condition with certainty at 8 or 10 weeks. These changes can only be recognized by a careful bimanual (abdomino-vaginal) examination, and are, in brief, a round swelling of the uterine body, which becomes more and more globular in shape, while there is yet no appreciable change in the cervix, so that the exam-

ining finger impinges both in front and behind the cervix on the swelling uterine wall, the whole organ being shaped like a fat-bellied jug; the consistency also changes, the organ becoming very resilient and elastic, feeling as if it could be compressed between the examining fingers. This feeling of resiliency is of importance, as it assists us to differentiate the enlargement from that of hyperplasia (hard, non-elastic), subinvolution (soft, non-elastic) or fibroids (hard, non-elastic). We must also be careful not to mistake an ante- or retroflexion for this condition. Any cause which prevents a satisfactory bimanual examination, as rigidity or unusual thickness of the abdominal walls, retroposition of the uterus, or pelvic exudations, may prevent the recognition of this sign. The changes are also more difficult to recognize in multiparæ, but when well marked are absolutely indicative of the presence in the uterus of a product of conception.

By the 12th or 13th week (1st third) the fundus uteri can be felt at the pelvic brim; by the 26th (2d third) it has reached the umbilicus, and at the 38th the ensiform appendix, sinking down somewhat during the last two weeks.

The cervix uteri, soon after conception has occurred, begins to soften and enlarge circumferentially, this softening being from without inward, and becoming noticeable about the 6th or 7th week; at the end of the 16th week the lips are softened; at 20 weeks half the cervix is soft and the tip of the finger can be

inserted into the os; and at the 34th week the change has extended to the entire organ. The gravid uterus is usually symmetrically oval in shape, smooth and even in contour, firmly elastic in consistency, and may be felt to contract at intervals under palpation. The uterine murmur is a blowing sound synchronous with the maternal pulse; it may also be heard in uterine fibroids.

Fetal Signs.—Ballottement (the sensation caused by the rebound of the fetus in the amniotic fluid after being pushed away by a tap of the examining finger) may be recognized by a skilled observer at about the 14th week, but more easily between the 18th and 30th weeks. External ballottement of the fetal head may be obtained, in other than cephalic presentations, after the 20th week in many cases. The fetal heart sounds may sometimes be distinguished by the 15th or 16th week, and more easily later. In head presentations they are heard below the umbilicus, in breech above, and in character they resemble the muffled ticking of a watch.

Fetal movements may be sometimes recognized by the *stethescope* as early as the thirteenth week; are usually felt by the mother about the middle of the fourth month (twentieth week); may be recognized by the hand pressed gently upon the abdominal wall at about the same time; and may be noticed by sight in the later months. The funic souffle is a hissing sound, synchronous with the fœtal heart—it is only

heard where there is some obstruction to the funic circulation, and is, therefore, usually a sign of danger to the child.

Miscellaneous Signs.—The violet discoloration of the vaginal mucous membrane found in pregnancy may be caused by any other condition which induces venous congestion of the pelvic mucosa, as pelvic tumors, etc. Other signs sometimes mentioned are dentalgia, facial neuralgia, tendency to syncope, salivation, elevation of uterine temperature, unusual gratification during some particular act of coitus, etc.

Certain pathological conditions may simulate pregnancy. These may be any of the pelvic or abdominal tumors, obesity, ascites, tympanites, distention due to retained menstrual blood, amenorrhœa with cervical congestion, etc. The differential diagnosis, between pregnancy and any of these conditions may usually be made by a careful physical examination, supplemented, if necessary, by the use of an anæsthetic.

MANAGEMENT OF PREGNANCY

Having ascertained that your patient is pregnant, you should impress upon her the necessity of conforming to certain hygienic rules and measures, and should make her understand that both her own welfare and that of her unborn child may greatly depend on their proper observance. The bowels should be kept regular, if possible by attention to the habits and diet, which should be plain, easily digested and nutritious, consisting in part of fruits, fresh or stewed, and bread made from unbolted flour. Mild laxatives, such as compound licorice powder, or a saline are used if necessary. The skin should be kept clean and in working order by frequent spongings; the body should be carefully protected against cold or wet, which, by causing renal or other congestions, might lead to serious consequences. The patient should have plenty of fresh air and sunlight, her rooms should be carefully ventilated, and she should avoid all places where the air is apt to be impure, as theatres, crowded lecture halls, churches, etc. Moderate exercise should be insisted upon, and the usual light household duties should not be relinquished; besides, the woman should be in the open air a certain part of each day, even to the very last. Unusual excitement and worry should be avoided as much as possible. Coition should be but seldom indulged in, and where there is any tendency to abortion, should be positively prohibited as aiding to pro-

duce this accident by increasing the uterine congestion. The dress should be warm, comfortable, loose-fitting, and arranged so that it can be easily enlarged, so that there may be no pressure or constriction at any time on the breasts, waist, or abdomen. Where the abdomen is pendulous or flabby, an abdominal bandage adds greatly to the patient's comfort. Where pelvic deformity, retroversion or prolapsus has existed, or is suspected, the physician should make a vaginal examination during the early months, that he may know of any narrowing or rectify any existing malposition. In the later months, in all cases, he should determine the position of the child by abdominal palpation. The urine should be tested for albumin every few weeks during the later months; the nipples should be examined with reference to the cure of possible fissures or tenderness, and in primiparæ or if not perfectly healthy, should be bathed every morning for two months before the expected confinement, with some hot, weak, astringent solution, as, for instance, a small pinch of alum in a tumblerful of hot water; this is to be followed by the application of some bland unguent, *i. e.*, cold cream, mutton tallow, or equal parts of lanoline and cocoa butter. Strong astringents are to be avoided, as they harden the skin and increase the liability to fissures.

ABNORMAL PREGNANCY.

Extra-Uterine Gestation. — Extra-uterine gestation is the development of the fertilized ovum elsewhere than in the uterine cavity; the supposed predisposing causes being long previous sterility; the presence of adhesions about the tubes and ovaries; strong mental emotion, as fright, fear, etc.

The Diagnosis is difficult, the fatal collapse being sometimes the first symptom recognized as pointing to ectopic fetation. There are usually some of the signs of normal pregnancy present, such as morning nausea, enlargement of the breasts, and pigmentation of the areolæ, abdominal enlargement, etc.; the first symptoms which call our attention to the possibility of something wrong being *pain* and *menstrual irregularity*. The pain, sudden and irregular in its appearance, is usually severe, paroxysmal, and accompanied by the constitutional symptoms of shock. It may be a fixed grinding pain in one iliac fossa, perhaps running down the thigh, or a colicky, cramp-like pain, anywhere in the lower abdomen. Menstruation stops when pregnancy begins, but with ectopic gestation we find irregular spotting, or gushes of blood, or sero-sanguinolent discharges, either with or without the expulsion of perceptible shreds, pieces, or an entire decidual membrane. If no shreds of membrane can be found, examine the discharge with the microscope, when you may discover the large, round, decidual

cells. At times the first intimation of danger comes with a sudden pain, followed by the symptoms of concealed abdominal hemorrhage, from which the patient may die in a short time.

Having noticed any of these symptoms, we should at once institute a careful vagino-abdominal bimanual exploration, when, supposing we have a case of extra-uterine gestation to deal with, we would find the uterus somewhat enlarged and displaced to one side, or forward and upward, with an elastic, fluctuating tumor to the side or back, tender to touch, and in which palpation excited severe pain; we would also find pulsating vessels running about and over the walls of the tumor; besides, we might obtain ballottement, or be able to feel fetal parts. Should the tumor be large enough to feel *per abdominem*, we would notice that it lacked the rhythmical contractility of the gravid uterus, and we might be able to hear the fetal heart, or feel the fetal parts or movements. Being moderately certain of our diagnosis, we would be justified in gently sounding the uterus, which would be found slightly enlarged. The diagnosis is not usually so very difficult after we have once had our attention called to its probability, and in view of the serious nature of the trouble and the great success of proper treatment, we should always, when suspicious symptoms are present, consider the case one of extra-uterine gestation until we have proved the contrary.

Treatment.—In all cases seen before the end of

the fourth month (16th week), and in many seen later, the destruction of the ovum by means of the electrical current is the safest, most certain and efficient method of treatment—this having succeeded in every case in which it has been properly employed.

Theoretically, galvanism would seem to be the best form of electricity with which to destroy the life of an ectopic fetus, but practically faradism has proved itself just as efficient and less apt to produce disagreeable symptoms, while at the same time the apparatus for its production is less cumbersome and less costly. The method of its use is as follows: Having any good Faradic battery, we need also a ball electrode three-fourths of an inch in diameter, covered with wash-leather and fixed in an insulated handle, for insertion into rectum or vagina; a flat sponge electrode for the abdomen, and the usual connecting cords. The patient should have rectum and bladder empty and be in bed; the ball electrode should be placed as closely as possible in apposition to the tumor, being passed for the purpose into the rectum or vagina, and the flat sponge opposite to it on the abdomen. A mild current should then be turned on and be increased to the limit of the patient's endurance, the application lasting ten to fifteen minutes and being repeated daily until signs of the death of the fœtus are shown by decrease in size and tension of the sac, or rarely in interstitial gestation by the passage of the ovum into the uterine cavity.

After the death of the fetus the electricity, using now either faradism or galvanism, should still be employed to promote absorption of the remains of the ovum.

In any case seen after the fourth month the probability is that the gestation is abdominal and the chances are that the pregnancy may go on to full term when, if we choose to submit the mother to the well-known and very serious dangers (hemorrhage and sepsis from placental site or retained placenta) of laparotomy for this condition we may deliver a living child. Laparotomy not being done the child dies, and after a variable time usually becomes disintegrated and as a foreign body causes suppuration and is discharged through an opening in the abdominal wall, vagina, rectum, or bladder, the treatment at this time being laparotomy with removal of the mass. If the fetus is destroyed at an earlier period than term by electricity the same process results, but the mass to be removed is much smaller and more apt to be absorbed or remain inocuous, so that we may safely lay down the general rule *to always destroy the fetus by electricity if the condition be discovered before the fifth lunar month, and after this time to destroy it when discovered unless we think best to submit the mother to the danger of laparotomy at term.* Should we only see the case after rupture of the sac has occurred and find the patient collapsed, immediate laparotomy with removal of the tube or ligature of the bleeding points, and if

necessary transfusion, give the patient the best chance of recovery.

Molar Pregnancy may be of two kinds—hydatidiform or carneous. The hydatidiform mole is characterized by the early death of the fœtus and cystic degeneration of the chorionic villi; the abdomen rapidly enlarges so that at the sixth month it is as large as it is ordinarily at the ninth; the diagnosis is made by the abnormally large size of the abdomen, its peculiar doughy feeling, and the finding of some of the cysts in the discharge from the uterus.

Treatment is to carefully remove the mass, preferably by a finger or fingers introduced into the uterus; dangers are from hemorrhage and uterine rupture or perforation; distinguished from true hydatids (rare) by the fact that they are connected with each other by narrow pedicles and are *not* contained one within another, also by the absence of scolices and hooklets.

The Carneous Mole is formed of the degenerated remains of an ovum which has died at an early period, or from pieces of chorion left after abortion, together with partly organized blood-clots, the whole forming an irregular fleshy mass in which chorionic villi may be found by the microscope.

Treatment the same as in abortion, complete removal of the mass.

Spurious Moles may be formed from blood clots, dysmenorrhœal membranes, degenerated polypi or fibroids; distinguished from true moles by the

absence of chorionic villi, they are not in any way connected with pregnancy.

Hydrorrhea Gravidarum is a condition characterized by the collection of fluid between the walls of the uterus and membranes, or between the chorion and amnion, which may be discharged during the latter months of pregnancy either in a gush or a constant dribbling; may cause premature labor.

Treatment.—Rest in bed and opiates.

Hydramnios is the distension of the uterine cavity by the excessive production of amniotic fluid; the abdomen is very much larger than normal, very fluctuant on percussion, the fetus usually small and very freely movable, often a monstrosity, and in one-fourth of the cases still-born.

Treatment.—If the abdomen becomes so large as to endanger the life of the mother by the pressure symptoms which it causes, rupture the membranes and cause a premature delivery; principal dangers then are from uterine atony, hemorrhage, prolapse of funis, or malpresentation.

DISORDERS OF PREGNANCY.

In considering the treatment of the disorders directly incident to the gravid state we must remember that most of them are the effects either of sympathetic nervous disturbance or the direct result of the pressure of the growing uterus on the adjacent organs and that most of these disturbances are favored by any systemic depression, so that the best means of prophylaxis for all is to maintain the general health at as high a level as is possible by means of the hygienic measures already described.

ANEMIA.—This condition is often present, especially during the latter months—the usual symptoms of blood impoverishment may be present or more rarely signs simulating to a certain extent plethora—the degree of anemia may be slight or excessive, may run on to excessive hydremia, or may even cause death.

The best treatment is prophylactic; good food, air, light, exercise, and cheerful surroundings will best stay its progress. Iron is valuable in staying the progress of the disease, and is best given as ferrum redactum or carbonate in three-grain doses, which may be combined with a fiftieth or a hundreth of a grain of arsenious acid, as advised by Lusk, or with bitter tonics as the solid extracts of cinchona, gentian, or nux vomica. Easily assimilable albuminoid food should be given, and where the stomach is weak or irritable, in small frequently repeated portions. Nutritive enemata,

especially meat solutions prepared after the formula of Leube or Rudisch, are of value in the more severe forms of anemia. In exceptional cases it may become necessary to induce premature labor. Excessive hydremia is apt to be accompanied by edematous infiltration of the feet, lower limbs, external genitals and even the lower segment of the uterus. Treatment is to remove the weight of the uterus from the pelvic vessels as much as possible by an abdominal bandage, the recumbent position with elevation of the legs, the induction of diaphoresis, and when the distension is excessive so as to threaten gangrene, multiple puncture with antiseptic precautions. Hydragogue cathartics should be avoided as tending to still further impoverish the blood.

Plethora.—This condition is rare but may occur; it increases the danger of uterine hemorrhage and consequent premature labor or abortion. Its diagnosis is easily made by the general appearance of the patient, her slow, full and strong pulse, flushed face, headache, giddiness, etc., with often a history of profuse menstruation. Treatment: Saline laxatives, restricted quantity of food with avoidance of albuminoids, wet cups or leeches where there is any local congestion which requires any immediate relief.

Constipation is extremely common, as a sympathetic disturbance during the early months and later from the pressure of the uterus on the rectum; its continuance leads to many other disorders and it should

always be inquired for and relieved. An evacuation should be encouraged by a regular hour for going to the closet; oatmeal, wheaten grits, brown or Graham bread, fruits, stewed prunes should form part of the diet. Figs or dates, with a glass of water should be taken before going to bed and a second glass of water upon rising in the morning. If these are not sufficient, use saline laxatives, or compound licorice powder, or cascara sagrada. In the later months it may be necessary to employ even daily enemata, and in case of fecal impaction to use mechanical means for the removal of the hardened masses.

