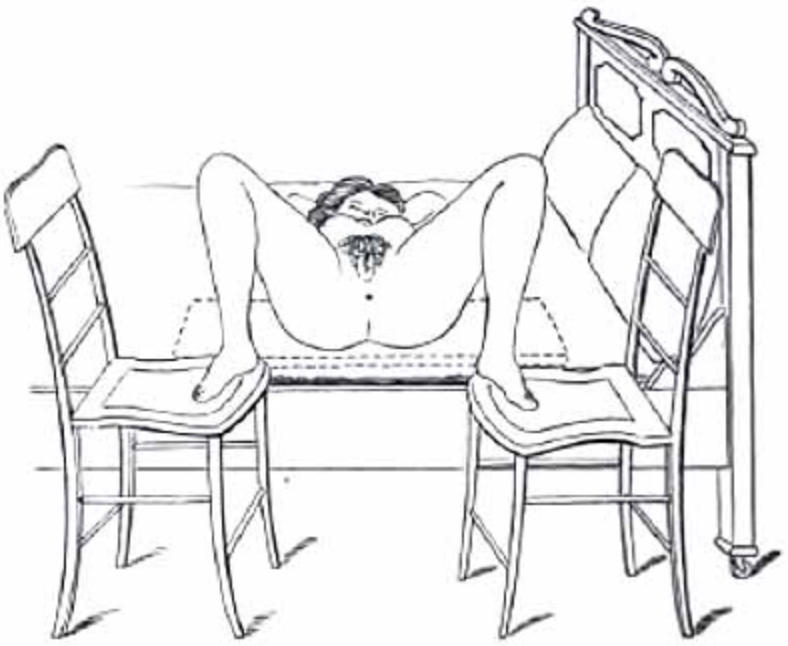

FIG. 762.—Position of the patient for an examination upon a bed. (Ashton.)

Gynecological Postures.—In examining the female pelvic organs a number of postures are available. These include the dorsal, the Sims, the knee-chest, the erect, and the squatting positions.

The dorsal position, which is the best for digital or bimanual examinations, is obtained by placing the patient, facing the light, flat on the back, with the hips near the edge of the table and with the feet supported upon the foot-rests (Fig. 762).

The Sims position is obtained by placing the patient upon her left side, with the left side of the face, the left shoulder, and left breast resting upon a flat pillow. The left arm lies behind the back, the thighs are well flexed upon the body, and the right knee is drawn

up nearer the body than the left (see Fig. 538). In this position an excellent view may be obtained of the vaginal fornices, the anterior vaginal wall, and the cervix, but it is not satisfactory for a digital

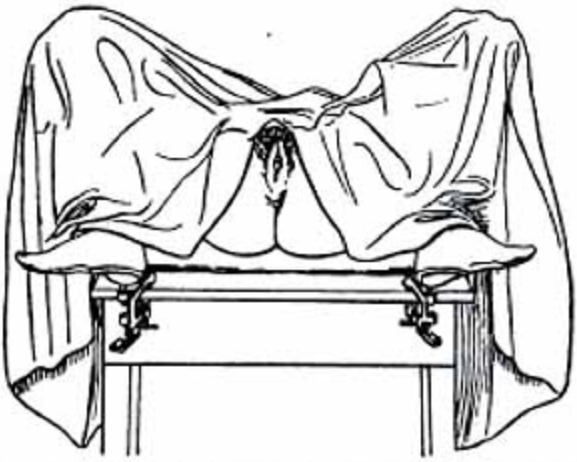

FIG. 763.—The patient in the dorsal position. (Ashton.)

FIG. 764.—Examination with the patient standing erect. (Ashton.)

examination, as the pelvic organs are more difficult to reach than with the patient in the dorsal posture.

The knee-chest position is obtained by having the patient kneel upon a table, with the thighs at right angles to the legs, the chest

resting upon a pillow placed upon the same level as the knees (see Fig. 540). In this posture the intestines gravitate toward the diaphragm, and the vagina becomes distended so that the numerous folds of mucous membrane are spread out smoothly.

The Erect Posture.—The patient, with her clothes elevated and a sheet fastened about her hips, stands with one foot on the floor and the other resting upon a stool 6 to 8 inches (15 to 20 cm.) high. The examiner kneels in front of the patient and, passing his hand beneath the sheet, makes a digital examination of the vaginal outlet and the uterus (Fig. 764). In this position a prolapse of the uterus or a relaxation of the vaginal outlet is more readily recognized than in the dorsal posture.

The squatting posture is sometimes useful in ascertaining the degree of a uterine prolapse and the relaxation of the vaginal walls. The patient takes the same position as when at stool and, by a slight straining effort, any tendency to prolapse is readily made visible to the examiner.

Asepsis.—In all gynecological examinations every precaution must be taken to avoid infecting a patient as well as to prevent infection of the examiner by the patient. All instruments that are used are boiled for five minutes in a 1 per cent. soda solution, and no instrument should be used on more than one patient without resterilization. The examiner's hands are sterilized by a thorough scrubbing with tincture of green soap and water, followed by immersion in an antiseptic solution. The examiner should also see that his finger-nails are cut short to avoid hurting the patient.

If the patient is suspected of having syphilis or gonorrhea, or in the presence of a septic discharge, the examiner should protect himself by wearing rubber gloves previously sterilized by boiling. In the majority of cases it is sufficient to wipe off the vulva with a swab soaked in a 1 to 2000 bichlorid solution, but where a profuse or foul discharge is present a vaginal douche should be given. When it is desired to obtain a specimen of a discharge for examination, antiseptic solutions or douches should be omitted until this has been done.

I. Examination of the Abdomen

INSPECTION

From the appearance of the skin, the shape of the abdomen, and the effect of respiration upon a tumor valuable information may be obtained.

Position of Patient.—The patient should lie with the body symmetrically placed upon a firm flat table in the horizontal position.

Technic.—With the patient's abdomen entirely exposed and the light falling obliquely upon the abdomen, the examiner inspects it first from the side and then from the foot of the table (see Fig. 491). The color of the skin of the abdomen, the presence or absence of striæ, eruptions, scars, edema, and dilated veins, the condition of the abdominal walls, whether rigid or lax, and the shape and symmetry of the abdomen should all be noted.

