Chapter 2
GYNECOLOGIC EXAMINATION AND DIAGNOSIS

The physician who wishes to do accurate work in the diagnosis and treatment of diseases of women must be in possession of certain facts, as follows:

Knowledge of the anatomy and physiology of the organs involved.

Reliable history and examination of the patient.

Knowledge of the organic and functional disturbances to which the parts are liable and of the differential diagnosis and treatment of them, along with coordinating knowledge which will enable understanding of the situation as a whole as well as of the local disturbance.

Diagnosis is based upon the symptoms given by the patient and the signs found on examination. It should, as far as possible, be both an anatomic and a pathologic diagnosis—that is, it should state the structure involved and the character of the pathologic process, whether organic or functional. The fact that a diagnosis must eventuate from the history and examination requires that the diagnostic significance of symptoms and signs be kept in mind and utilized as the examination proceeds.

Keep a Record

A short record, giving in a systematic way the principal facts of a case, may be made quickly and more than repays for the time consumed. And the principal advantage is not the permanent record it gives for reference after some years, though that is important, especially to the teacher, but the fact that it systematizes and steadies and improves the physician's work day by day. Such an account of the case in black and white, referred to frequently as the patient returns for treatment, is a constant stimulus to accurate diagnosis and a constant help in the treatment, particularly if the case is a long-continued one. The importance of legible, accurate, and complete notes on the history, findings, and treatment for future statistical reporting can only be fully appreciated by one who has done this type of work. Again, in court a physician is supposed to have some record of his work. You may at any time be called upon to testify as to the exact findings in the case of some patient whom you saw several years previously.

PSYCHOSOMATIC ASPECTS OF GYNECOLOGY

Because a knowledge of the influence of the mental and emotional background on gynecologic complaints is of such importance in obtaining an adequate history, a discussion of its relation to gynecologic diagnosis is given at this point.

In recent years medical literature has been flooded with articles on a so-called new concept—psychosomatic medicine. The *New Gould Medical Dictionary* defines psychosomatic as used of "affections with an emotional background having both mental and bodily components. Especially relating to

a system of medicine which emphasizes the interdependence of mental processes and physical or somatic functions.''

I feel it is unfortunate that this concept has not only been called a system of medicine, but has been treated as a separate entity, for it is based on principles as old as medicine itself. In another way, however, this has served to reemphasize something which our age of specialization had forgotten, namely, that we should treat the patient as well as the disease. One cannot separate a disease from its host any more than a person can be considered apart from his heredity, environment, and emotions. As Miller states, ''There is nothing mysterious or difficult about psychiatric practice, but it does take an interest in persons and their troubles as well as technical and scientific knowledge about their anatomy and physiology.'' Our elder practitioners had never heard the word psychosomatic, but by insight and intuition they knew that backgrounds of emotional conflicts and tensions could affect the manifestation of disease and that these stresses themselves acting over years could, by altering function, be the deciding factor in organic disease.

The importance to the gynecologist of any subject dealing with emotions is obvious, for the pelvic organs are the seat of the most compelling of human emotions—love. This powerful emotion with its many ramifications begins, according to some, in intrauterine life and continues in various forms through infancy, adolescence, marriage, motherhood, and the menopause. Its interplay with other emotions is most frequently evidenced in the symptoms of pain, menstrual or otherwise, premenstrual tension, dyspareunia, and frigidity.

Lock and Donnelly attempted to determine the incidence of psychosomatic affections in a private referred gynecologic practice. The diagnosis was made on two points: ''first the absence of any demonstrable organic pathology or lesion sufficient to cause the patient's complaints, and second the presence of a definite emotional problem grave enough to justify such a diagnosis.'' They concluded that 33 per cent of all the patients seen were suffering from psychosomatic disease. This seems high, but certainly most gynecologists find inadequate marital adjustment in approximately a third of their patients.

In the following paragraph Miller succinctly states in an understandable way the importance of finding out, in any adequate history, something about the patient's life: ''One must always remember that there is an organ above the neck called a brain and that it has been active since early childhood. In fact, in childhood it probably received its most vivid and important impressions, which will determine the attitude of its owner for life. Is there any reason why it is less important to learn that Mary Smith acquired a lasting hate for men because she was treated cruelly by a drunken father than to learn that she had measles, mumps and chickenpox before the age of ten? For gynecologists it may be a much better clue to the understanding of her frigidity in marriage than any other item in the examination. It is well to remember that sexual function is more closely related to the powerful emotion of love than to any other and as far as I know, love still seems to have a universal appeal. When it is interfered with and the woman is unhappy, depressed, worried and frustrated, it is more than likely that the physiologic counterpart will reflect most of the disturbance.'' In the history there are a number of symptoms and actions which enable one to suspect a large psychosomatic element. Hart emphasized the ''resistance symptoms'' such as pro-
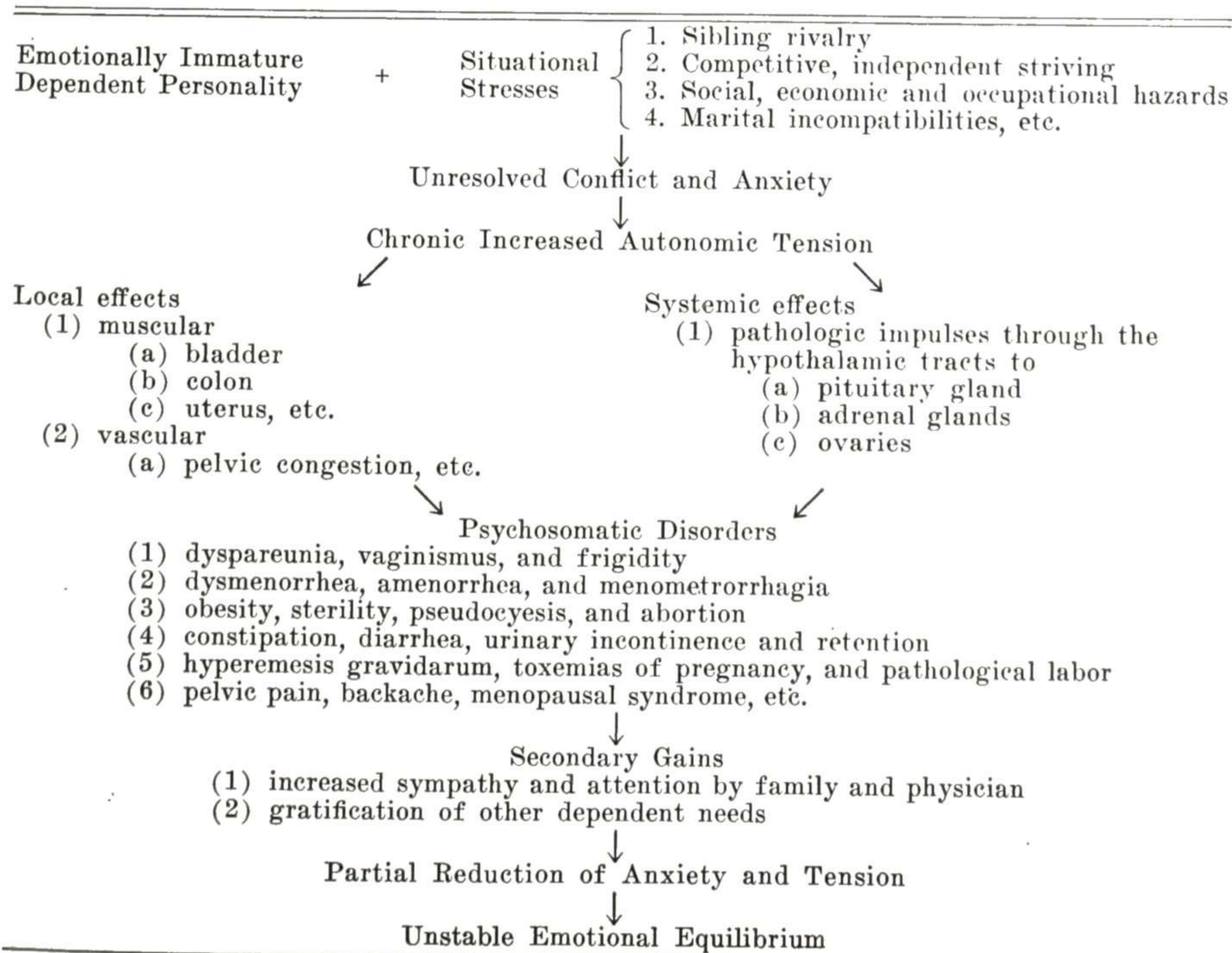
crastination in seeking medical advice, self-treatment, vagueness and evasion, broken appointments, medical shoppers, misleading explanations, fear of a personality study, numerous ineffective operations and many others. Pain is one of the most difficult symptoms to evaluate, for the only clue we have as to whether the patient feels pain is her conception of it. Pain does not necessarily mean organic pathology, for it can also be caused by the physiologic disturbances resulting from emotional maladjustments occurring throughout life.

Alvarez states: "The harder it is to get a clear history out of a person, the less likely he or she is to have organic disease." These patients bring in many irrelevant facts which they have all written down. Instead of answering questions put to them, they interrupt the physician in order to give their interpretation of the symptoms and their diagnosis. Events in the history are apt to be related in an emotional manner.

That the neglect of the psychomatic elements in the history can lead to unfortunate conclusions is evidenced in records of 150 psychiatric patients reported by Bennett. In this group, 121 patients had had a total of 205 surgical operations and had been given 368 various medical treatments before the psychogenic origin of the trouble was recognized. Let us, as Miller suggests, "be a physician (a healer in the broad sense) first and surgeon, gynecologist, internist or psychiatrist last" and always do a complete workup before concluding that the case is either surgical or psychosomatic.

The accompanying table is from an article by Mandy et al. on the emotional aspect of obstetrical and gynecological problems.

PSYCHODYNAMICS OF FUNCTIONAL PELVIC DISORDERS

Emotionally Immature Dependent Personality + Situational Stresses
{
1. Sibling rivalry
2. Competitive, independent striving
3. Social, economic and occupational hazards
4. Marital incompatibilities, etc.
}

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Unresolved Conflict and Anxiety

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Chronic Increased Autonomic Tension

↙   ↘

Local effects
(1) muscular
   (a) bladder
   (b) colon
   (c) uterus, etc.
(2) vascular
   (a) pelvic congestion, etc.

Systemic effects
(1) pathologic impulses through the hypothalamic tracts to
   (a) pituitary gland
   (b) adrenal glands
   (c) ovaries

↘   ↙

Psychosomatic Disorders
(1) dyspareunia, vaginismus, and frigidity
(2) dysmenorrhea, amenorrhea, and menometrorrhagia
(3) obesity, sterility, pseudocyesis, and abortion
(4) constipation, diarrhea, urinary incontinence and retention
(5) hyperemesis gravidarum, toxemias of pregnancy, and pathological labor
(6) pelvic pain, backache, menopausal syndrome, etc.

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Secondary Gains
(1) increased sympathy and attention by family and physician
(2) gratification of other dependent needs

↓

Partial Reduction of Anxiety and Tension

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Unstable Emotional Equilibrium

Two nervous ailments encountered frequently in a gynecological practice are anxiety neurosis and hysteria. The following suggestions for a differential diagnosis were prepared for me by Dr. Eli Robins of the Neuropsychiatric Department of Washington University Medical School:

(1) Patients with anxiety neurosis may have menstrual or sexual symptoms, but *not* in a greater incidence than a group of patients without psychiatric disease. Patients with hysteria have an excessive amount of these symptoms. (2) The women with hysteria give a history of all these symptoms; it is not clear how often they are exaggerating normal physiologic alterations in the body and how often there may be some slight abnormality. (3) Patients with hysteria get excessive surgery probably because of complaints of severe abdominal pain, vomiting, back pain, and menstrual symptoms. Therefore, if hysteria is present, it must be considered as a possible explanation of such symptoms. If anxiety neurosis is present, it is *not* a possible explanation of such symptoms since they do not occur in anxiety neurosis. (4) Surgery does not cure hysteria or even the symptoms for which it was mistakenly done. (5) One-quarter (25%) of the patients with hysteria in our series had had some sort of operation leading to sterility before age 35. (6) The great excess of surgery in hysteria was chiefly contributed to by gynecologic operations, although other major operations were also performed excessively. (7) The differential diagnosis of these two illnesses is therefore important to the gynecologist and obstetrician. (8) The differential diagnosis may be made by obtaining a *past medical history* instead of concentrating just on the chief complaint or associated gynecologic symptoms.

The accompanying table will give in brief form the chief points in the differential diagnosis of hysteria and anxiety neurosis.

DIFFERENTIAL DIAGNOSIS OF ANXIETY NEUROSIS AND HYSTERIA

	ANXIETY NEUROSIS	HYSTERIA
Age of Onset	Occasionally after 35 (typically, however, in the third decade)	Before 35
Sex Incidence	Women/men 2:1	Almost exclusively in women
Chief Complaint	Direct, succinct, relevant	Multiple, irrelevant, vague, dramatic
Symptoms	Palpitation, difficulty in breathing, nervousness, dizzy spells, fatigue, chest pain, headache, paresthesias, fear of death, unhappiness, fainting spells, nervous chills, occasional anorexia	All the symptoms of anxiety neurosis *plus* blindness, aphonia, nausea, vomiting, abdominal pain, constipation, diarrhea, urinary retention, menstrual hemorrhage, menstrual irregularity, menstrual pain, sexual frigidity, dyspareunia, back pain, joint pains, paralysis, trance states, vomiting throughout pregnancy
Method of Giving History	Straightforward, precise, not exaggerated	Exaggerated, dramatic, not precise, overtalkative
Social and Personal Difficulties	Moderate (infrequently severe)	Marked, including marital difficulties, difficulties with children, family, friends, and school and work difficulties
Hospitalizations and Operations	No increased incidence of hospitalizations or operations compared with the normal population	Greatly increased incidence of hospitalizations (5 × as many) and operations (3 × as many) as in normal population. These hospitalizations are in general hospitals, not in psychiatric hospitals
Drug Intake	Rarely habituated or addicted	One-third may be addicted or habituated

Hysteria is a disease requiring the expert services of a neuropsychiatrist. In an exhaustive study of anxiety neurosis, Cohen and White conclude: "As judged by published therapeutic results, patients with this disorder do as well with simple reassurance and the passage of time as do apparently similar cases managed by prolonged psychotherapy, psychoanalysis, electric convulsion procedures, ergotamine tartrate, and adrenal denervation." In a recent article Cohen et al. emphasize the excessive number of surgical procedures used in cases of hysteria.

HISTORY

A few preliminary questions as to the principal complaint will put the patient at ease and indicate the general type of disturbance. The systematic record is then begun, and care should be taken to cover the important items under the following headings.

History Record

Social Status—Name, address, age, marital status, occupation, referring doctor or friend.

Family History—Especially tuberculosis, diabetes, cancer, or familial diseases.

Previous Health—Childhood diseases and social history; any previous serious illness or accident; operations; x-ray or radium therapy; nervous disorders or emotional shocks as enumerated above; unusual gain or loss of weight; urinary trouble; gastrointestinal trouble; venereal diseases or pelvic inflammation.

Marital History—Pregnancies (with termination of each in order), sterility, dyspareunia, type of conception control, etc. Is patient happy and well adjusted to her living conditions or are there marital conflicts?

Menstrual History—Age at onset, regularity, duration, amount, clots, pain or associated symptoms. Dates of last two menses.

Present Illness—Time of onset, duration, apparent cause. Detailed description of the course of trouble, including principal symptoms with character, onset, and duration of each and complications. Previous treatment and results. Disability—is patient confined to bed? What is usual type work and has disability interfered with work?

Summary—Review of chief symptoms demanding relief.

It is well to put down the facts not strictly medical when beginning the written record, for if postponed some of them are liable to be overlooked altogether. Record accurately the patient's name, address, age, whether married or single; if married, how long; the occupation. If she has been married more than once, or if a widow, or if living apart from her husband, she will probably mention the fact and also any correlated facts bearing on the present disturbance. For business reasons and for future follow-up, it is advisable to note other items of information—for example, the husband's occupation and business address, also the referring doctor or friend.

After completing the history and before beginning the examination, fix in mind the chief symptoms for which the patient seeks relief. Keep these in mind while making the examination and endeavor to find the lesion or condition that causes each of them. These symptoms serve to indicate the directions for special investigation. The diagnosis should be made, to a considerable extent, as the examination progresses. Before finishing the examination, you should have formed an opinion as to whether or not you have found the cause or causes of the symptoms which brought the patient to you.

Is a Pelvic Examination Required?

After obtaining the information the patient can give concerning her illness, the next step is to make the physical examination, provided there are symptoms indicating that such examination is needed.

In the case of an adolescent, vaginal examination is rarely indicated until after medication has been tried and failed to give relief. Occasionally, however, a young girl will present such symptoms that local examination at once is advisable to exclude tumor or other serious lesion. In such case, abdominal examination, inspection of external genitals to exclude inflammation or imperforate hymen, and rectoabdominal palpation will usually give sufficient information to exclude serious pelvic disease.

If conditions still remain doubtful and a small hymen precludes digital palpation, examination under anesthesia may be required. In a case with bleeding, curettage may be needed, at once or after trial of medication, and the vaginal examination may be postponed till then, anesthesia sparing the girl an ordeal and giving an opportunity for more accurate information to be obtained.

On the other hand, in the case of an adult, an examination should be made at once.

If the patient is menstruating, the examination may be postponed, unless there is urgency. A nonmenstrual bloody discharge is not a contraindication to examination but rather an additional indication for it.

If the patient is extremely anxious to avoid the examination, treatment without it may be tried for a while in an *exceptional* case, even though immediate examination seems decidedly preferable. But the physician should be cautious of assuming responsibility for the treatment of alleged conditions which he has not been allowed to investigate.

After the physician has finished his history, the nurse prepares the patient for examination. Enough of the clothing is removed to allow adequate examination of the breast, abdomen, and pelvis. The bladder is emptied so as to secure a specimen of urine for routine examination and also to facilitate the bimanual examination. If possible, it is better for the nurse to remain in the room during the examination to assist the doctor and also to help put the patient at ease.*

PHYSICAL EXAMINATION

Physical examination consists of the general and the local examination. The **general examination** should be pursued far enough to give a reliable idea of the general physical condition, to show any serious disturbance, and to indicate whether the patient's disability is probably due to pelvic disease or to some extrapelvic trouble.

In the **local examination** an investigation is made of the genital tract and adjacent structures. The steps in the local examination and the order of their employment which the authors find most convenient are given in the following outline. It is in this order also that the various methods are taken up for detailed consideration. Since carcinoma of the breast and carcinoma of the uterus together comprise by far the largest percentage of malignancies in the female, a breast examination should *always* be done.

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*A full discussion of these details of nursing can be found in *Gynecologic Nursing*, by Crossen and Campbell, The C. V. Mosby Co.

When the patient is sick in bed at home, the order of examination is more frequently abdominal, vaginal, vaginoabdominal, and rectoabdominal. Inspection of the external genitals and the speculum examination are sometimes not required in such a case but, of course, should be employed if they will furnish needed information.

Regular Steps in the Local Examination

Breast Examination.
Abdominal Examination.
Inspection of External Genitals.
Vaginal Examination (Digital).
Vaginoabdominal Examination (Bimanual).
Speculum Examination and Taking Specimens of Discharge.
Rectoabdominal and Rectovaginoabdominal Palpation.
Localization of Backache.

In the case you are considering, the regular examination and history may furnish all the information needed for diagnosis and treatment, so that after making the examination you are in a position to proceed at once with the therapeutic directions. On the other hand, there may still be questions to be answered to enable satisfactory diagnosis and effective treatment.

Most of the serious mistakes in diagnosis are not due to ignorance but to oversight of the possibilities in the case. Hence it is well to present the possibilities in a suggestive outline which can be taken in at a glance. This outline will serve as a memorandum of the various examination measures which may be helpful in special gynecologic and associated conditions.

In fever of undetermined origin or other obscure conditions, the various infectious diseases must be considered, including gonorrhea, tuberculosis, syphilis, brucellosis, chancroid, granuloma inguinale, lymphogranuloma, as well as infections with streptococci or staphylococci or anaerobic bacteria.

Various rarer diseases may produce puzzling pelvic lesions, such as actinomycosis and echinococcus disease. Even inert particles may work into the tissues and give rise to obscure lesions (inclusion granulomas), such as the granulomas from inclusion of lycopodium powder grains on gloves in abdominal operation or on rectal suppositories used for rectal distress.

Special Examinations

Vaginal Smears and Surface Biopsy.
Colposcopic Magnification of Cervical Lesions.
Lugol's Test (Schiller) of Cervical Epithelium.
Cervical Biopsy.
Endometrial Biopsy and Measuring of Uterine Cavity.
Cul-de-sac Puncture.
Pregnancy Tests.
Endocrine Examinations.
Tubal Patency Tests with Gas (Rubin).
X-Ray Examinations.
  With opaque solution to outline tubal and uterine cavities.
  For fetal bone shadows, calcified tumors, or foreign bodies.

Other indications for x-ray investigation are arthritis, metastases in bone, intestinal disturbances, genitourinary lesions, certain endocrine disturbances, and suspected tuberculosis.

Pelvic Examination under Anesthesia.

Intra-abdominal Inspection with Culdoscope or Peritoneoscope.

Extragenital Examination (which may be needed for differential diagnosis or a checkup in preparation for operation or complete blood studies, electrocardiogram, catheterized urine study, cystoscopy, orthopedic consult, neurologic or psychiatric consult, allergy testing and any other which seem to be indicated.

Urinary Tract Investigation.

Premarital Examination and Counsel.

BREAST EXAMINATION

The breasts should be inspected in a good light with the patient in the sitting position. Notice any abnormalities in contour or relative position or direction of the nipple. Have the patient raise her hands over her head to see if it causes any asymmetry or retraction or dimpling of the skin. While the patient is in the sitting position palpate especially around the areolar area, as it can be felt better in this position than it can with the patient reclining. Feel for axillary and supraclavicular lymph nodes.

For further palpation it is best to have the patient lying on her back. Haagensen* recommends placing a pillow under the shoulder on the side to be examined as this balances the breast on the chest wall. Light palpation is carried out, using the finger tips over the entire breast, then with the flat palm of the hand the breast is palpated against the chest wall.

ABDOMINAL EXAMINATION

Have the patient lie near the edge of the bed or table, in a comfortable position, with the head slightly raised on a pillow and the knees drawn up sufficiently to relax the abdominal muscles.

The abdomen is subjected to:

Inspection—Contour, Color, Eruption, Striae, Scars, Protrusion on Coughing, Hernial Ring, Diastasis of Recti.

Palpation—Tension, Tenderness, Mass, Fluctuation, Fluid Wave, Fat Wave, Fetal Movement, Uterine Contraction, Friction Rub.

Percussion—Area of Dullness.

Auscultation—Fetal Heart Sounds, Vascular Murmur.

Mensuration—For accurate comparison, in suspected enlargement of abdomen.

INSPECTION OF ABDOMEN

Contour

Also Movement, Color, Eruption, Striae, Scars

The principal thing to determine by inspection is contour. Determine also the other items mentioned—movement of wall, color, eruption, striae, scars—

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*For more details on breast examination see the article by C. D. Haagensen: J. A. M. A. 138: 195, 1948.

but usually they are of secondary importance. As to contour, there may exist one of several conditions, as follows:

The smooth, moderately full contour of the normal abdomen.

The flat, sunken abdomen of wasting disease, with empty intestines.
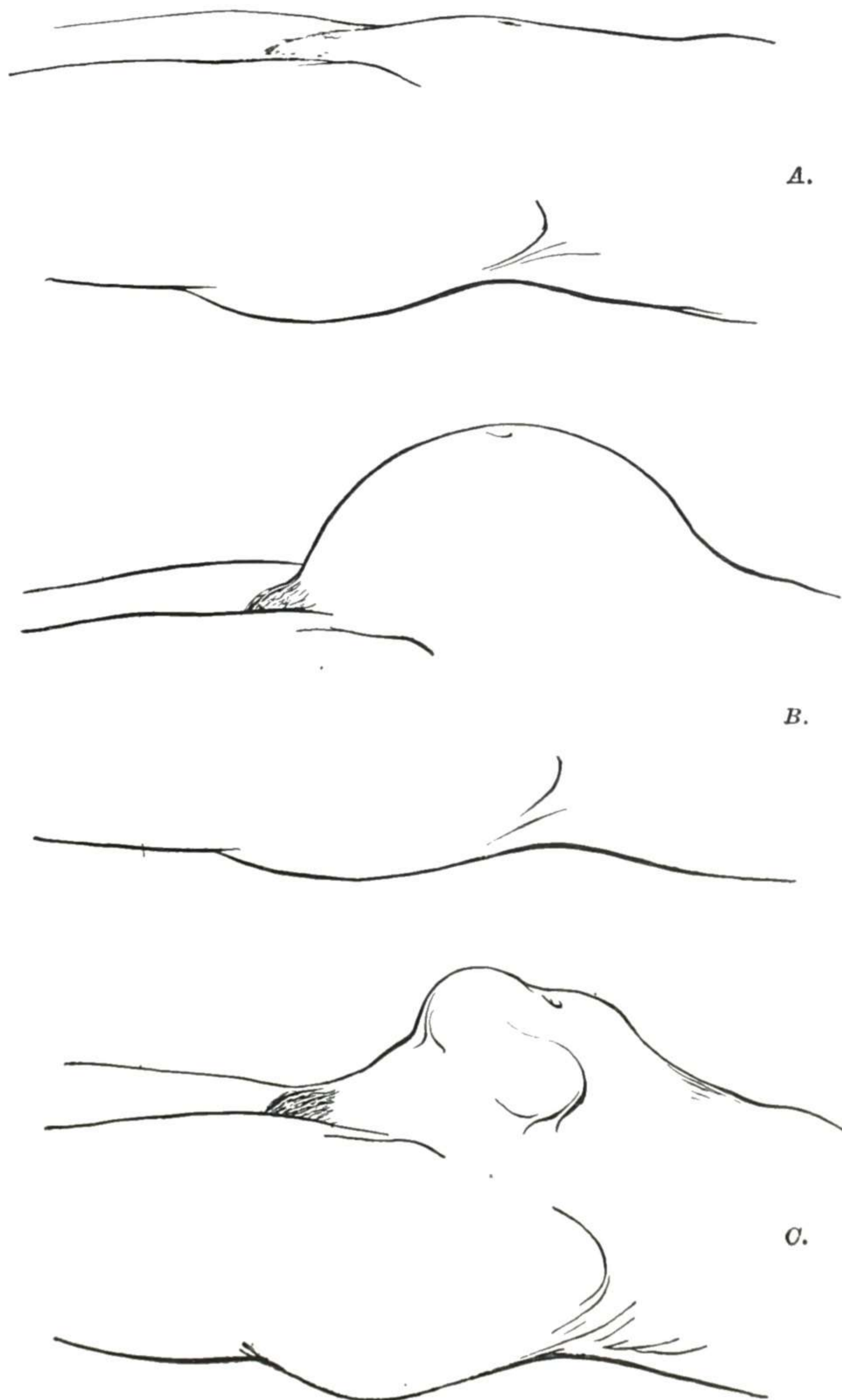
A swollen, prominent abdomen.