Diarrhea should not be neglected, for, if severe, it may lead to premature labor or abortion. Where there has been previous constipation or where the discharges contain much mucus give first a laxative and when the bowels are cleared or where there has been no fecal accumulation give a vegetable astringent with the camphorated tincture of opium, or a pill containing acetate of lead with opium and ipecac; in addition enjoin rest in bed with mustard and hot applications to the abdomen.

Vomiting.—When the ordinary nausea of pregnancy is but slight so that the ingestion of food and general nutrition is not interfered with it is best to leave it alone and do nothing save to keep the bowels regular and the patient's surroundings as cheerful as possible. Should the vomiting prove troublesome, we may in addition let the patient have a cup of coffee

or some lime-water and milk, or ice-cold vichy and milk before rising in the morning. Oxalate of cerium (gr. v–x) and subnitrate of bismuth (gr. x), cocaine hydrochlorate (gr. $\frac{1}{10}$), tincture of nux vomica (♏x in drop doses), compound tincture of iodine (gtt. j or ii), Fowler's solution of arsenic (gtt. i–ii), carbonic acid (gtt. ii–iii) are some of the most reliable medicinal agents which we can use. An ice-bag applied to the cervical vertebræ is often of use, as is also the application of ether spray over the epigastric region. Should the vomiting still be persistent a vaginal and specular examination should be made, and any displacement remedied by a proper pessary. If the cervix be eroded it should be brushed over with a solution of silver (ʒ j. to ℥ i) or of tincture of iodine at intervals of two or three days. Coitus should be forbidden.

When the vomiting is protracted and severe, the patient should be kept in bed so as to avoid any unnecessary waste of the tissues, and the food given in very small and often repeated portions. Ice-cold milk, peptonized or boiled, and Vichy, Kumys, scraped rare beef, frozen cream, or meat solutions may be used. It may be necessary to stop all food and medicine by the stomach and nourish the patient by nutritive enemata. Dilatation of the cervix is often wonderfully successful in causing the vomiting to cease; it may be accomplished by inserting the tip of the index finger nearly to the internal os or by the cautious use of

a dilator. In the rare cases where the vomiting resists every measure and the patient becomes dangerously reduced it may become necessary to induce premature labor; this, however, should never be done until after a consultation with other physicians.

Uterine Displacements.—*Retroversion* is the most frequent, its subjective symptoms being pain in the dorsal region and down the thighs and painful or difficult defecation and micturition, the diagnosis being completed by a vaginal examination which shows the cervix to be high up in front, the fundus being felt low down posteriorly. The dangers are that the growing uterus will become incarcerated between the os pubis and the sacral hollow, and if abortion or spontaneous reposition does not occur, will cause serious or fatal retention of urine and feces from the pressure exerted upon the rectum and urethra.

Treatment is to reduce the displacement. In the early weeks this is usually easy and may be accomplished by pushing up the fundus with two fingers of the right hand, the patient being placed in Sims' position; or, this not succeeding, place the patient in the knee-chest position, draw back the perineum with two fingers of the right hand, exerting at the same time pressure upon the fundus uteri with their tips, while a tenaculum in the left hand draws down upon the cervix. These measures not succeeding, inflate a large-sized Barnes dilator in the rectum and allow it to re-

main several hours, at intervals placing the patient in the knee-chest position and drawing down the cervix as before. Before trying any of these measures empty the bladder by catheter, or, if this be impossible, by aspiration, and the rectum by enemata. Should it not be possible to reduce the retroversion it will become necessary to induce premature labor to save the woman's life. Having reduced the displacement, retain the uterus in position by an Albert Smith or Hodge pessary, which should be worn until after the third month, when the uterus becomes too large to again decend.

Retroflexion.—Same symptoms as retroversion, save that the cervix is not felt so far forward on vaginal examination. Treatment the same as for retroversion. A form of retroflexion sometimes occurs in which, the cervix being high up behind the pubis, the uterus becomes sacculated, one part filling the pelvis and the other developing in the abdomen—this form may go on in this way to term when it becomes necessary, to allow the labor to go on, to push up the pelvic portion and pull the cervix downward.

Prolapsus should be treated by rest in bed, with the hips slightly elevated, or by cotton pessary retained by bandage—treatment to be continued until the uterus becomes large enough to remain above the pelvic brim.

Anteversion seldom gives trouble, except where the abdominal walls are flabby and weakened by re-

peated child-bearing or ventral hernia—should be treated by rest on back and abdominal corset.

Anteflexion, when combined with more or less anteversion, causes frequent and painful micturition, supra-pelvic pain, excessive vomiting; symptoms much relieved by rest on back and increased by walking or standing; may become incarcerated with similar symptoms to retroversion, and should be replaced in a similar manner and patient kept in recumbent position.

Leucorrhea is usually a hypersecretion of mucus caused by the pelvic congestion—the external parts may be bathed frequently with tepid water, for purposes of cleanliness and to prevent excoriations Should the discharge become very troublesome, the vagina may be washed once or twice daily with a pint of a *tepid* solution of carbolic acid or borax injected very gently and slowly, and followed, if necessary, by the introduction of an astringent suppository.

Pruritus may be very distressing without any visible affection of the skin. *Treatment.*—When general, soda bath and inunction with vaseline or cold cream; when abdominal apply cloths wet with carbolic acid solution (1 to 40) or rub surface with carbolic acid and glycerine (℥ ss to ℈ ii); when vulvar keep the parts scrupulously clean, use douche and suppositories as described for leucorrhœa, use dusting powders, or solutions described above, or solution of silver nitrate (gr. x to ℈ i) or of cocaine hydrochlorate (4 per cent.) with rose-water.

Frequent Micturition occurs in the early months as a sympathetic disorder and later from direct pressure on the bladder. Treatment: *Early.*— Bland mucilaginous drinks, infusions of buchu or triticum with alkalies if urine is acid, tincture of belladonna. *Later*, when due to pressure, use catheter to be sure that the bladder is empty. Correct any malposition of fetus. Use abdominal corset. Keep the bowels regular.

Incontinence, *two forms.*— First, slight incontinence of urine during laughing, sneezing, etc., treated by tincture of iron, nux vomica, strychnine, or belladonna; second, incontinence in women who have borne many children, treated by abdominal corset, strychnine or cantharides, cleanliness and simple ointment to prevent excoriations, catheter at regular intervals if necessary. Always use catheter at first to eliminate the possibility of overflow from retention.

Diabetes, when occurring in pregnancy, is of grave import to both mother and child. Treatment same as when occurring at other times; if not improved it may become necessary to induce abortion.

Albuminuria and Eclampsia.—The urine of pregnant women should be examined from time to time during the latter months as a routine practice, and in cases where we have reason to suspect kidney trouble we should keep a constant watch for its signs as shown by the presence of albumin or casts. A slight amount of albumin may be present in the urine

during the latter months and not cause any symptoms save, perhaps, slight edema of the feet, nor cause any trouble during or after labor, and soon disappear entirely. We should, however, be on our guard against possible eclampsia and should prevent mental excitement, exposure to cold, or indigestion, and keep the bowels freely open. True interstitial nephritis is almost always aggravated by pregnancy.

When albuminuria is present earlier in pregnancy, or in large amount, or associated with many tube-casts, the prognosis is much graver and the symptoms often severe. Anorexia may become general, the urine dark-colored and scanty, nervous symptoms show themselves in headache, vertigo, vomiting, derangements of the special senses, the body exhales a heavy urinous odor, and if these symptoms be not relieved eclampsia, stupor, coma and death may follow. After premature labor or delivery these symptoms may all disappear, or may go on as chronic nephritis.

Treatment.—Milk diet, or milk with other easily digested food; if anemic, tincture of the chloride of iron; if plethoric, venesection, to relieve immediate symptoms, restricted diet; diuretics and diaphoretics; to relieve congestion of kidneys, cups followed by mustard and hot poultices. Should the nervous symptoms become very grave, or the amount of albumin increase rapidly, premature delivery. Should *eclampsia* supervene either before, during, or after

either premature labor or labor at term, prevent the patient from injuring herself and from lacerating the tongue, by inserting the handle of a brush or the corner of a folded towel between the teeth, administer chloroform and a hypodermic of morphia, dose, from ½ to 1 grain. When the patient can swallow, give chloral and bromide of soda in full doses. If in labor, terminate it as soon as possible without violence, use Barnes' dilators, do podalic version if it can be done easily; if necessary, use forceps. If labor is progressing rapidly, let it alone. Much may depend on the skill of the obstetrician. After labor, rest, quiet, cold to head, milk diet, laxatives, morphia and bromide. In eclampsia due to other causes than uremia, as overloaded stomach, bowel, or bladder, seek out the cause and remove it when possible.

Varicose Veins may be treated by abdominal corset to remove pressure, rest, and elevation of the limb, flannel bandage, or elastic stocking. As severe or fatal hemorrhage may occur from a varicose vein, the patient should be provided with and shown the application of a compress and bandage.

Neuralgic Pains may be treated by the local application of chloral, camphor, and tincture of aconite equal parts, or belladonna plaster, and full doses of quinine, with iron, strychnine, or arsenic. Keep the bowels regular.

Hyrosis may be palliated by spts. ammon. aromat. or soda bicarb. In *excessive salivation* give small doses

of atropia. In *nervous trouble*, attention to general health, bromides, antispasmodics, change of scene. cheerful society, etc.

ABORTION AND IMMATURE DELIVERY.

ABORTION is the expulsion of the ovum before the formation of the placenta (12th week); *miscarriage* or immature delivery, its expulsion before the period of viability (28th week); and *premature delivery*, its expulsion between this time and the 38th week.

The *causes* of these accidents are *predisposing* and *immediate*. The *predisposing* causes are any depressing constitutional affection, dyscrasiæ on the part of either parent, but especially the mother. (Syphilis, chronic lead poisoning, senility, acute anemia, the exanthemata, albuminuria, etc.) Uterine displacements, or death of the child from any cause. The *exciting* causes may be mechanical, as blows, jars, violent exertion, marital excesses, willful violence, etc.; emotional, as grief, fear, anger, joy, etc.; any condition which produces increased hyperemia of the uterus, or which intensifies the uterine contractions.

The chief *symptoms* are *pain* and *hemorrhage;* the pain is rhythmically intermittent, caused by the uterine contractions, and is not relieved by the hemorrhage, which is due to the partial separation of the ovum from the uterine wall; the *diagnosis* is completed by a vaginal examination which reveals a partially or completely dilated os uteri, in which some part of the ovum may usually be felt; all discharges should be examined under water or microscopically, for traces of chorionic villi, membranes, or fetus.

When the uterus has emptied itself the symptoms subside; if a part or the entire ovum be retained, they continue or suddenly recur after a partial or complete cessation. Putrid decomposition of retained portions may occur and cause sepsis and perimetric inflammation, or the retained portions may become converted into fleshy masses (carneous moles), which, after a time, may be expelled or decompose. Most abortions which occur spontaneously and receive early and proper care do not cause serious danger to the mother; the contrary is the case with criminal abortion.

Treatment is prophylactic of habitual, preventive of threatened, and conservative of inevitable abortion. *Prophylaxis* consists in the removal or avoidance of predisposing or exciting causes; as by the use of mercurials in syphilis of either parent, or treatment directed to the lessening of any systemic dyscrasia; the correction of uterine displacements by suitable pessaries; the avoidance of too frequent coitus; the use of potassium chlorate (gr. v-xv, t. d.) in habitual abortion from placental disease; the use of viburnum in habitual abortion where no cause can be discovered, save nerve irritability. Viburnum prunifolium is very useful in these latter cases, and should be given in teaspoonful doses, t. d., beginning three days before the menstrual date, and continuing it for two days after the time when the flow would have ceased had the patient not been pregnant.

Treatment in Threatened Abortion.—The

dorsal recumbent position and absolute quiet should be enjoined whenever in the pregnant woman there is the slightest hemorrhage, or even pain low down in the back. Having these symptoms we should at once examine per vaginam, to ascertain the condition and position of the uterus. Any displacement should be at once replaced in the genu-pectoral position. Opiates should be given in doses sufficient to quiet all restlessness and mental worry. The fluid extract of viburnum should be given in drachm doses every 2 hours, and the patient kept in bed for a week after the disappearance of all symptoms. Should, however, the symptoms continue, the os become patulous, the pain and hemorrhage increase, portions of the ovum be discharged, or should we have good reason to think the embryo dead, we should abandon this treatment and consider the case one of

Inevitable Abortion, the indications then being to empty the uterus and check the bleeding. To the middle of the second month rest in bed for a week, and ergot will usually be all that is necessary. In the third month, when we find the ovum *entire* and filling the lumen of the dilated cervix, the hemorrhage is not usually very severe. We should carefully avoid any manipulation which might break the membranes, and besides the rest in bed should tampon the vagina carefully. The tampon should be removed in twelve hours, when the ovum will usually be found lying loose in the vagina. Should the membranes be rup-

tured and the cervix dilated, pass in the finger gently and detach and remove the ovum by sweeping the finger around the cavity; use but slight force; be gentle and persistent. Should the cervix not be dilated, tampon carefully, and if necessary repeat, allowing each tampon to remain in place ten or twelve hours, and disinfecting the vagina carefully before the introduction of each. Should the cervix not be dilated after the removal of the second tampon, insert a tupelo-tent with antiseptic precautions, tampon, after eight hours remove the tampon, give a vaginal douche, remove the tent and scrape out the ovum with the finger or dull curette, using if necessary an anesthetic. After the removal of the ovum wash out the uterus and vagina with tepid carbolized or sublimate water. Hemorrhage ceases after complete removal of the ovum. In cases of incomplete abortion which have lasted for several weeks decomposition of the ovum with septic symptoms may or may not occur. Treatment is to remove ovum at once with finger or the large dull curette devised by me (see *Am. Jour. Obst.*, Feb., 1883), if cervix is dilated, otherwise dilate it with tupelo-tent or steel-branched dilator, and then remove debris. Antiseptic uterine douches are to be used if there is offensive discharges.

MISCARRIAGE, when threatened, is treated like threatened abortion—when inevitable, treatment like that of abortion, except that the tampon is rarely required.

Premature Labor is treated in the same manner as labor at term.

Induction of Abortion and Premature Labor.—In justice to the mother and for your own protection in case of accident neither of these procedures should ever be undertaken except after mature deliberation and council with other physicians.

Artificial Abortion is rarely necessary; it may be induced (1) in cases of disorders of pregnancy which immediately threaten life and which cannot be mitigated by any other treatment, principally persistent vomiting and rarely for some organic visceral lesion; (2) where there is incarceratiou of the retroverted or flexed, or prolapsed uterus, and (3) it may be considered as an alternative in cases of extreme pelvic obstruction from deformity of the bones or the presence of large tumors which would necessitate delivery of the child by some form of abdominal section at term. The operation is best done at the fourth month. From the second to the fifth month the best means of bringing on the labor is the dilatation of the cervix by means of the tupelo-tent or the steel-branched dilator.

After the middle of the fifth month the means of inducing the expulsion of the ovum will be the same as those employed in the induction of

Premature Labor, which is labor brought on after the period of viability (28th week). Practically, however, the child has little chance of surviving until after the 30th week, and in almost all instances the best

time for the procedure will be between the 32d and the 39th week.