In enlargement of the abdomen due to obesity, the lower portion of the abdominal wall usually hangs down over the patient's thighs. In ascites the abdomen is more or less flattened, and the sides bulge outward. In the presence of pregnancy or an ovarian cyst the enlargement is smooth and regular, in the former case the abdomen being symmetrically enlarged, while an ovarian cyst, especially if small, may distend one side only. Fibroid tumors may present as irregular and nodular growths. If a tumor is discovered, the presence or absence of mobility with respiration and whether the abdominal walls move over the growth should be noted. Evidence of a weakened condition of the recti muscles or the presence of a hernia should also be sought by having the patient strain and cough.

PALPATION

Palpation of the abdomen is the most satisfactory of the methods of abdominal examination and should form a part of every routine gynecological examination. By it the presence of tumors, rigidity, fluctuation, or local tenderness that might escape notice by trusting simply to a vaginal examination may be recognized, and, in the presence of an enlargement, its situation, origin, shape, mobility, and consistency may be determined.

Position of Patient.—The patient lies in the dorsal position, with the shoulders slightly elevated and the thighs somewhat flexed to secure thorough relaxation.

Technic.—The examiner first thoroughly warms his hands. Then, taking his place upon one side of the patient, he systematically palpates all portions of the abdomen. In doing this the palpating hand—usually the right—is placed upon the abdomen, palm downward, and firm but gentle pressure is made—sharp pressure with the finger tips should be avoided as it incites the muscles to contract. Local or general rigidity of the abdominal wall, sensitive areas, and the presence of a tumor are thus ascertained.

To differentiate obesity from intraabdominal growths both hands are employed and make deep pressure from the sides toward the mid-line, at the same time lifting upward on the abdominal walls

FIG. 765.—Showing the method of estimating the thickness of the abdominal walls.

(Fig. 765). The situation, origin, size, or mobility of a tumor is determined by making deep pressure with both hands in all directions about the mass (Fig. 766). An enlarged uterus is mapped out in the same manner. In examining the lateral regions of the abdo-

FIG. 766.—Bimanual palpation of an abdominal tumor. (Ashton.)

men bimanual palpation is often of service, one hand being placed under the flank and making forward pressure while the other hand palpates the antero-lateral surface of the abdomen.

Fluid collections are recognized by a thrill or wave produced by placing one hand with the palm flat on one side of the abdomen and tapping the abdomen from the opposite side with the fingers of the other hand. To avoid confusing a wave produced by tapping a fat abdomen with that of fluid the examiner should have an assistant place the ulnar edge of his hand firmly on the summit of the abdomen while the tapping is performed (Fig. 767). In the case of fat the wave is then absent.

FIG. 767.—Method of differentiating between a wave produced when tapping a fat abdomen and one containing fluid. (Ashton.)

PERCUSSION

Abdominal percussion is valuable when employed as an adjunct to inspection and palpation in differentiating between tympany, ascites, cystic and solid tumors, and in determining the size and shape of a tumor, and its origin. To avoid errors, the large intestine should be emptied by an enema before the examination.

Position of Patient.—Percussion is performed, first, with the patient lying on the back and, then, turned upon the side.

Technic.—The examiner places the palmar surface of the middle finger of the left hand firmly upon the area to be percussed and, using the tip of the middle finger of the right hand, bent at a right angle, as a plexor, strikes quick, sharp blows (see Fig. 497). The normal resonance of the abdomen is tympanitic except in the regions of the liver and spleen where it is dull. Fecal masses, cystic and solid tumors, and fluid collections give dulness on percussion. When

distended intestines overlie a growth, however, the note will be tympanitic, and it will be necessary to employ deep and strong percussion to bring out the dulness. By carefully percussing around the

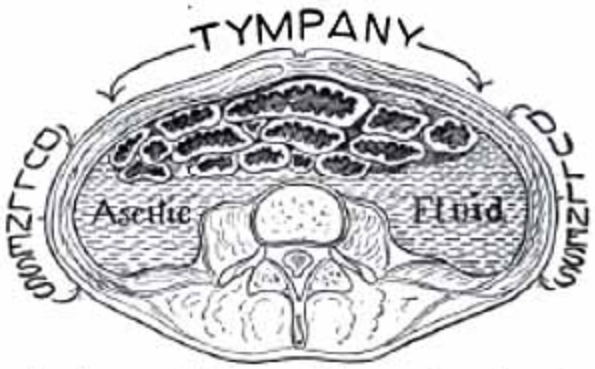

FIG. 768.—Showing the area of dulness and tympany in ascites when the patient is recumbent. (Ashton.)

margins of a tumor and noting where tympanitic resonance is absent, it is often possible to determine the origin of the growth.

In the presence of ascites with the patient in the dorsal position, dulness will be elicited in the flanks, while the center of the abdomen

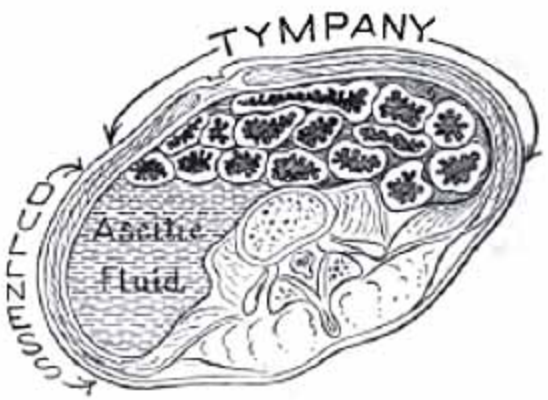

FIG. 769.—Showing the area of dulness and tympany in ascites when the patient lies on her side. (Ashton.)

will be tympanitic, as the intestines float to the highest point (Fig. 768). With a change in the patient's position the fluid gravitates to the lowest point and the location of the dulness and tympany is likewise changed (Fig. 769). On the other hand, the area of dulness due to tumors is not affected by changes in the patient's position.

AUSCULTATION

Auscultation is of limited use except in the differential diagnosis between pregnancy and other tumors. In the former case the fetal heart sounds and the funic souffle settle the diagnosis. Much importance cannot be attached to the uterine bruit, however, in the absence of other signs pointing to pregnancy, as it is also heard in large fibroid tumors. In some cases of peritonitis it may be possible to hear a friction note.

MENSURATION

Mensuration of the abdomen is useful in determining whether the abdomen is symmetrically enlarged or not, in noting any increase of ascites, and in recording the rapidity of enlargement in a tumor.

Position of Patient.—The measurements are taken with the patient in the horizontal recumbent position.