Fig. 113.—*A*, Contour of normal abdomen; *B*, contour of abdomen when cystic tumor is present, even rise and fall; *C*, contour when irregular solid tumor is present.

PROMINENCE OF THE ABDOMEN

Fig. 113 shows normal contour of the abdomen. In the enlarged abdomen the contour or simple outline may give some idea of the cause of the enlargement. The contours of cystic tumor and solid tumor are also shown and contrasted.

Decided prominence of the abdomen is due to many different affections—so many that it is difficult to remember them in an ordinary list. They are

easily remembered, however, when grouped according to location. Thus conveniently arranged, they form five groups, as follows:

A. Some Affection of the Abdominal Wall.
B. Something in Intestines.
C. Something in Peritoneal Cavity.
D. Some Enlarged Organ.
E. Tumor from Pelvis or Abdomen.

A. Abdominal Prominence From Some Affection of Wall

Obesity.—There is evidence of fat deposit in other parts of the body. The abdominal wall may be picked up as a thick roll, and the fingers made almost to meet beneath (Figs. 114 and 115), showing that most of the prominence is due to the thickness of the wall. There is no distinct localized mass, like a tumor in the wall.
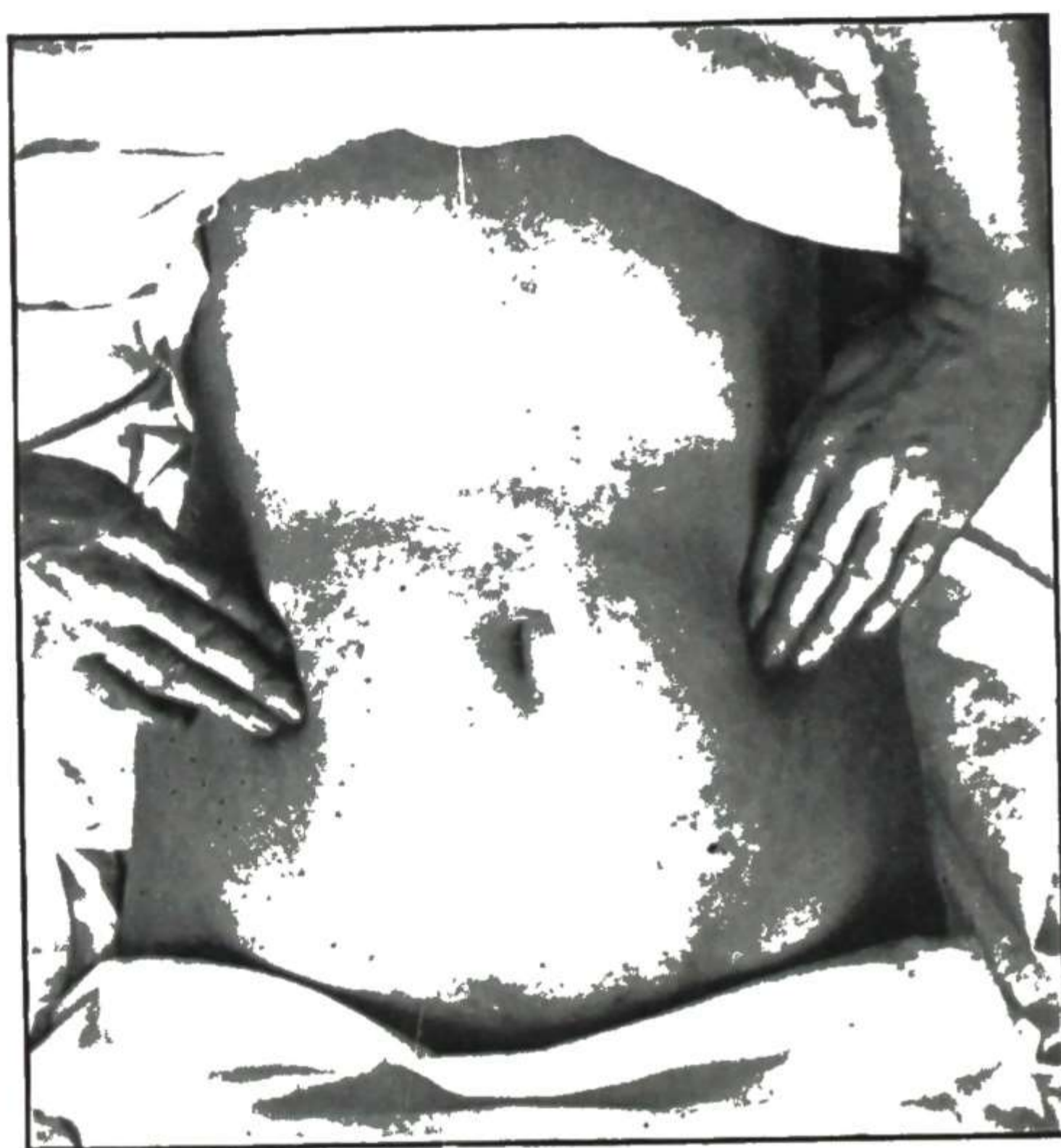
Fig. 114.   Fig. 115.

Fig. 114.—Testing the thickness of the abdominal wall. First step.
Fig. 115.—Testing the thickness of the abdominal wall. Second step. The fingers carried beneath the wall.

Percussion gives resonance all over the abdomen. Sometimes a distinct "fat wave" may be obtained, but it may be distinguished from a "fluid wave" by the expedient shown in Fig. 133, and also by heavy percussion. In some cases, when the patient stands, a distinct roll of fat drops below the general abdominal contour. Prominence from obesity has been mistaken for ovarian tumor and also for pregnancy.

Tumor of Wall.—There is a distinct mass, which is superficial and moves with the wall and is apparently inseparably connected with it. The mass may be picked up and the fingers approximated beneath it. There is no apparent connection with any intra-abdominal organ. There is dullness on light percussion, but resonance on deep percussion.

Inflammatory Area in Wall.—Same as tumor with evidences of inflammation added—pain, tenderness, fever, and, in some cases, redness and fluctuation.

Ventral Hernia.—There is a distinct localized protrusion, which is most pronounced when standing or sitting and diminishes when the patient lies down. Coughing makes the mass prominent and gives a distinct impulse to it. The mass is resonant on percussion, when containing intestine, and is partially or wholly reducible. When the mass is reduced, the margin of the opening may be felt. When strangulated and so inflamed as to prevent satisfactory palpation, a ventral hernia may give much trouble in diagnosis, particularly if it contains only omentum.

Relaxation of Wall.—There is general protrusion of the wall when sitting or standing, which largely disappears when patient lies down unless tympanites is pronounced. On palpation the walls are lax and no abnormal mass is felt. The abdomen is everywhere resonant on percussion.

Fig. 116.—Median grooving of the abdominal wall where there is separation of the recti muscles. The woman is represented as lying on her back. (From Webster: Diseases of Women, W. B. Saunders Co.)

Separation of Recti Muscles.—The recti muscles are ordinarily held firmly together by the junction of the sheath of one side with that of the other side, forming a strong fibrous septum in the median line. In some cases of abdominal distention from pregnancy or a tumor, the tissue between the recti muscles is greatly stretched laterally and remains so. This gives a wide, weak place between the recti muscles in which the tissues are lax and thin (Fig. 116). When the patient raises her head and shoulders from the pillow, or otherwise makes strong intra-abdominal pressure, there is bulging of this weak portion of the wall between the recti. In such a case, the hand may be sunk deeply into the abdomen between the separated recti muscles.

B. Abdominal Prominence From Something in Intestines

Gas (Tympanites).—Gas may cause marked prominence when associated with relaxation of the abdominal wall. There is no distinct mass felt on palpation. Percussion shows hyperresonance over the entire abdomen. There are usually symptoms indicating gastric or intestinal indigestion. Tympanites is frequently associated with enteroptosis. Fig. 117 shows tympanites which the patient mistook for pregnancy.

Fecal Impaction.—Fecal impaction may cause localized prominence in any part of the abdomen, but it is usually situated along the course of the colon. The diagnosis depends largely on the exclusion of other causes of enlargement, the history of constipation, and the effect of treatment directed toward clearing out the intestinal tract. Have the patient take a purgative until free bowel movements are secured, then a large enema, and then return for another examination; if still in doubt, a gastrointestinal x-ray series is indicated.

Fig. 117.—Tympanites, mistaken for pregnancy by the patient. The small figure in the upper corner shows the internal condition as determined by the bimanual examination, the uterus being of normal size. (From Edgar: Practice of Obstetrics, The Blakiston Co.)

C. Abdominal Prominence From Something in the Peritoneal Cavity

General Ascites.—General ascites may be slight or marked. In ascites, i.e., free fluid in the peritoneal cavity, the abdomen is inclined to spread out at the sides and flatten at the top. There is usually a distinct fluid wave, obtained as explained in Figs. 132 and 133. When the patient is turned on the side or when she sits or stands, the area of dullness changes, because the fluid seeks the lowest part of the peritoneal cavity (Figs. 134 to 139). Another diagnostic point is that in some cases where there is free fluid in the peritoneal cavity, when the patient stands there may be decided protrusion of the umbilicus, which protrusion disappears when the patient is in the recumbent posture.

Encysted Fluid (Pus or Serum or Blood).—A distinctly limited collection of fluid, walled off or encysted, may be present in peritoneal tuberculosis and also in abscess from salpingitis or appendicitis. There may be considerable solid exudate associated with the swelling, and also other evidences of inflammation, either septic or tuberculous. The diagnosis between the two forms of inflammation may usually be readily made from the history and the accompanying symptoms. Extrauterine pregnancy, like the inflammatory processes just mentioned, may present the evidences of encysted fluid. For the points in differential diagnosis, between extrauterine pregnancy and ordinary pelvic inflammation, see Chapter 10.

D. Abdominal Prominence From Some Enlarged Organ

Uterus Pregnant.—There is dullness over the mass and resonance at the sides. There is no change of outline of dullness on change of position of patient. There are also the various signs of pregnancy, including the fetal heart sounds if the pregnancy is far enough advanced.

Bladder Distended With Urine.—The retention of urine to such an extent that the distended bladder produces a distinct prominence of the abdomen happens occasionally in labor, in pregnancy with retrodisplacement, in pelvic tumors compressing the urethra, and in certain nervous affections. There is dullness over the mass with resonance at the sides. In one of our cases, examination showed a large cystic mass, presumably an ovarian cyst with a solid portion deep in the pelvis. In trying to determine the degree of mobility of this deep portion it was pressed on in various directions, and suddenly urine spurted out of the urethra. The cystic tumor was distended bladder, holding 2,500 c.c. of urine. Fig. 118 is a photograph of the abdomen with the bladder full and Fig. 119 with it empty.

Spleen Enlarged from chronic malaria, leukemia, or other cause.

Liver Enlarged from malignant disease, hypertrophic cirrhosis, or other cause.

Gall Bladder Enlarged on account of occlusion of duct and distention with mucous secretion and inflammatory exudate. It sometimes becomes so much distended as to form a large cystic mass in the right side of the abdomen.

E. Abdominal Prominence From a Tumor

A Tumor Projecting Up From the Pelvis.—Such a tumor has its point of attachment in the pelvis, the free margin of the growth extending upward into the abdominal cavity. The growth may be either cystic or solid. There is dullness over the mass and resonance at the sides. There is no decided change of outline of dullness with change of position of patient, except where there is complicating ascites. There are found also the usual symptoms caused by the particular variety of pelvic tumor present.

A Tumor Connected With Some Abdominal Structure.—Such a tumor has its point of attachment in the abdomen, with the free margin of the growth extending toward, and sometimes into, the pelvic cavity. There is dullness over that portion of the mass lying against the abdominal wall and resonance elsewhere, unless there be associated ascites. There are symptoms also pointing to the organ affected and to the nature of the growth.

B. Abdominal Prominence From Something in Intestines

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PALPATION OF ABDOMEN

Tension, Tenderness, Mass

Also Fluctuation, Fluid Wave, Fat Wave, Fetal Movement,
Uterine Contraction, Friction Rub

TENSION AND TENDERNESS

As to **tension**, we determine whether the wall is soft and easily depressed, or is firm and resisting from muscular tension. The latter condition may be due to nervousness or fright, the patient fearing that the examination will cause pain, or it may be due to genuine **tenderness** from inflammation or irritation beneath the wall, as in peritonitis or intraperitoneal hemorrhage.

A.   B.
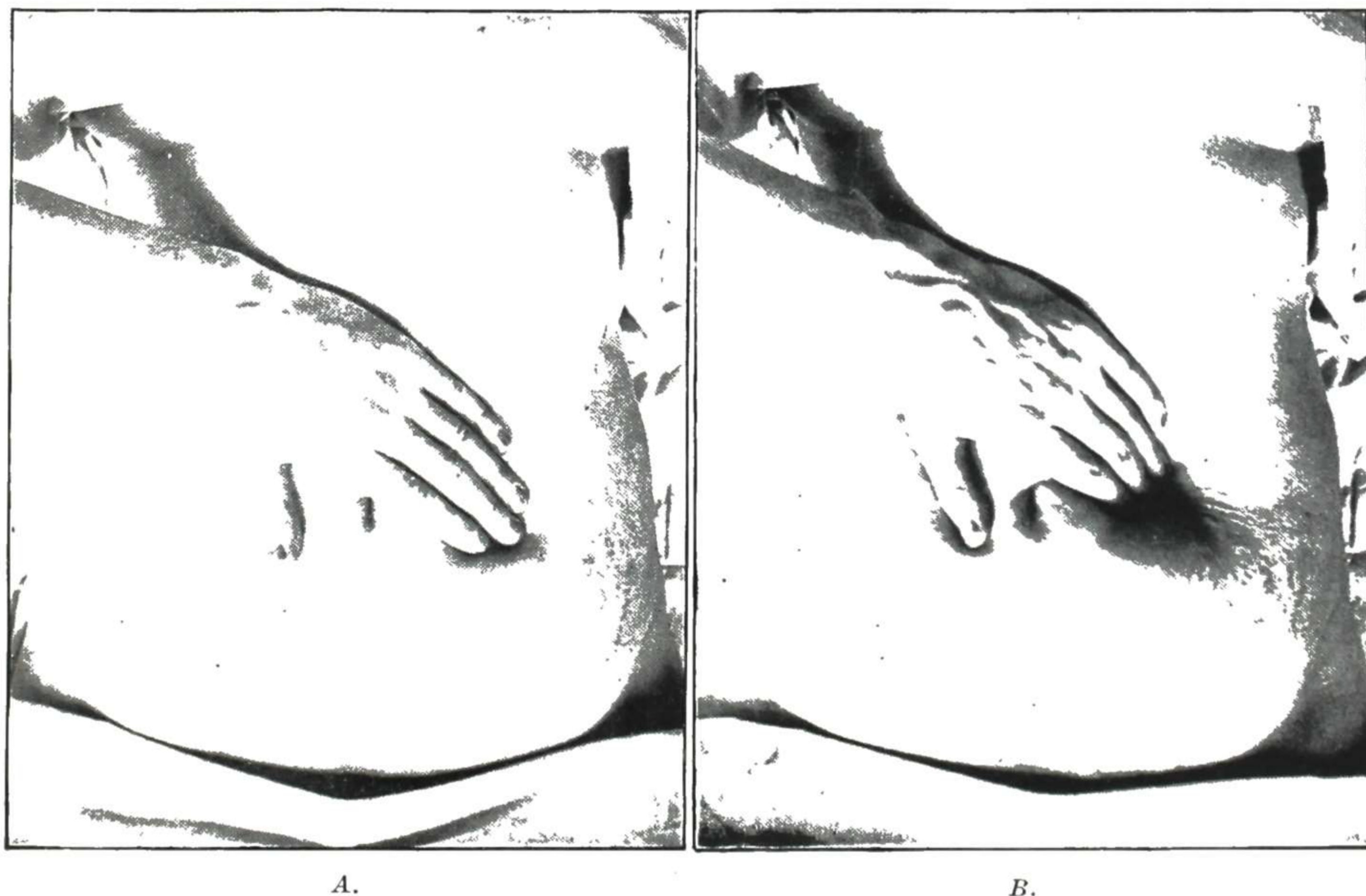
Fig. 120.—*A*, Palpation of the abdomen. First step. Hand flat on abdominal surface. *B*, Palpation. Depressing the wall with the fingers of one hand, in various situations.

The best way to begin palpation is to place the palmar surface of the **whole hand flat** on the abdominal wall (Fig. 120, *A*). Hold it there perfectly quiet for a moment, that the patient may see that you are not going to cause pain. Then, as the muscular tension relaxes, depress the wall carefully with the fingers (Fig. 120, *B*) in various directions and situations as the hand is moved about over the surface. Begin the movement of the hand gradually, at the same time directing the patient's attention away by a question or two. When the patient's attention is fixed on the palpating hands, there is likely to be troublesome tension of the wall. As the examination proceeds, **deep** palpation is made in various parts of the abdomen in order to exclude disease in the various regions. Palpation with **both hands** assists much in determining the character and consistency of the tissues between them and under them, particularly when the abdomen is rather full. If a resisting area is found,
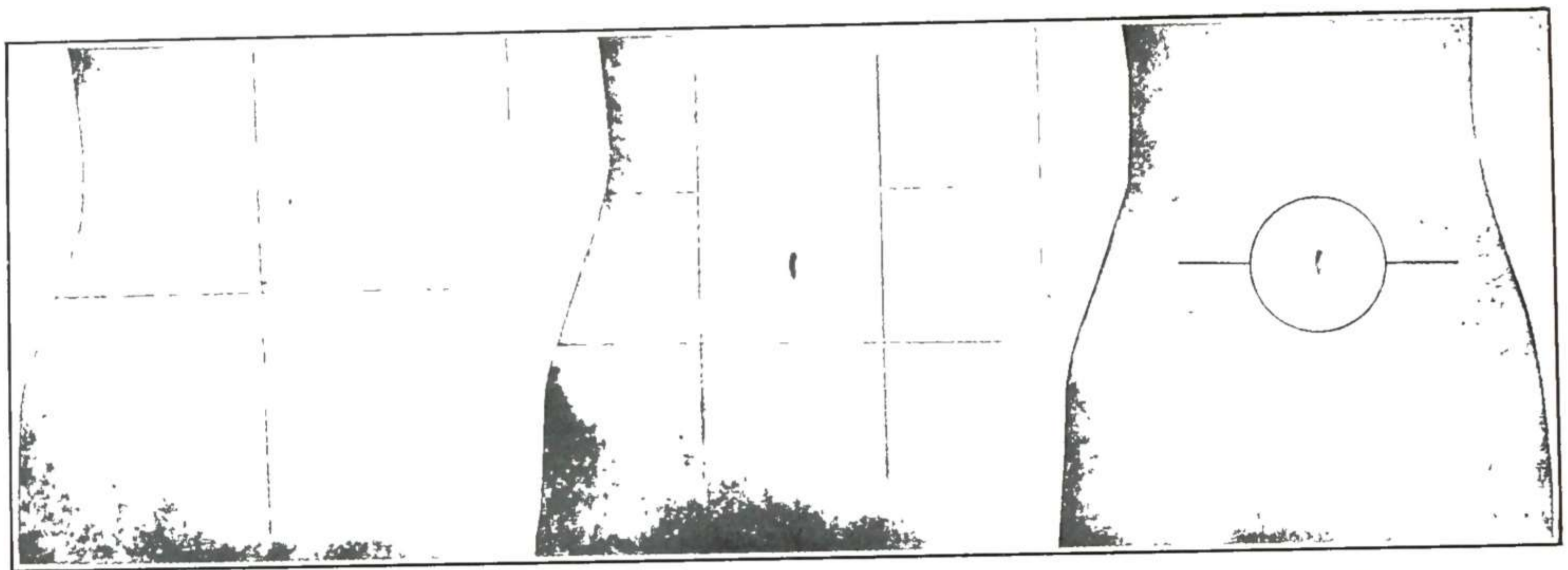
Fig. 121.   Fig. 122.   Fig. 123.

Fig. 121.—The abdominal surface divided into quadrants.
Fig. 122.—The usual anatomic division of the abdomen into nine regions by two transverse lines and two vertical lines. The upper transverse line is at the level of the cartilages of the ninth ribs, and the lower with the highest points of the iliac crests. The two parallel vertical lines pass through the cartilages of the eighth ribs and the middle of Poupart's ligaments.
Fig. 123.—Division of the abdomen into regions by means of a circle with a two-inch radius and two-inch horizontal lines.
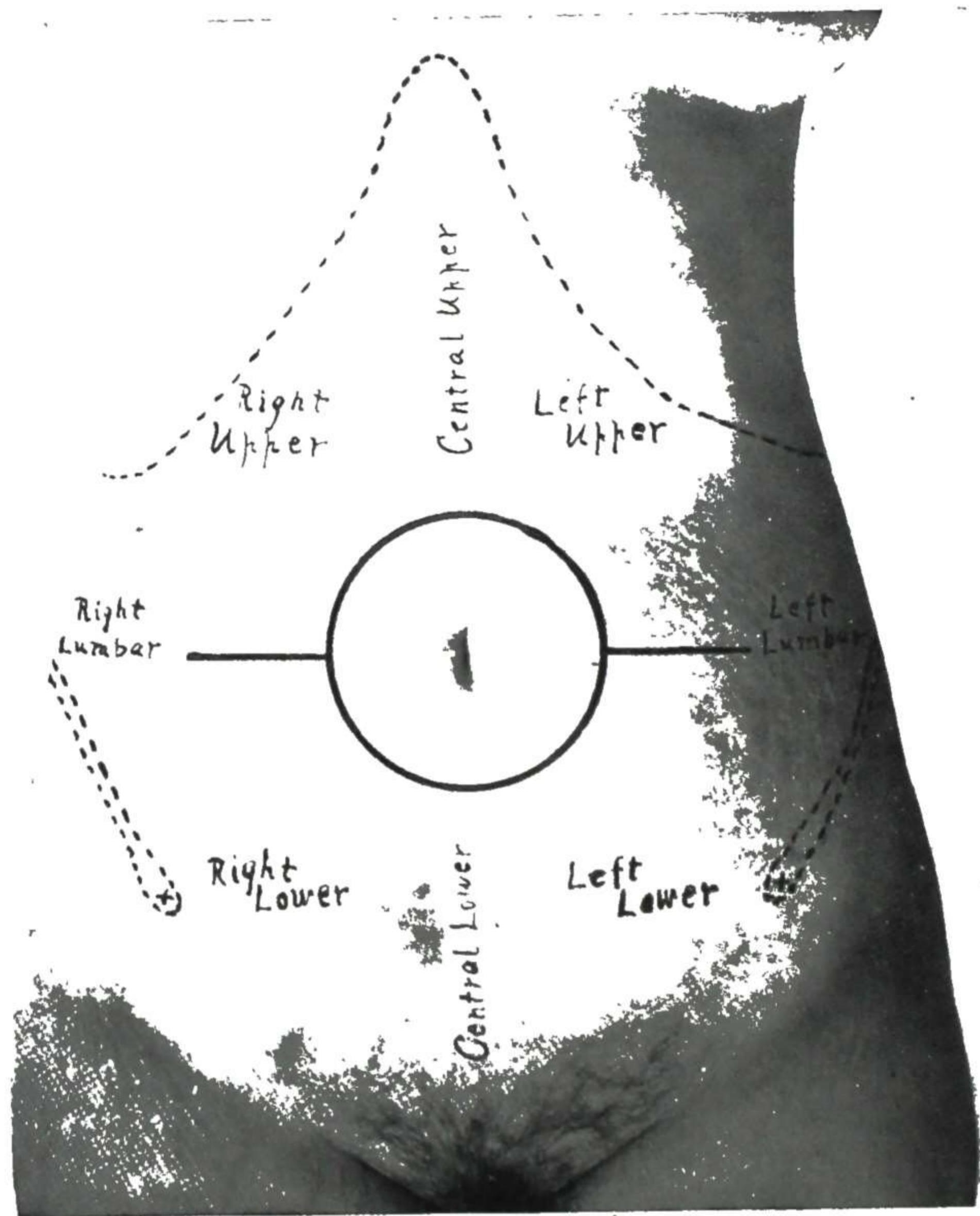
Fig. 124.—Another abdomen divided with the circle and short horizontal lines, and showing the names on the primary regions. The area within the circle carries the usual designation, "umbilical region."

work the fingers around it, depressing the wall and examining all portions of it. The palpation should always be made **gently,** for if the manipulations cause pain or frighten the patient, the wall is immediately made tense and then no satisfactory palpation is possible.