The indications are: (1) Diseases or conditions which imperil the life of the mother and which are rendered more threatening by the continuance of the pregnancy, as dyspnea from enormous distention of the abdomen from any cause, hemorrhage from placenta previa, severe nephritis with edema, uncontrollable vomiting, organic heart trouble, etc. (2) Habitual death of the fetus from inanition caused by fatty degeneration or faulty development of the placenta or maternal anemia, when the labor should be induced before the usual time of death or when careful watching shows dangerous symptoms in the child. (3) Pelvic contraction of moderate degree, that is where the conjugate at the brim is between $2\frac{1}{2}$ and $3\frac{1}{2}$ inches. With a conjugate of less than $2\frac{1}{2}$ inches, labor should be brought on at the sixth month; with $3\frac{1}{2}$ inches there is small hope of delivering a living child at the 28th week; with 3 to $3\frac{1}{2}$ inches deliver at the 33d to 35th week, with over $3\frac{1}{2}$ inches deliver at term. (4) Where the mother's condition is hopeless, but in which premature delivery may save the child's life. (5) Where in previous labors there have been unusually large children with large or prematurely ossified heads labor may be induced at the 36th or 37th week without danger.

The best means of inducing premature labor is by *catheterization of the uterus.* This is accomplished

by the use of a perfectly new, clean, solid elastic bougie, as follows: The patient being on her back on a table or hard bed, the index finger is passed into the cervix to the internal os and the bougie slipped along it, its point, when the internal os is reached, being turned a little to one side by the finger tip so as to avoid perforation of the membranes. The bougie is gently passed onward, allowing it to take its own course, until but two or three inches remain in the vagina; the protruding end is then bent upon itself and left. Should any resistance be encountered in passing the bougie, withdraw it and pass it up the other side. In primipara a preliminary dilatation of the cervix may be necessary, which may be secured by warm douching, the use of a tupelo-tent, or a steel-branched dilator. Labor usually begins a few hours after the introduction of the bougie; if no progress has been made at the end of forty-eight hours give a hot vaginal douche and dilate the cervix with Barnes' bags. In other ways treat the case like one of labor at term.

PARTURITION.

NORMAL.

For convenience in description, the process of labor has been divided into three stages: The first, beginning with the inception of labor and ending with the complete dilatation of the cervix, the second, ending with the expulsion of the child; the third, ending with the expulsion of the placenta and membrane.

General Directions and Management of the First Stage.—When called to an obstetric case, pocket your armamentarium and go at once. The first procedure necessary when you see the patient is to determine whether the woman is or is not in labor. False pains may be felt for some weeks before the date of actual delivery; these are usually cutting or colicky in character, and are referred to the front of the abdomen, while true pains, rythmical uterine contractions which tend to produce cervical dilatation, are more often referred to the back and loins. If on vaginal examination we find no dilatation of the cervix, or bulging, or increased tension of the cervical zone or membrane during a pain, we can safely conclude that labor has not yet begun. True pains begin as slight contractions, lasting from half a minute to a minute, which at first may occur every half hour, increasing both in strength and frequency as labor progresses, and always causing some cervical dilatation

and increased intra-uterine tension. Together with these symptoms there is increased mucous secretion in the vagina, and often a slight bloody discharge.

Having found that our patient is in labor, we next proceed to determine the position, presentation, and condition of the child by abdominal palpation and auscultation of the fetal heart; if not done before, we satisfy ourselves of the condition of the natural passages by a vaginal exploration, and look to the general physical condition of the mother. We then see that the bed is prepared, and that everything is ready for the proper care of the new-born child, and for any emergency which may arise (tape, scissors, towels, blanket, flannel, hot and cold water, ice, etc.).

Abdominal Examination.—Place the woman on the back, with head slightly elevated, lower extremities somewhat flexed, abdomen exposed from pubes to epigastrium, and with bladder empty; let all the clothing be loose, and have the patient close to the edge of the bed. If the abdominal muscles are tense, instruct the patient to open her mouth and breathe deeply, when, during expiration, the muscles will be relaxed. Stand by the side of the patient and place the *warmed* hands gently on the abdomen, pressing with the palmar surface of all the fingers with a slightly pawing motion, and gradually moving them over the whole surface. After a little practice the presentation is easily determined, but to detect the position may require much skill and dexterity. Palpa-

tion is usually more easy in multiparæ. Obstacles are usually tension or thickness of the abdominal walls; hydramnios, or unusual tenderness.

The following are the sensations imparted to the hand by the various fetal parts: The *head*, when not engaged, is felt as a hard, round body, exceedingly movable, and often giving slight ballottement. More or less of a depression may be felt at the situation of the neck. The *breech*, felt at the opposite end of the diameter passing through the head, is larger, softer, more irregular, less movable, does not give ballottement, and its resistance is continuous with that of the back. The *back* is distinguished by the regular, uninterrupted resistance offered to the palpating fingers, and is most easily differentiated by palpating opposite portions of the abdomen at the same time. The *arms* are not usually palpable. The *feet* and *legs* are very movable, sharply projecting, irregular, small bodies.

To determine the *presentation* and *position* we begin by examining the cavity of the pelvis, by placing the ulnar surface of the fingers on each inguinal region, just above Pouqart's ligaments, and pressing the finger tips downward and toward the median line. This being properly done, either a hard round body which fills the pelvic excavation—the head—or a similar but softer body—the breech—or only the resistance of the maternal soft parts will be felt. No other condition can be found until after labor has begun, for no other fetal parts than the vertex and breech ever

descend into the pelvic cavity until forced down by strong uterine contraction, and these, once engaged, never become displaced, the position sometimes changing, but the presentation never. The vertex, having descended well into the pelvic cavity, careful palpation will always show that the fingers of one hand will be arrested sooner than those of the opposite, which sink more deeply, and more toward the median line. The brow is always that part of the head which is the more accessible, prominent and elevated; it also feels harder than its opposite the occiput. The determination of this single point establishes the diagnosis of the presentation and position, which can be corroborated by finding the situation of the breech and back. With the head felt more easily to the right, and the resistance of the back to the left, the position is left, and *vice versa*. If the vertex is not engaged, we find either a head or breech just above the plane of the pelvic brim, or in one iliac fossa. The extremities being found and differentiated, the discovery of the back completes the diagnosis of the position. In face presentations we find, with back anterior, a hard, round tumor above the brim, a deep depression between head and back, the resistance of which is felt deeply on the same side; with back posterior we also find the resistance on the same side as the accessible portion of the head. Vaginal explorations may be necessary to confirm the diagnosis in these cases. The *death* of the fetus is not recognizable with certainty, but may

be strongly suspected if palpation shows any unusual flabbiness and compressibility of the abdomen, in contrast to a former firm and elastic consistency, if the fetal motions are not distinguishable, if the fetal body remain passive in any position in which it may be pushed, if the head feels unusually soft and flaccid, and if the fetal heart be not heard after several attempts at auscultation. The diagnosis of twins can be made, with absolute certainty, only when a second head or breech can be felt.

The *fetal heart* is heard over the back of the child in dorso-anterior positions; in dorso-posterior at one side, or perhaps not at all; in face presentation, chin-anterior, it is heard over the child's thorax; in chin-posterior, faintly over the back. It is a double ticking sound, repeating itself from 120 to 170 times a minute, and any wide deviation beyond these limits, if continued for any length of time, means danger to the child. An anterior attachment of the placenta, or dorso-posterior position of the child with a large amount of liquor amnii may entirely mask the fetal heart sounds.

For an exhaustive description of this subject see my monograph on "Obstetric Palpation," reprinted from the American Journal of Obstetrics, July and October, 1879, and April, 1880, pp. 114. Wm. Wood & Co.

Vaginal Exploration.—Having placed the patient on the back, with the knees somewhat flexed

and near the side of the bed, wash and disinfect the hand, anoint one index finger with vaseline or sweet-oil, and, shielding it with the other fingers, pass it under the thigh and over the posterior commissure, into the vagina, noting:

1. The condition of the vulvar outlet—whether the perineum is intact, whether it is thick and rigid, or thin and flaccid, a soft and thick perineum being usually less liable to rupture; the degree of approximation of the pubic rami; or the presence of any abnormality, as a tumor of the vulva, etc.

2. The condition of the vagina—its degree of roominess, its heat, its moisture, absence of tenderness, etc.

3. Condition of the cervix—its consistency, thickness, elasticity, and degree of dilatation, thickness, softness and elasticity being all favorable conditions for rapid and easy dilatation. To ascertain the degree of dilatation, sweep the finger up around over the edge of the external os, and see whether the membranes, and through them the presenting part, can be touched. This examination should be continued during a pain, when the rim of the cervix will be felt to become tense. Should it remain flaccid, the pain is not a true labor pain. To reach the cervix when it is not low down, the fingers should be extended so that the posterior commissure fits into the space between the index and middle fingers, and the perineum pushed strongly backward and upward.

4. The character and position of the presenting part.—The unruptured membranes can usually be distinguished by their smooth, tense bulging condition during a pain, and their comparative flaccidity in the intervals, by the detection of fluid between them and the presenting part. When ruptured, we feel the scalp become more corrugated during a pain, we feel the hair, or we feel distinctly the characteristics of whatever portion there is presenting, as vertex, face, breech, or small part.

5. Notice any pelvic contraction.—There is usually none of any moment when we cannot touch the sacral promotory with the index finger, and there is no contraction of the pelvic rami. We should notice whether or not the rectum and bladder are distended. After repeating the vaginal exploration and noticing any changes which may have taken place, we can form some estimate of the probable length of the labor; we should, however, not make any definite statement to the patient or her friends concerning its exact duration.

General Examination of the Mother.—While exploring abdomen and vagina, we should ask the mother about any previous confinements, their number, nature, etc., about the present condition, beginning, duration, frequency of pains, about general physical condition, past and present, and any other points which might have a bearing on the present labor. We should notice the general physical status,

examine the lungs and heart to detect any organic lesion which might cause trouble, and should talk cheerfully and allay the fears of the patient, especially when she is a primipara; she should, in general, be told that everything is all right, though expected complications should be stated to the friends. The patient may have any light food that she desires; the bowels should be thoroughly emptied by an enema of oil, or of an ounce of glycerite of ox-gall with warm soap-suds; the bladder should be regularly emptied; the hair should be braided, and a loose wrapper put on so as to be ready for the advent of the second stage.

Preparation of Bed and Patient's Dress.— The bed should be so placed that it can be approached from both sides; the mattress should be firm, so that the hips will not sink in it, should be covered by a sheet, and at the point where the hips will rest, by a piece of waterproof cloth four feet square, on which should be laid a folded blanket, the whole being then covered with a second sheet, which is turned down at the upper edge of the waterproof cloth. A piece of blanket should also be placed under the hips, to soak up the liquor amnii at the time the membranes rupture, after which it should be removed. When labor is over the second sheet, blanket and waterproof, now soiled and sodden, are drawn from under the patient, who is then left lying on a dry, clean bed.

The patient may be allowed to sit up and walk

about until the os is two-thirds dilated, when she should be put to bed, the night-dress being rolled up to the arm-pits and a pair of drawers and stockings put on.

Preparations for the Child.—Have twine, scissors, something soft and warm to wrap the child in, two large basins, one to be filled with hot and one with ice-water, to be used in case the child is born partly asphyxiated, and soft cloths to use in washing the eyes and mouth.

Armamentarium.—The physician should take with him to every obstetric case: A pair of obstetric forceps (Simpson's or Elliot's will answer for most cases), a fountain syringe with a glass intra-uterine tube, a male elastic catheter, curved needles, needle-holder, and silk or wire sutures, a hypodermic syringe, chloroform, ℥ iv, ergot, extr. fl. ℥ i, a solution of morphia, liq. ferri. subsulph. ℥ i, pellets or a strong solution of mercuric chloride, to use for making the 1-2000 solution, carbolic acid ℥ ii, pocket case.

Anesthetics.—Chloral is the best agent for mitigating the pains caused by the uterine contraction during the first stage, and for furthering the rapid and easy dilatation of the os. The drug may be given in solution by the mouth, in fifteen grain doses, and the dose repeated until forty-five grains have been given, or until the desired effect has been produced. Patients to whom chloral is given should always be carefully watched, to see that they do not get an over-

dose. I have never seen any harm come from its use. Chloroform should be used toward the end of the second stage, so as to produce partial insensibility. It is best administered by means of a tumbler, containing in its bottom a wad of cotton saturated with the drug, which the patient or nurse can hold to her face at the beginning of each pain, and which can be dropped when the patient is partially anesthetized.

Second Stage.—The patient should now be in bed, where she may lie in a semi-recumbent position. See that the urine is passed, or drawn by catheter, at regular intervals. After the complete dilatation of the os the membranes may be ruptured, by pressing the end of a straightened hair-pin against them during a pain. But this rupture should not be premature. The anterior lip of the cervix may sometimes be caught between the advancing head and the pelvis, become swollen and edematous, and retard the labor. The best plan is to push up the lip above the head between the pains, and hold it there by the finger-tips until the head has descended, so that there is no danger of its again becoming incarcerated. When the head has advanced low down, and the pains become frequent and powerful, a few whiffs of chloroform may be given, and when the head is about to pass the perineum the anæsthesia may be carried almost to the surgical degree with advantage.

Care of the Perineum.—This is usually the most important procedure necessary during the second

stage. The slow advance of the head is the best means of dilating a rigid perineum, and by properly regulating this advance the number of unavoidable lacerations can be made very small, though even the most expert may not be able to prevent one when the patient becomes unmanageable, or the pains spasmodic at the critical time when the head is about to escape. The method of delivering the head which I use with the best results is as follows: When the head begins to distend the perineum to the limit of safety I place the index and middle fingers of one hand in the anus and the thumb upon the child's head, thus placing it completely in my control and enabling me to regulate its advance at my pleasure. The head should be kept strongly flexed until the occiput is well out under the pubic arch, then pressed up as close to the symphysis as is possible and very slowly and gently "shelled out" between the pains. Another good method is to cover the anus with a napkin and placing the palmar surface of the right hand againt the perineum, the thumb and fingers following its curve, press upwards and forwards, keeping the head as near the symphysis as possible. The position on the side is preferable at this time as the woman is less able to bear down and forcibly expel the head before the perineum is sufficiently distended. An anæsthetic is invaluable at this stage, and should be pushed so as to markedly diminish the pains.

When the head is born the shoulders and body

follow with the next pain or two. The head and shoulders should be lifted up towards the symphysis and the posterior arm carefully swept across the child's chest and delivered; the shoulders are then depressed and the anterior arm delivered. Gentle friction of the abdomen will excite the uterus to contract and thus expedite the delivery of the body.