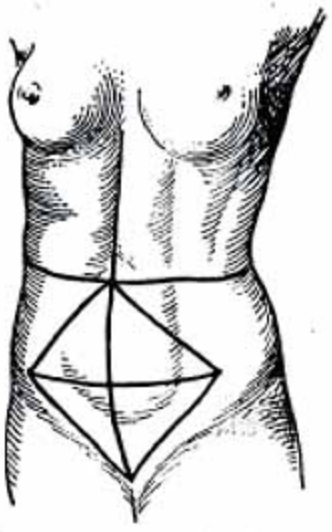

FIG. 770.—Showing the measurements taken in recording the growth of an abdominal tumor.

Technic.—An ordinary tape measure is employed and the following measurements are taken: (1) the circumference of the abdomen at the level of the umbilicus, (2) the distance from the ensiform cartilage to the pubes, (3) the distance from the umbilicus to each anterior superior spine, (4) the distance between the two anterior superior spines, and (5) the distance from the anterior superior spines to the pubes (Fig. 770). To have any value for purposes of comparison, these measurements should be taken from the same points each time and with the patient in exactly the same position.

II. Examination of the Pelvic Organs

INSPECTION

A careful inspection of the external genitals and the vaginal orifice should always be made as a routine before a digital examination, otherwise lesions involving the vulva and neighboring parts may escape notice. Inflammations, new growths, the presence of abnormal secretions, prolapse of the anterior or posterior vaginal walls, lacerations of the perineum, and many other pathological conditions are readily recognized by inspection.

FIG. 771.—Inspection of the vaginal outlet. (Bandler.)

Position of the Patient.—Inspection is performed with the patient in the dorsal posture with the feet toward the light.

Technic.—The examiner sits or stands facing the vulva and begins his inspection without disturbing the relation of the parts. He should first note the general appearance of the vulva, whether the labia are closed or in apposition, and whether the vulva is the seat of

inflammation, ulcerations, warts, swelling, edema, varicosites, eruptions, or excoriations, the latter a frequent accompaniment of a discharge. If a discharge is present, its color, quantity, and other characteristics should be noted.

The labia are next separated with the fingers of the left hand, and the entrance to the vagina is inspected (Fig. 771), noticing the color of the mucous membrane, the presence or absence of the hymen, the condition of the openings of the ducts of Bartholin and the orifice of the urethra, and the presence or absence of lacerations, cystocele, or rectocele. By instructing the patient to bear down or strain slightly, a prolapse of the anterior or posterior vaginal walls is made

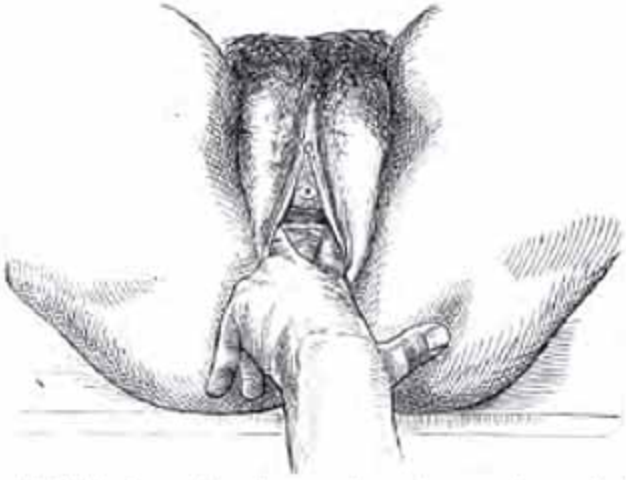

FIG. 772.—Method of exposing the anterior and posterior vaginal walls for inspection. (Ashton.)

more evident. The hood of the clitoris should also be retracted and an examination made for adhesions or concretions that may be the cause of nervous symptoms. By retracting the perineum with two fingers inserted in the vagina, as shown in Fig. 772, the lower portion of the anterior and posterior vaginal walls may be brought to view.

EXAMINATION OF DISCHARGES

If an abnormal discharge is present, specimens should be obtained at this time for later microscopical or bacteriological examination. The importance of such an examination cannot be too strongly emphasized. The technic for collecting and preparing the specimens has been previously detailed at length in Chapter X.

DIGITAL PALPATION

Palpation by means of the finger is employed to obtain more complete information as to abnormal conditions of the vulva or vaginal outlet discovered on inspection, and to determine the condition of the vagina, vaginal fornices, and the cervix. For a satisfactory examination of the other pelvic organs, bimanual palpation is necessary.

Asepsis.—All the aseptic precautions previously detailed (page 742) should be observed.

FIG. 773.—The diagnosis of a cystocele by the aid of a bladder sound. (Ashton.)

Position of Patient.—The dorsal position is ordinarily employed, but the erect posture will be found useful in estimating the degree of a uterine prolapse.

Preparations.—(See page 739.)

Technic.—The examiner first palpates between the thumb and forefinger of the right hand any abnormal conditions, such as swellings, new growths, etc., about the vulva and the vaginal outlet, and also the glands of Bartholin for signs of inflammation or thickening.

The labia are then separated between the thumb and index-finger of the right hand, and the index-finger of the left hand, well lubricated, is introduced into the vagina. The condition of the vagina is then investigated, noting the presence or absence of congenital malformations, its sensitiveness, its temperature, and whether the vaginal walls have their normal roughness or are smooth

and unduly relaxed. By turning the examining finger palmar surface up the anterior vaginal wall may be palpated and the presence

FIG. 774.—Method of estimating the thickness of the perineum. (Ashton.)

FIG. 775.—Digital palpation of the cervix. (Ashton.)

or absence of an urethrocele or a cystocele may be ascertained. By introducing a sound into the bladder and palpating its point with the finger in the vagina (Fig. 773) a cystocele, if present, may be more

readily recognized. The posterior vaginal wall is likewise examined by rotating the examining finger, palmar surface back, and, by placing the thumb of the same hand near the rectum the perineum may be grasped between the two fingers and its firmness and thickness estimated (Fig. 774). The vaginal fornices on all sides of the cervix are next palpated, noting their depth, any rigidity, induration, or tenderness.

If the uterus is in a normal position, it will be possible to feel its body through the anterior fornix, while, if retroverted, the latter will be felt in the posterior fornix. The condition of the uterus is more satisfactorily made out, however, by bimanual palpation.