In a case of suspected appendicitis or one-sided inflammation, the difference in tension of the abdominal wall on the two sides is of diagnostic importance.

Having determined the general tension and tenderness, search is made for **local tenderness.** The exact location of the tenderness should be carefully determined, and also whether it is circumscribed to that area or extends to other areas. When the area of tenderness has been accurately located, we know what organs are likely to be affected, and the further differentiation between affections of those organs may be proceeded with.
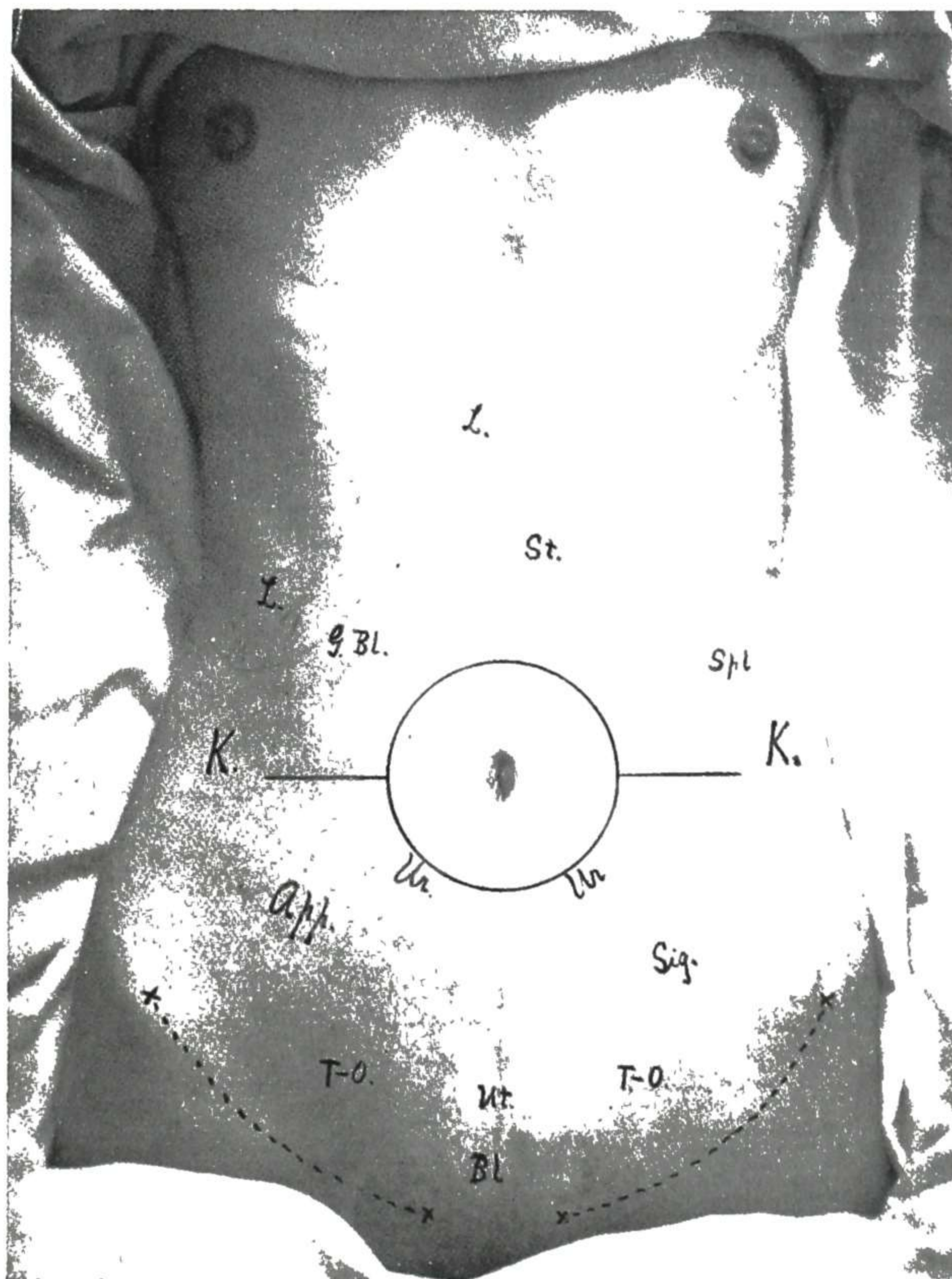
Fig. 125.—Various areas of significant point-tenderness. These are the areas to be investigated during the course of an abdominal examination.

Regions of the Abdomen.—For convenience in designating the location of tenderness or of a mass, the abdomen is divided into regions. There are several methods of division. A simple one is the division of the surface into quadrants by an imaginary horizontal line passing through the umbilicus and a vertical line through the same point (Fig. 121).

This is used in obstetrics for designating the approximate location of the fetal heart sounds and is convenient for designating in a general way the location of large masses, but it is not sufficiently definite for the accurate localization of small masses or points of tenderness.

For the more definite localization, there is the time-honored anatomical division into squares (Fig. 122). As a practical working division for diagnostic and teaching purposes, however, this has been found decidedly unsatisfactory, as is attested by the many attempts of clinicians to devise a simple method of dividing the surface and of designating the various regions.
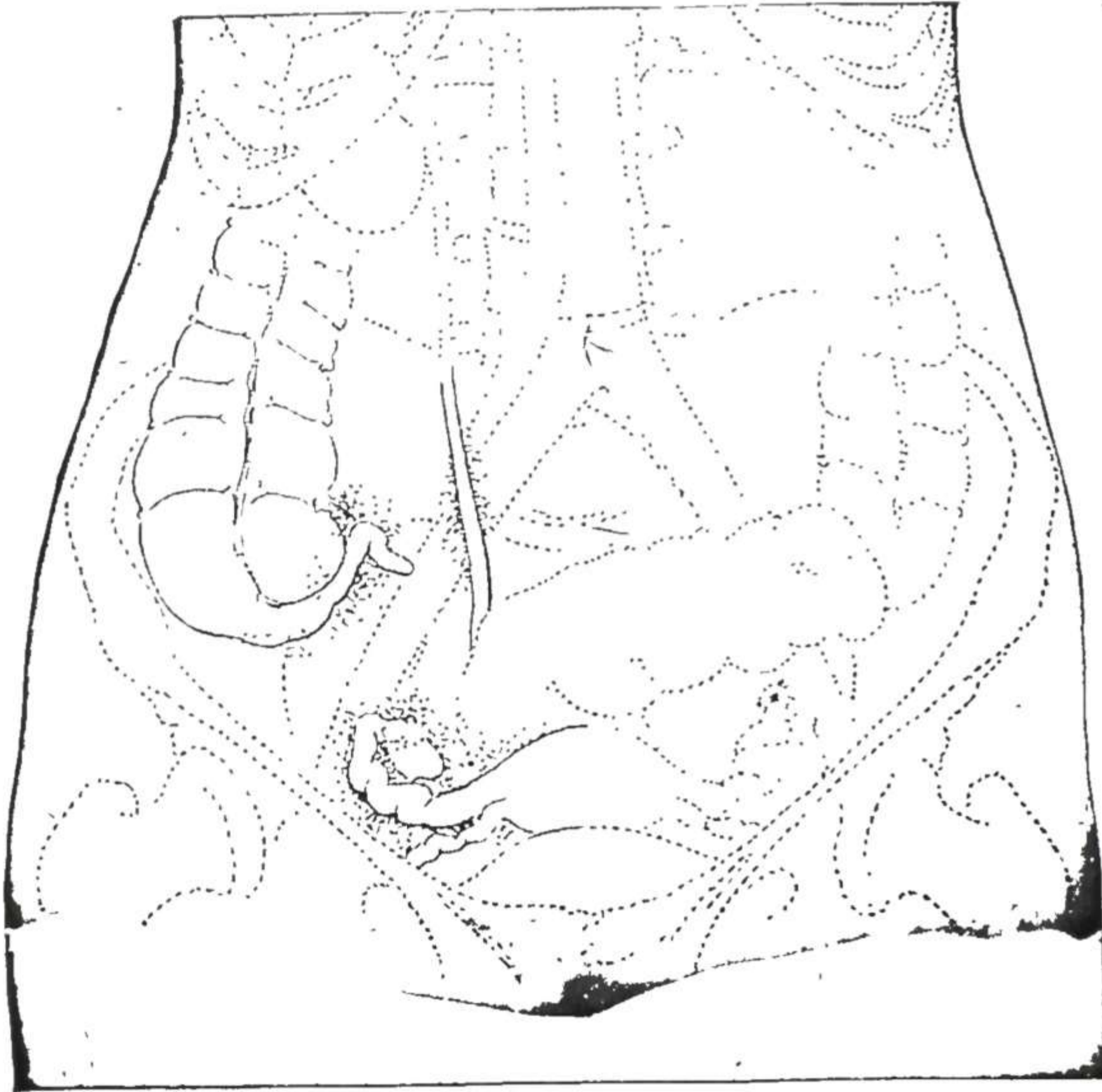
Fig. 126.

Fig. 127.

Fig. 126.—The right lower abdomen. The organs commonly affected and the areas accordingly of particular interest are indicated by the stippling.

Fig. 127.—Palpating the area of the appendix and cecum. Appendix tenderness is usually most marked about the middle of a line from the umbilicus to the anterior superior spine of the ilium, slightly nearer the latter (McBurney's point).
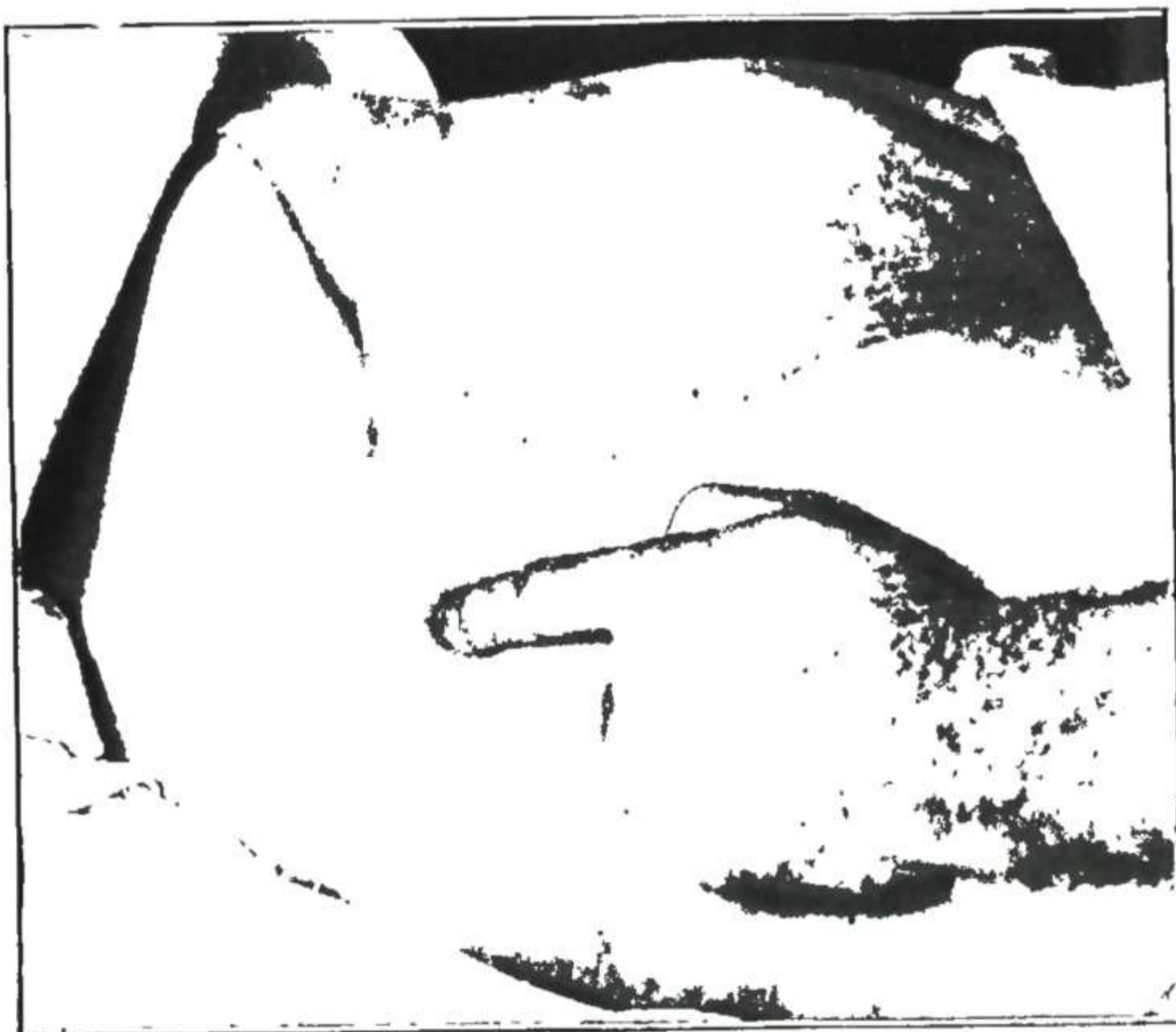
Fig. 128.

Fig. 129.

Fig. 128.—The point for kidney tenderness laterally.
Fig. 129.—The point for kidney tenderness posteriorly.

Failing to find a method of division that was satisfactory clinically, we devised that shown in Fig. 123, which, so far as we know, is original. The only lines not marked by natural landmarks are a circle with a two-inch radius about the umbilicus and a short straight line extending horizontally for two inches from each side of the circle.

The **regions** are designated as right lower, left lower, central lower, right upper, left upper, central upper, umbilical, and right and left lumbar (Fig. 124). This method of division is simple, and the names are easily remembered and are self-explanatory. In fact, these designations are the ones commonly used in conversation among physicians in describing the location of a mass or area of tenderness. For example, we speak of tenderness in the right lower region of the abdomen, or, more briefly, in the "right lower abdomen," or in the "left lower abdomen," or in the "right upper abdomen," etc.

Within each of these principal regions there are one or more points which are of special interest. The special interest attaches to each one of these points because well-defined tenderness limited to such point usually means an affection of a particular organ. It must be kept in mind, however, that in some cases such point-tenderness is due to an affection of some adjacent organ (as when inflammation within the cecum causes tenderness in the appendix region), or even of some distant organ which has become displaced (as when the right kidney has become displaced into the appendix region) (Figs. 126 and 127).

Again, in some cases tenderness is due to an organic or functional disturbance of the nerves of the abdominal wall or to reflected pain, due to a lesion in some other part of the abdominal cavity or to some organic or functional lesion in a distant part of the body. But in these exceptional conditions the tenderness is usually not genuine "point-tenderness," but is more extensive and can be traced in some direction sufficiently far to indicate its probable origin (Figs. 128 and 129).

With the above-mentioned exceptions kept in mind, the special **areas of point-tenderness** are of great help in the differential diagnosis of abdominal lesions. The most significant ones are shown in Fig. 125.

MASS IN THE ABDOMEN

When a mass is discovered determine so far as possible its position, size, shape, consistency, tenderness, mobility, and attachments.

The **position of a mass** indicates in a general way the organ or group of organs from which it arises. Keep in mind, however, that it may be due to some adjacent organ, or even some distant organ displaced into that region.

The **size and shape of a mass** are determined by ascertaining its length, breadth, thickness, and general contour. The length or height of a tumor projecting up from the pelvis is usually designated as so many fingerbreadths or "fingers" above the symphysis or below or above the umbilicus. The breadth may be given approximately in fingers or inches, stating at the same time whether or not the mass is situated symmetrically on both sides of the median line; or the mass may be referred to as filling the pelvis from side to side or as filling the abdomen. It is sometimes difficult to convey a satisfactory idea of the general contour of a mass by a detailed description, when it may be very quickly conveyed by referring to some familiar object.

Another method of recording the size and shape of a mass is to draw it within a stamped outline of the pelvis and abdomen.

The **consistency of a mass** should be carefully determined. Is it uniformly solid or does it present hard nodules, or does it contain fluid? If the mass contains a collection of fluid of sufficient size, there may be elicited that peculiar sensation known as **fluctuation,** the recognition of which is one of the first lessons in surgical work.

The **tenderness of a mass** as determined by palpation is of much importance in differential diagnosis. In acute inflammation (as in acute salpingitis or peritonitis), or in acute irritation (as in hemorrhage from tubal pregnancy), the tenderness is very marked. On the other hand, in uncomplicated ovarian or uterine tumors, tenderness is slight.
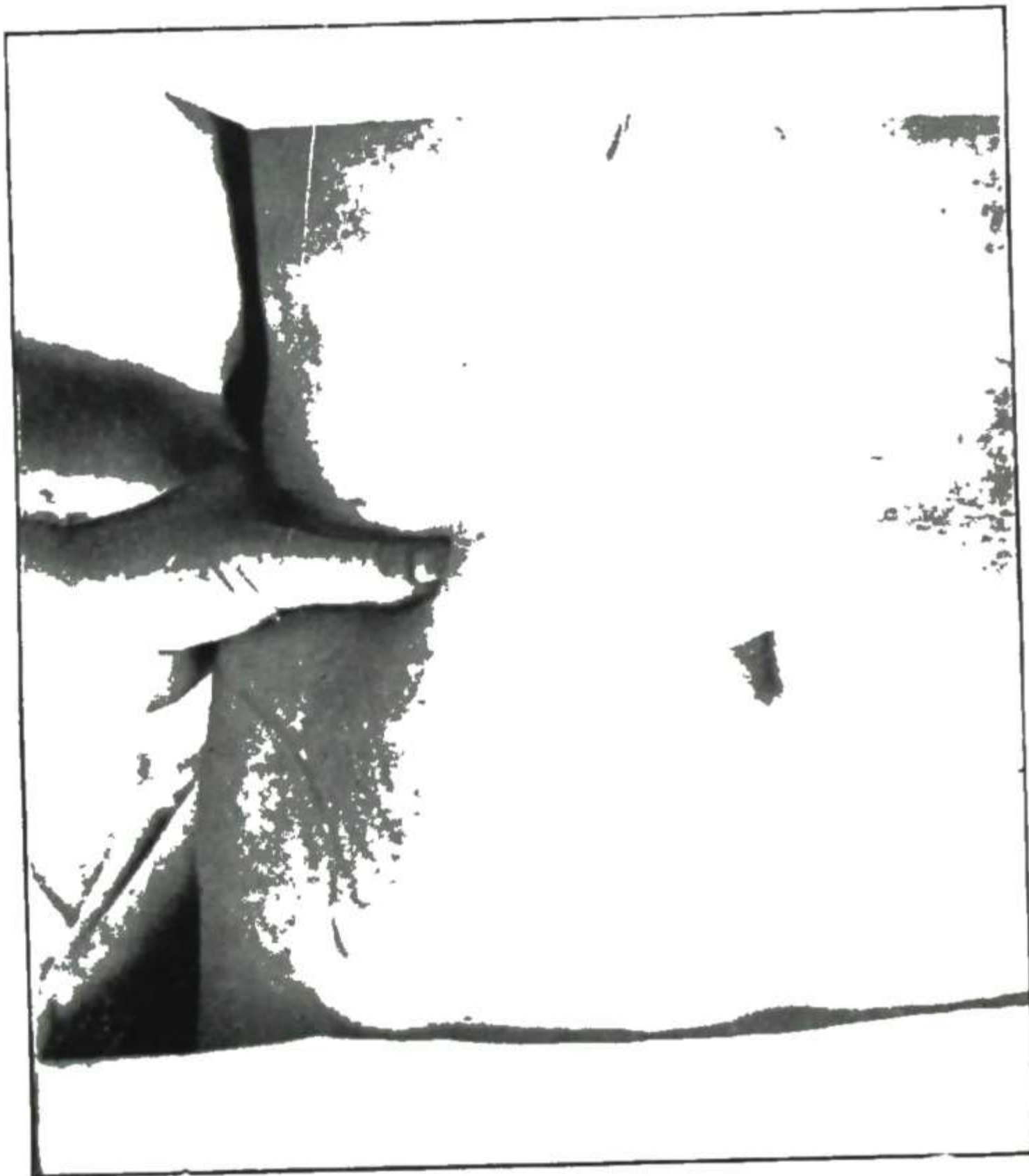
Fig. 130.   Fig. 131.

Fig. 130.—Palpation of a movable kidney, with the patient on her back. First step. The loin is grasped as here shown, to prevent the displaced kidney from slipping unnoticed back into its place at the beginning of palpation.

Fig. 131.—Palpation of a movable kidney, with the patient on her back. Second step. Palpating the kidney with the right hand while it is held in displacement with the left hand.

The **mobility** and **attachments of a mass** are determined by attempting to move the mass in different directions. The fingers are worked in deeply about the mass at various points, and it is determined just what part may be easily displaced and what part is fixed. The fixed point of a mass usually indicates its point of origin, i.e., the organ involved, while the free border indicates the direction of growth, and hence is opposite to the point of origin.

Fixation of a mass may be due to inflammation, exudate or old adhesions, or to malignant infiltration, or to its being retroperitoneal or even in the abdominal wall. It is difficult at times to estimate how much of an abdominal enlargement is due to fat in the wall. The maneuver shown in Figs. 114 and 115 is very helpful in determining the **thickness of the abdominal wall.** A mass found in the pelvis does not necessarily originate in the pelvis, but may

be an organ or growth from elsewhere. Pelvic spleens and pelvic kidneys have given rise to serious diagnostic mistakes (Figs. 130 and 131). The differential diagnosis of masses in the pelvis will be further considered under vaginal and vaginoabdominal palpation.

FLUID WAVE, FAT WAVE, FETAL MOVEMENT, UTERINE CONTRACTION, FRICTION RUB

If there is a large collection of fluid, as in a case of marked ascites, a **fluid wave,** started by tapping on one side of the abdomen, may be felt by the other hand applied to the other side (Fig. 132). A somewhat similar wave may be caused, also, by a thick layer of subcutaneous fat (fat wave). In such a case, however, if an assistant presses lightly in the median line with the ulnar edge of the hand (Fig. 133), the **fat wave** will stop at the line of pressure.

Fig. 132.   Fig. 133.

Fig. 132.—Trying for a fluid wave across the abdomen.
Fig. 133.—Differentiating a fat wave from a fluid wave. The fat wave is stopped by the pressure in the median line.

A distinct fluid wave may be obtained in any large collection of fluid with a comparatively thin wall. It is present in well-marked ascites, in unilocular cysts, and in multilocular cysts with one or more large cavities. Occasionally the fact that there are different large cavities in the cyst may be surmised by a distinct difference in the fluid wave as obtained through different parts of the cyst. In a cyst with small cavities no fluid wave is obtained, as there is not a large enough single cavity, although fluctuation may be as clear as in a single large cyst. Also, in a cyst with thick gelatinous contents a fluid wave may not be obtained.

In late pregnancy, **fetal movement,** caused by the fetus' changing position or kicking, may not infrequently be felt. In some cases the hardening and softening of the uterus in contractions may be distinct even in the earlier months of pregnancy, and when felt is evidence of the character of the mass under examination.