Attentions to the Child.—Do not be in a hurry to tie the cord. Clear the mucus from the child's mouth with a soft wet cloth over the little finger. A few drops of cold water sprinkled over the child will usually cause it to inspire vigorously, or it may be flapped with the end of a wet towel. When it cries freely tie the cord *firmly* at about one inch from the umbilicus, place another ligature beyond this and divide the cord between the two. Gently wash the child's eyes with clean warm water, and if there is any suspicion that the mother has an infectious vaginal discharge drop a single drop of a two-per-cent. solution of silver nitrate upon the cornea of each eye and wash again. Wrap the child up and put it in a warm place. In private practice ophthalmia of the newborn child seldom occurs.

Third Stage.—From the time of the birth of the child until the complete contraction of the uterus after the expulsion of the secundines the hand should be placed over the fundus so as to detect at once any relaxation of the uterus which might mean danger from hemorrhage. My practice is as follows: After

the birth of the child give a drachm of fluid extract of ergot; make *gentle* friction by the hand over the fundus until the uterus is felt to contract uniformly, and then (not before) gently compress the uterine sphere by the whole left hand, or with both if necessary, directing the pressure toward the axis of the brim; if the placenta does not escape from the uterus, as shown by its immediate reduction in size, continue the friction and repeat the compression a little more forcibly with the next pain until the placenta is expelled. As soon as the palpating and expressing hand discovers that the placenta has escaped from the uterus, I have found it well to draw *gently* on the cord and thus guide the placenta over the perineum, when it is received in the right hand, twisted a few times to make a cord of the membrane and gently withdrawn. Steady, gentle friction is then kept up over the fundus until the uterus is well and permanently contracted, which is usually in half an hour. Always carefully inspect the placenta and membrane to see that no part remains behind in the uterine cavity. If any part should remain behind it must be at once removed with the fingers.

Examine the perineum, and if it is found to be lacerated beyond the fourchette, pass a curved needle and suture around the upper edge of the rent, just within the edge of the sound mucous membrane, and close the tear. It is seldom necessary to use more than one or two sutures or to give an anesthetic, ex-

cept in unusually large tears, and hypersensitive women.

When the uterus is well contracted, the patient should be cleaned, and a binder applied reaching from the waist to below the trochanters, together with a vulvar pad to prevent the lochia from soiling the bed.

Breech Presentation.—In these cases, which may be regarded as normal, nothing should be done to hasten the delivery until the os is fully dilated, or the body of the child born; then, as the cord, passing between the head and the pelvic wall, becomes compressed, we must deliver at once to prevent asphyxia.

Should it become necessary to hasten the labor before the delivery of the body, manual compression of the uterus from above should be resorted to instead of the usual traction from below, the object of this being to aid the expulsion of the body without danger of extending the arms and head. Should the arms become extended, they should be delivered by lifting the child's body towards the mother's abdomen, or in the direction of its own back, passing the finger up until an elbow is felt and drawing the arm down across the anterior of the child's thorax, repeating the process to disengage the other arm. The after-coming head may be delivered by strong pressure directed downwards and backwards with the left hand placed over the head above the pubes, while the right grasps the feet of the child and aids by traction, the child's

body being lifted upward towards the mother's abdomen; or, an assistant makes strong pressure downwards and backwards with both hands placed close together above the pubes, while the operator lifts and makes traction on the child's body. In these cases the forceps should always be at hand ready for instant use, so that if the method just described does not succeed they can be applied without delay, the child's body being lifted up towards the mother's abdomen out of the way. The application of the forceps to the after-coming head is not usually very difficult, and its prompt use will save many lives. They are very liable to slip from the breech, and may, therefore, require repeated application.

Antisepsis.—The essential element of successful antisepsis is *cleanliness*, and so that we attain this it matters little what means we employ. The room in which a patient is to be confined should be the best her habitation will afford. It should be carefully cleaned beforehand, and should be well ventilated; an open fire-place is desirable. The woman, at the beginning of labor, should, if possible, receive a full bath and have fresh clothing; at any rate, the external genitals and adjacent parts should receive a thorough cleansing before the beginning of the second stage. A vaginal douche at this time is not necessary, unless there be a suspicious vaginal discharge, or reason to fear septic infection, and after the completion of the third stage is only necessary when the fingers have

been introduced into the uterine cavity to remove shreds of membrane or placenta, or where the fetus is dead and macerated. The most important antiseptic measures are those relating to the physicians and attendants. An obstetrician should never go from a septic to a normal case, or expose himself to septic contamination, by attending autopsies, etc. His garments and linen should be kept scrupulously clean. Should it be necessary for him to attend a confinement case, after being exposed to sepsis, a warm bath, with plenty af soap and scrubbing of the hands, face, beard, and hair, with an entire change of clothing, will be required. Before examining a patient the hands and nails should be *thoroughly* cleansed, by scrubbing with soap and warm water, and then by the use of the mercuric bichloride solution (1-2000) before each examination. Should lubricants be necessary because of tenderness and dryness of the parts, any clean vegetable oil or vaseline may be used.

All instruments should be brightly polished and clean, and before use should be immersed in a five per cent. carbolic solution.

Mechanism of Labor.—A correct understanding of the manner in which the fetus passes through the parturient canal is of the greatest importance to the obstetrician who would manage his cases intelligently, and should be acquired by careful study of some of the larger text-books, with skull and pelvis in hand. He should always know:

1st. *The average pelvic diameters in the living woman:*

Brim:

Antero-posterior (conjugate), 4 inches.

Transverse, 4 inches.

Oblique, $4\frac{1}{2}$ to 5 inches.

Cavity:

All diameters about 5 inches.

Outlet:

Antero-posterior, $4\frac{1}{2}$ to 5 inches.

Transverse, 4 inches.

Oblique, 4 inches.

Depth of *anterior* pelvic wall, $1\frac{1}{2}$ inches.

Depth of *posterior* pelvic wall, $4\frac{1}{2}$ inches.

2d. *The average diameters of the fetal head:*

Occipito-mental, $5\frac{1}{2}$ inches.

Occipito-frontal, $4\frac{1}{2}$ inches.

Biparietal, sub-occipito-bregmatic, and fronto-mental, each $3\frac{1}{2}$ inches.

3d. *That the spinal column articulates with the child's head nearer the occiput than the sinciput, thus favoring flexion.*

4th. *Mechanism of vertex presentations.*

(*a*) Occiput anterior.

Descent, flexion, rotation, extension, restitution, expulsion of the body.

Descent accompanies all the movements. Flexion allows the sub occipito-bregmatic ($3\frac{1}{2}$ in.) diameter of the head, to enter the pelvic cavity, instead of the

longer occipito-mental diameter. Rotation occurs when the occiput reaches the floor of the pelvis and the convergent anterior planes, and causes the occiput to turn forward under the symphysis, so that the longer diameters of the head still occupy the longer diameters of the pelvis. As a general rule, that part of the fetal head which is *lowest* in the pelvis is rotated forware. Extension occurs when the occiput is born, and allows the birth of the head, the brow, face, and chin sweeping successively over the perineum. Restitution, or the turning of the head after its birth in the direction of the oblique diameter in which it originally descended, is caused by the rotation of the shoulders passing through the opposite oblique diameter.

(*b*) Occiput posterior.

Descent, flexion, rotation of occiput to symphysis; these same as in occiput anterior positions, or rotation may take place backward (unusual) with birth of the occiput over the perineum and *extension*, the face passing under the pubic arch, restitution and birth of body as before.

Rotation forward is favored by extreme flexion of the head and may not occur until the occiput stretches the perineum.

5th. *Mechanism of face presentations.*

(*a*) Chin anterior.

Extension, descent rotation of chin to symphysis, flexion, restitution.

(*b*) Chin posterior.

Extension, descent, rotation of chin to anterior pelvic plane, thus making a chin-anterior, or rotation to sacrum and *impaction.*

6th. *Mechanism of breech presentations.*

Descent, rotation (hip nearest symphysis passing forward), and delivery of breech, descent, rotation, and delivery of shoulders; flexion, descent, rotation forward of occiput, and delivery of head. Rarely the occiput rotates backward.

7th. *Mechanism of transverse presentations.*

Natural delivery usually impossible; exceptionally *spontaneous version* or, with a dead child, *spontaneous evolution* may occur.

PARTURITION.

ABNORMAL.

Precipitate Labor may be regarded as a form of normal labor when the pelvis is roomy, soft parts unusually distensible and fetal head not large; is only dangerous in that the child may be born on the street or where it and the mother cannot be properly cared for. A form caused by excess of reflex irritability which excites the voluntary muscles to excessive contraction may interfere with the utero-placental circulation, cause rupture of the cervix, vagina, or perineum, fracture the fetal skull, or even produce subcutaneous emphysema about the mother's face and neck.

Treatment is to reduce the irritability by complete anesthesia, chloral by mouth and rectum or morphia hypodermically.

Prolonged Labor is due to some irregularity in the uterine contractions which prevents them from acting properly as an expellant force. *Powerless labor* is the last stage of prolonged labor and is marked by the absence of all expulsive effort and marked exhaustion of the patient. Ineffectual contractions in the *first stage* are manifested by a tense, unyielding condition of the cervix caused usually by a spasmodic contraction of its circular fibres. While they may be painful and exhausting to the patient, they are rarely an element of danger so long as the membranes re-

main unruptured; when, however, the membranes have ruptured the consequences are far more serious, especially when all or the greater part of the liquor amnii has leaked away, allowing the uterus to become retracted about the child and thus endangering both its and the mother's life.

Treatment is to lessen pain and restore the expulsive quality to the uterine contraction. The first object, and often the second, may be attained by the use of morphia, chloral, or chloroform; the second, by Barnes' dilators, the prolonged hot douche, and, in exceptional cases, where the liquor amnii has entirely drained away, by the cautious use of the forceps. Barnes' dilators are most efficient exciters of uterine contraction. A medium-sized one should be passed into the cervix, slowly distended and left in situ until expelled by the uterine contraction. One application will usually cause the pains to become more effective and the cervix softer and more distensible, though when necessary, a second larger one can be used. Dilate slowly. The warm douche is used for a half hour at a time at hour intervals. It is less desirable than the Barnes dilators.

When forceps are used (only in extreme cases), they must be carefully applied and traction made only at intervals, and not during the height of the pains, so as to avoid, if possible, any lacerations of the cervix.

Drugs, other than morphine and chloral, are

seldom of much use. Ergot should *never* be employed. Quinine given by rectum is at times effective.

Always be sure that the bladder and rectum are emptied at regular intervals.

In the *second stage*, where careful examination has shown no obstacle other than the normal resistance of the soft parts to the expulsion of the child, the ineffective pains may be reinforced by pressure from above, and this failing, by the careful use of the forceps. Do not be in too much of a hurry to interfere, but do not hesitate to act when failing heart action shows danger to the child, or when beginning dryness, heat, and tenderness of the vagina, with a rise of temperature and more or less depression, show danger to the mother.

In the *third stage*, irregular contractions are rarely troublesome where placental expression is practiced, as I have already described it. Should the so-called "hour-glass contraction" occur, it can usually be overcome by patience and morphia, the finger-tips in the uterus being gently pressed against the contracted portion while counter-pressure is made without. When once a portion of placenta has entered the constriction, the rest will follow slowly. Do not hurry. Never leave a patient until the uterus is empty and well contracted.

Obstructed Labor may result from: 1. Malpresentations. 2. Abnormalities of the fetus. 3. Abnormalities of the maternal soft parts. 4. Ab-

normalities of the pelvic bones, and usually requires operative interference on the part of the accoucheur to prevent the loss of maternal or fetal life.

1. *Mal-presentations:*

Face presentations without anterior rotation of chin:

Push the head upward to the pelvic brim, and convert the presentation into one of the vertex, or perform podalic version; should the head be immovable, the forceps may be cautiously tried; and, these failing, craniotomy must be done.

Transverse presentations.

If discovered before the membranes have ruptured, try cephalic version by external manipulations; not succeeding in this, do podalic version. After the escape of the liquor amnii, podalic version under complete anesthesia.

2. *Abnormalities of the fetus:*

Hydrocephalus, encephalocele, premature ossification of the head, hydrothorax, and ascites, cystic or other enlargement of viscera, tumors, and monstrosities, all may produce obstruction requiring to be relieved by puncture (when fluid), or some mutilating operation upon the fetus. The exact diagnosis in these cases is apt to be obscure until after the delivery of the child. The prognosis for the mother varies; in general, it is better the earlier the abnormal condition is recognized and relieved.

3. *Abnormalities of the maternal soft parts:*

(*a*) *Atresia.*—This may be of the cervix, the vagina, or the vulva. Complete atresia of the cervix during pregnancy is the rarest form and of course can only occur as the result of some injury inflicted during gestation, usually from an attempted abortion; incomplete forms may occur as the result of some previous injury. The thinned and tense cervical tissue may be mistaken for the unruptured membranes, the true diagnosis being made by noting the continuity with the vaginal walls, or by visual examination with a speculum. Careful examination will usually reveal the dimple-like depression of the external os.

In the vagina stenosis or atresia may occur as a congenital condition, or as the result of injuries which have caused ulceration or sloughing.

At the vulva atresia may be produced by an almost imperforate hymen or by the adhesion of the labia after some ulcerative process.

The Treatment must be altered to suit the case; in general, dilatation can be accomplished by the use of the tupelo tent, tearing and stretching by the finger, multiple superficial incision, and forcible dilatation.

(*b*) Tumors occupying any part of the genital passage may cause atresia or obstruction. Small *ovarian cysts* complicating labor may sometimes be pushed, by gentle manipulation, above the pelvic brim and out of the way of the advancing head; when this cannot be done the cyst must be aspirated through the vagina. When discovered during gestation the ques-

tion always arises whether to remove it at once or wait until after labor. If the cyst is growing rapidly, ovariotomy should be soon performed, the chances for a continuation of the pregnancy being better than if the operation is deferred. I have thus operated once with success.

Myomata of the lower uterine zone may form very formidable impediments to the delivery of the child. Small pediculated growths may be torn loose and expelled spontaneously in front of the head; larger submucous or interstital masses should be enucleated *per vaginam* after incision of the capsule, as in the case reported by me in the *American Gynecological Transactions*, Vol. IX, 1884. Where this is not possible embryotomy or Cesarean section may become necessary.

Carcinoma of the cervix or vagina renders the patient liable to grave dangers from hemorrhage, sloughing of the cancerous mass and septicemia. If confined to the cervix we may amputate this organ or scrape the mass away with the sharp curette, but if the upper vagina is also extensively involved Cesarean section offers the best chance both to mother and child. I have amputated one lip of the cervix for epithelioma during the third month of pregnancy, with continuance of the gestation, and non-recurrence of the disease.

Cystocele with distended bladder or a rectocele filled with fecal matter may produce serious obstruc-

tion and may be taken for other forms of tumor. The diagnosis is made and the tumor removed by emptying the bladder or rectum.

A *vesical calculus* may sometimes be pushed above the head. If this cannot be done it must be removed through the forcibly dilated urethra, or by litholapaxy, or, best, by incision through the vesico-vaginal septum.