Finally, the cervix is palpated (Fig. 775), noting especially its size, whether closed or open, whether hard or soft, its mobility, and its position, that is, whether pointing backward toward the sacrum, as in retroflexion of the uterus, or pointing forward toward the symphysis, as is found when the uterus is retroverted or anteflexed. The presence or absence of lacerations, erosions, cysts, etc., should also be determined.

BIMANUAL PALPATION

Bimanual palpation by means of the fingers of one hand in the vagina or rectum and the fingers of the other hand making counter-pressure above the symphysis is the most valuable method for investigating the condition of the pelvic organs. By it one may map out the size and shape of the uterus and determine its consistency, position, mobility, and the presence or absence of new growths. The tubes, ovaries, broad ligaments, etc., may likewise be palpated and their condition ascertained.

Vagino-abdominal palpation is the most satisfactory and the more generally employed method. It should be supplemented by recto-abdominal palpation, however, in any doubtful cases. The latter method is especially useful in exploring the posterior surface of the uterus and the appendages in cases of posterior displacement of the uterus, as these structures may then be more readily reached from the rectum than from the vagina. Recto-abdominal palpation is also indicated in children, in the unmarried, and in cases where the vagina is unduly sensitive or obstructed by tumors or an imperforate hymen.

To perform a successful bimanual examination it is necessary that the abdominal walls be thin, relaxed, and free from tenderness upon pressure, and that the vagina be sufficiently large to admit

the fingers of the examining hand. In the case of individuals with very muscular, fat, or rigid abdominal walls or a small vagina the examination is usually unsatisfactory without an anesthetic. In any case, the examination must be performed with the utmost gentleness. Rough manipulations accomplish nothing and are capable of causing great harm, especially in cases where the pelvis contains a tube filled with pus, a thin-walled cyst, an ectopic pregnancy, etc.

Asepsis.—For the necessary precautions against infection see page 742.

Position of Patient.—Bimanual palpation is most satisfactorily performed with the patient in the dorsal position.

Preparations.—(See page 739.)

Anesthesia.—General anesthesia is not often required in individuals with thin and relaxed abdominal walls, but in muscular, fat, or nervous individuals or where the parts are tender and sensitive an anesthetic may be necessary to secure relaxation. A general anesthetic should also be employed if any doubt remains as to the conditions found after an ordinary bimanual examination, and in all cases where it is necessary to make a vaginal examination upon virgins.

Technic.—1. *Vagino-abdominal.*—The examiner stands facing the patient a little to one side or the other depending upon which hand he palpates with. The labia are then separated between the thumb and forefinger of one hand and the index-finger of the other hand, or the index- and middle fingers if the parts are sufficiently relaxed to admit them, are well lubricated and are inserted into the vagina, while the fingers of the free hand are placed on the abdomen above the pubes. The external hand is used to steady or depress the organs while the internal hand does the palpating. As a rule the left hand is employed to palpate with, being the smaller of the two and possessing greater tactile sensibility, but the examiner should be equally proficient with either hand. The last two fingers of the internal hand should be folded back upon the palm, as shown in Fig. 776, so as to invaginate the pelvic floor and thereby permit the greatest possible penetration. The palmar surfaces of the fingers of the internal hand are brought in contact with the cervix and its condition and position are first determined. With the internal fingers in contact with the cervix and exerting upward pressure the external hand locates the fundus of the uterus and makes gentle pressure from above. The length, sensitiveness, consistency, and position of the

uterus are thus determined, and likewise the mobility by making a series of gentle pushes from above and below (Fig. 777).

By placing the internal fingers in front of the cervix and the fingers

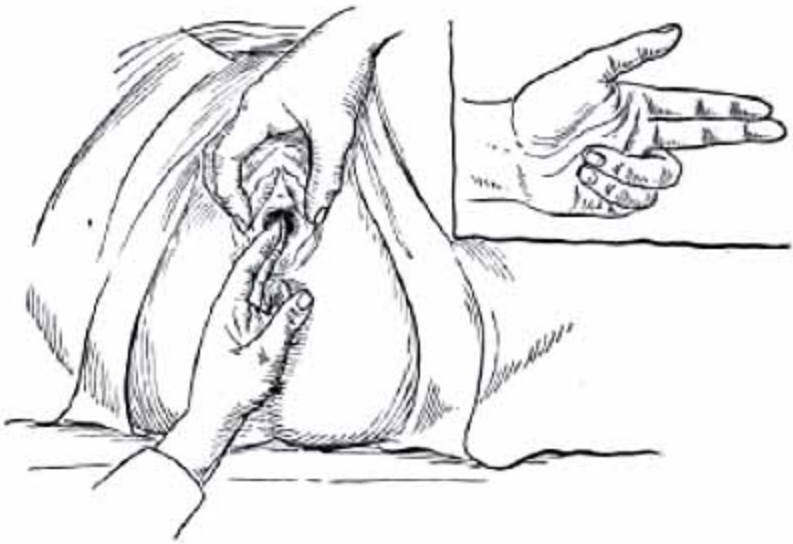

FIG. 776.—Method of inserting the examining fingers in bimanual palpation Small figure shows the method of holding the fingers.

FIG. 777.—Method of determining the length and mobility of the uterus. (Ashton.)

FIG. 778.—Method of estimating the thickness of the uterus. (Ashton.)

of the external hand behind the fundus the thickness of the uterus may be estimated (Fig. 778). If the fundus is pressed well forward by the external hand, the anterior and lateral surfaces may be palpated and any irregularity of the surfaces which might be caused by

fibroids or other growths is noted. By carrying the fingers of the internal hand posterior to the cervix and pressing the fundus backward the posterior surface is in like manner explored. When the

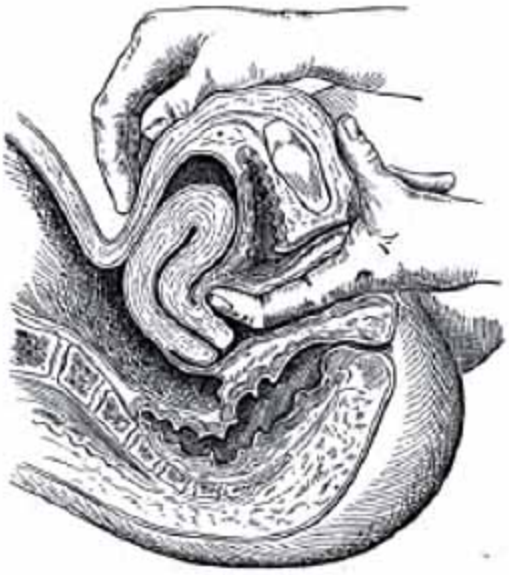

FIG. 779.—Diagnosis of an anteflexion of the uterus by bimanual palpation. (Ashton.)