PERCUSSION OF ABDOMEN

Area of Dullness

Percussion over the abdomen serves to confirm the information obtained by palpation, and also brings out some new facts—for example, by outlining accurately the **area of dullness** it shows at what portion of the abdominal wall the tumor or fluid lies against the wall, and at what portion there is intervening intestine. It shows also whether the mass or fluid changes relations when the patient changes position. In a ventral hernia (intestinal) it shows that the large mass, which might be taken for a tumor or inflammatory mass, is resonant—i.e., it contains air, and, therefore, must under ordinary circumstances, contain intestine. Endeavor to get definitely in mind exactly the reason for the dullness or resonance found in a particular case, and then its diagnostic significance will be clear.
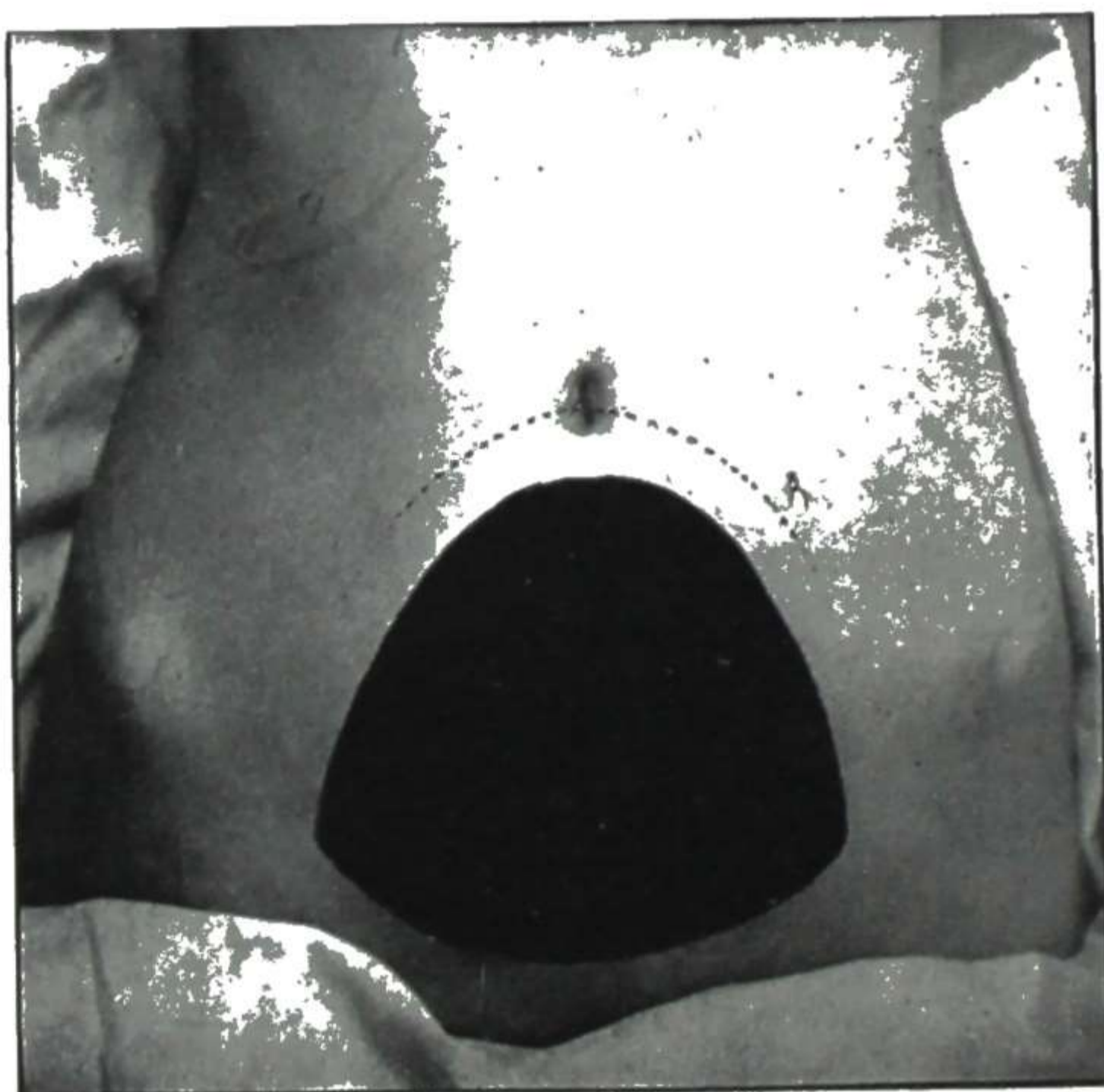
Fig. 134.
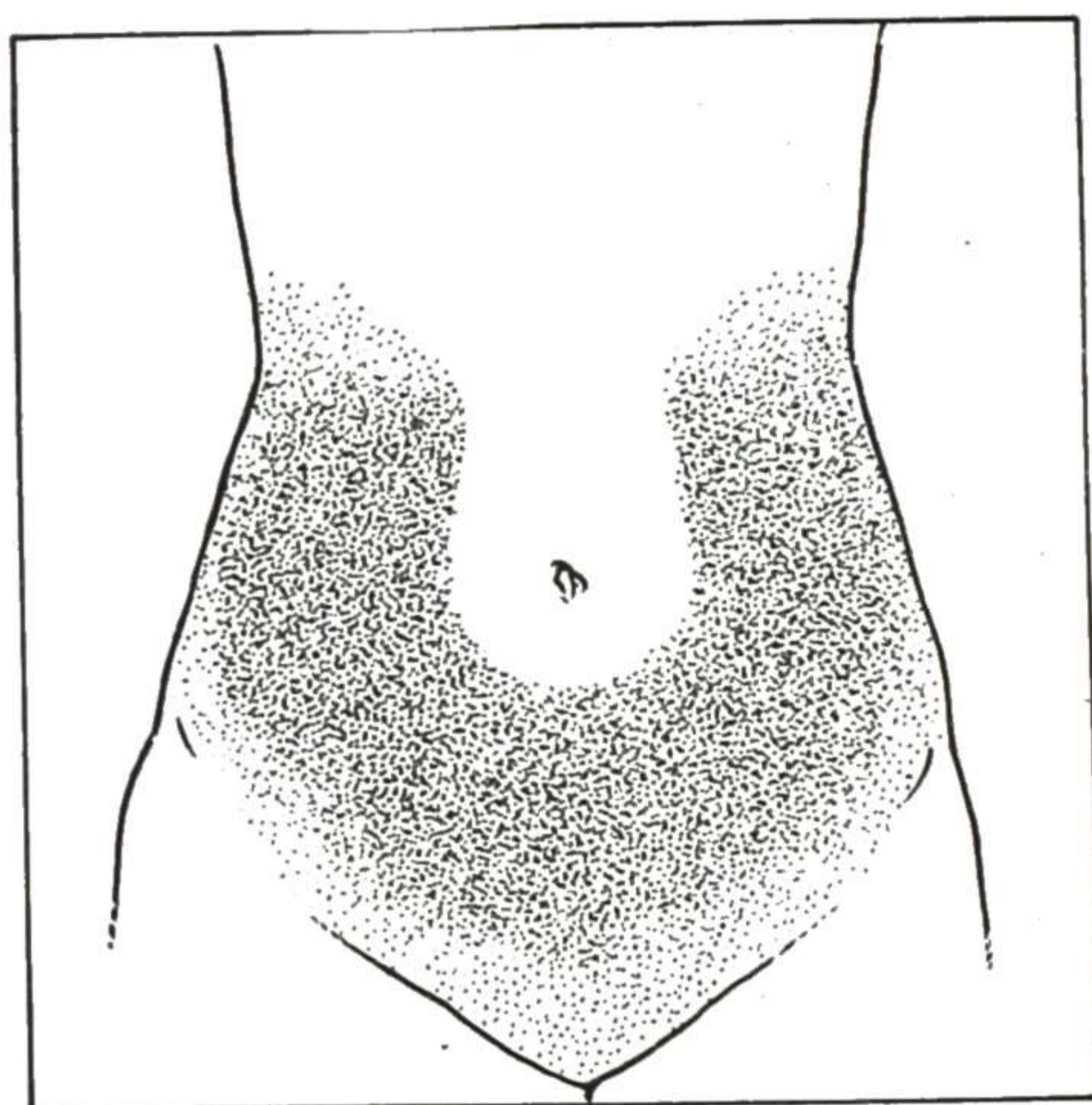
Fig. 135.

Fig. 134.—Indicating area of dullness from a large mass of regular outline rising out of the pelvis, for example, the pregnant uterus or a symmetrical myoma. Dotted line indicates the palpable part of the mass above the dull area. The dull area is the part against the wall.

Fig. 135.—Indicating area of dullness in marked ascites with patient recumbent.

The use of **superficial** and **deep** percussion in succession may give valuable information in some cases. Ordinary percussion is moderately light and superficial, and gives resonance over all the normal abdomen, except where the liver lies against the wall. In marked obesity, however, superficial percussion is likely to give only dullness over all the abdomen, while deep percussion (a hard percussion stroke against the finger pressed in deeply) gives resonance.

A tumor of the wall or of the omentum ordinarily gives dullness in light percussion and resonance in deep percussion.

An area of dullness where there should be resonance may be due to an enlarged organ, such as distended bladder, or pregnant uterus, or to a tumor or encysted fluid (Fig. 134), or it may be due to free fluid (ascites) (Fig. 135). The diagnostic characteristic of free peritoneal fluid is that it shifts

when the position of the patient is changed, flowing to the lowest level in the peritoneal cavity so that its surface is about parallel with the horizon (Figs. 136 to 139).
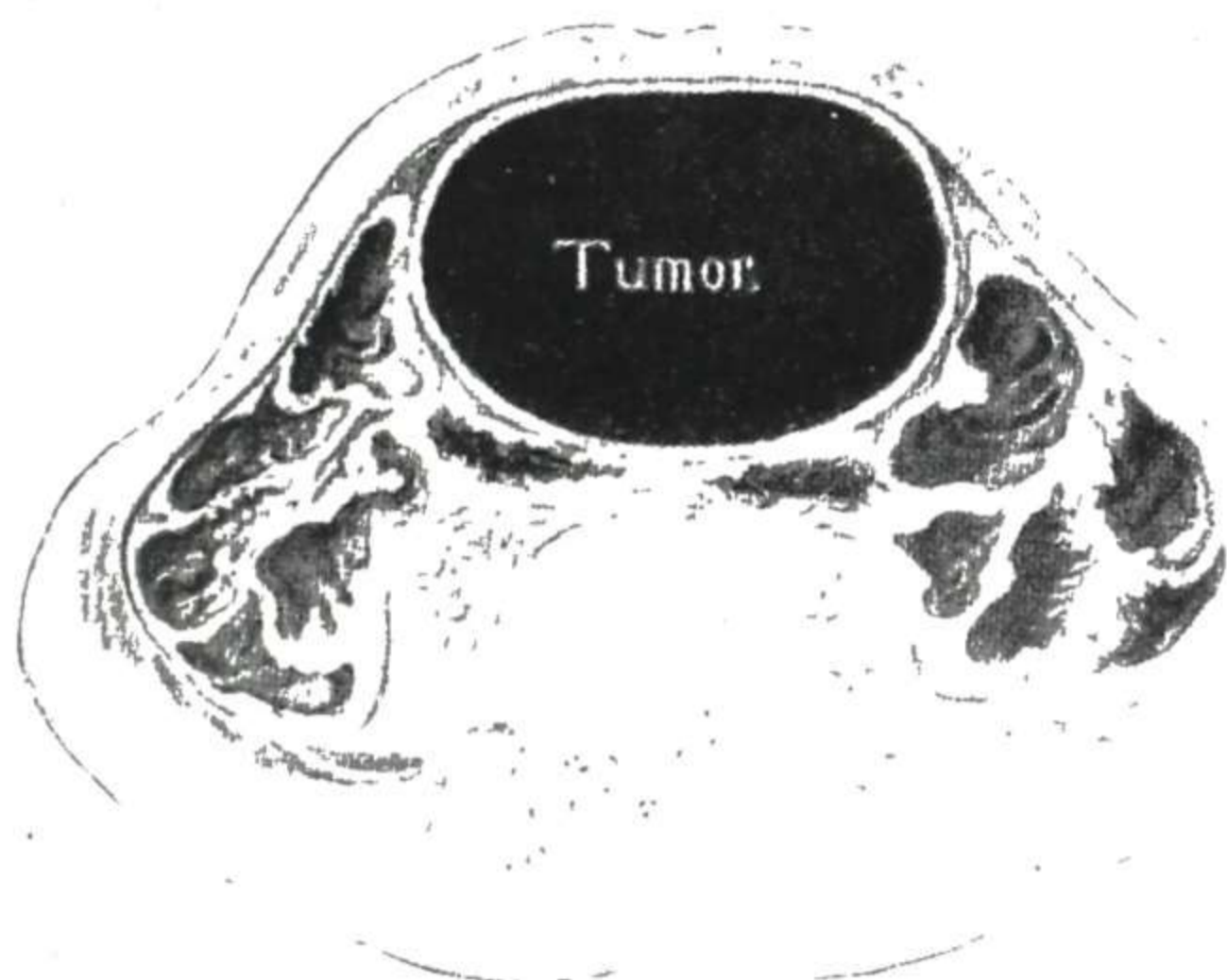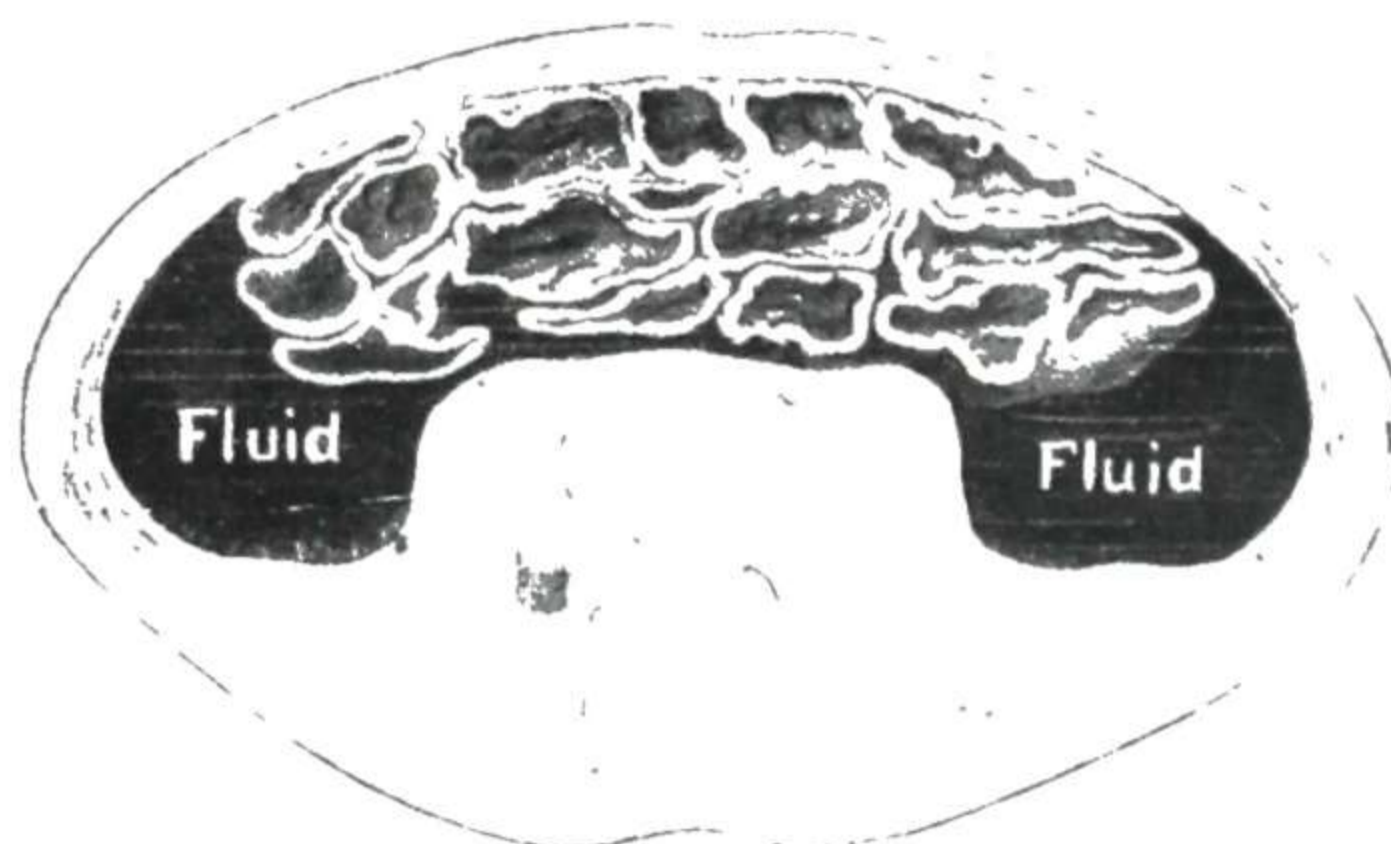

Fig. 136.   Fig. 137.

Fig. 136.—Indicating the relation of the dull and resonant areas in the case of a tumor occupying the central lower abdomen.

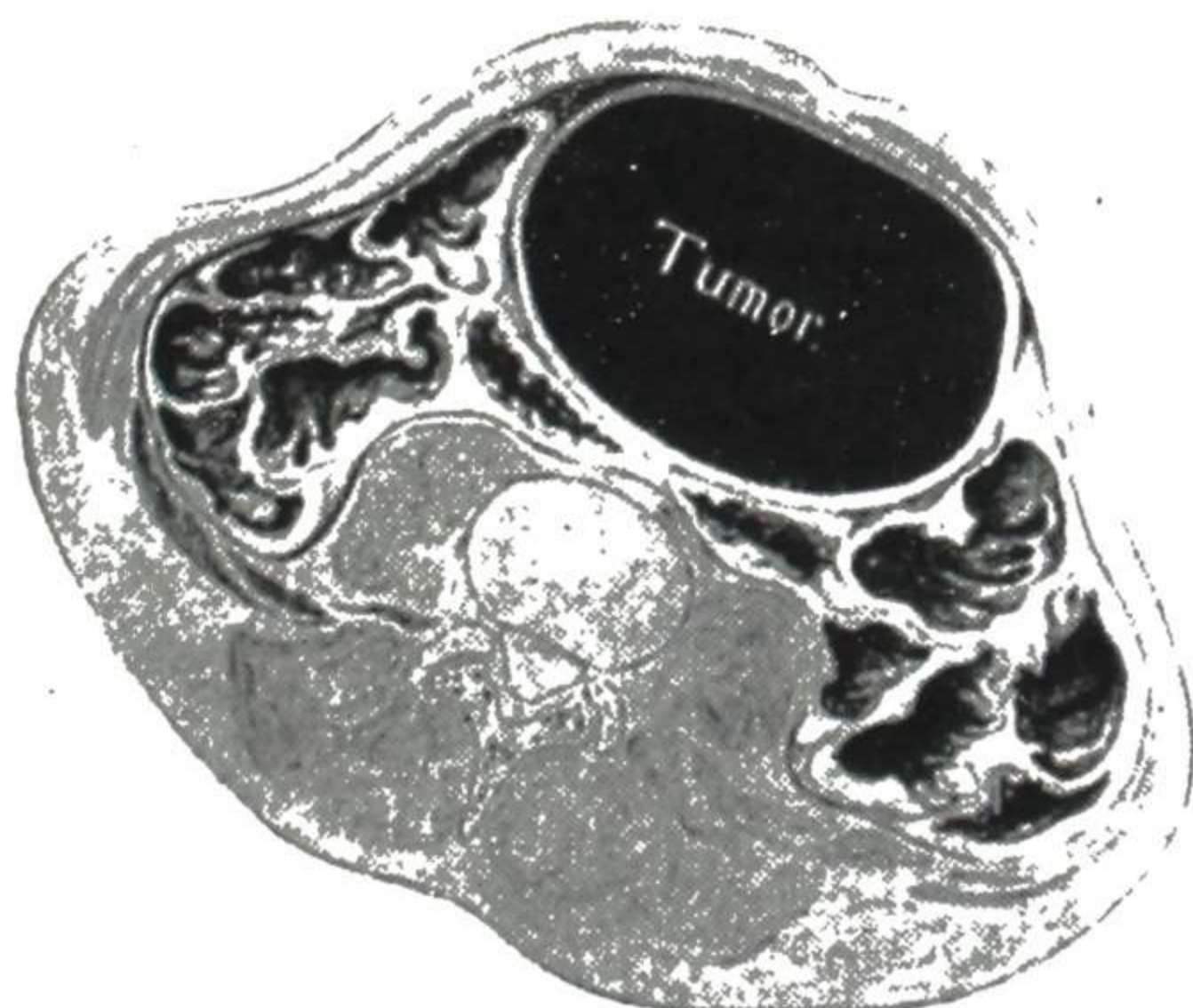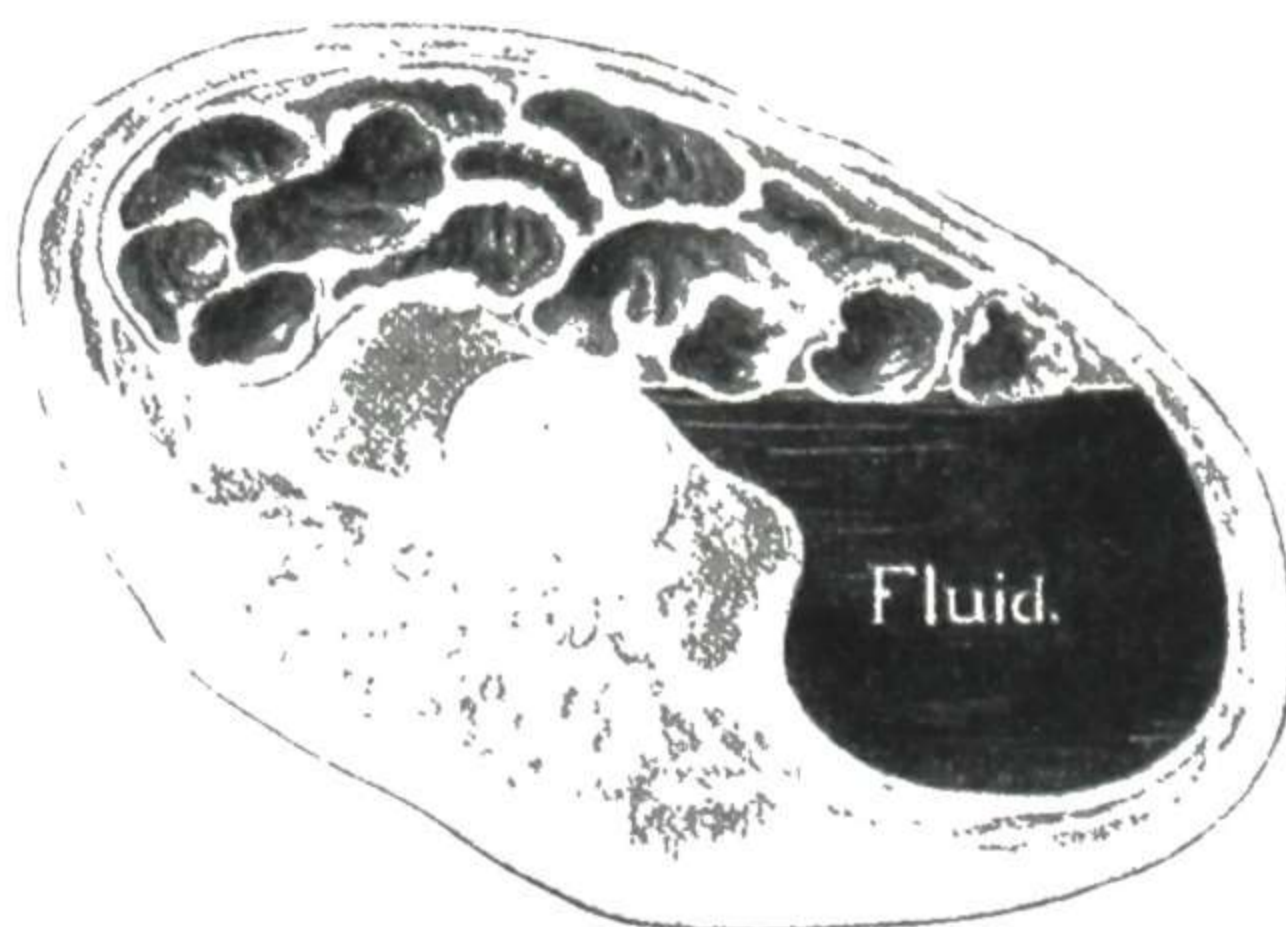Fig. 137.—Showing the reason for the disposition of the dull and resonant areas in a case of moderate ascites.

Fig. 138.   Fig. 139.

Fig. 138.—Tumor with patient turned on side. No change in area of dullness. Compare with Fig. 139.

Fig. 139.—Ascites with patient turned on side. The fluid gravitates to the underside, leaving the upper flank resonant.

(Figs. 134 to 139 from Butler: Diagnostics of Internal Medicine, D. Appleton-Century Co.)

AUSCULTATION OF ABDOMEN

Fetal Heart Sounds, Vascular Murmur

Auscultation assists in differentiating between advanced **pregnancy** and a large ovarian tumor or large myoma. The placental murmur may be simulated by the large vessels of a tumor. The absence of fetal heart sounds does not exclude pregnancy, for the fetus may be dead, and even in normal pregnancy they are sometimes difficult to hear. Auscultation should be employed also in obscure cases of pain in the abdomen, for the pain may be due to **aneurysm** of the abdominal aorta or other large vessel, which would give a murmur, and which occasionally runs its course unrecognized until rupture and sudden death.

MENSURATION OF ABDOMEN

Measure the abdomen when it is very large or when there is a growing tumor, or when for other reason it may be desirable to know exactly any difference in size some weeks or months hence, or when it is desired to speak with accuracy concerning the size of the abdomen in the case of a large growth.

The measurements are made with the ordinary tapeline. When measuring a patient take enough measurements to make an accurate record. Measurements along the following lines will show variations with a large growth in any part of the peritoneal cavity:

1. From umbilicus to sternal notch.
2. From umbilicus to pubes.
3. From umbilicus to right anterior superior iliac spine.
4. From umbilicus to left anterior superior iliac spine.
5. Circumference of body at level of umbilicus.
6. Circumference of body 3 inches above umbilicus.
7. Circumference of body 3 inches below umbilicus.

EXAMINATION OF EXTERNAL GENITALS AND ADJACENT STRUCTURES

If the patient complains of irritation about the external genitals, of itching or burning, of frequent or painful urination, or of sores or swelling or discharge, the parts should be inspected in a good light. For this examination, the patient is draped and the hips are brought near the end of the table in a comfortable position, as shown in Fig. 140. A general inspection is then given to see if there is any marked abnormality. The labia are then separated, to expose the vestibule and urethral and vaginal openings, and also the openings of the ducts of the vulvovaginal glands.

By examination determine whether any of the following conditions are present:

Discharge—Mucoepithelial, Mucopurulent, Purulent, Bloody, Watery.

Inflammation—Gonorrheal or otherwise.

Ulcer—Simple, Chancroidal, Syphilitic, Tuberculous, Malignant.

Swelling—Inflammatory, Stasis Infiltration, Edema, Hematoma, Hernia, Cyst.

New Growth—Condyloma, Urethral Caruncle, Lipoma, Fibroma, Malignant Growth.

Malformation—Imperforate Hymen, Adhesions of Labia, Pseudohermaphroditism.

Determine also the:

Condition of Hymen—Intact, Lacerated, Destroyed.

Condition of Perineum—Normal, Lacerated (wide opening, vaginal walls visible, shallow perineum, scar tissue, fistula).

Fig. 140.—Vaginal examination. The patient is draped, the instrument table is conveniently placed, and the light is ready for final adjustment. The large jar, *a*, contains sponges; the small one, *b*, contains cotton balls. A similar unit may be used in an office or hospital dressing room.

DISCHARGE ABOUT EXTERNAL GENITALS

Mucoepithelial, Mucopurulent, Purulent, Bloody, Watery

Leukorrhea is a term frequently used to designate discharge from the genital tract. Its derivative meaning, "white flow," applies especially to mucoepithelial discharge, but through custom it has come to be used as a general term to designate all vaginal discharges except the bloody.