4. *Abnormalities of the Pelvic Bones.*—Our attention should be directed to the possibility of pelvic contraction, where there is a history of even slight rachitis in childhood, or where its traces are manifest in any portion of the skeleton; where there is lameness or inequality in the length of the lower limbs; where there is spinal distortion; where there is a suspicion of malacosteon; where there is a history of previous difficult labors with malpresentations of the fetus; and where the individual is markedly under-sized. During labor with contraction at the brim the presenting part remains high up, and in any form of contraction the descent is not in proportion to the strength of the pains; arrest and impaction occur, and the prognosis for both mother and child is most grave.

The diagnosis is made by direct examination, the finger and hand forming the best pelvimeter. The conjugate at the brim is the diameter most often affected. In the normal pelvis it is very difficult or impossible to touch the promontory, without introducing more than two fingers into the vagina, unless the pa-

tient be anesthetized. The method of measurement is as follows:

The index and middle fingers are passed into the vagina, the patient lying on the back with elevated hips, the elbow depressed, the perineum pressed upward and backward, and the finger tips passed up along the sacral vertebræ until the promontory, recognized by its convex surface, is reached. The point at which the inferior pubic ligament touches the hand is then marked, the distance from this point to the finger tip, less a half-inch, being the true conjugate. Other important points to be noted are the angle of the pubic arch, the nearness of the ischial tuberosities, and the prominence of the ischial spines. These points should be noted in every case of labor, in order that you may become accustomed to estimating them. If contraction is suspected it may become necessary to give chloroform and explore with the whole hand in the vagina.

The *treatment* must vary with the degree of the deformity, the period of the pregnancy, and the condition of the child. If the contraction is discovered before or during pregnancy, premature labor or abortion may be necessary, as before described. At term, in cases where the conjugate is not less than three inches, if the head engages, forceps; if the head does not engage, version. Where the conjugate is between three and two inches, if the child is alive, laparo-elytrotomy or cesarean section; if the child is dead

or if laparotomy is refused, perforation and cephalotripsy. With conjugate less than two inches the cesarean section (Porro or the old method) or laparo-elytrotomy are always safer than the use of the craniocast and cephalotribe. These rules can be only general, and must necessarily often be modified; thus you would perform craniotomy or cephalotripsy for a minor degree of contraction if the child were dead, or in a justo-minor pelvis, with a diminution of more than three-fourths of an inch in all its diametres, or where the head was impacted and forceps failed, or with retraction of the uterus about the child, and complete loss of the liquor amnii, or in extreme weakness of the mother.

Painful Labor.—Any cause which prevents the progress of the labor may cause the uterine contractions to become excessively painful. Excessive hyperesthesia may exist in hysterical patients, in the so-called "rheumatism of the uterus," where there is chronic inflammation in the peri-uterine tissues, or where the bowel or bladder is distended. Its presence should always cause us to suspect the probability of some puerperal complication. Where we can find a cause for the hyperesthetic condition, remove it, when possible; otherwise, deaden the sensibility by chloral or morphia.

Hemorrhage may occur before, during, or after labor, and is always of the greatest import.

Hemorrhage before labor (accidental) is caused by

a partial separation of the normally situated placenta, and the blood may either appear externally or collect in the uterine cavity, external to the membranes. Appearing externally, the condition may usually be differentiated from placenta previa by a vaginal examination. Internal or concealed hemorrhage produces symptoms of collapse, faintness, sighing, pallor, coldness of extremities, usually together with an irregular enlargement of the uterus and severe cramp-like pains.

The *treatment* is, if the hemorrhage is external and slight, *rest*, and cold over the abdomen, in the hope that the flow may stop. Should it be severe and persistent, or concealed, temporizing is merely endangering the life of your patient. The os should be dilated at once with Barnes' bags, or, if the case is urgent, with the steel-branched dilator. When the os is the size of a silver half-dollar, do version by the combined method, rupture the membranes, and deliver by the breech. Should the hemorrhage occur after the os is partly dilated, apply forceps if the head is engaged; otherwise, deliver by version. Promote uterine contraction after birth of the child by the use of ergot, hypodermically.

Placenta previa is implantation of the placenta below the equatorial zone of the uterus. Its lower edge may be near (marginal), overlap (partial), or entirely cover (complete) the internal os. Dilatation of the cervix can, therefore, not occur without causing a

partial placental separation. The condition usually makes itself known by sudden, repeated and most profuse hemorrhages, occurring, apparently, without cause, usually not before the twenty-sixth week of gestation, and often only after labor has begun. Malrepresentations are common, and there is always a tendency to premature labor. The diagnosis is confirmed by feeling the thick spongy placental tissue through the lower uterine zone or through the partly dilated os.

The *treatment* is to always empty the uterus as soon as possible after the first occurrence of hemorrhage, whether the child be viable or not, and this is best accomplished as follows: Pass the finger through the internal os, and sweep it partly around, thus separating a portion of the placenta as high as you can reach; dilate with Barnes' bags or manually, until the os is the size of a silver half-dollar; pass the whole hand into the vagina, and two fingers or the hand through the os, past the edge of the placenta, but not through it, which is rarely necessary; do version by the combined method; bring down a foot and draw the breech into the os. Then let the case progress more slowly, as the pressure exerted by the child's body will effectually stop the bleeding. Deliver as in ordinary breech cases. When the head escapes from the uterus, give ʒ ii fl. ext. ergot. But remember to save the child if possible, and therefore to extract it as rapidly as practicable by whatever means are safe

and at your disposal. Even when the uterus is well contracted, there may be troublesome hemorrhage from the cervical zone. This is best arrested by vaginal douches of ice-water and vinegar, equal parts. The tampon (best the rubber bag) may be used to arrest bleeding and dilate the os.

When dilating or proceeding to turn, it is important to leave a sufficiently large portion of the placenta attached for the nutrition of the child if it is viable or still alive. At times, after rupture of the membranes, the head enters the pelvic cavity and by compression arrests the hemorrhage. Delivery may then be accompliseed by forceps, or left to nature.

Post-Partum Hemorrhage may occur immediately or at any time within twelve hours after the labor. The bleeding comes from the open mouths of the utero-placental sinuses, and is caused by a want of contraction of the uterine walls. This inertia may be caused by exhaustion, or after tedious labor; by retention of the placenta, preventing complete contraction of the uterus; from overdistention, or hydramnois, causing a partial paralysis; by distention of bladder or rectum, causing a diversion of nervous energy; by too hasty extraction of the child, or placenta, not allowing sufficient time for retraction to occur; by anæsthesia; by mental emotion, etc.

The *symptoms* are the sudden appearance of hemorrhage, together with a softening, enlargement, and disappearance of the uterine globe, as felt by the hand

above the pubes. The hemorrhage may be a mere trickle, a considerable stream, or by gushes mixed with clots. If not stopped at once the general signs of hemorrhage become manifest; these may pass into those of collapse, every function become paralysed, the uterus refuse to contract, the sphincters may relax, the features are pinched, respiration becomes gasping, convulsive movements and death close the scene.

Treatment.—In no obstetrical emergency is a cool head and a sound knowledge of the principles governing uterine hemorrhage more necessary, or is intelligent treatment more productive of good, than in post-partum bleeding. We must make the uterus contract permanently. Always have cracked ice and a hypodermic syringe filled with ergotine, and very hot water, where they can be had when wanted. Always have a hand held lightly over the fundus uteri until it has become permanently contracted after the expulsion of the placenta. Any post-partum bleeding, unless it comes from cervix, vagina, or perineum, is always preceded by a softening of the uterine body. A beginning tendency to hemorrhage may often be counteracted by gentle circular friction over the fundus. Should this not cause contraction at once, give a hypodermic of fluid extract ergot or solution ergotine (inserting the needle *deep* into the abdominal wall or hip), pass the hand into the uterus, clear out any remnant of placenta or clots, and leave a bit of ice the size of an egg in the cavity. If still necessary, one or two

quarts of ice-water may be thrown into the uterus from a fountain syringe, and the contractile power of the water may be increased by adding one-quarter to one-half of cider vinegar. Many obstetricians prefer hot (temp. 115° to 120° F.) water douches to arrest the hemorrhage, vinegar being added if desired. I have always succeeded with the cold water injections, and think, besides, that the hemostatic effect of cold is more permanent than that of heat. Proper precautions should, of course, be taken to prevent introduction of air into the uterus, and the fundus uteri should be stimulated to contract by friction while the injection is being made.

If necessary, repeat the hypodermic of ergot. Always see that the bladder is empty. Keep the head low and elevate the hips. Employ aortic compression. Compression of the uterus against the pubes, one hand pressing the fundus forward and downward, and the other pressing the cervix against the pubic bone, will temporarily control the bleeding. Admit plenty of fresh air to the room. Give stimulants, brandy, whisky, ether, morphia, freely by hypodermic injection, and by mouth if patient can swallow. Nitrite of amyl by inhalation to stimulate the heart. Should the uterine atony still persist, the womb refusing to contract, it has been recently recommended to tampon its cavity with antiseptic gauze or cotton, which may be left in situ for from six to twenty-four hours. This method has been used with good results and is

certainly worthy of remembrance. As a last resort make an intra-venous injection of a saline solution (sod. chlor. ʒ iss.; sod. bicarb. gr. xx; aq. pur. Oii, temp. 100° F.), letting it pass slowly and steadily into the vein, and continuing until one, two, three, or even more pints have been injected, the quantity being measured by the effect, and the injection being repeated if necessary. The patient must not be moved, or her head raised, until reaction has set in. Absolute rest and sleep must be secured. Fluid nourishment and stimulants must be given in small and frequently repeated amounts. Careful after-treatment and nursing are most important.

Hemorrhage occurring immediately after labor while the uterus is *firmly contracted* comes from a laceration of the cervix, vagina, perineum, or vulva; it usually can be stopped by a hot (115° F.) vaginal douche, but if persistent, the bleeding point should be searched for, if necessary with the aid of a speculum, and ligated by deep sutures.

Puerperal hemorrhage, or *secondary* post-partum hemorrhage, is bleeding occurring more than twelve hours after labor. Its most usual causes are the retention in the uterus of blood clots, membrane, or pieces, or even the whole placenta; less often it may be referred to lacerations, abrasions, or thrombi of the genital passages; to malignant disease, fibroids, inversion, or displacements of the uterus; to chronic inflammation of the uterine adnexa, to uterine atony from

general constitutional debility, organic visceral lesions; from emotional causes, or too early coition.

Treatment.—In hemorrhage coming on more than twelve hours after labor the uterine cavity should always be explored by the scrubbed and aseptic finger, and any blood clots, membranes, or portions of placenta, thoroughly removed by the finger or my large dull placental curette (see *Am. Jour. Obst.*, February, 1883), after which the cavity should be washed with a 1-10,000 hot bichloride solution (see under PUERPERAL STATE). The hot intra-uterine douche is valuable in *any case* in which the bleeding is from the cavity of the uterus. Where the hemorrhage is from a point external to the uterus, a hot vaginal douche should be employed, and if the bleeding still persists a specular examination and local treatment by astringents, styptics, or ligature is necessary.

Uterine displacements may require reposition and a suitable pessary. A small thrombus should be let alone, a large one treated by incision, turning out of the clots, packing of the cavity with styptic cotton, and after cessation of the bleeding with cotton soaked in carbolized oil (5 per cent.). In malignant disease styptic packing, or, if the patient be strong enough to stand it, rapid cutting away of the cancerous masses with the sharp curette and styptic packing. Hemorrhage from constitutional debility or visceral disease may be stayed by the hot douche and general tonic treatment.

Inversion of the Uterus may be partial or complete and may be caused by traction from below, as with an abnormally short cord, or from pulling on the cord or adherent placenta, or by pressure from above by violent coughing or straining, or manual pressure on the fundus when relaxed.

Symptoms are: Hemorrhage, shock, pain, faintness, local exploration showing absence or a depression of the fundus, and the presence of a body in the vagina or cervix. Differentiated from fibroid polypus by the entire want of sensibility and contractility in the latter, by exploration with the sound, and by the presence or absence of the fundus in its normal position.

Immediate replacement is easy in partial inversion, the patient is anesthetised, the hand passed into the uterus, and the depressed portion pressed back into place. In complete inversion replacement is usually easy if attempted at once. Anesthetize the patient; make steady, firm, continued pressure and compression with the hand in the vagina against the uterine body, the other hand making counter-pressure over the pubes. If this does not soon succed, indent by pressure one or both uterine horns at the point of the tube entrance. If the placenta is adherent, we should attempt reduction before its removal, only detaching it should reduction prove very difficult.

Rupture of the Genital Passages.—Rupture of the uterus may occur at any point, and in any

direction, the most frequent seat of the tear being near the junction of the cervix and body. The rent is usually through the entire thickness of the uterus (complete), but may leave one or more layers intact (incomplete). The causes may be violence, inflammatory conditions, or any condition obstructing the passage of the child, coupled with strong uterine contractions. The symptoms are a recession of the presenting part, a cessation of uterine contractions, pain, shock, collapse, partial or entire escape of the fetus from the uterine cavity. Diagnosis confirmed by careful physicial examination per abdominem et vaginam.

Treatment.—If the head is engaged and there is no obstacle to quick delivery, or if turning can be easily done, with hope of saving the child's life, forceps or version may be tried. In nearly all cases, however, and always when the uterine contents have escaped even in part into the abdominal cavity, immediate laparotomy with cleansing of the cavity and closure of the uterine rent, or removal of the uterus, offers by far the best chance for saving the mother's life. The child is seldom saved. Extensive laceration of the intra-vaginal portion of the cervix, if it causes troublesome hemorrhage, not controlled by a hot styptic douche, may be closed at once by silk sutures, or the bleeding vessel or vessels secured. In my own experience I have not found it necessary, nor do I consider it advisable, to attempt the immediate closure of a

cervical rent, first, on account of the more or less exhausted condition of the woman at the close of labor; second, because of the flabbiness of the parts and the danger of causing retention of the lochia in the uterine cavity; third, because what appears a large and serious rent at the time of labor often becomes insignificant after involution is completed, or after a short period of local treatment.

Tears of the vaginal mucous membrane will usually heal without other treatment that warm cleansing douches, the exception to this rule being principally confined to tears in the fornix, which are dangerous because of their nearness to the peritoneum. These fundal tears, therefore, should be closed by catgut or silk suture, and afterwards the parts kept clean by gentle warm douching.

Lacerations of the vaginal orifice need but to be kept clean by the warm douche, except when they are deep enough to reach the erectile tissue; in these latter cases the hemorrhage, which may be profuse or even fatal, if not controlled by hot water (120° F.), may be stopped by approximating the edges of the tear by deep sutures.