FIG. 780.—Diagnosis of a posterior displacement of the uterus by bimanual palpation. (Ashton.)

FIG. 781.—Shows the method of palpating the body of the uterus in a posterior displacement. (Ashton.)

fundus is not found in its normal position, it should be sought for anteriorly near the symphysis, or posteriorly. To palpate for anterior displacements, the internal finger is carried up in front of the cervix

into the anterior fornix while the external hand exerts pressure downward behind the symphysis. If anteflexed, the fundus will be readily felt between the fingers of the external and internal hands (Fig. 779), while in posterior displacements the opposed fingers may be brought together as shown in Fig. 780. In such case the fundus should then be sought posteriorly by carrying the internal finger up into the posterior cul-de-sac while external pressure is made by the external hand from above (Fig. 781).

A posterior flexion will be readily differentiated from a version by the bend or angle on the posterior aspect of the uterus (Fig. 782).

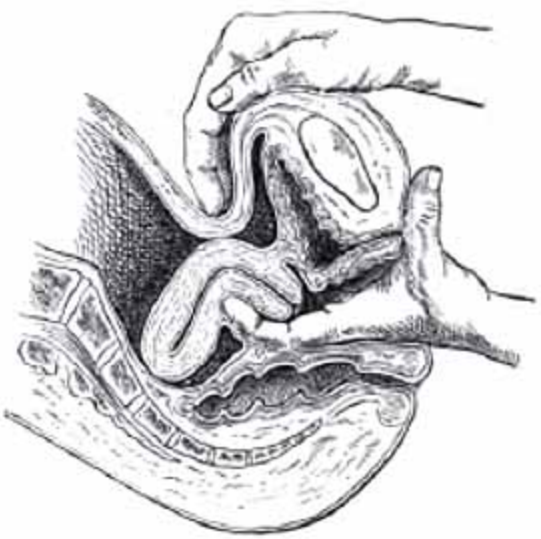

FIG. 782.—Diagnosis of a posterior flexion of the uterus by bimanual palpation. (Ashton.)

In the presence of a posterior displacement it should be determined whether the uterus is mobile or fixed through adhesions by passing the internal fingers high up posteriorly and by the aid of the external hand attempting to lift the uterus up.

After thoroughly examining the uterus the condition of the broad and uterosacral ligaments should be ascertained. By carrying the fingers up beside the cervix into the lateral fornices and making counter-pressure from above the condition of the broad ligaments may be determined, and any pain on pressure, thickening, or induration noted. Palpation of the uterosacral ligaments through the posterior fornix may be performed in like manner.

The tubes and ovaries should also be examined with reference to their size, shape, consistency, sensitiveness, position, and mobility. It is of advantage to use the right hand in palpating the right side

and the left hand for the left side. The examining fingers are inserted well up in the lateral fornix beside the cervix in an upward and backward direction, while the external hand makes deep pressure downward through the abdominal wall on the corresponding side. By altering the position of the fingers of the two hands from time to time the ovary and tube are finally grasped between the opposed fingers (Fig. 783). Except where the abdominal walls are extremely thin and the vagina is relaxed, the normal tube cannot be felt, but,

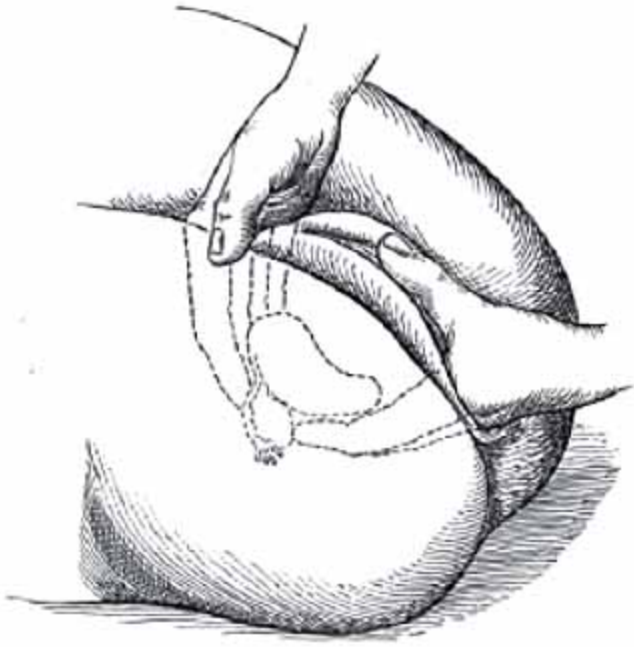

FIG. 783.—Examination of the uterine appendages by bimanual palpation. (Ashton.)

when enlarged, it may be readily recognized at a club-shaped mass gradually narrowing down as it approaches the uterus. The normal ovaries, however, are generally palpable as small, oval masses, somewhat tender upon pressure, on each side of the uterus. When, as the result of chronic inflammation, extensive adhesive formation has taken place the tubes and ovaries are often matted together into irregular masses, and it may not be possible to map them out separately. Having examined one side of the pelvis, the same procedure is repeated upon the other side.

2. *Recto-abdominal.*—The examiner stands facing the patient and inserts the well-lubricated index-finger of the left hand high into the rectum. At the same time the external hand placed on the abdomen

above the symphysis makes counter-pressure, while the uterus and appendages are carefully palpated (Fig. 784). Care must be taken,

FIG. 784.—Recto-abdominal palpation of the uterus. (Ashton.)

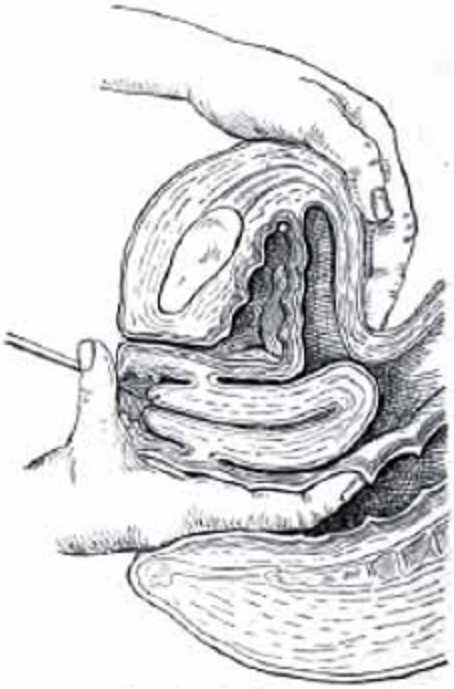

FIG. 785.—Recto-abdominal palpation of the uterus with the latter drawn toward the vaginal outlet by means of a tenaculum. (Ashton.)

however, not to exert too much force with the fingers in the rectum for fear of lacerating or otherwise injuring the bowel.