Mucoepithelial Discharge (Normal).—The normal mucous secretion from the cervix moistens and macerates the vaginal epithelium. The mixture of this cervical mucus and vaginal epithelium appears at the external genitals as a clear or slightly whitish discharge. Usually it is hardly noticeable, only just enough to keep the parts normally moist. At the menstrual periods, and under other conditions favoring pelvic congestion, it may increase so as to be somewhat annoying to the patient, though hardly of pathologic importance.

Mucopurulent Discharge.—When there is inflammation or persistent congestion in the uterus, the mucous secretion is much increased, and there are thrown out, at the same time and for the same cause, many leukocytes, which mix with the mucus, giving it somewhat of a purulent character, the prominence of the purulent feature depending on the amount of this admixture of

dead leukocytes. If it contains enough mucus to be noticeable, the discharge is sticky and stringy and may be drawn out into long threads.

Purulent discharge presents the appearance of pus, either thin pus or thick yellow pus, as from an abscess or inflamed surface. Determine just where this comes from—i.e., whether from the urethra or vulvovaginal gland or inflamed surfaces on the external genitals, or from the vagina.

Bloody Discharge.—The discharge is red or brown, the intensity of the color depending, of course, upon the amount of blood. It varies all the way from a slight reddish or brownish tinge, hardly noticeable, to practically pure blood or clots. The blood may be mixed with any of the other pathologic discharges—mucopurulent, purulent, or watery.

Watery Discharge.—This may be due to leakage of urine through a vesicovaginal or ureterovaginal fistula or to rupture of the membranes in pregnancy. Occasionally in a malignant tumor of the vagina or uterus, or when there is a sloughing myoma, the foul discharge will become thin and watery.
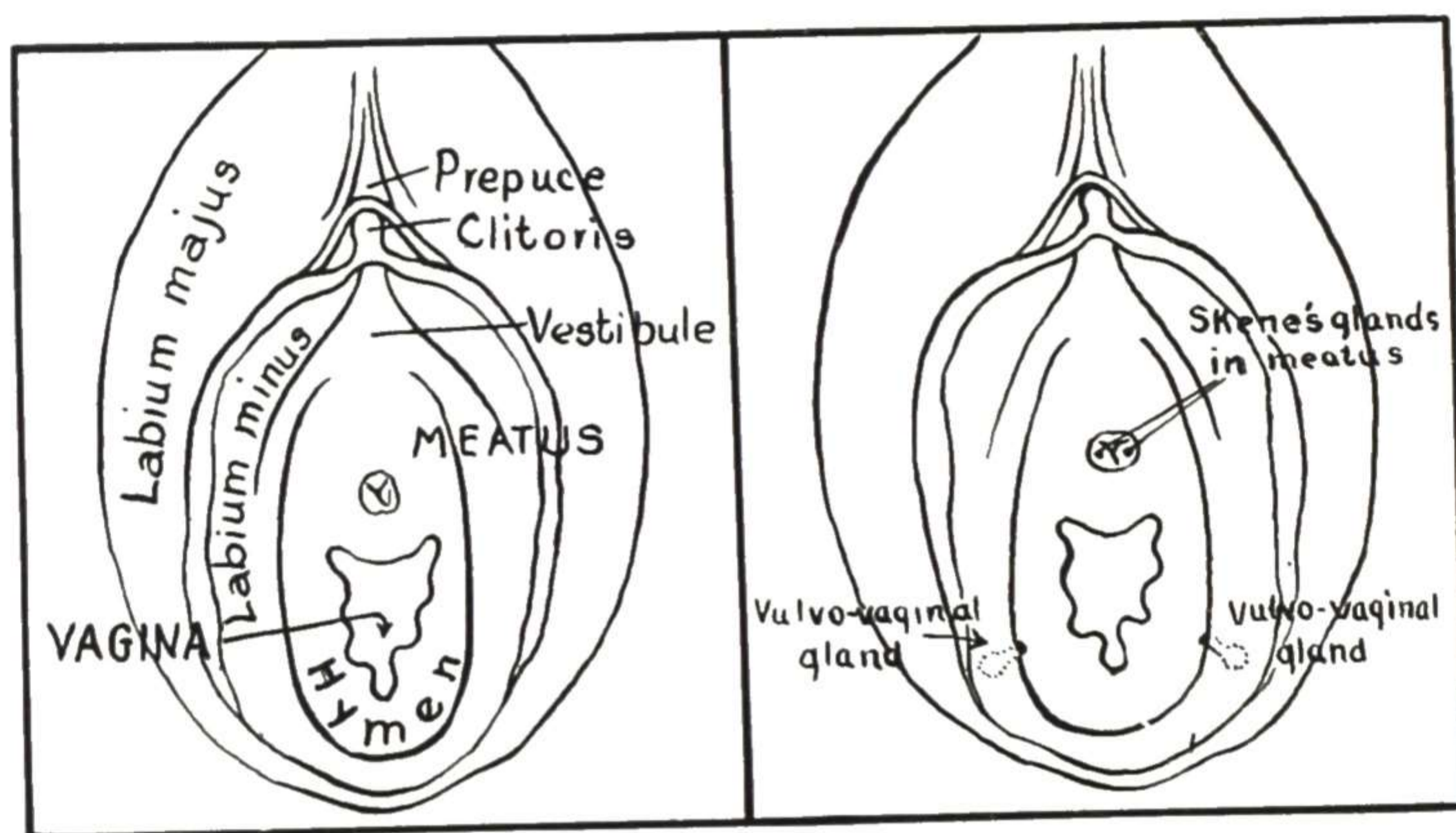
Fig. 141.

Fig. 142.

Fig. 141.—External genitals.
Fig. 142.—Areas most likely to harbor persistent inflammation.

Dip the tip of a cotton-wrapped applicator in this purulent discharge and spread some on a microscopic slide.

If possible, secure some discharge from the urethra or vulvovaginal gland (Figs. 141 and 142), for the pus from these situations is much more satisfactory for microscopic examination for gonococci than the mixed vulvar or vaginal discharge.

To secure urethral pus, separate the labia, cleanse the meatus, and compress the internal end of the **urethra** by pressure against the anterior vaginal wall with the tip of the index finger. Then, still maintaining the pressure, draw the tip of the finger along the urethra toward the meatus (Fig. 143). This brings the urethral pus to the meatus.

Chronic inflammation in the urethra is likely to be situated in **Skene's glands,** and in such a case some pus may be pressed from these small glands by compressing the urethra (by pressure through anterior vaginal wall) just back of the meatus. In some cases, particularly in a multipara, the urethral mucosa pouts out, so that by careful examination the orifice of one or both of

Skene's glands may be seen. Fig. 144 shows such a gland opening (left side) and also a drop of pus which has been pressed from the gland on the right side.

The **vulvovaginal glands** (Bartholin's glands) are situated symmetrically on both sides of the vaginal opening. The opening of the duct of the gland of each side is situated laterally, just in front of the remnants of the hymen and a little below the middle of the lateral margin of the vaginal opening. Draw aside the labia in this situation and look for the opening of the gland, and determine whether or not the opening is reddened and if there is any discharge from it.

Fig. 143.   Fig. 144.   Fig. 145.

Fig. 143.—Method of pressing pus from the depth of the urethra to the meatus.

Fig. 144.—Slight eversion of urethral mucosa, so that openings of Skene's glands come into view. On left side the gland opening is seen. On right side a drop of pus has been squeezed from the gland and partially obscures the field. (From Kelly: Operative Gynecology.)

Fig. 145.—Palpating the left vulvovaginal gland, to determine if there is thickening or tenderness, or if pus can be pressed from it.

To examine either vulvovaginal gland, to determine if there is any thickening or tenderness from inflammation, or if pus can be squeezed from it, grasp the region of the gland between the index finger in the vagina and the thumb outside, as shown in Fig. 145. When normal, the gland is scarcely noticeable by palpation.

When inflamed, there is thickening and the gland is felt as a small, firm, tender nodule. If pus can be pressed out, make a smear for staining for gono-

cocci. In case of abscess or cyst, the swelling is much larger. A well-marked red area involving the opening of the gland duct indicates previous inflammation, usually gonorrheal, and gives a clew to the origin of inflammatory lesions found higher (cervical, tubal).

VAGINAL EXAMINATION (DIGITAL)

In the vaginal examination, or digital examination as it is frequently designated, one or two fingers are introduced into the vagina and the structures within reach are palpated. In this way valuable information may be obtained in certain cases. It is also a preliminary step to the important vagino-abdominal or bimanual examination, to be taken up later.

Fig. 146.—Position of the fingers for the vaginal and vaginoabdominal examinations.

Method of Examination

Use **two fingers** for the vaginal palpation where the size of the vaginal opening will permit. A much deeper and more accurate examination can be made with both the index and middle fingers than with the index finger alone. Ordinarily in the examination of a married woman, even one who has had no children, two fingers may be introduced without difficulty, provided the fingers are well lubricated and care is taken to cause no pain.

It is important also to separate the labia with the fingers of the other hand while the examining fingers are being introduced, for, if the hair and labia are allowed to roll in with the examining fingers discomfort is caused and the opening is considerably narrowed.

It is always advisable to use **rubber gloves**; in addition to esthetic reasons, if intact they give complete protection against syphilis or other infection which might come through an unnoticed abrasion about the fingers. Fig. 146 shows the **position of the fingers** ordinarily preferable in the vaginal examination, and the hand gloved and ready for the examination. In introducing the fin-

gers, remember that a bony arch surrounds the vaginal opening above and at the sides (Fig. 147) and that additional space can be secured only by depressing the muscular floor as shown in Fig. 148.
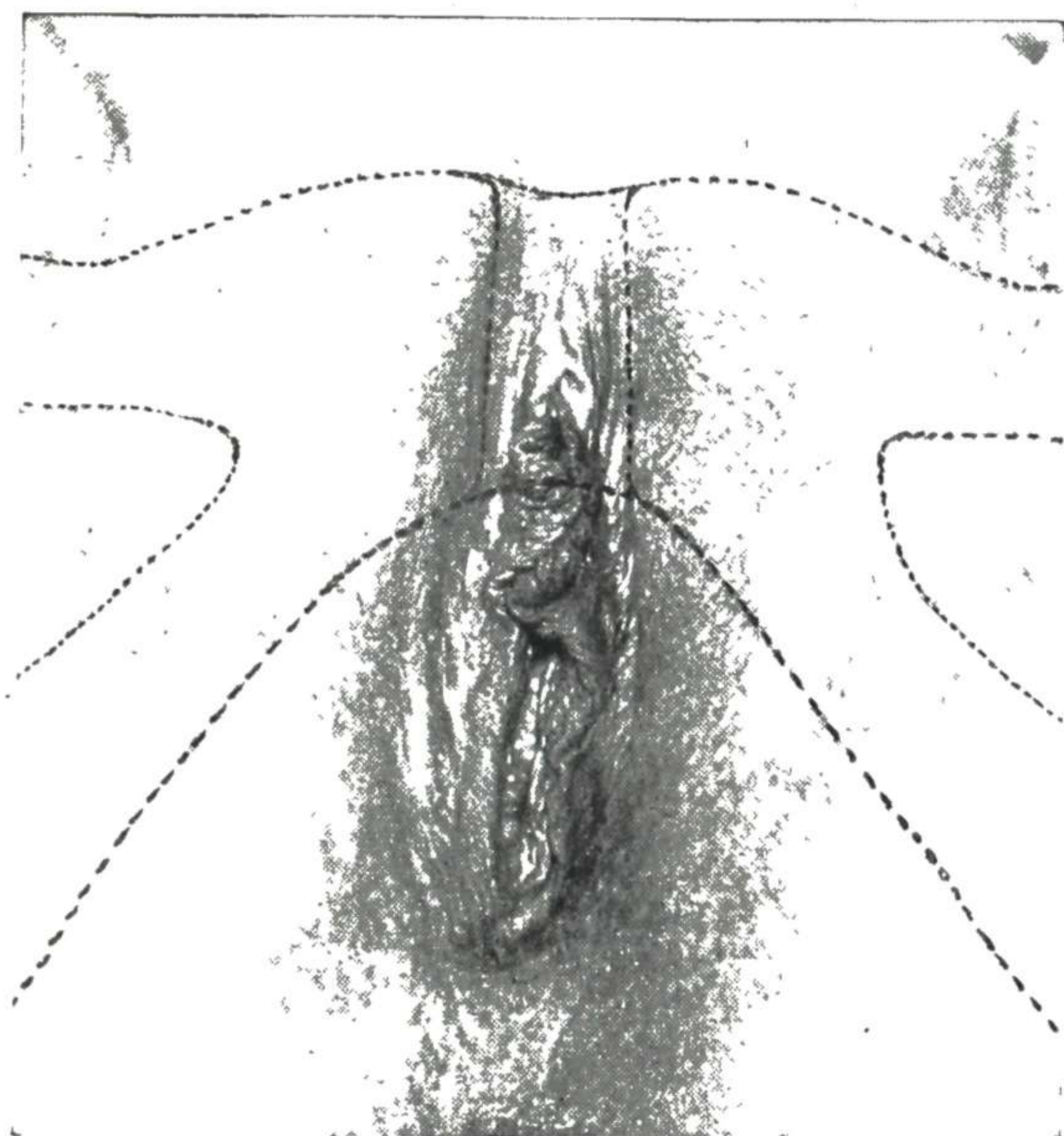
Fig. 147.
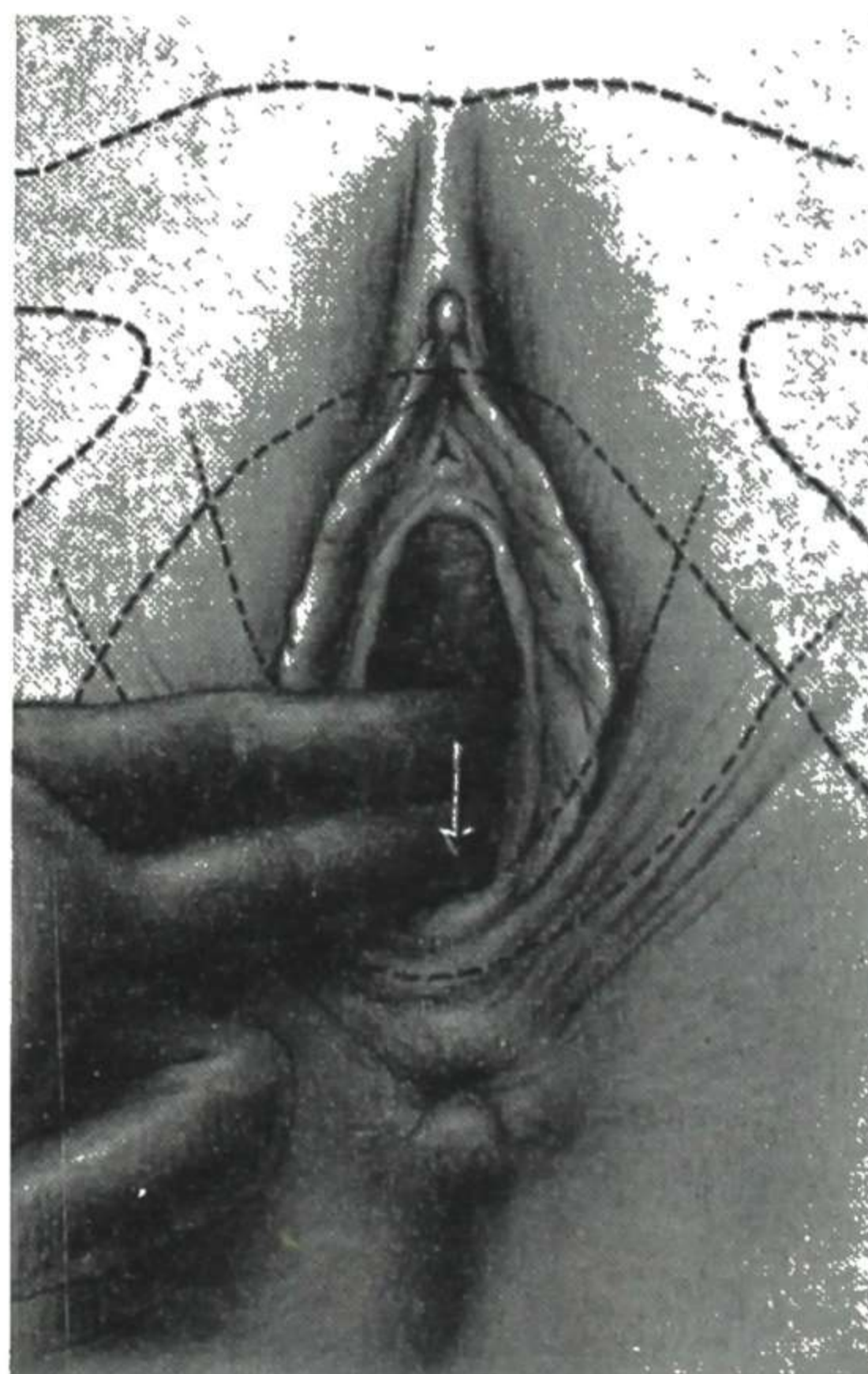
Fig. 148.

Figs. 147 and 148.—The bony arch, which bounds the vaginal opening above, is shown in Fig. 147. Additional space needed for examination is secured by depressing the perineum, as shown in Fig. 148.

What Structures to Palpate

With one or two fingers, well lubricated and introduced into the vagina, palpate the following structures:

Vaginal Walls—Roughness, Tenderness, Discharge, Induration, Swelling, Stricture.

Base of Bladder—Tenderness, Induration.

Cervix Uteri
{
Position,
Direction of axis,
Size and shape,
Laceration and eversion of lips.
Condition of external os,
Consistency of cervix,
Tenderness,
Motility.
}

Pericervical Tissues—Tenderness, Induration.

Pelvic Floor
{
Size of opening,
Resistance to backward pressure,
Protrusion of vaginal walls,
Scars and distortions,
Thickness of perineum.
}

CERVIX UTERI

Position, Direction of Axis, Size, Shape, Laceration With Eversion of Lips. Condition of External Os, Consistency of Cervix, Tenderness, Mobility

The cervix uteri is felt at the upper end of the vagina as a firm, conical body, projecting through the upper portion of the anterior wall. It is distinguished from the surrounding vaginal wall by its greater hardness.

Position of Cervix.—The normal position of the cervix is from three to three and one-half inches from the vaginal orifice. The fingers are carried toward the top of the vagina until the tip of the finger touches the cervix. If the vaginal orifice comes well up to the upper end or the third joint of the finger, the cervix is in normal position (Fig. 149). If the cervix is encountered by the finger before it is introduced that far, the cervix is low (Fig. 150). If not encountered at that point, it is high. Another method of determining the position of the cervix is to ascertain whether it is above or below the level of the ischial spines, for normally the lower margin of the cervix lies approximately at the interspinal line.
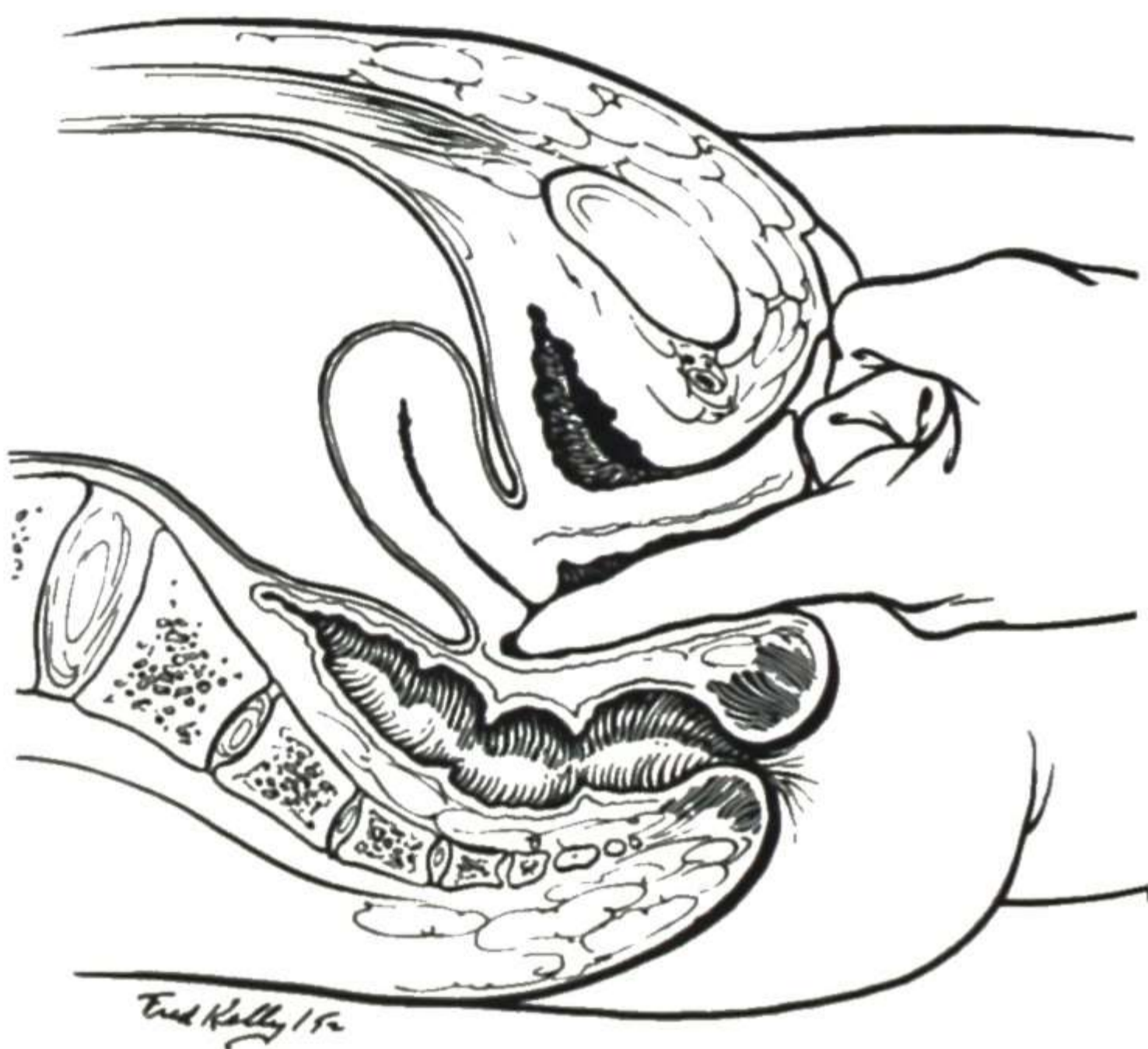
Fig. 149.
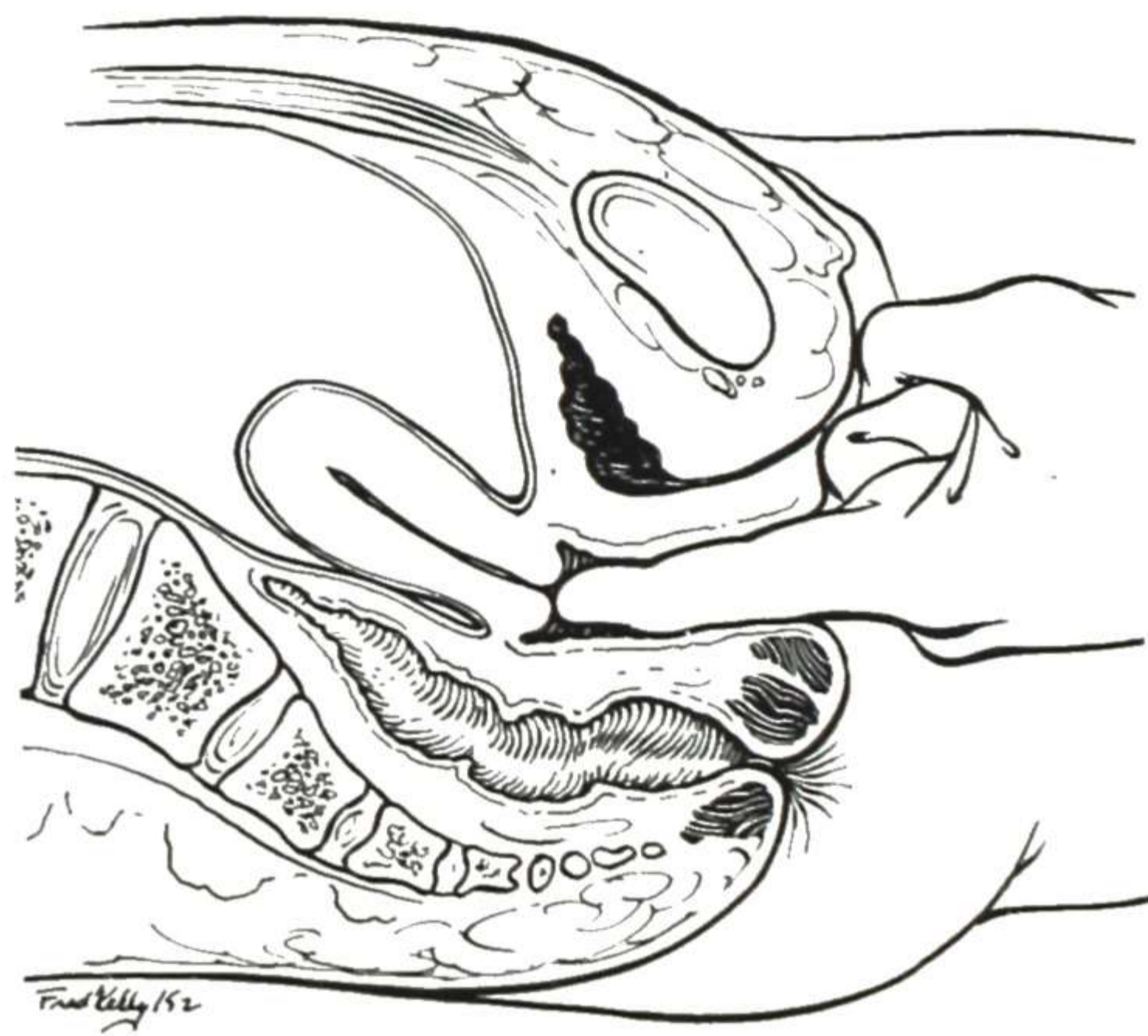
Fig. 150.