Perineal lacerations, if extending half way or nearer to the sphincter, and including the whole thickness of the perineum, should always be closed by suture; smaller tears may be treated by cleanliness and rest in bed until healing is complete. The diagnosis of the extent of the tear is made by including the

recto-vaginal septum between finger and thumb and by careful ocular inspection. Anesthesia is not necessary unless the tear be very extensive. Instruments needed are a stout needle with bilateral cutting edges, three-and-a-half inches long and curved so that from head to point the distance is two-and-a-half inches; a needle-holder, and stout silk for ligatures, together with a pair of sharp scissors for trimming ragged edges. Having decided that a tear is present requiring suture, make everything ready, place the patient crosswise with the hips at the edge of the bed and the legs supported in the gluteo-dorsal position, thoroughly cleanse the wound with a 1-5000 bichloride solution, place a disinfected sponge or wad of dry absorbent cotton in the vagina to absorb fluids and then leave the wound surface clear, pass the index finger of the left hand into the rectum for a guide, pick up the needle and silk from the bichloride solution in which it has been dipped, insert the point of the needle about a fourth of an inch to the side or even above the upper edge of the wound and carry its point as near as possible or slightly above this edge throughout its whole extent to a corresponding point on the opposite side, being especially careful not to let the suture escape from the tissues at any point in its course. This one suture will often be sufficient to completely close the laceration, though if necessary a second or more may be passed each a half inch below the preceding one. It is seldom necessary to use

more than four sutures except in extensive rents involving the sphincter and septum. In the latter case sew the septal rent first, knotting the stitches in the rectum and then close the perineal part as before. The stitches having been passed, irrigate the wound with the bichloride solution and, beginning below, tie the sutures, placing the knot a little to one side, removing the sponge or cotton before tying the last. Wash the external parts with the bichloride solution, dust with iodoform, cover the line of the wound with a bit of protective or oiled silk, and cover this with a wad of absorbent cotton or oakum held in place by a broad bandage pinned to the abdominal binder.

The after-treatment is simple, the legs are to be kept closely bound together until several days after the removal of the stitches; the external parts should be irrigated several times a day with an antiseptic solution; vaginal irrigation is unnecessary unless there be distinct indications for its employment; the urine may be drawn for the first twelve hours, after this the patient can pass it herself; the diet should be the same as usual after labor, nutritious but light; the bowels, if thoroughly evacuated before labor can be left alone for three days, when a mild laxative may be given and at the first sign of an impending movement an enema of warm soap-suds and sweet oil, the object being to procure a motion soft and smooth, without scybalæ or straining; the sutures may be removed on the fifth or sixth day, the bowels having been carefully moved the

day before and being moved with the same preacutio is twenty-four hours later.

Prolapse of Cord. — Predisposing causes are mal-presentations, pelvic deformities, hydramnios, sudden loss of liquor amnii, abnormal length of cord. *Diagnosis* made by feeling cord alongside of presenting part, either before or after rupture of the membranes. *Prognosis* is bad as regards the life of the child, and worse in head than in breech presentations. Child's life is in no immediate danger so long as the funic pulsation is strong, but when the pulsations become very weak or cease from compression of the funis between the pelvic wall and a part of the child's body, only immediate delivery can save its life.

Treatment.—Reposition, version, forceps. Reposition should first be attempted, unless the cord be already compressed by the advancing head, the patient being placed in the knee-chest position, and an attempt being made to carry the cord above the pelvic brim, by a loop of tape passed loosely around it and fastened in the eye of an elastic catheter. Should we succeed in elevating the cord, hold the catheter in situ, place the woman on her back, and, after the head has engaged, remove the stylet, thus freeing the tape, and remove the catheter. In cases where reposition is not practicable, podalic version should be performed if the head be above the brim, or forceps applied if the head be engaged. In any case rapid delivery offers the child its only chance after the cord has become compressed.

Asphyxia Neonatorum.—I have not space to mention the etiology. The symptoms which manifest themselves before birth are weakened heart-action, continued in the intervals between the pains, escape of meconium, intra-uterine inspiratory efforts, diminution of the plantar reflex in breech presentation; after birth by absent or imperfect respiratory effort and weakened heart action.

There are two degrees, *asphyxia livida*, in which the body surface is dusky red, and some tonic contractility of the muscles present, and *asphyxia pallida*, in which the surface is anemic and tonic muscular contractility entirely lost. In the first degree the immediate prognosis is usually favorable; in the second at least doubtful. Even if resuscitated, the child's chances of survival for any length of time are not good.

Treatment.—Immediate delivery when signs of beginning asphyxia become manifest. After delivery wipe out the mouth, pharynx, and nostrils with a soft cloth on the little finger; to clean them from fluid and mucus; flick the child with the end of a towel wet in ice-water; do not tie the cord so long as it pulsates; if, after division of the cord the child does not respire, dip it in a hot bath (115° F.) for a few seconds, and then in ice-water; repeat this procedure several times, then, if respiration does not occur; take the child from the warm water, hold it with both thumbs resting in front of its chest, the index fingers under its axillæ,

and the rest of the hand obliquely against its side and back (Schultz's method); let the arms fall until the child is between the operator's knees, then extend them slowly to a little above the horizontal, or until the child's head falls forward; hold them in this position an instant and then repeat the maneuvre, dipping the child in the warm water from time to time, that the surface may not become chilled. If the child is pale, holding its head downwards for a minute will often excite respiration. If there be mucus in the trachea, remove it by aspiration through a catheter introduced into the glottis under the guidance of a finger.

In asphyxia pallida the child must be kept warm and quiet; artificial respiration should be tried by means of a catheater passed into the larynx. Mouth to mouth insufflation does no good, the air only passing into the stomach. Never give up hope of inducing respiration so long as the heart beats, no matter how feebly.

OBSTETRIC OPERATIONS.

General Considerations.—All obstetric operations are performed in the interest of the mother or child, usually of both; where there is a choice of methods, select that most favorable to the mother. In normal cases, patience is important. Do not interfere too early, but when an indication arises, act without delay and without fear. Prompt assistance may save two lives, and be easily accomplished when tardy help would be inefficient, difficult, and dangerous. Careful examination, if necessary with the aid of anesthesia, and thorough understanding of both the case and the ways and means of assistance should always precede the use of force. If in doubt, or if the operation required be serious, always have the advice or assistance of an able colleague. Carefulness, gentleness, perseverance and intelligence should banish blind force, fuss, and hurry.

A hypodermic of morphia may advantageously precede an anesthetic. In short operations use chloroform; in those likely to be tedious, ether. Have everything ready at hand before beginning an operation; your instruments, means for controlling hemorrhage, and means for resuscitating the child. Always scrub the hands well and employ as careful antiseptic measures as possible.

The Forceps.—The forceps is an eminently conservative instrument, and can never do harm when ap-

plied and used under proper conditions, and with a correct understanding of the anatomy of the genital canal and the mechanism of parturition.

The instruments of Elliot or Hodge are the best for general use, having long shanks, allowing the lock to be without the vulva even with the head at the brim, moderate compressive power, a good cephalic curve, moderate pelvic curve, and firmness. Features to be avoided when selecting an instrument are, short handles, and thin springy blades with sharp edges. When called to an obstetric case, always take your forceps with you.

The indications for its use are two-fold:

First: *In conditions where the natural forces are inadequate to complete the delivery*, as in powerless or protracted labors from any cause, minor pelvic deformity, occipito-posterior positions without rotation, face presentation, shortness of cord, etc.

Second: *Where speedy delivery is required to save mother or child*, as in hemorrhage, eclampsia, exhaustion, head-last deliveries, prolapse of cord, etc.

In general, in choosing between forceps and version, if the head is engaged at the pelvic brim, use forceps; if the head be movable above the brim, employ version. The choice will be influenced also by the skill of the operator and the size and pliability of his hand. Before using the forceps it is necessary that the os be dilated or dilatable, that the membranes be freely ruptured, that the head be at or below the

pelvic brim, and that the pelvic diameters be not greatly contracted.

Operation.—See that the bladder and rectum are empty; chloroform if necessary; place the patient in the dorsal position with hips at edge of bed; have the limbs supported by assistants or on chairs; avoid display or hurry; re-ascertain the position of the head; place the tips of the index and middle fingers of the right hand between the fetal head and rim of the cervix toward the mother's left; take the warmed and oiled left blade in the left hand and insert it gently along the finger between the head and cervix to the mother's left side following the direction of the pelvic and cephalic curves and depressing its handle well towards the perineum; insert the right blade in a similar manner. See that the lock comes together easily; if it does not, readjust the blades, pressing the handles well toward the perineum, but using no great amount of force, only gentleness and persistency. When locked make traction in the direction of the axis of that portion of the pelvic canal in which the head lies, keeping the handles well back toward the perineum until the occiput has escaped under the symphysis. When applying the forceps proceed only between the pains, when making traction only during the pains or, if these are absent, at intervals; pull steadily and without any rocking movement, one hand grasping the handles and one the lock; guard against undue compression by the use of the stop-screw at the

handle end, or by placing a folded towel between the handles; relax the pressure when not making traction. When properly adjusted the forceps will not slip, if they do slip, they have been improperly applied, or the bones of the skull are fractured, or the head is macerated. The forceps should as a rule be removed when the head distends the perineum and the head "shelled out" between the pains by a finger in the rectum. When the head is very high in the pelvis, or where powerful traction is required some form of axis-traction instrument, or the axis traction attachment of Wells (made by Ford, of New York), which can be applied to any forceps of the Elliot type, enable us to apply the force needed more easily and in the proper direction.

The application of the forceps in presentations other than the vertex should be guided by the general rules given above modified by the differences in mechanism peculiar to the presentation or position.

The prognosis in forceps cases is more favorable, *ceteris paribus*, the lower the head is in the pelvis, but is also greatly influenced by the condition necessitating the operation and by the skill and experience of the operator. The dangers to the mother are from contusions and lacerations of the soft parts, and to the child from bruises, compression, cranial hemorrhage, or even fracture of the cranial bones.

Version or Turning is the bringing to the superior strait of a part other than that originally pre-

senting. It is cephalic when the head is brought to the pelvic brim, and podalic when the breech or foot is brought down.

It is indicated in transverse presentations, in pelvic contraction with a conjugate at the brim of three inches or more; and in those cases where it is necessary to aid delivery in which it is not practicable to use the forceps.

It may be accomplished in three ways:

1. *By external version.* This is only practical before the membranes have ruptured, and when the child is freely movable in the uterus.

The woman being placed as for abdominal palpation and the exact position of the child carefully ascertained, the operator with his warmed hand endeavors to push the head or breech, as may be, towards the pelvic brim, while at the same time his other hand pushes the other extremity in the opposite direction. The pressure should be of a gentle, sliding nature, and be made only when the uterus is relaxed, merely holding what has been gained during a pain. The version may be sometimes aided by placing the woman on the side towards which that pole is directed which it is desired to bring to the brim. When the version is completed the child must be held by a hand placed over the fundus or by longitudinal pads and a bandage until the presenting pole engages or the membranes are ruptured.

2. *By combined version.* This is indicated when

the first method has failed or where the membranes have recently ruptured. The position of the fetus being exactly known, the patient should be anæsthetized, placed in the dorsal position with semi-flexed thighs, and while one hand pushes up, between the pains, one extremity of the fetal ovoid, the other by means of two fingers introduced into the os uteri lifts and pushes the presenting part in the direction which tends to bring the desired uterine pole to the superior strait.

Thus, to bring the breech down, the head or presenting part is lifted by the internal fingers and pushed to the side of the pelvis toward which the occiput points, while at the same time the external hand depresses the breech in the opposite direction. When the breech is a little lower than the head, the membranes should be ruptured and a knee grasped and brought down, while the external hand changes its positon and pushes the head up. The fingers introduced into the uterus should be those of the hand whose palmar surface would be in apposition with the ventral surface of the child (*i. e.*, with the child's back to the left, the left hand, and *vice versa*) so that, should the combined method be ineffectual, the hand could be at once used for

3. *Internal version.* This is nearly always podalic version and is indicated when the preceding methods have failed or are impracticable because of escape of liquor amnii and retraction of the uterus about the

child. Before or soon after the rupture of the membranes it is usually easy; when the liquor amnii has drained away and the uterus is closely retracted about the child it is often one of the most difficult of obstetric procedures.

Conditions necessary for its performance are: Dilatation or dilatability of the cervix; a pelvis large enough to admit the operator's hand. Contra-indications are: When the head has escaped from the cervix; when the presenting part is so firmly wedged in the pelvis that it cannot be pushed up without danger of serious laceration of the maternal soft parts.

The dangers are from bruising of the maternal soft parts or rupture of the uterus from violence or roughness of manipulation.

Operation.—Use gentleness, deliberation, perseverance. Be sure of the position of the child. Anesthetize the patient. Place her on her back with semi-flexed thighs. Introduce the hand, previously thoroughly asepticised, into the vagina; push up the presenting part above the brim and gently pass the hand along the ventral surface of the child until a foot is reached; pull down the foot at the same time that the external hand pushes up the cephalic pole. When the version is completed, deliver as in any breech presentation. Should the head not go up, slide a fillet over the foot you have grasped, and use it as a tractor, at the same time pushing up the head with the internal hand. Should an arm be prolapsed it may be used to

help push up the shoulder; it should be held by the side of the body by a fillet that it may not slip up alongside the head. The introduction of the hand and the turning should be done only between the pains; the hand should lie flat against the ventral surface of the child. It is really immaterial which foot is brought down, although the one corresponding to the hand of the operator is usually chosen, therefore the posterior foot. If there is difficulty in finding the feet, turn the woman on the side opposite to that of the hand of the operator in the uterus, when the feet will usually fall readily within reach.

Sacrificial Operations.—These are always in favor of the mother, and for the purpose of removing the disproportion existing between some part of the fetus and the pelvic diameters.

Craniotomy is indicated when the disproportion is between the fetal head and the pelvic space where the conjugate at the brim is not less than two and a half inches, where delivery is not practicable by forceps or version, or after version when the head remains high in the pelvis. In difficult labors *when the child is dead* it may be performed as soon as delay becomes dangerous to the mother. Having decided that the size of the head must be reduced, do not delay; early craniotomy offers little danger to the mother; late is very fatal. The instruments necessary are some form of perforator; I prefer a well-made curved trephine and Braun's cranioclast (see article by me in May, 1873, of

Jour. Obstet.), although the cephalotribe (Lusk's) will often answer very well.

Operation.—Patient should be anesthetized, placed in the same position as for the use of forceps; bladder and rectum should be empty. If the head is not firmly fixed in the pelvis, it must be steadied in its position by strong supra-pubic pressure, made by an assistant. Pass the perforator, guarded by the fingers of the left hand, up to the head, and selecting a point nearer the symphysis than the promontory, perforate the skull by a rotary movement. Be careful that the point of your instrument does not slip and lacerate the maternal soft parts. When the skull is perforated pass the instrument into the cranial cavity and thoroughly break up the brain and medulla. Then apply Braun's cranioclast (which should more properly be called craniotractor), one blade passed within the skull and one externally, and by steady, firm traction deliver the head. This instrument takes a very firm hold, especially if the external blade be applied over the face, and very seldom causes any laceration of the maternal parts. If the pelvic deformity is so marked that it becomes necessary to break up and extract the bones of the cranial vault piecemeal before delivery can be completed (conjugate at brim less than 2¾ inches), some form of abdominal section will give better results than craniotomy. Should there be difficulty in delivering the body after the birth of the head, the craniotractor may be applied, one blade

passed through an opening made with the perforator between the clavicle and scapula, and the other over the back. This gives a very powerful means of making traction.