By drawing the uterus well down by means of a pair of bullet forceps caught in the cervix, and then performing recto-abdominal palpation, a much more complete examination is possible (Fig. 785). This method, however, should never be attempted when the uterus is fixed by adhesions or the appendages are inflamed. As a rule, general anesthesia is necessary. Care should always be taken to replace the uterus in its normal position at the completion of such an examination

EXAMINATION BY SPECULA

By means of suitable specula the mucous membrane of the entire vagina and cervix may be directly inspected. The use of specula furnishes little information outside of the color and condition of the

FIG. 786.—Goodell's vaginal speculum. (Ashton.)

mucous membrane and the origin of a discharge, which is not as readily obtainable by digital palpation. For gynecological treatment and operative procedures, however, specula are indispensable.

FIG. 787.—Trivalve vaginal speculum.

Instruments.—Numerous specula have been devised, such as the bivalve (Fig. 786), the trivalve (Fig. 787), the cylindrical, the Sims (Fig. 788), Simon's, the self-retaining weighted speculum, etc., etc.

For diagnostic purposes the bivalve and the Sims specula are probably most commonly employed. To prevent the anterior vaginal wall from obscuring the view when using the Sims speculum a vaginal depressor is also required (Fig. 789). A sponge holder (Fig.

FIG. 788.—Sims' vaginal speculum. (Ashton.)

790) and cotton wipes should be provided for removing secretions.

Asepsis.—The speculum should be sterilized by boiling for five minutes in a 1 per cent. soda solution before use.

Position of Patient.—When the bivalve or trivalve speculum is

FIG. 789.—Vaginal depressor. (Ashton.)

employed the patient should be in the dorsal position. If using the perineal retractors, such as the Sims, the left lateral, or the knee-chest position may be employed.

Preparations of Patient.—(See page 739.)

FIG. 790.—Sponge holder and swab.

Technic.—1. *With the Bivalve Speculum.*—The examiner stands or sits facing the vulva. Then, with the labia well separated between the index- and middle fingers of the left hand, the speculum, warmed and well lubricated, is inserted into the vagina with its

blades parallel to the vulva opening (Fig. 791). The speculum is introduced about 2 inches (5 cm.) and is then rotated so that the

FIG. 791.—Method of inserting the bivalve speculum. (Ashton.)

FIG. 792.—Method of exposing the lateral walls of the vagina by means of the bivalve speculum. (Ashton.)

blades lie parallel with the anterior and posterior vaginal walls. By widely separating the blades (Fig. 792) a view of the cervix and the lateral walls of the vagina is obtained. For inspection of the ante-

rior and posterior vaginal walls the blades of the speculum are turned so that they lie parallel with the outlet of the vulva and they are then opened (Fig. 793). The condition of the entire vaginal mucous

FIG. 793.—Method of exposing the anterior and posterior vaginal walls by means of a bivalve speculum. (Ashton.)

FIG. 794.—Shows the method of inserting Sims' speculum.

membrane may be thus ascertained, and inflammatory conditions, a fistulous opening, new growths, etc., will be readily recognized if present. If a discharge is present, its origin should be determined.

FIG. 795.—Showing the Sims speculum in place. (Ashton.)

FIG. 796.—Method of inspecting the cervix by the aid of the Sims speculum and a vaginal depressor. (Ashton.)

The cervix is then inspected, noting its size and shape and whether it is lacerated or is the seat of inflammation, erosions, cysts, or new growths, and whether a discharge issues from the external os. If secretions obstruct the view, they should be carefully wiped away by means of cotton wipes held by a sponge holder. In some cases, where the vagina is very long and narrow, a clear view of the cervix can only be obtained by drawing it down into the vagina by means of a tenaculum or bullet forceps.

2. *With the Sims Speculum.*—The shaft of the speculum is grasped in the operator's right hand while with the left hand the upper buttock is raised so that the vulva is well separated. The blade of the speculum, which has been previously warmed and lubricated, is then inserted into the vagina parallel with the cleft of the vulva (Fig. 794). The blade is then rotated so that it lies parallel with the anterior and posterior vaginal walls and is further introduced until its distal end lies back of the cervix. By making traction backward and outward the perineum is retracted so that an excellent view of the anterior vaginal wall and cervix is obtained (Fig. 795). Should the anterior vaginal wall obstruct the view, it may be drawn out of the way by means of the vaginal retractor as shown in Fig. 796.

SOUNDING THE UTERUS

The uterine sound, which was formerly employed to a great extent in gynecological diagnosis, is now seldom used, as little information is gained by its use, outside of determining the length, size, and consistency of the uterine cavity, that is not as readily obtainable by other and less dangerous means. The unskilled use of the uterine sound has often led to the introduction of septic material into the uterus carried from the vagina or cervix, as well as to the infliction of serious injury upon the uterine mucous membrane and even perforation of that organ. To avoid these risks the position of the uterus should be ascertained before an attempt is made to introduce the sound, and, during the attempt, only gentle manipulations of the instrument should be made; it should never be used as a means of righting a displaced uterus. The sound should never be introduced by touch alone, but always with the cervix clearly exposed by means of a speculum, and in every case the date of the last menstruation should be ascertained beforehand so as not to interrupt a possible pregnancy. Its use is contraindicated if the uterus is infected or is the seat of a malignant disease, or if the uterine appendages are involved in a suppurative disease.

Instruments.—The operator will require a vaginal speculum, a pair of bullet forceps, cotton wipes, a sponge holder, and a uterine sound (Fig. 797).

The sound is made of flexible metal, about 12 inches (30 cm.) long and from 1/12 to 1/8 inch (2 to 3 mm.) thick, with a bulbous tip. The shaft is marked off in inches, and 2 1/2 inches (6 cm.) from the distal end is a small protuberance to indicate the normal depth of the uterus.