Figs. 149 and 150.—The relation of the cervix to the examining finger. Fig. 150 shows this relation in retroversion of the uterus. Compare this with Fig. 149, which shows the relation when the uterus is in normal position.

In cases where, after examination in the dorsal posture, it is still uncertain as to whether or not there is serious descent of the uterus, the patient may be examined in the standing posture. The patient stands, with one foot slightly elevated on the round of a chair or on a small stool, while the examiner, sitting on a chair in front of her, makes the vaginal examination.

Direction of Cervix.—Determine whether the cervical canal, i.e., the axis of the cervix, points **across** the vagina above toward the coccyx as it should (Fig. 149), or **along** the canal, as shown in Fig. 150. Direction of the cervix forward along the vaginal canal is usually due to backward displacement of the uterus. However, it is sometimes due simply to anteflexion of the cervix.

Size and Shape, Laceration and Eversion, Condition of External Os.—The size and shape of the cervix vary much in different individuals, and in the

same individual at different periods of life. In women who have never been pregnant, the normal cervix has the shape of a rounded cone about one inch wide and projects into the vagina from one-half to three-quarters of an inch. The external os is small and round and is at the flattened apex of the cone.

In certain abnormal cases the cervix is very long (an inch to an inch and a half) and pointed. This condition is known as conical cervix. It is frequently accompanied by a very small external os ("pinhole os") and is one cause of sterility.

In women who have borne children the cervix is larger and broader, and comparatively shorter. The os is a transverse slit and is irregular in shape and may be large enough to admit the finger tip. There are usually small scars and irregular depressions from lacerations in labor. When the cervix has been severely lacerated, there may be two or three distinct lips. Again, it may, on account of chronic inflammation, become enlarged to two or three times its normal size and may be felt as an irregular ball at the top of the vagina.
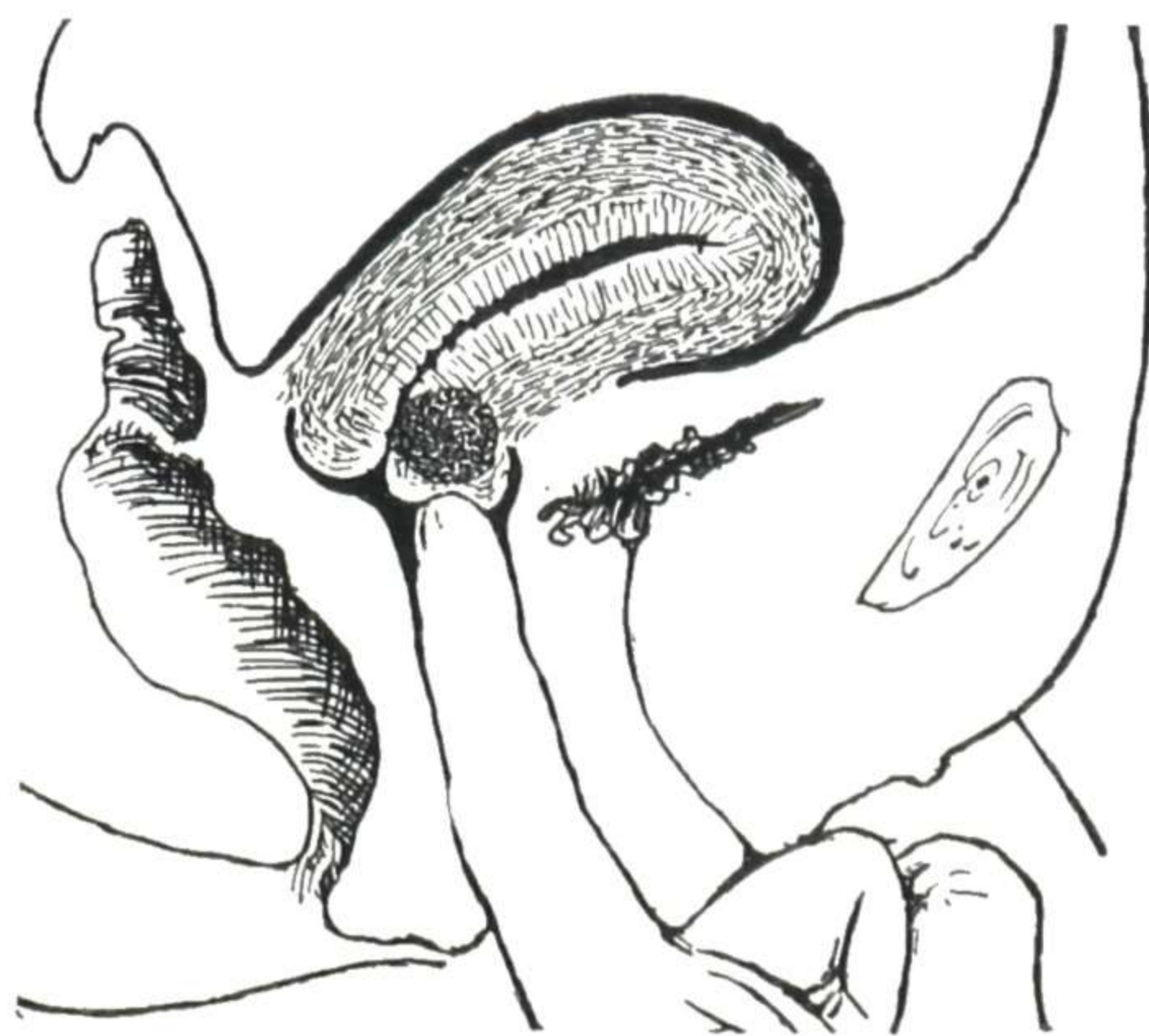
Fig. 151.   Fig. 152.

Fig. 151.—Palpating the cervix to determine softening. The light stippled area represents the softened portion. The uterus is represented as enlarged from early pregnancy.

Fig. 152.—Beginning carcinoma within the cervix, causing a hard nodule, which can be felt on digital examination.

(From Kelly: Operative Gynecology, D. Appleton-Century Co.)

Consistency.—The normal cervix is like hard connective tissue, almost as hard as tendon. Its consistency is closely approached by that of the end of the nose when firmly pressed upon. During pregnancy the cervix **softens,** the softening beginning at the lower end and gradually involving more and more as pregnancy advances (Fig. 151). The softening is so marked that the softened portion is sometimes missed entirely.

Abnormal **hardening** of a portion of the cervix may be due to scar tissue, to cystic disease, to a myoma nodule, or to malignant infiltration (Fig. 152).

Tenderness of Cervix.—The cervix is much less sensitive than the vaginal wall and rarely becomes very sensitive even when diseased. The pain complained of when the cervix is pressed upon is usually due to the pulling upon inflamed periuterine structures, by the resulting movement of the uterus.

Mobility of Cervix.—Normally the cervix is freely and painlessly movable a short distance in all directions. Its range of mobility may be diminished

by scar tissue or by malignant infiltration in the upper part of the vagina, or by an inflammatory exudate in the pelvis, or by a uterine tumor, or by any pelvic tumor that fixes the uterus. Its range of mobility may be increased by laceration or overstretching of the supports, posteriorly or anteriorly or laterally, a frequent accompaniment of pelvic floor injuries.

PERICERVICAL TISSUES

Tenderness, Induration

The tissues about the cervix, immediately beneath the vaginal wall, may be palpated, and tenderness or induration noted. If induration is present, note whether it is a distinct, well-defined mass or diffuse infiltration and thickening of the tissues; this can usually be felt more easily by rectal examination.

PELVIC FLOOR

Size of Vaginal Opening, Resistance to Backward Pressure on Pelvic Floor, Protrusion of Vaginal Walls, Scars, or Distortions, Thickness of Perineal Body

Is there loss of support at the pelvic outlet? Is there so much relaxation, due to imperfect healing of an **open tear** or of a **subcutaneous tear,** or due to **subinvolution** of the pelvic sling, that the pelvic organs are not satisfactorily

Fig. 153.   Fig. 154.

Fig. 153.—Testing the pelvic floor. The vaginal fingers are separated widely, as explained in Fig. 154, and pressed downward.

Fig. 154.—Showing the relative position of the fingers when in the vagina, while testing the pelvic floor.

supported? Keep in mind that the important supporting structure in the pelvic floor is the musculofibrous sling formed by the levator ani muscles and fibrous sheaths. The perineal body is of secondary importance, hence a relaxed vaginal opening does not necessarily mean relaxation of the supporting

floor, though it usually accompanies such relaxation. Methods of testing the pelvic floor are shown in Figs. 153 to 156.

When there has been **laceration of the sphincter ani muscle,** the torn ends are drawn apart, their location being indicated by a small dimpled scar at each side of the anus. The appearance in relaxation of the pelvic floor and also in laceration of the sphincter ani muscle is shown in the illustrations in the chapter dealing with that subject (Chapter 4).
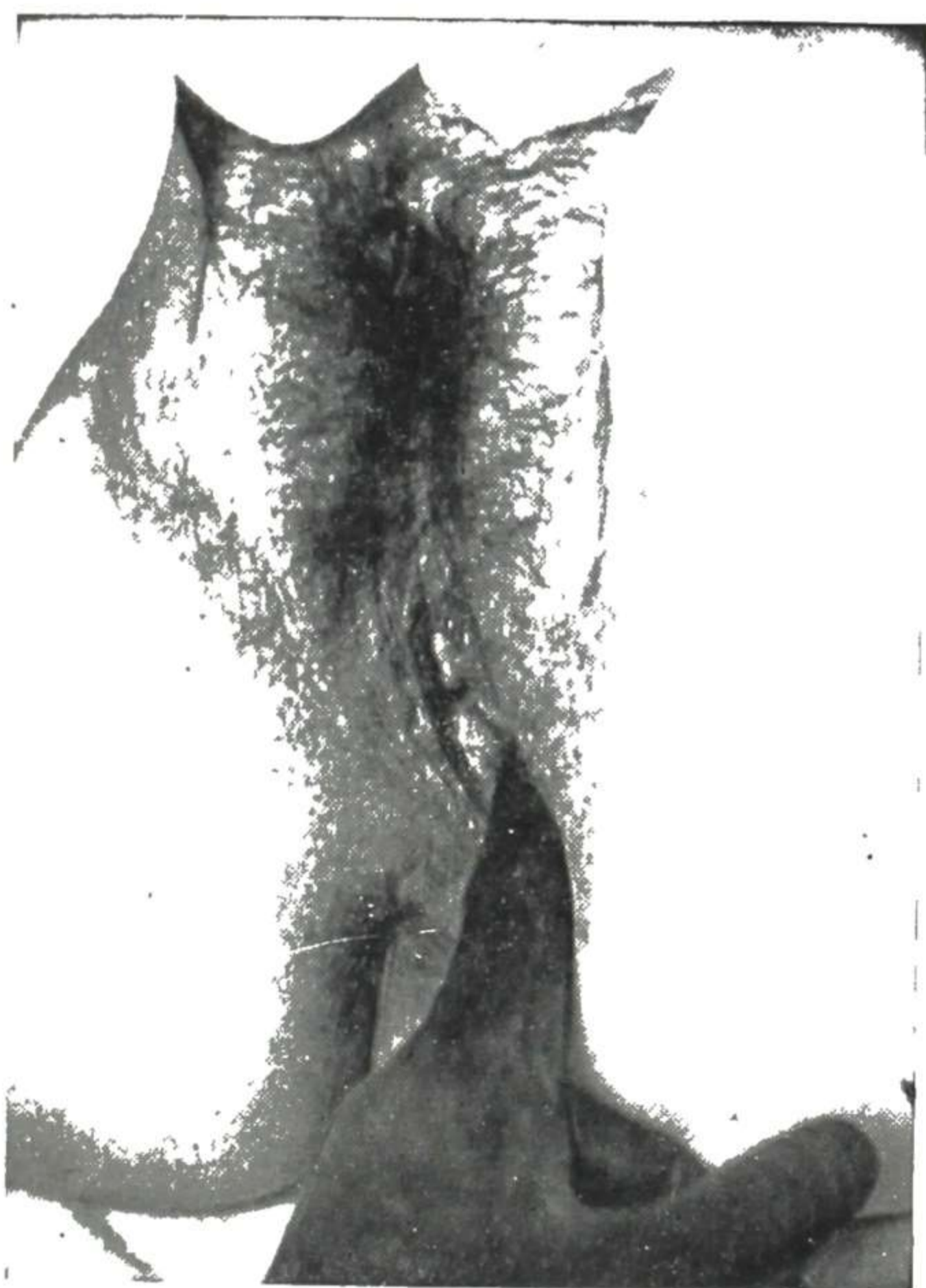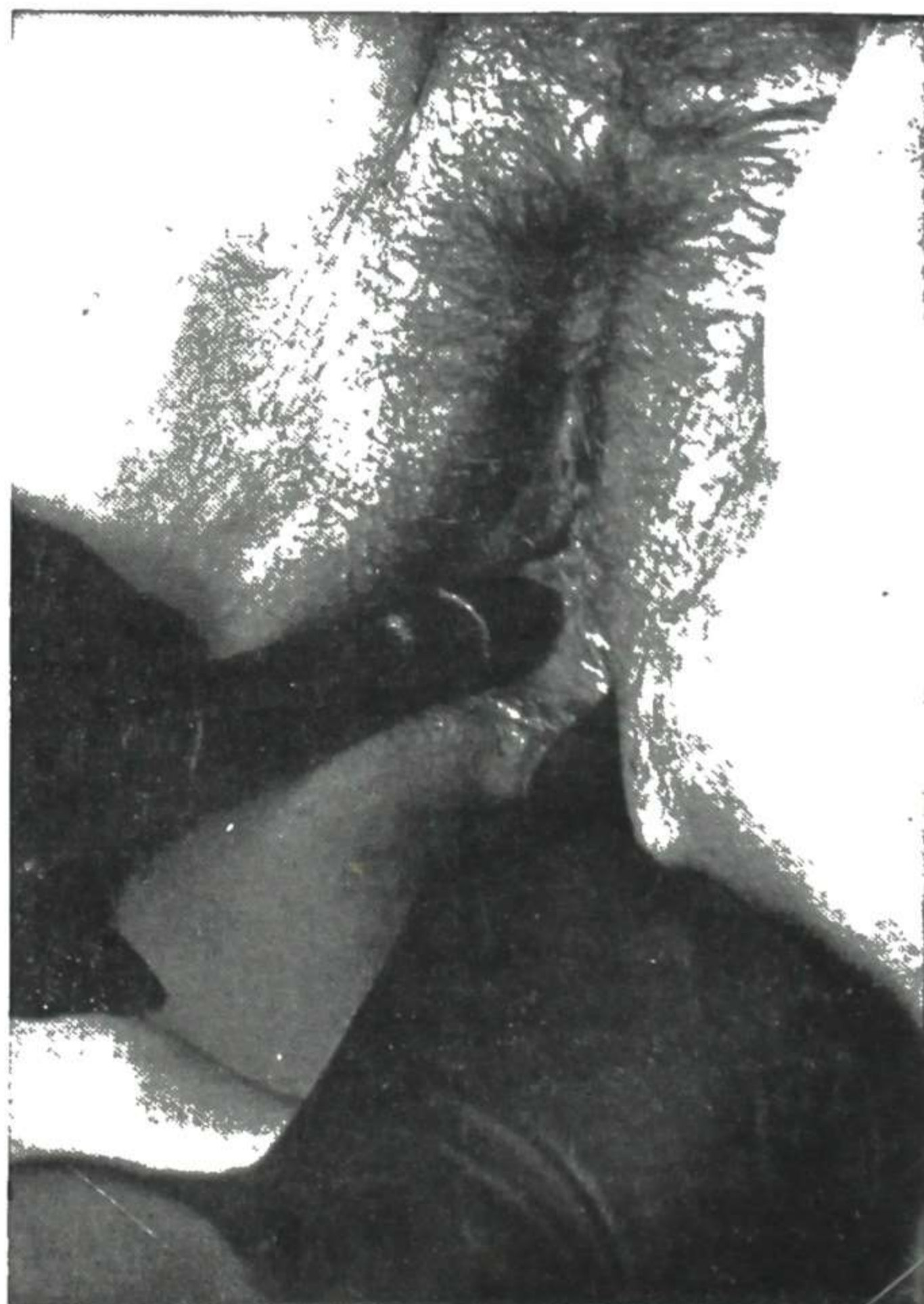

Fig. 155.

Fig. 156.

Fig. 155.—Testing the pelvic floor, especially the left sulcus.

Fig. 156.—Testing the pelvic floor by two fingers introduced into the vagina and then separated.

VAGINOABDOMINAL EXAMINATION (BIMANUAL)

The vaginoabdominal examination is, as its name implies, an examination from the vagina and the abdomen at the same time. The pelvic structures are caught between the fingers in the vagina and the fingers over the abdomen, and carefully examined by indirect touch. By it the body of the uterus is located and outlined. The region to each side of the uterus is palpated and also the space back of the uterus. It is determined whether there is any abnormal mass in the pelvis or whether there is any area of marked tenderness.

To the beginner in gynecologic work this important bimanual examination is often unsatisfactory. He has heard a great deal about tubal and ovarian disease and he expects to feel the tube and ovary at once. He examines a patient, or several patients, and can feel neither tube nor ovary if they are normal. Then he is discouraged and thinks that he has learned nothing from the examinations; and probably he has not learned much, for the simple reason that he was feeling for something that he could not feel and did not know the significance of what he did feel. Close attention to the details of the examination will prevent this unprofitable experience.

Trained Touch

The authors desire to emphasize the importance of training the fingers to appreciate differences in the feel of tissues and training the mind to interpret the diagnostic significance of the differences felt. The multiplication of instruments and laboratory aids to diagnosis has to some extent obscured the importance of the educated touch. Though these aids are helpful, and necessary in many conditions, they cannot substitute for trained palpation in deep-seated pelvic disease.

The beginner must learn to read the conditions first by learning the separate letters, so to speak, and then learning what certain groupings of letters mean. The separate items that must be recognized in this examination are the **position, size, shape, consistency, tenderness, mobility,** and **attachments** of the organs. This takes much time and patience and well-directed efforts through many examinations. It cannot be learned from lectures. It cannot be learned by seeing someone make examinations and applications. It can be learned only through repeated bimanual examinations by the student himself, under competent instruction. Hence the importance of the clinical portion of a gynecologic course.

Though it takes considerable time to learn to recognize normal conditions, the time is well spent, for no real progress is possible without this knowledge. The **normal must be known** before the abnormal can be appreciated. This is self-evident and yet how many students at graduation, and physicians long after graduation, find it difficult to feel more than the vaginal walls and cervix.

In the recognition of pathologic masses, the same points must be considered (position, size, shape, consistency, tenderness, mobility, and attachments), and this information, supplemented by the history and other aids, determines the diagnosis.

The information concerning the bimanual examination may be divided as follows:

> **Palpation of Uterus**—Position, Size, Shape, Consistency, Tenderness, Mobility, Attachments.
>
> **Palpation of Lateral Regions of Pelvis**—Tubes and Ovaries, Mass, Induration, Tenderness.
>
> **Palpation of Other Regions**—Mass, Induration, Tenderness.

PALPATION OF BODY OF UTERUS

Position, Size, Shape, Consistency, Tenderness, Mobility, Attachments

Locating the Corpus Uteri

Steps.—The locating of the corpus uteri will be much facilitated by proceeding as follows:

1. With two fingers in the vagina, locate the cervix and then push the cervix backward and upward. This tends to tip the fundus forward, as indicated by the dotted line in Fig. 157, *A.*

2. Then, with the fingers of the abdominal hand depressing the abdominal wall into the depth of the pelvis back of the uterus, bring the fundus uteri well forward (Fig. 158).

3. Then, with the pressure still maintained in the direction indicated, slip the vaginal fingers in front of the cervix. The body of the uterus is thus caught firmly between the fingers below and above, and may be clearly felt and outlined (Fig. 159).

Three Common Errors.—The following errors are made so often that particular attention is called to them:

Error 1. Examining With Partly Filled Bladder (Fig. 160).—If the body of the uterus is not felt in front and still the abdominal fingers cannot be brought well together, have the patient empty the bladder and then examine again. A partly filled bladder is not felt as a distinct mass, and yet there may be half a pint or more of urine—enough to make the palpation very unsatisfactory. The peculiar thing about this condition is that there is nothing to indicate it, except the difficulty in locating the body of the uterus in deep palpation. No mass is felt and the tissues are all soft and yielding, and there is no particular pain. The fingers seem to sink into the pelvic tissues well, but for some unaccountable reason the uterus is difficult to feel. It seems too

A.   B.   C.
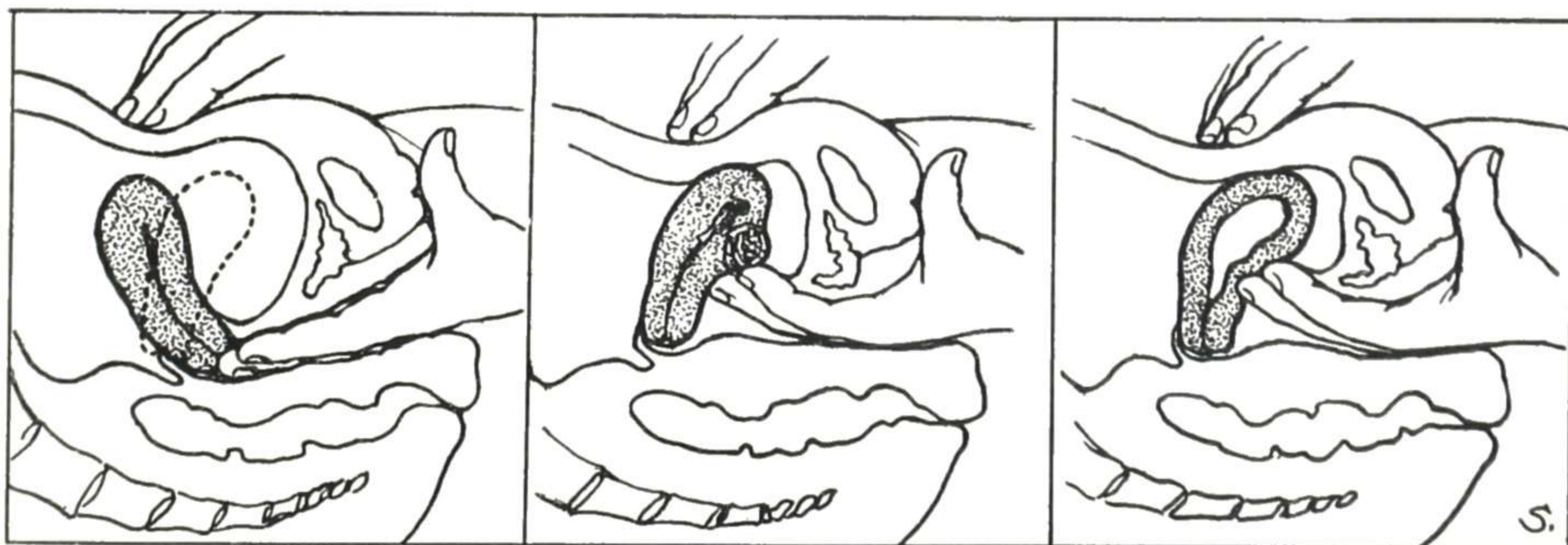
Fig. 157.—*A*, Pushing the cervix back and upward, so as to tip the corpus uteri forward within reach of the abdominal fingers. *B*, Palpating a nodule on the anterior surface of the corpus uteri. *C*, Palpating softening or fluid in the corpus uteri.

far back in the pelvis and yet when you try to bring the fingers together in front of it, they do not come together well. When such a condition is encountered in an apparently normal abdomen (no marked obesity or muscular tension), it is probably due to a collection of urine in the bladder or to intestinal coils in the pelvis. If it does not disappear after the bladder is evacuated, then elevate the patient's hips, to get the tympanitic intestinal coils out of the pelvis.

To **avoid this error** have the patient empty the bladder shortly before the gynecologic examination. If she cannot urinate she may be catheterized if conditions are found sufficiently doubtful to warrant it.

Error 2. Frequent Shifting of the Position of the Abdominal Fingers.—Some students gouge about in the lower abdomen in various directions in an effort to feel the fundus uteri with the abdominal fingers. This is likely to make the examination a failure in a normal case and it is almost certain to do so in a difficult case. Remember that tension of the abdominal wall interferes with the examination and may defeat it entirely. Remember also that the tension is increased by frequent movements of the abdominal fingers, such as

placing them in one position after another in rapid succession, and particularly by endeavoring to gouge in forcibly in various parts of the pelvis in an endeavor to overcome the resistance of the wall. Keep in mind that most of the effective palpation is done with the vaginal fingers, the principal function of the abdominal fingers being to bring the body of the uterus within reach of the vaginal fingers and then hold it there while palpation is being carried out. Get clearly in mind just exactly what movements are necessary to palpate the uterus best.