Perforation of the after-coming head is more difficult, and is accomplished by drawing the head backward and inserting the perforator under the symphysis. Where the pelvic deformity is not great, and where the proper instruments cannot be procured, perforation and evacuation may be accomplished by the use of a pair of large scissors and the head delivered by the ordinary obstetric forceps.

Eventration may be necessary to diminish the bulk of the body in extreme degrees of pelvic deformity, where there is pathological enlargement of some of the child's viscera, or in impacted shoulder presentations, where the neck cannot be easily reached. It is accomplished by making an opening in the thoracic wall near the axilla with a strong pair of scissors, and removing the viscera with the fingers or with forceps. If necessary, the diaphragm can be incised, and the abdominal organs removed through the same opening. Care must be taken to guard the maternal parts against laceration by spicula of bone.

Decapitation may become necessary in neglected shoulder presentations where the neck can be reached, or to allow the delivery of monstrosities, or after "head-locking" of twins. It is accomplished by

drawing down on the arm so as to bring the neck well within reach, encircling the neck with the fingers or the blunt hook and cautiously dividing the tissues with scissors, guarding the points carefully to avoid injury to the mother. Or, we may use Braun's decapitating hook. The body may be delivered by traction on the arm, and the head afterwards by forceps; or, if necessary, by the craniotractor after perforation.

Abdominal Section in some form becomes necessary in those cases where the pelvic obstruction, from deformity, exostoses, or new growths, is so great that delivery by mutilation of the child subjects the mother to graver danger than the section; where the mother elects to undergo the operation for the sake of a living child, delivery by craniotomy being possible; where the child of a moribund mother can be saved; after rupture of the uterus, etc.

The earlier the operation can be done after the inception of labor, the better is the prognosis, both for mother and child. Delay invites death. Early operations in this country have saved seventy-five per cent. (Harris), while the mortality in late operations has nearly reached that figure. When possible the conditions requiring abdominal section should be learned before labor, so that everything may be ready and delay avoided.

The four principal operative methods are: (1) *The Improved Cesarean Section*, with antiseptic precau-

tions, careful suturing of the uterus, and toilette of the peritoneal cavity; (2) *The Porro operation*, or removal of body of uterus and ovaries, after the ordinary cesarean section; (3) *Laparo-elytrotomy;* (4) *Laparotomy*, for the removal of a fetus already escaped into the abdominal cavity.

1. *Cesarean Section.*—The room in which the operation is done should be as *clean* and free from furniture as possible. Temperature should be between 70° and 80° F. Operating table should be firm and high, and covered with blanket and sheet, as for ovariotomy. Patient should have bladder and rectum empty, be anesthetized, placed on the table in ovariotomy position, have abdomen cleansed with soap and water, ether, and a 1–1000 solution bichloride of mercury, and have vaginal douche of 1–2000 bichloride solution. Operator stands to right of patient. Five assistants, if possible. One, the most reliable, stands opposite the operator and manages the abdominal walls, keeping them close against the uterus, to prevent the escape of intestines, and hooking his fingers into the ends of the uterine wound as soon as the incision is made, and holding the uterus forward against the abdominal parietes, to prevent any fluids from entering the abdominal cavity. The second, to give ether. The third, to sponge. The fourth, to have care of instruments. The fifth, to care for and resuscitate the child, if necessary. Median abdominal incision, from umbilicus to 1½ inches above pubes,

may be extended above and to left of navel, if necessary. All bleeding in abdominal wall to be stopped before incising uterus. Uterine incision to be median, longitudinal, avoiding fundus and cervix, and about five inches long. Uterus to be at once hooked up by fingers of first assistant. If os is dilated, rupture membranes through vagina, otherwise through wound. Should the placenta lie under the uterine wound, peel it off to one side, or tear it through, whichever is quickest. If the head presents at the wound, deliver head first; otherwise deliver by feet. Should uterus grasp neck, extend the incision in preference to tearing. Hypodermic of ergotine. When placenta separates remove it, membranes and blood-clots carefully, and cleanse uterine cavity with bichloride sponges. Elastic tubing or the fingers of an assistant may compress the cervix before making the incision. Bleeding from uterine wounds may require pincettes, or ligation of vessels. Uterus may have to be swabbed with alcohol or subsulphate of iron, to stop persistent bleeding. Cervical drainage tube, if os is not dilated. Uterine wound to be closed with deep and superficial, interrupted, antiseptic, silk or silver wire sutures, or by layers of cat-gut sutures, one above the other, from decidua to peritoneum. The deep sutures should be about a half-inch apart, and should pass down nearly to the uterine mucous membrane; the superficial should be inserted between them, so as to turn in the peritoneal edges. Muscular resection is not necessary,

as retraction of the uterus causes the peritoneum to be redundant, so that its edge can be inverted. Cleanse the abdominal cavity carefully; close the abdominal wound with silk sutures, first sewing the peritoneum with cat-gut; dress antiseptically. All instruments and sponges to be kept in a two-and-a-half-per-cent. solution of carbolic acid. Hands of operator and assistants to be carefully scrubbed with soap and water, and with bichloride solution, and recleansed when soiled.

The Porro operation, or the modification of the cesarean section, devised by Prof. Porro, of Pavia, consists in removing the body of the uterus down to the vaginal junction, together with the ovaries, after the child and placenta have been extracted as described under ordinary Cesarean section. After removing the child, the uterus is lifted outside of the abdominal cavity, an elastic ligature is placed around the cervix, and the organ is cut away, The pedicle may be transfixed by long pins and stitched into the abdominal wound, or it may be carefully covered with peritoneum by deep and superficial sutures, so as to check hemorrhage, and the elastic tubing having been removed it may be dropped. The transfixion and extra peritoneal method has given the best results. Mueller, of Berne, has modified the operation, by lifting the whole uterus out of the peritoneal cavity before applying the pedicle ligature and incising the organ.

The method is applicable particularly to cases of

rupture of the uterus, of uncontrollable hemorrhage after Cesarean incision of the uterus, and when the pelvic contraction renders subsequent pregnancy undesirable.

3. *Laparo-elytrotomy* is not difficult of execution if the operator be conversant with the anatomy of the parts and able to rely confidently upon his eye and touch, and is the operation of election in all cases where it can be performed. A necessary condition is a dilated or dilatable cervix. Same preliminaries and assistants as for Cesarean section. The incision may be made on either side (the operator standing on the same side) beginning at a point one and three-quarter inches above and to the outside of the pubic spine, running parallel with Poupart's ligament, and ending one and three-quarter inches above the anterior superior iliac spine, the wound being between four and a half and five inches long.

The muscles are slowly cut through, all bleeding vessels being ligated with cat-gut, the superficial epigastric being the most important. Care must be taken not to wound the peritoneum, which when reached is to be carefully separated from overlying tissues throughout the whole length of the wound and peeled and lifted up from the transverse and iliac fasciæ until the vagina is exposed near its junction with the cervix. The first assistant, who has been holding the skin of the abdomen tense, now draws the uterus forcibly upward and away from the incision

so as to expose the vaginal wall more fully, while the second, with a warm, wet napkin guarding his hands to prevent slipping, pushes the peritoneum with the superincumbent intestines up out of the way of the operator. The third assistant holds a catheter in the bladder to keep that viscus out of the way and serve as a guide. The operator introduces his hand into the vagina and with his fingers pushes the vaginal wall as far as possible into the wound. The vagina is now to be opened by a small incision made as far anterior to the cervix as possible, about an inch and a half, so as to avoid the ureters and large vaginal vessels. The tips of the index fingers are now forced through the cut, which is opened up by being torn in various directions, avoiding as much as possible the base of the bladder. The catheter is now withdrawn, the uterus tilted more forcibly to the left, the cervix lifted into the wound by the index finger hooked into the os, and the child delivered by natural uterine contraction, by forceps, or by version. The placenta is expressed; the wound irrigated with a warm bichloride solution (1-2 to 4,000) and any bleeding vessels ligated, or touched with the actual cautery. The bladder is injected with milk, and any rent which may be found sutured. Hypodermic injections of ergotine if uterus does not retract readily. Abdominal wound closed with interrupted silk sutures, a vagino-abdominal drainage tube being placed in the lower angle. The wound seldom heals throughout by first intention.

Puerperal Laparotomy. In every case where rupture of the uterus has occurred allowing fluid to ecape into the peritoneal cavity, whether the fetus and secundines be partly escaped from the uterus or not, so long as the mother be not in *articulo-mortis*, a median abdominal incision should be made and child, placenta, clots and fluid removed from the cavity. The uterine tear should be carefully closed as after Cesarean section, the toilet of the peritoneum made, and the abdominal wound treated as after any laparotomy.

These same rules would apply to cases where rupture of an ectopic gestation sac had occurred; the abdomen being opened, foreign substances removed, bleeding stopped and the wound closed.

THE PUERPERAL STATE.

NORMAL.

The placenta and membranes having been delivered, the hand is to be kept gently pressed over the fundus uteri, from time to time making slight circular friction to ensure the expulsion of any clots which may form and be retained to afterwards cause after-pains, until the uterus becomes permanently contracted and retracted. This will be in from a half-hour to an hour. Then the patient is to be cleansed about the genitals and to have a binder applied with moderate firmness. The binder should extend from about the tenth rib to below the trochanters and be worn nine or ten days. It is a source of much comfort and benefit by sustaining the relaxed abdominal walls and increasing the intra-abdominal pressure. Experience teaches that a properly (equably) applied binder tends to prevent subsequent pendulous, flabby abdominal walls. A wad of absorbent cotton or oakum covered with muslin should be placed over the vulva and held in place by a broad bandage fastened in front and behind to the binder. This is removed to permit of defecation and urination. The vulva should be gently cleansed with warm water every six hours and the absorbent wad renewed. The urine should not be drawn except where, after trial in different positions, the woman can not pass it herself. The bladder

should be frequently emptied for twelve hours after labor; for when at all distended it increases greatly the liability to relaxation of the uterus and hemorrhage. When necessary to employ the catheter it should be passed by inspection and not by touch, the parts being first carefully cleansed from lochia, and the catheter kept aseptic; neglect of these precautions will result in cystitis. If the bowels do not move by the third day, give some pleasant cathartic and afterwards keep them regular. Constipation will often cause a rise in temperature and general malaise, which a cathartic will remedy. After-pains are most surely relieved by stupes of chloroform liniment, together with morphia and camphor; they are best prevented by keeping the uterus well contracted by ergot. For twenty-four hours after labor the food should be fluid, milk, broths, etc., but after this time the patient may have any nutritious food not of known difficult digestion, care being only taken not to over-feed and disorder the stomach.

The proper *care of the breasts and nipples* is of great importance. Pendulous breasts should be supported, being lifted upwards and inwards, by a proper bandage. When milk begins to be secreted the bandage should be applied firmly, and if hardness and tenderness show danger of inflammatory trouble it should be made to exert as much pressure as possible. When compression is properly applied, rubbing out of the breasts is unnecessary, as any excess of milk will

drain away spontaneously. The bandage is a strip of cheap muslin 18 inches wide, long enough to go around the chest, and having notches 6 inches deep cut to fit under the axillæ. This can be placed around the patient with very little disturbance, and is fastened by pinning from below upwards, the parts over the shoulders being pinned last. The nipples should be washed with a soft cloth after each nursing and should any tenderness or tendency to fissure appear may be smeared with carbolized oil (5 per cent.); more marked tenderness requires dusting with tannin and the use of the nipple shield. Fissures should be delicately touched with a dry point of silver nitrate, with the bandage and *rest* until healed.

THE PUERPERAL STATE.

ABNORMAL.

Puerperal Septicemia.—The symptoms of puerperal septicemia are, unfortunately, but too familiar. Appearing usually from the third to sixth day after labor, the severe chill or succession of rigors, the elevation of temperature (102°–105° F.), the constitutional depression, the rapid, thready pulse, the clammy sweats, the sweetish breath, and later, if not checked, the pinched face, the wandering mind, the deepening stupor, coma and death, mark its dread advance.

Besides occurring thus as a pure septic fever, there may be added an inflammation of the *peritoneum*, uterus, vagina, or of their adnexa or adjacent structures. The exact clinical differentiation of these various forms is often exceedingly difficult, but fortunately not always necessary to ensure proper treatment. It should be remembered that these local inflammations do also occur without marked septic poisoning (see below), and that they are then much less serious.

The prognosis in septicemia is always serious, being usually worse in proportion to the early appearance and severity of the symptoms. The most unfavorable cases are those with a persistent high temperature (105° F.), but no local inflammatory lesions; the most

favorable are those appearing late and showing mild symptoms.

Treatment is preventive and curative. *Prophylaxis* consists in antisepsis. The obstetrician should be scrupulously careful about carrying infection. He should, if possible, not attend a case of labor after having been exposed to the poison from autopsies, foul wounds, the exanthemata, or other septic puerperal cases; or, if obliged to, should take first a full bath with soap and warm water, have an entire change of clothing, and pay particular attention to the cleansing of his hands and forearms, scrubbing them first with soap and water, and then with the bichloride solution (1-1000). The patient and everything about her should be made as clean as possible. Special care should be taken that no fragments of placenta or membrane remain in the uterine cavity. The antiseptic pad should be used over the vulva, both as a matter of precaution and as a matter of comfort.

Intra-uterine or vaginal douches are not necessary after the normal labor, unless the hand has been introduced into uterus or vagina to remove fragments of secundines, or where the child has been dead and macerated, or where there is purulent vaginal discharge. A warm vaginal douche properly given, will, ordinarily, do no harm, and is grateful to the patient, but I have of recent years discontinued its use in normal cases, unless the lochia were decidedly offensive, finding the antiseptic pad quite sufficient.

Any rise of temperature above 99½° F. during the first puerperal week should be cause enough to make us suspect and seek for any possible source of septic infection, though we should not forget that constipation, distension of breasts, sore nipples, or malarial poisoning may all cause symptoms at the outset like those of sepsis.

When the septic poison has once gained entrance to the maternal tissues, it is beyond our control; we can then only try to prevent any further absorption; and to sustain the vital forces until the morbific elements can be eliminated.

As we know the point of infection to be in the genital tract, *local* treatment is of first importance. A warm vaginal douche should be given and the vulvar orifice, vagina and cervix searched for necrotic patches, using, if necessary, a bivalve speculum. Any patches found are to be touched with equal parts of liq. ferri. subsulph. and tinct. iodi. comp. The vaginal douches are to be given every four or six hours when there is the slightest fetor to the lochia or reason to suspect the presence of infectious material in the vagina.

We may use plain boiled water or a 1-5000 mercuric bichloride solution (temp. 99°–100° F.), with a clean fountain syringe and glass vaginal tube six inches long, three-eighths of an inch in diameter, with a somewhat bulbous end and several side, but no terminal openings. With the stream running, the ex-

ternal parts are to be first washed and then the tube inserted into the vagina, the perineum being depressed slightly so as to allow free exit for the fluid. The uterus should be guarded against relaxation by a hand over the fundus. When necessary to refill the bag of the syringe, do it before the fluid is quite exhausted, compressing the exit tube to prevent the entrance of air bubbles. I never use a bichloride solution within the puerperal uterus, for fear of mercurial poisoning.