Asepsis.—The introduction of a sound or any instrument into the uterus should be regarded as a surgical operation and should be carried

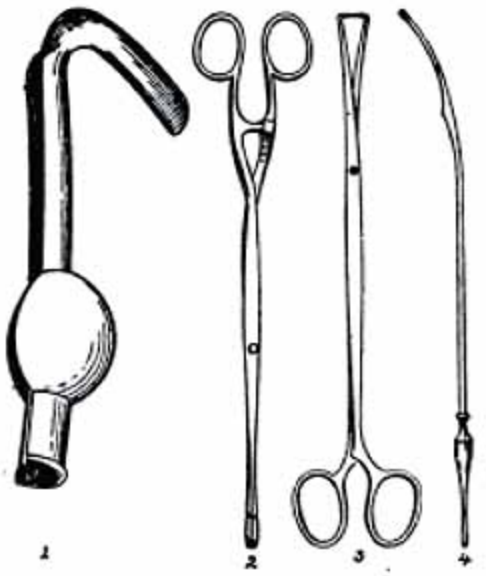

FIG. 797.—Instruments for sounding the uterus. 1, Garrigues' weighted speculum; 2, dressing forceps; 3, tenaculum; 4, uterine sound.

out with every aseptic detail. All the instruments should be boiled for five minutes in a 1 per cent. soda solution. The external genitals should be thoroughly cleansed with soap and water followed by a 1 to 2000 bichlorid solution and the vagina should be douched with some antiseptic. The operator's hands are cleansed as thoroughly as for any operation.

Position of Patient.—The patient should be in the lithotomy position.

Technic.—The operator sits facing the vulva and, after separating the labia, introduces the speculum. The anterior lip of the cervix is then seized by means of bullet forceps and, after being pulled down into view, is thoroughly wiped off with a cotton swab soaked in a

1 to 2000 bichlorid solution. The sound with its distal 3 inches (7.5 cm.) bent in a slight forward curve is grasped lightly between the thumb and forefinger of the right hand and is introduced into the external os, being careful not to touch any portion of the vagina. By gently depressing its handle the sound should readily glide up the canal to the fundus. If the point is arrested by catching in a fold of mucous membrane or at the internal os, gentle manipulation will usually result in its passage—*force should never be employed.*

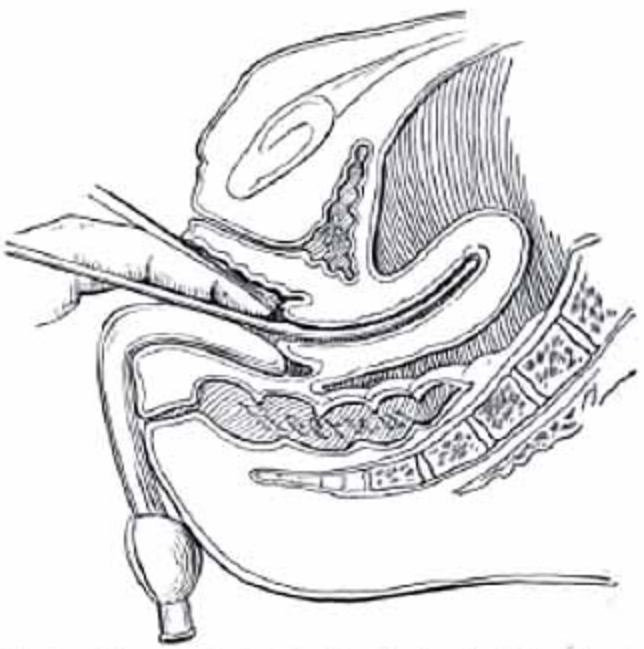

FIG. 798.—Showing the method of estimating the length of the uterus by means of the uterine sound.

Sometimes, when the cervix is bent forward, the sound may be more readily passed if it is started with the concavity of its curve turned backward and, as soon as it becomes arrested, rotating it forward. When the tip of the instrument reaches the fundus, the operator's right index-finger should be slid along the shaft of the instrument until it comes in contact with the cervix for the purpose of indicating the depth of the canal when the instrument is removed (Fig. 798).

DIGITAL PALPATION OF THE UTERINE CAVITY

Digital exploration of the interior of the uterus is occasionally required in the diagnosis of intrauterine growths or retained prod-

ucts of conception which are not revealed by other methods of examination. With the finger in the cavity of the uterus it is possible to determine whether the uterus is empty or not, the length and direction of the canal, and the thickness, consistency, and other characteristics of the endometrium.

Digital exploration necessitates a thorough preliminary dilatation of the cervix, except in puerperal cases, and should, therefore, be considered in the same light as a surgical operation. It should not be attempted until the possibility of pregnancy has been excluded by determining the date of the last menstruation and by a careful examination.

FIG. 799.—Digital exploration of the uterine cavity. (Ashton.)

Instruments.—Instruments for dilating the cervix are required. These include a vaginal speculum, a pair of dilators, sponge holders, and two bullet forceps. (See Fig. 851.)

Asepsis.—Strict aseptic precautions should be observed. The external genitals are washed with soap and water, followed by a 1 to 2000 bichlorid of mercury solution. The vagina is scrubbed with soap and water by means of a sponge on a holder and is then douched with an antiseptic solution. The instruments are boiled for five minutes in a 1 per cent. soda solution and the operator's hands are prepared with the same care as for any operation.

Position of Patient.—The lithotomy position is employed.

Anesthesia.—General anesthesia is required except in postpartum cases.

Technic.—The cervix is first dilated sufficiently to admit the operator's finger (see page 803). The index-finger of the right hand or, where possible, as in postpartum cases, the index- and middle fingers are then passed into the uterus, while, with the left hand on the abdomen, the operator presses down upon the fundus uteri, so as to bring the uterus within reach of the internal fingers (Fig. 799). The interior of the uterus is then systematically explored by the internal fingers.