In order to **avoid this error** just mentioned, place the abdominal fingers so that the depression of the wall will be into the back part of the pelvis, and then carry the fingers by steady and continuous pressure toward the desired region. When you have advanced the fingers as far as possible, hold them there steadily and direct the patient to take a deep breath and then to let the breath all out. As expiration takes place, the fingers may be carried deeper into the pelvis—not by any sudden forcing movement, but by strong steady pressure that does not excite muscular contraction and resistance. If still the fingers are not deep enough in the pelvis, the same movements may be repeated several times. Because the uterus is not felt at once, do not cease the pressure there and begin to depress the wall at some other place. Start the fingers in the right direction at first and then keep them going in that direction steadily, firmly, persistently, without relaxing the pressure, until the depth of the pelvis is reached.

Error 3. Depression of the Abdominal Wall Too Close to the Pubes (Figs. 161 and 163).—If the uterus happens to be far forward, this causes no trouble, but if the uterus is very high, as it frequently is from normal or abnormal cause, the fingers come down on top of the uterus instead of well back of it as they do when the fingers are placed higher (Fig. 161). This depression of the wall close to the pubes tends to push the uterus backward (Fig. 163). Consequently it is not felt between the examining fingers, even though there is no real displacement or was none before the examination was begun.

To **avoid this error**, depress the abdominal wall near the promontory of the sacrum, about midway between the pubes and the umbilicus. In particularly difficult cases it is well to start very high and bring the fingers down upon the sacral promontory, and then allow them to slip over the promontory into the posterior part of the pelvis. They are then brought forward until the body of the uterus is felt or until the vaginal and abdominal fingers are so closely approximated as to demonstrate the absence of the uterus from the central and anterior parts of the pelvis.

Facts To Determine About Corpus Uteri

When the body of the uterus has been located, then fix in mind the following facts concerning it:

1. Position.—Is it in anterior position, as it should be, or is it displaced backward or to one side?

If it can be determined that the corpus uteri is in the posterior part of the pelvis, the diagnosis is "retrodisplacement," and it is well to note also whether it is first, second, or third degree, as in Fig. 164. Avoid the terms "retroversion" and "retroflexion," unless it is possible to examine deeply enough to

Fig. 158.—First maneuver in outlining the corpus uteri. Pushing the cervix back and upward, thus tipping the fundus forward so that the abdominal fingers can get back of it. (From Netter: Sharp & Dohme Seminar, February, 1943.)
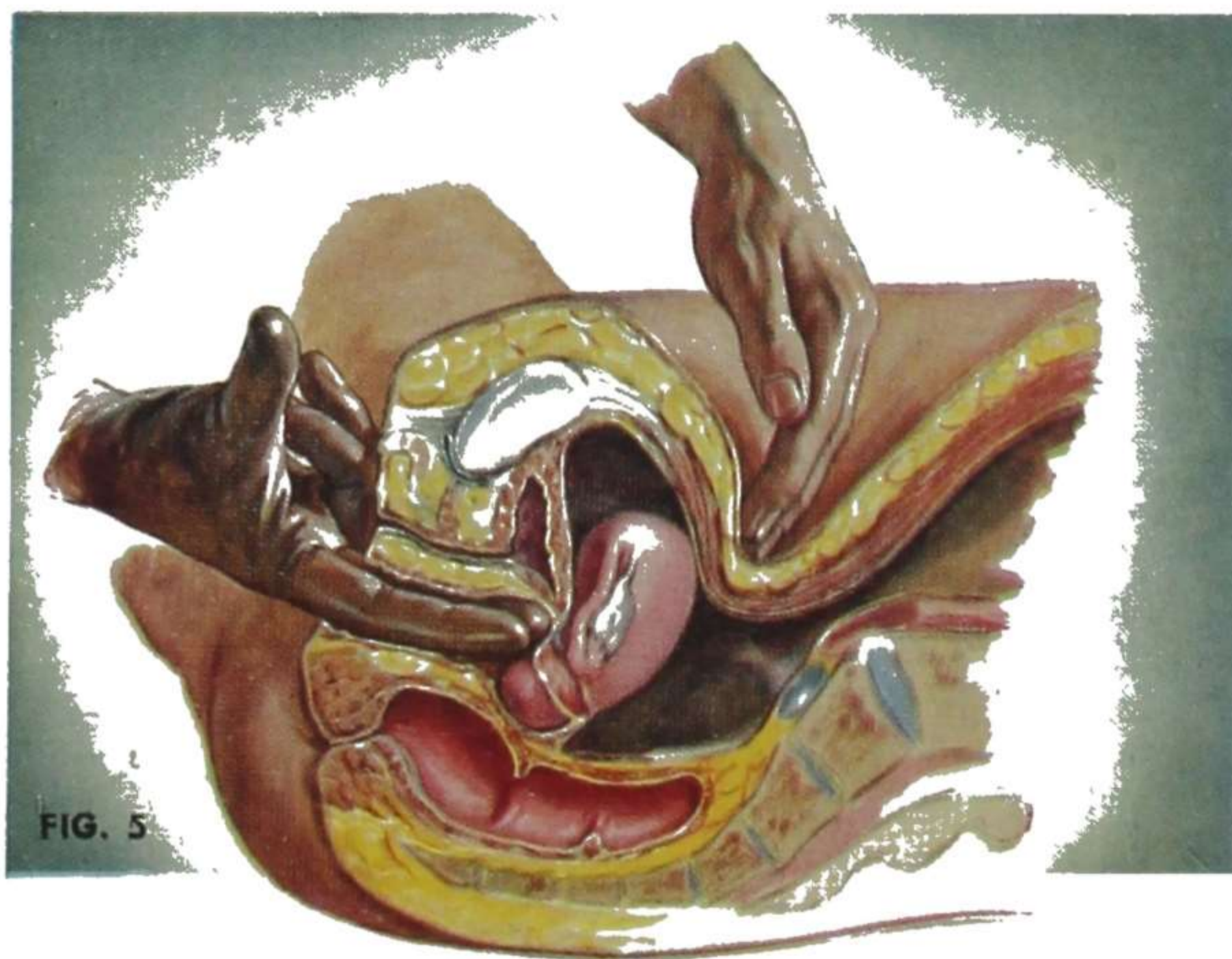

Fig. 159.—Second maneuver. Slipping the vaginal fingers up the front of the corpus, to palpate its anterior surface as in Fig. 157, while the corpus is held forward by the abdominal fingers. (From Netter: Sharp & Dohme Seminar.)
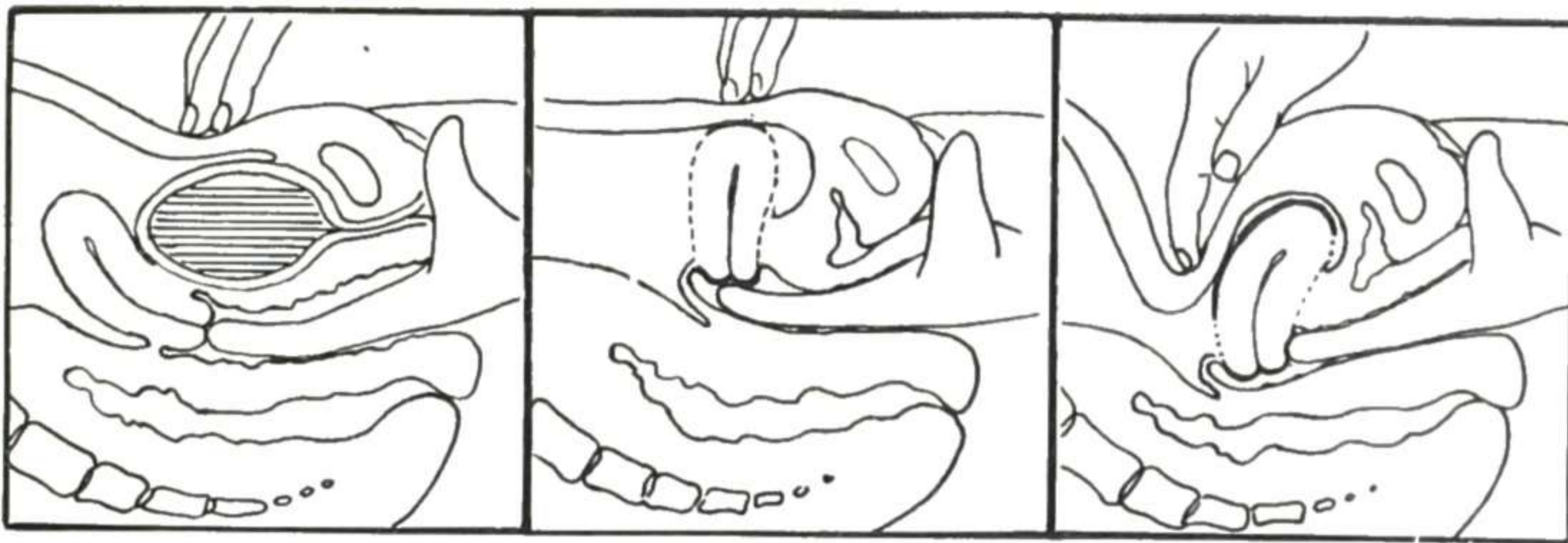
Fig. 160.　　　　　　　　Fig. 161.　　　　　　　　Fig. 162.

Fig. 160.—Bimanual examination. Uterus displaced backward by a full bladder, interfering with deep palpation.

Fig. 161.—Bimanual examination. Difficult case in which the uterus cannot be accurately outlined.

Fig. 162.—Bimanual examination. Uterus forward, and easily outlined.
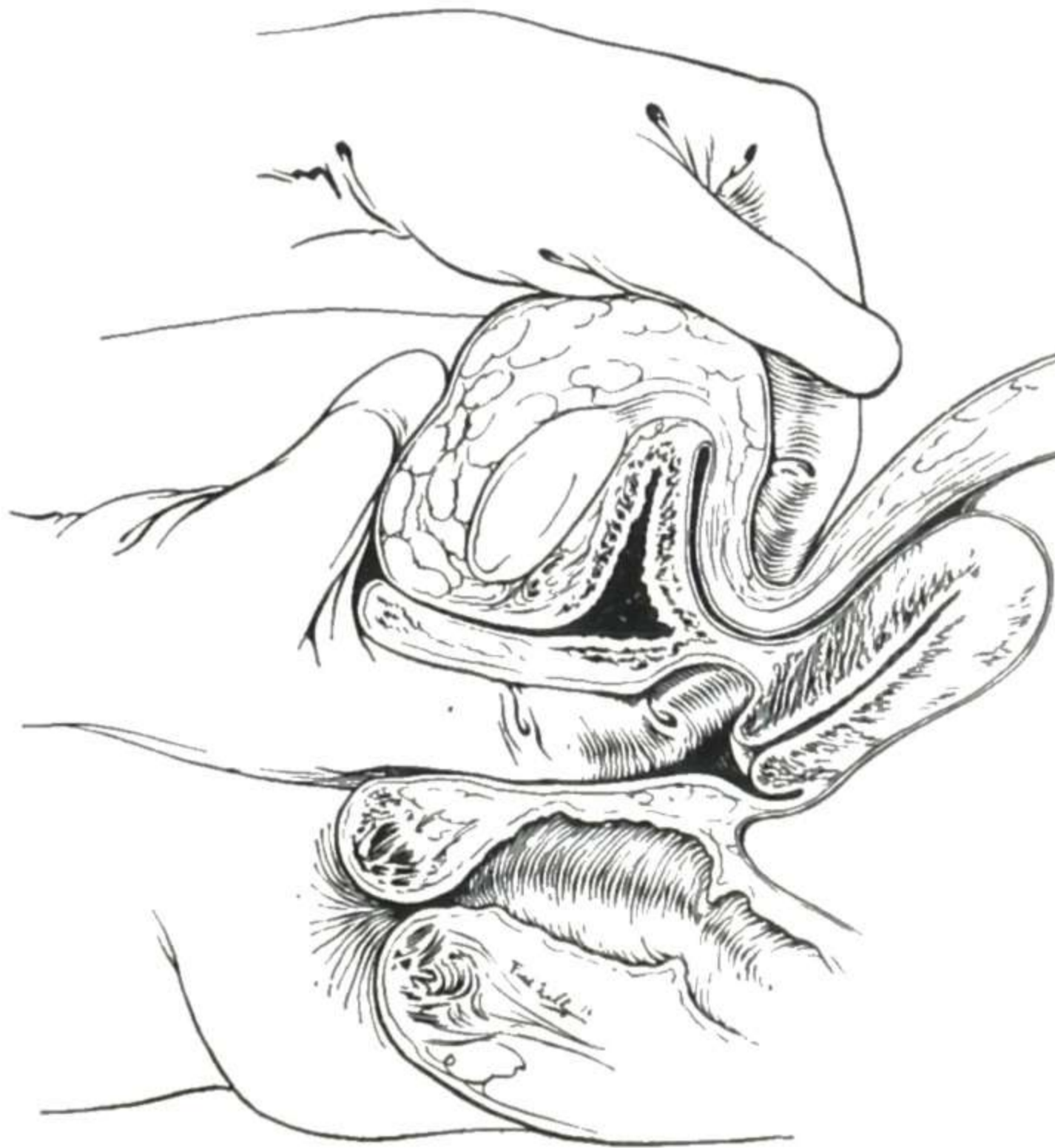
Fig. 163.—Depression of the abdominal wall too close to pubes. Sectional view.
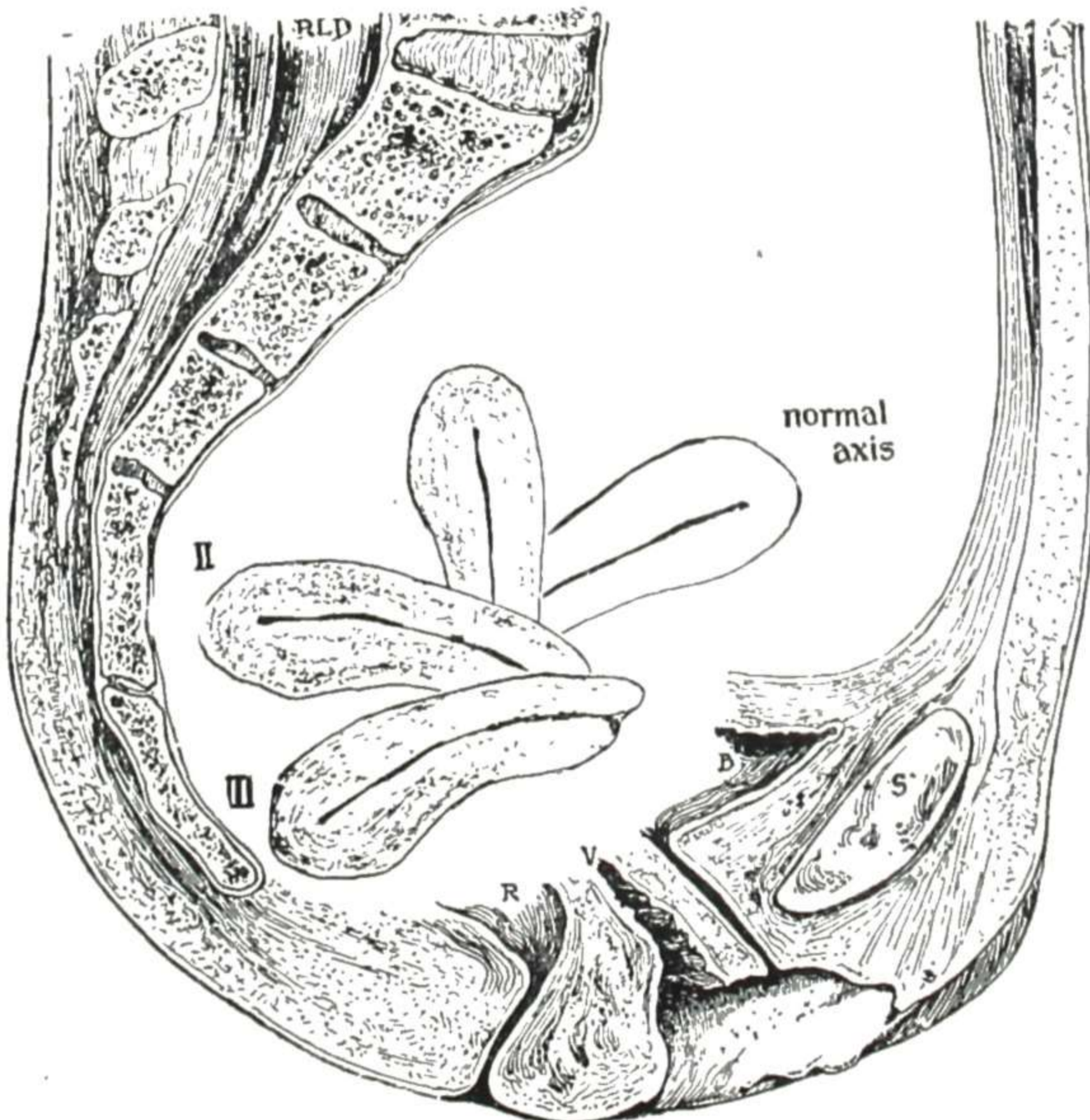
Fig. 164.—Retrodisplacement of the uterus, showing the first, second, and third degrees. (From Skene: Diseases of Women, D. Appleton-Century Co.)

Fig. 165.—Search is made in the posterior part of the pelvis and the uterus is found in retroversion.
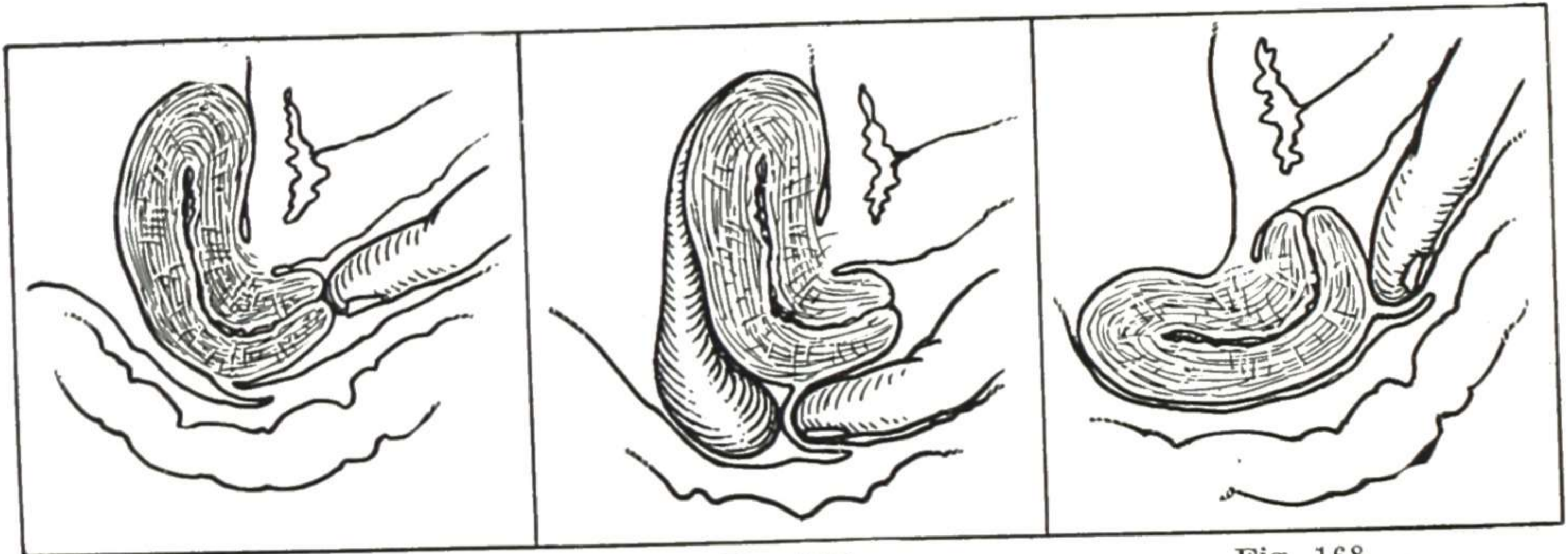
Fig. 166.   Fig. 167.   Fig. 168.

Fig. 166.—Digital examination, anteflexion of cervix.
Fig. 167.—Digital examination, enlarged tube in cul-de-sac.
Fig. 168.—Digital examination, retroversion of uterus, with anteflexion of cervix.
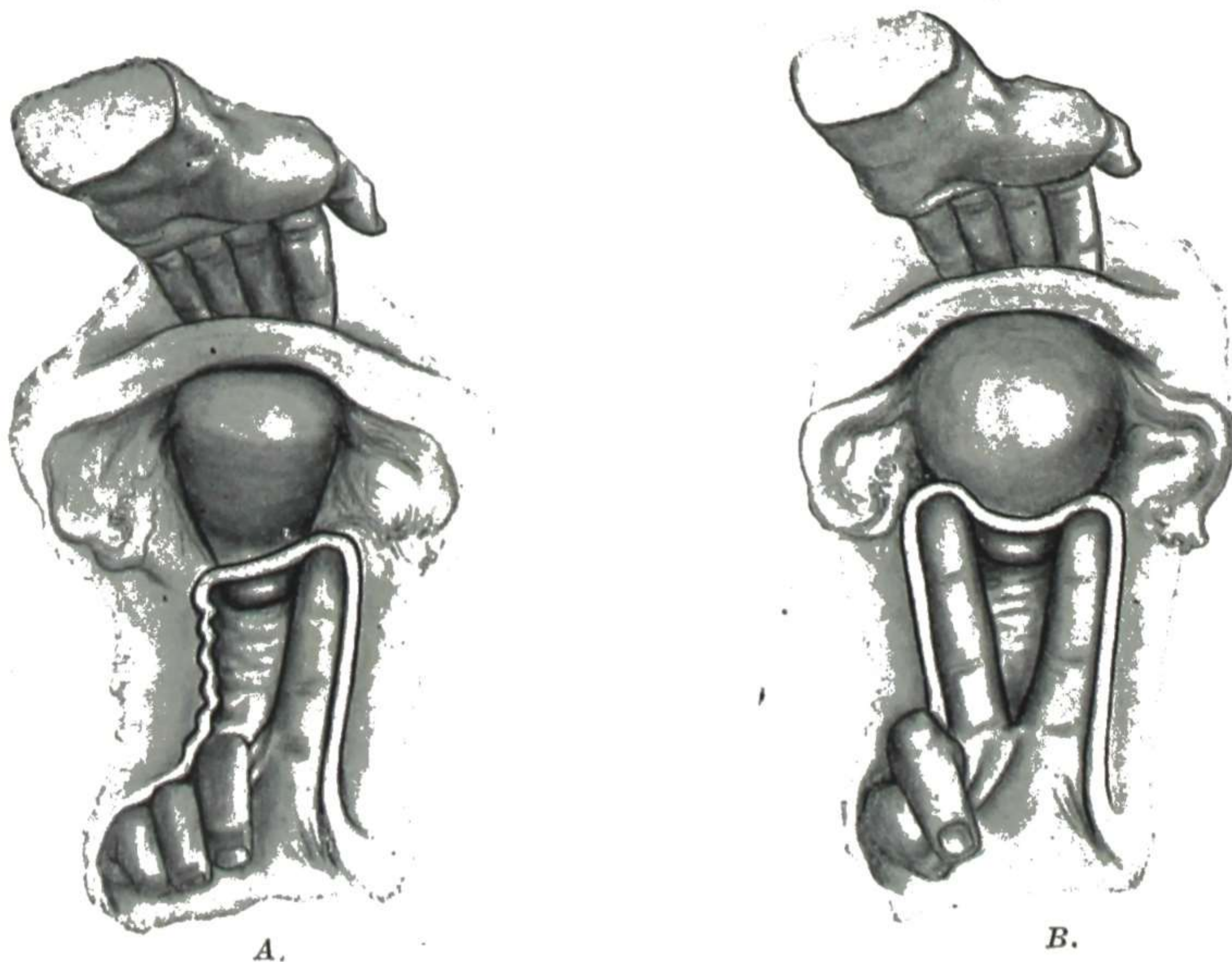
A.   B.

Fig. 169.—A, Palpating the margin of the uterus to determine enlargement or irregularity. B, Estimating the width of the uterus by separating the vaginal fingers so that one goes to each side of the uterus. (From Edgar: Practice of Obstetrics, The Blakiston Co.)