Nor cause for infection being found in vagina or cervix, they should be rendered scrupulously clean and aseptic, and a carful digital examination and washing of the uterus performed. Any clots or placental fragments discovered should be at once removed by the finger or my large, dull, placental curette, the vagina again carefully cleansed, and the uterus irrigated. The fluid should be a warm (100° F.) solution of carbolic acid (2 per cent.), or plain boiled water, slowly injected through a strong tube of annealed glass one-third of an inch in diameter, bent to conform to the uterine axis and pierced in its last three inches with seven to ten small openings, but no terminal perforation. The fluid should be about three pints in amount, and should be delivered from a clean fountain syringe held two feet above the patient's hips. The tube should be introduced flowing, to avoid entrance of air, and guided by two fingers of the left hand to the cervix, should be passed nearly to the fundus, a free escape for the injected fluid being

insured by pressing the anterior lip of the cervix a little forward by the tube and depressing the perineum with the fingers, or the fundus uteri may be pressed back by the hand through the abdominal parietes, and the uterine canal thus straightened. Any septic material will escape with the first portion of the fluid, which may have a more or less fetid odor. If the fluid returns clear and sweet, there is usually no need for repeating the injection. If the temperature falls after irrigation, it may be repeated every four to eight hours, as may be necessary, so long as the fetid discharge lasts. As intra-uterine douching is not entirely without danger, it sometimes producing chill, rise of temperature and colic, it should not be unnecessarily resorted to in every case in which there is a rise of temperature. It is indicated where there is a fetid discharge which persists after vaginal douching, where we suspect the presence of decomposing material in the uterine cavity, where the uterus is large and flabby, where the child has been born dead, or where the hand or instruments have been introduced into the uterine cavity. We may also give an intra-uterine douche where we can find no cause for the febrile rise; the douche not to be repeated unless we find evidence of septic material in the uterus.

I would add here that the patency of the uterine canal for two fingers as late as the end of the first week after confinement, almost infallibly indicate the presence of some foreign body (coagula or remnants

of placenta, or both) in the uterus, and calls for a thorough digital exploration of the endometrium, and prompt removal of the offending object, which may be the cause both of septicemia and secondary puerperal hemorrhage.

Some practitioners commend highly the introduction into the vagina or uterus of iodoform suppositories, containing from 3 to 10 grains each, one or more daily. I do not object to the former, as they are easily inserted, but those into the uterus I have found too troublesome for frequent employment, although I do not doubt their utility.

Symptomatic Treatment is directed towards relieving the pain and controlling the local inflammatory processes, reducing the temperature, and sustaining the vital energies.

1. The peritonitis, which may be present to a greater or lesser degree, is best controlled by morphia, cold, heat, and counter-irritation.

Morphia is to be given at first hypodermically, p. r. n., in quantities sufficient to quiet pain. When the pain becomes less acute, or is absent, it is to be stopped, as it then seems rather to do harm than good.

Dry cold applied over the abdomen by the rubber-coil or ice-bag is valuable while the temperature remains over 101° F., relieving pain, reducing temperature, and staying the spread of inflammation. One or two thicknesses of flannel should be interposed between the skin and the rubber.

Heat, in the form of poultices, should be used *if there is an exudation, after the temperature has subsided*, and is very grateful and soothing to the patient, besides exerting a very salutary effect on the absorption of the inflammatory product.

Counter-irritation by means of turpentine stupes repeated p. r. n., and later by blister, is valuable.

Tympanites is best relieved by turpentine stupes, by enemata containing turpentine (1 to 4 drachms to q. s. sweet oil and 1 pint peppermint water), by the careful passage of the rectal tube, or if all these means fail by abdominal aspiration (which is usually a last and unfortunately desperate resort).

At the beginning the bowels should be moved, if constipated, by enema. Severe diarrhœa should be checked.

2. High temperature of itself does harm and should be checked by the application of cold, by the cautious use of antipyrin or antifebrin, and by quinine, and alcohol, *ad libitum*.

Cold is most easily and efficiently applied by means of a coil of rubber tubing through which ice-water is allowed to flow. In the absence of the coil we can use ice-bags or frozen compresses, and as a supplementary means sponging of the whole body with water and alcohol. Cold full baths will reduce temperature, but may produce dangerous or fatal collapse, and are inconvenient.

Antipyrin and antifebrin are the most certain me-

dicinal means of reducing temperature. Antipyrin should be given in ten- or fifteen-grain doses at first, and then in five- to ten-grain doses every half hour and afterwards at longer intervals as may be necessary to keep the temperature within bounds. It, in common with all antipyretics, has a somewhat depressing influence on the heart, which, however, may be easily counteracted by giving tincture digitalis and whiskey with each dose. It has no effect on the cause of the disease other than as a heat reducer, but it enables the exhausted constitution to regain strength for a new attack. Antifebrin (Acetanalide) acts similarly to antipyrin, but is given in much smaller doses, two to five grains producing about the same effect as three times the amount of antipyrin. It seems to be less depressing than the latter, is equally efficient and much less costly.

Quinine is of value in the remittent forms of fever, given in a single dose of twenty grains; if this reduces the temperature, it may be repeated in twenty-four hours; or 10 to 15 grain doses may be given two or three times daily, as the prospect of a rise of temperature may require.

Alcohol is of considerable service as an antipyretic, but is of more value as a food and stimulant. The dose should be regulated by the effect produced. When it lessens headache and delirium, promotes natural sleep, reduces the temperature and produces no sign of intoxication, it is indicated and we are not

giving too much. It may be given as champagne, tokay, old port, cognac, whiskey, etc.

3. The food must be liquid and not too concentrated, given in small amounts and at short intervals.

Milk, plain, peptonized, frozen, as Kumyss, punch, or egg-nog is the best food. Animal broths or light and delicate custards may be acceptable.

Nausea is best avoided by giving the food ice-cold or very hot and in small (℥ i to ℥ ii) quantities frequently repeated. Small bits of ice, ice-cold carbonic water, iced champagne, small doses of strychnia, mustard or electricity to the epigastrium, and in the early stages hot water, are all useful If the vomiting is persistent it may be necessary to feed the patient by rectum as before described for vomiting of pregnancy. Oxalate of cerium, drop doses of wine of ipecac or of iodine, etc., should be used to check the vomiting. Nitrite of amyl may be given by inhalation to relieve faintness and danger of collapse.

Puerperal malarial fever may simulate septic infection and for several days be undistinguishable from it. The diagnosis is made by the absence of local symptoms, a malarial history or malarial surroundings, and the rapid and marked antipyretic action of large doses of quinine. A permanent cure can not be assured so long as the malarial surroundings continue, a change of residence affording the most certain relief.

Puerperal Peritonitis and Cellulitis at the outset

most closely resemble puerperal septicæmia, so that usually the differential diagnosis between the two cannot be made until on vaginal examination we can detect a fulness or distinct exudation in some of the peri-uterine tissues, usually in the region of the broad ligament. This exudation, at first diffuse, soon becomes circumscribed and distinct. The uterus becomes fixed and at times pushed to one side. The area of inflammation is usually exquisitely tender and fairly hard to the touch. Usually easy to distinguish, the exudation when small or only moderately pronounced may be difficult to detect. When the exudation is very large, pressure symptoms, or dysuria and rectal tenesmus are apt to appear, and the thigh of the affected side is kept flexed to relax the muscles of the iliac space. The amount of tympanites is usually in proportion to the extent of the peritoneal surface involved, and is slight where the cellular tissue is chiefly the seat of the trouble. When the exudation has developed the morning temperature is usually low, but in the evening may reach 104° or 105° F. The diagnosis is helped by the negative signs, which show the probable absence of sepsis, viz., the absence of the sweetish breath, of the hectic flushes, of the recurring rigors, of the dry, brownish tongue, the sallow and pinched facies.

The *prognosis* is much better than in cases of general septic infection and is most favorable when the extent of peritoneal inflammation is small. The

great majority af localized inflammations, recover entirely, pyemia or general septicemia but rarely developing. When improvement begins, all the symptoms rapidly grow less, the fever soon disappears, and the exudation becomes smaller, harder, more clearly defined, less tender, and after a varying time either disappears entirely or leaves some induration or adhesions behind. Unusual exertion or exposure is for a long time liable to excite fresh inflammation. Where the patient is weak and exhausted, or from some imprudence, large intercellular exudations may break down and suppurate. When this occurs there is hectic fever, weak and rapid pulse, repeated rigors, anorexia, and severe pelvic pain. The pus is often exceedingly difficult to demonstrate but may usually be found by careful abdominal and abdomino-vaginal examination aided, if necessary, by the aspirating needle. The pus may be encysted, absorbed, or may escape spontaneously in any direction, usually into vagina or rectum, or through the abdominal wall.

The *treatment* at first, and so long as the temperature remains high, is similar to that of puerperal septicemia, later persistent blistering is of the greatest benefit in hastening the abortion of the exudation, one blister being applied as soon as its predecessor has healed. Hot poultices should also be regularly used so long as the size of the exudation or pain keeps the patient in bed. Slight exudations may be treated by tincture of iodine. Suppuration requires the free in-

cision and drainage of the abscess cavity, and in chronic cases curretting of the walls and injection with iodine, or packing with iodoform gauze, or oakum soaked in Peruvian balsam. Small abscesses, holding less than an ounce may be sometimes cured by vaginal aspiration. Attention to the general health, stimulation, tonics, iron, and good food are all most important.

Mastitis.—Inflammation may begin in either the interstitial connective and fat tissue of the breast or in the substance of the gland itself and may resolve or go on to suppuration. When the breast is properly supported, as already described, that form of inflammation which is caused by over-distension of the gland by retained milk should be very rare, as should also be those cases said to be due to exposure to cold, depressing emotions, blows, etc. The one condition which is the starting point for nearly every mammary abscess is a fissured or eroded nipple, and the best way of avoiding mastitis is therefore to keep the nipples sound.

When pain, tenderness, and the presence of an indurated lump or lumps tell of possible trouble to come, nursing on that side should be at once stopped, the surface painted with iodine, a *firm* bandage applied, and over that an ice-bag. The bowels should be kept freely open. Should redness and throbbing pain with elevation of temperature tell of beginning suppuration take off the cold and apply hot poultices,

and as soon as pus can be detected make a free incision, radiating from the nipple, wash out the abscess cavity, dress aseptically, and compress with a large antiseptic sponge, oiled silk, and a firm bandage. If the cavity is very large a drainage tube may be necessary, otherwise a bit of lint between the lips of the wound is all sufficient. In neglected cases where the breast is sometimes honeycomed with cavities and sinuses, make the incisions large enough to introduce the finger, which should be swept around to break up walls between cavities, wash out the cavities thoroughly, drain, and dress antiseptically with pressure from the sponge and bandage as before. Build up the general health in every way possible by iron, tonics, good food, stimulants, etc.

Crural Phlebitis.—Peripheral venous thrombosis usually occurs after labor or abortion, but may appear at other times. Its advent is favored by any cause which tends to produce blood coagulation, as debility and weakness of circulation after a severe labor, hemorrhage, pelvic inflammation, pelvic tumors, especially if cancerous, sepsis, etc. Usually begins within three weeks after labor with general malaise, dull, dragging pain in the limb, chill, fever, 101° to 103° F., arrest of secretions, fetid lochia, rapid pulse, coated tongue, constipation, restlessness, etc. Soon œdematous swelling begins, the skin becoming white, tense, and shining. "Wooden" sensation with complete loss of function in limb. Affected veins become

red, tender and hard, rolling under the finger. Inguinal glands may be swollen and vulva edematous. Resolution usually begins in about ten days and may go on to complete recovery, or instead gangrene, abscess, or pyæmia may result. Recovery is often imperfect, the leg retaining the "wooden" feeling for years. Relapses are liable to occur from very slight causes.

Treatment.—In the acute stage, elevation of the limb, complete rest, and continued application of hot poultices with morphia to relieve pain; after the acute stage rest, elevation of limb, cotton wadding and flannel bandage, applications of tincture of iodine along affected nerve. Rubbing is dangerous as it may detach portions of clot and so cause thrombosis of some other part. Build up patient by good food, iron, stimulants, etc. Keep patient in bed until thrombus has disappeared.

HEART-CLOT.—Central venous thrombosis is favored also by any cause which depresses the circulation causing extreme feebleness and slowness of the blood-current, by sepsis and by embolism. It may occur on sitting or getting up suddenly.

Symptoms.—Sudden intense dyspnœa; lividity; violent gasping; short and hurried respiratory motions; skin cool; thready, rapid, or imperceptible pulse. May die at once or live some days; rarely recover. Similar symptoms may be produced by the entrance of air into the veins. Prophylaxis consists in keeping the

patient after severe hemorrhage in *absolute* repose with head low. The head must not be raised. Treat the condition by absolute rest and the hypodermic use of stimulants q. s. Warmth to surface. Liquid food and careful after-treatment.

Insanity, as it comes to the notice of the obstetrician, may begin at any time from the moment of conception to the end of lactation. It may appear as an exaggeration of previously-existing mental peculiarities, as the outcome of hereditary predisposition, epilepsy, hysteria, or other neuroses, from depressing mental conditions, or as the result of any cause producing cerebral anemia or congestion, and may take the form of melancholia or mania—usually the former.

In *pregnancy*, melancholia, with often a tendency to suicide, is the most usual form. When not due to pre-existing insanity or to hereditary predisposition, melancholia occurring in the first half of pregnancy offers a favorable prognosis; beginning in the latter half, the prognosis is more doubtful.

During and immediately after *childbirth* mania is much more frequent than melancholia, appearing after painful and exhausting labors, or puerperal complications. It may appear suddenly, but usually is preceded by restlessness, sleeplessness, indistinct speech, and refusal of food. The delirium is usually violent and noisy at first, and later may either disappear or run into pronounced melancholia. The *prognosis* depends on the severity and cause of the attack, and

is bad in those cases where there is a previous taint of insanity, or which run into chronic melancholia.

During *lactation*, melancholia is usually the result of debility, and most often begins six to eight weeks after delivery. Prognosis is usually good if properly and promptly treated.

Treatment.—Sleep, rest, quiet, good food, careful nursing, cheerful surroundings, cessation of lactation, and reconstructive medication, are all important.

Sleep, quiet, and rest are to be secured by bromides and chloral, by keeping unnecessary persons from the patient's room, by quiet, skilled nursing, by the personal influence of the physician over the patient, and by tact and firmness. The nurse should see that bladder and rectum are emptied at proper intervals, that the patient is kept covered and prevented from doing harm to herself or others, and that food is properly given. The food should be as nutritive as possible, milk being the best. If the patient refuses to eat, tact and firmness will often overcome her resistance, or she will accept it as a drink, especially in a dark room and from a porcelain vessel. The bowels must be kept regular. Lactation must be stopped at once, except perhaps in the mildest cases. Iron, mineral acids, etc., should be given. Change of scene is important. Any drain upon the patient's strength should be stopped. Where good nursing cannot be obtained at home, or in chronic melancholia, the patient's chances of recovery are much improved by sending her to an asylum.

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