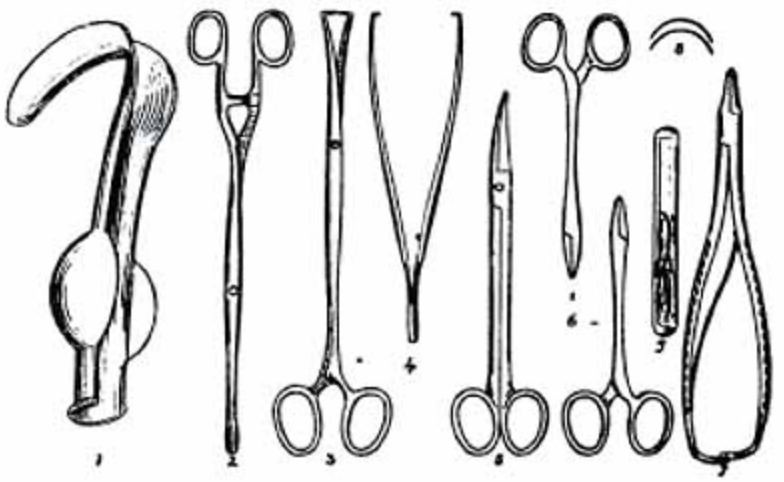

FIG. 800.—Instruments for an exploratory vaginal section. 1, Garrigues' weighted speculum; 2, sponge holder; 3, tenaculum; 4, thumb forceps; 5, sharp-pointed scissors; 6, artery clamps; 7, needle holder; 8, needles; 9, No. 2 catgut.

THE EXAMINATION OF SECTIONS AND SCRAPINGS FROM THE UTERUS

To determine the nature of a suspicious growth a portion should be excised for examination. The method of doing this has already been described (page 254). Where the interior of the uterus is the seat of suspected disease, scrapings from the endometrium should be collected by a thorough curettage for examination (see page 807).

EXPLORATORY INCISION

Direct palpation of the pelvic structures is sometimes required in the diagnosis of obscure pelvic conditions. It may be accomplished

by means of an abdominal incision or through a small opening made in the cul-de-sac of Douglas. The latter method is preferable, as it is not a dangerous operation, and the recovery of the patient is more rapid than when an abdominal section is performed. The operator should be prepared, however, to perform any operative procedures, such as draining a pus sac, removing suppurating tubes, or opening the abdomen, if the findings indicate it.

Instruments.—There will be required a weighted vaginal speculum, sponge holders, bullet forceps, toothed thumb forceps, sharp-

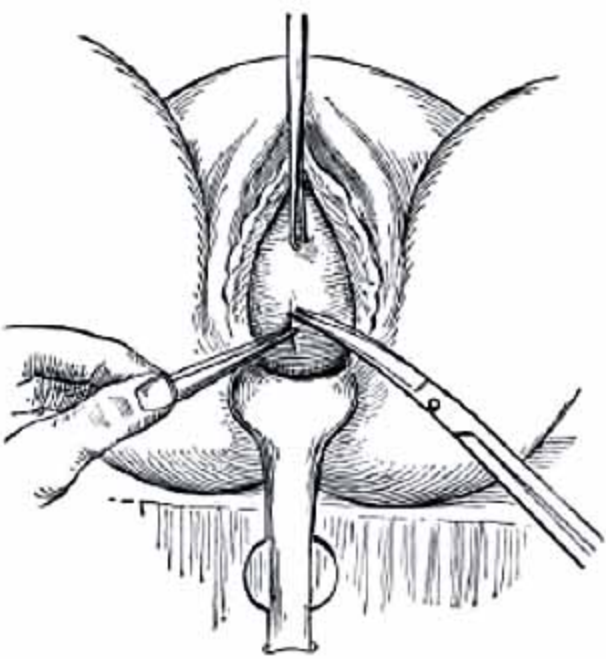

FIG. 801.—First step in performing a posterior vaginal section, opening into the posterior cul-de-sac.

pointed curved scissors, artery clamps, curved cutting-edged needles, a needle holder, and No. 2 catgut (Fig. 800).

Asepsis.—The instruments are boiled for five minutes in a 1 per cent. soda solution. The external genitals are scrubbed with soap and water followed by a 1 to 2000 bichlorid solution, and the vagina is cleansed by first washing with soap and water and then by means of an antiseptic douche. The operator's hands are sterilized in the usual way.

Position of Patient.—The patient should be in the lithotomy position.

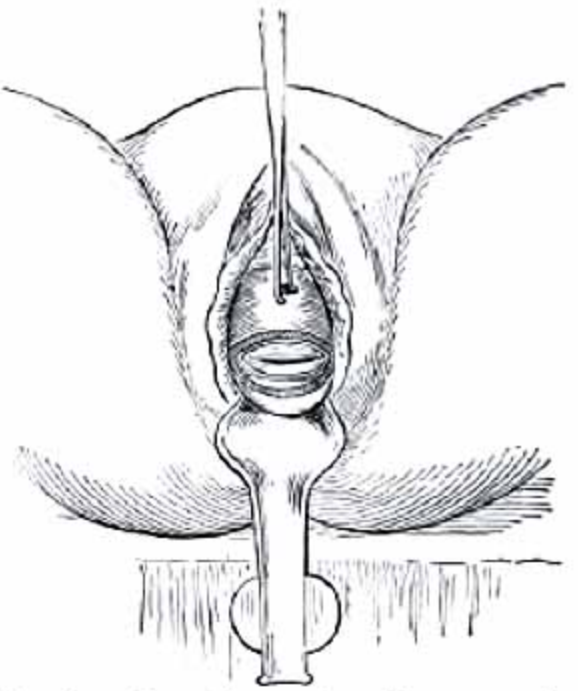

FIG. 802.—Shows the posterior cul-de-sac opened.

FIG. 803.—Shows the method of palpating a tumor through an incision into the posterior cul-de-sac.

Preparation of Patient.—The patient is prepared for general anesthesia (see page 2) and the bowels and bladder should be empty at the time of operation.

Anesthesia.—General anesthesia is employed.

Technic.—The vaginal speculum is placed in the vagina and the posterior lip of the cervix is seized in bullet forceps which are given to an assistant to hold. The operator then picks up the posterior vaginal wall by means of thumb forceps at a point in the mid-line, just back of where it is reflected from the cervix, and with a pair of scissors makes a transverse incision about 1 inch (2.5 cm.) long through the vaginal wall (Fig. 801). The vaginal wall posterior to the incision is then separated by blunt dissection from the underlying peritoneum for a short space (Fig. 802). The peritoneum thus exposed is then picked up and a transverse opening, sufficiently large to admit the fingers, is made in it. Through this opening the pelvic structures may be thoroughly palpated by the finger (Fig. 803), and if desired the appendages may be brought down to view and inspected.

At the completion of the operation the opening in the peritoneum and that in the vaginal wall are closed by a few catgut sutures.