Fig. 170.—Identifying retrodisplacement of the corpus uteri. The corpus cannot be felt in front, and posteriorly it can be felt as a mass which is continuous with the cervix—that is, the cervix can be traced to the mass and seems to expand into it. (From Netter: Sharp & Dohme Seminar.)
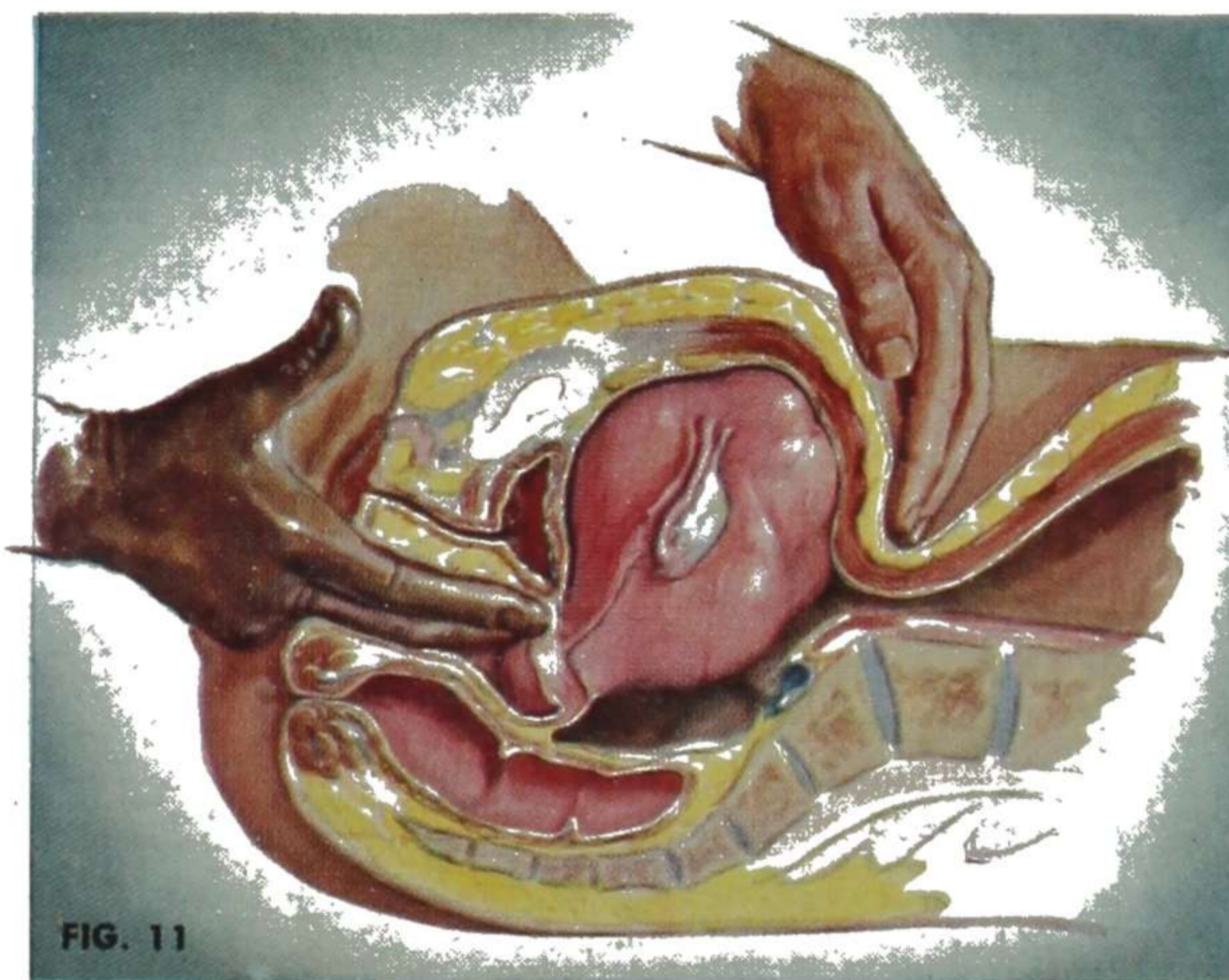
Fig. 171.—Identifying enlargement of the corpus uteri. By tracing up the cervix as in Fig. 169, in front and at sides and back, the examiner determines that it expands directly into the mass. This identifies the mass as part of the uterus, in contradistinction to an extra-uterine mass. (From Netter: Sharp & Dohme Seminar.)

outline the uterus sufficienly for differentiation of types, as in Fig. 165. The most common type is a combination of version and flexion, and the term "retrodisplacement" covers this combination as well as the separate types (Fig. 170). Pure retroversion or pure retroflexion is rare. Occasionally a uterus with anteflexed cervix becomes retroverted, producing a "retrodisplacement of uterus with anteflexion of cervix," as shown in Figs. 166 to
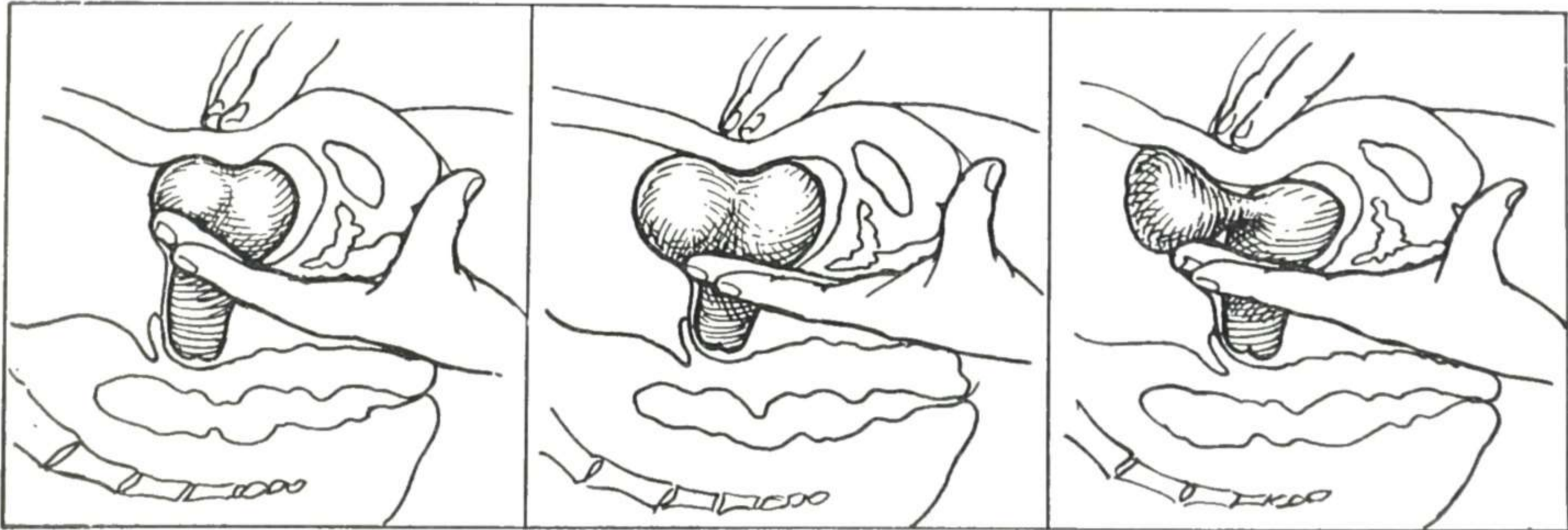
Fig. 172.　　　　　　　　Fig. 173.　　　　　　　　Fig. 174.

Fig. 172.—Bimanual examination, small nodule high on uterus.
Fig. 173.—Bimanual examination, large nodule high on uterus.
Fig. 174.—Bimanual examination, pediculated nodule high on uterus.
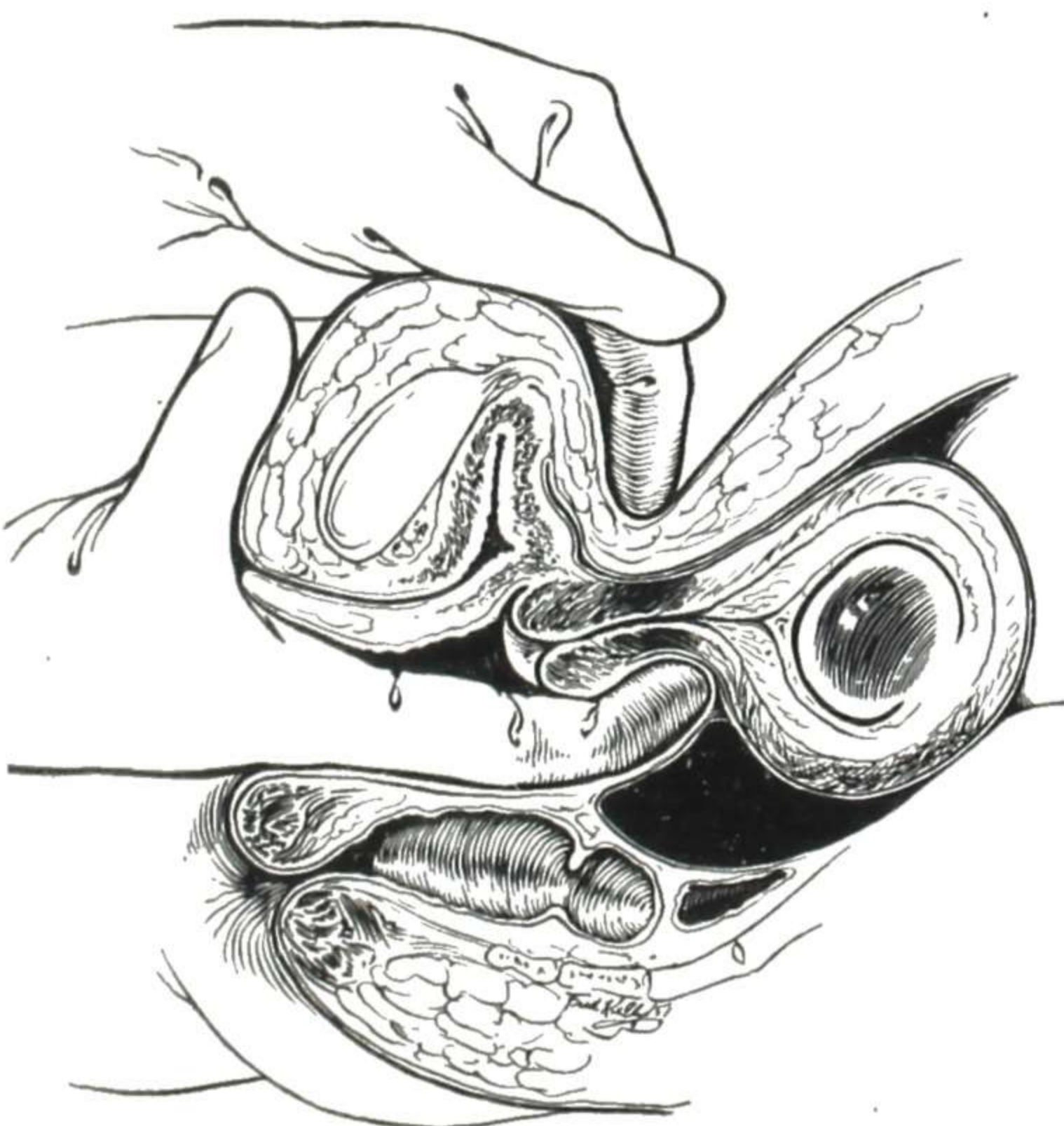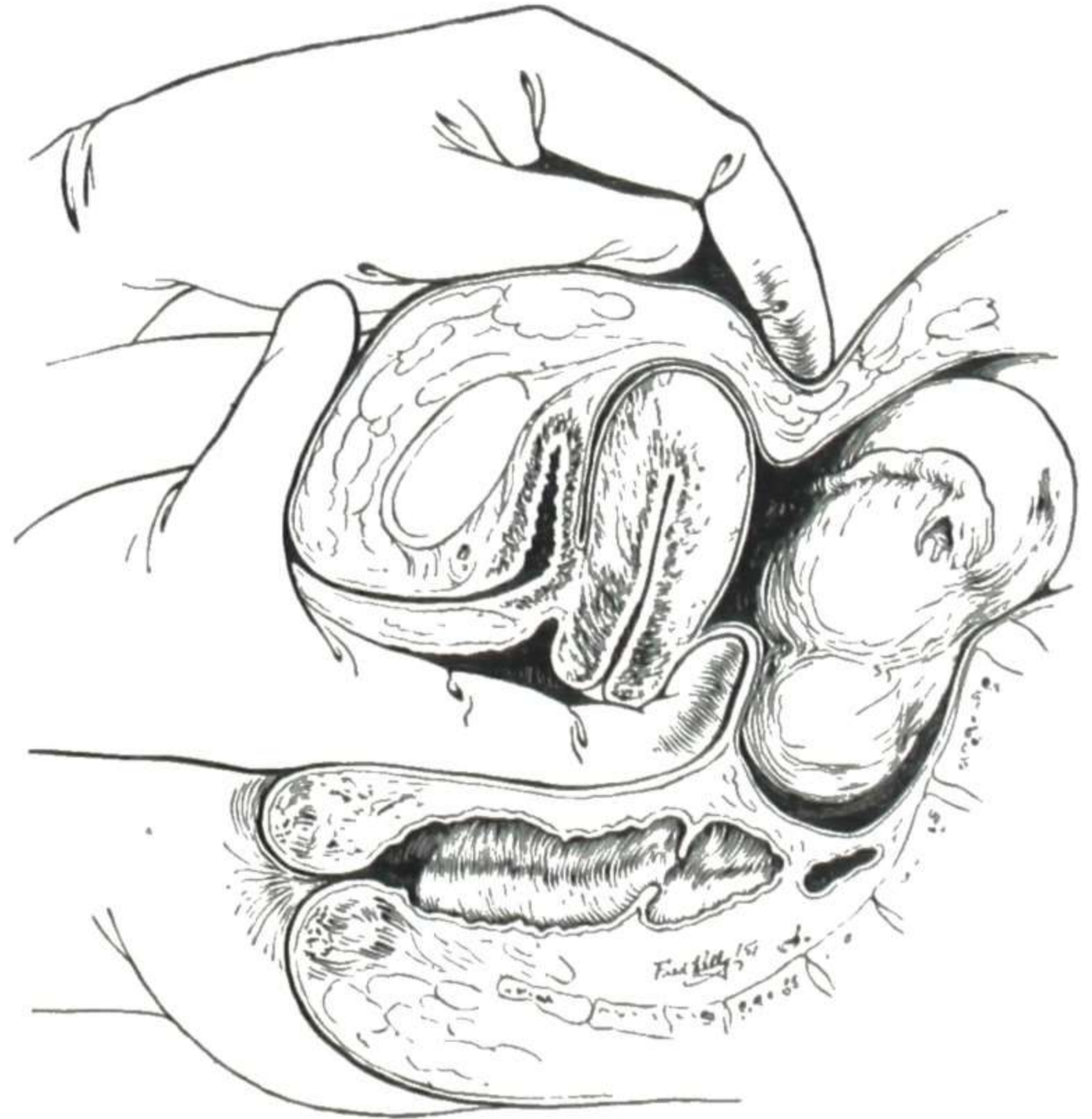
Fig. 175.　　　　　　　　　　　　　　　　Fig. 176.

Fig. 175.—Palpating for Hegar's sign, with the fundus uteri pushed backward, the abdominal fingers being in front and the vaginal fingers back of the cervix.

Fig. 176.—Determining what attachment there is between the uterus and a mass back of it. The uterus is caught between the hands and brought forward, and the examining fingers are crowded in between the uterus and the mass.

168. A mass felt back of the cervix may be an adnexal mass or the body of the uterus (Figs. 165 and 167). Lateral displacement of the uterus may be due to a tumor pushing it or to old adhesions pulling it.

2. Size.—Is it apparently normal in size (about three inches long) or is it as large as the fist, or as large as a child's head? Fig. 169 indicates the

method of palpating the margin of the uterus and also the method of determining its width by separation of the vaginal fingers. Also the cervix is traced up in front and back and laterally to determine whether it expands into the mass felt above (Fig. 171) or is separated from the mass by a deep notch (Figs. 176 and 182).
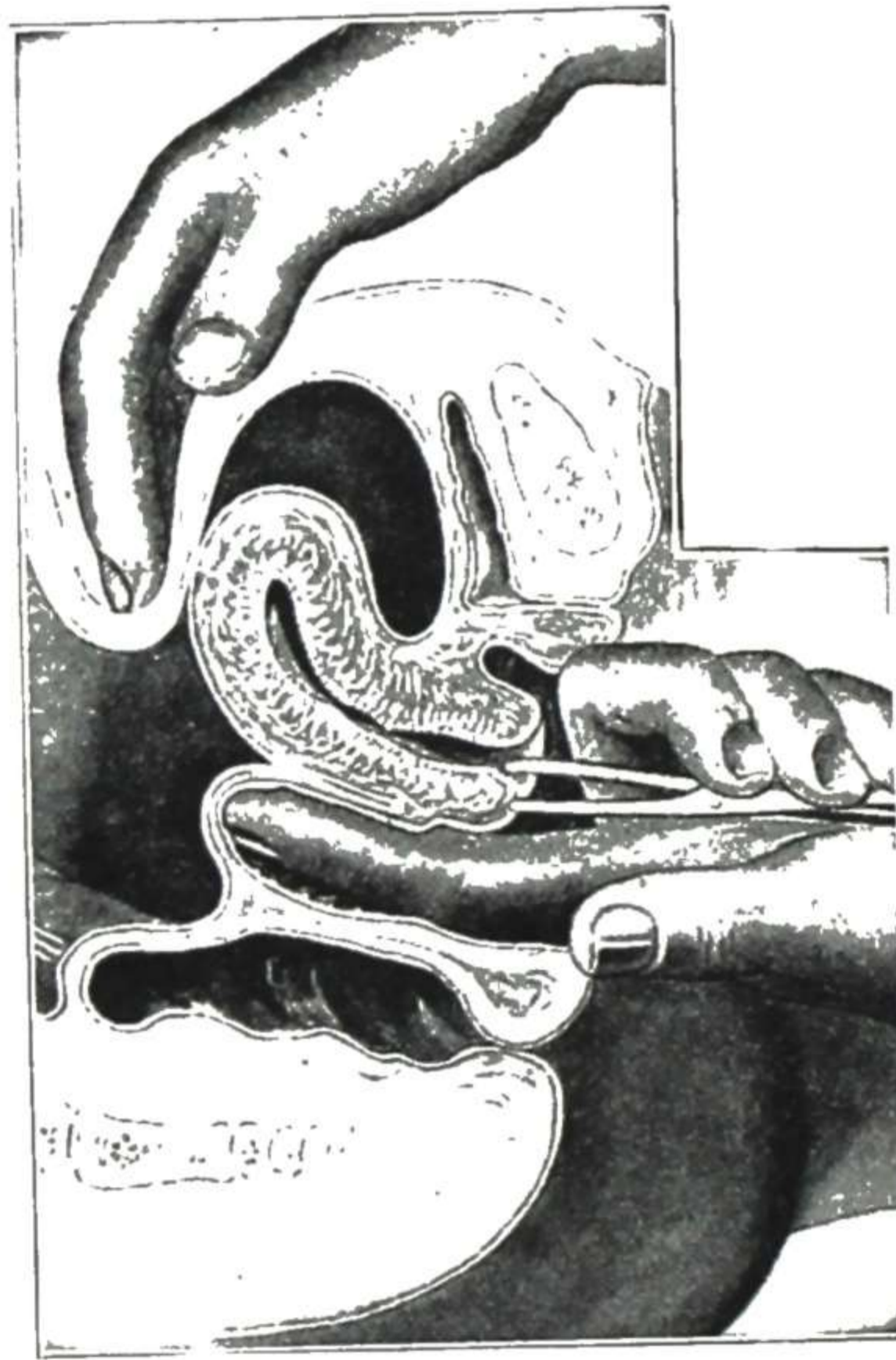

Fig. 177.—Drawing the uterus down with a tenaculum forceps to bring it within reach of the examining fingers. (From Dudley: Practice of Gynecology, Lea & Febiger.)
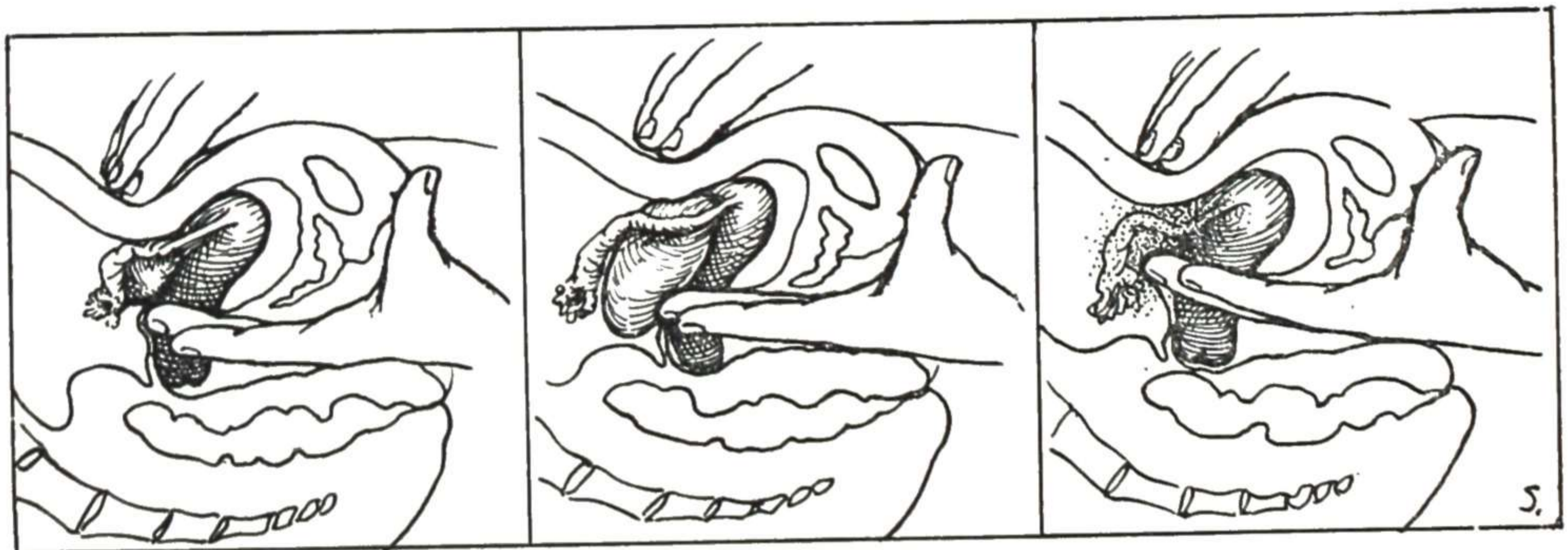

Fig. 178.   Fig. 179.   Fig. 180.

Fig. 178.—Bimanual examination, normal adnexa.
Fig. 179.—Bimanual examination, distinctly outlined adnexal mass.
Fig. 180.—Bimanual examination, adnexal induration from infiltration.

3. Shape.—Is it approximately pear-shaped and of regular contour, or is it distorted by myomas or other tumors (Figs. 171 to 174)?

4. Consistency.—Is it apparently a firm, solid body or does it contain fluid, or are there hard nodules in it, or is there marked softening as in pregnancy (Fig. 175)?

5. Tenderness.—Does pressure on the uterus cause pain or does the attempt to move it causes pain?
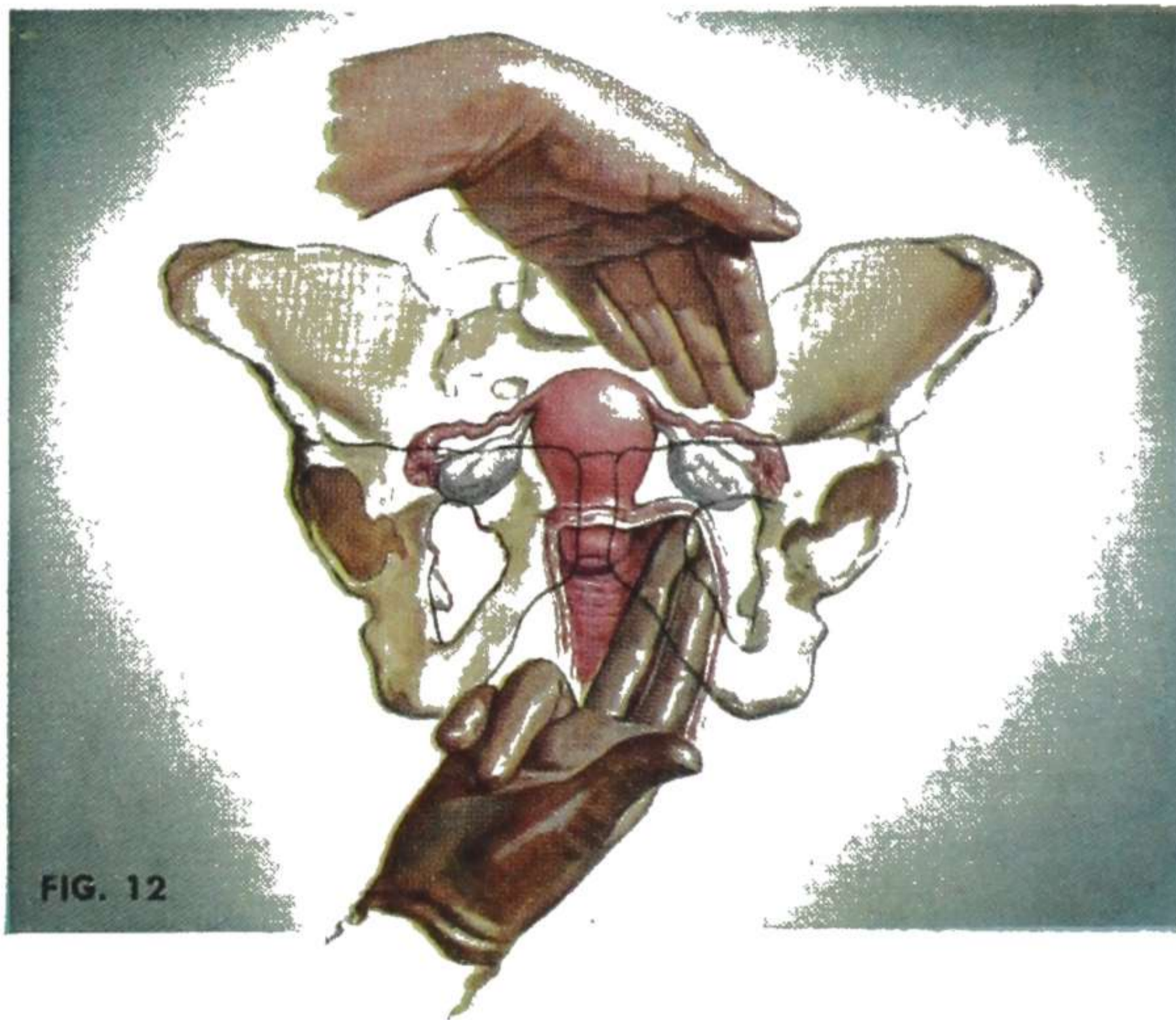
FIG. 12

Fig. 181.—Palpating the adnexal areas. It is well to train the fingers of one hand for the difficult inside palpation, so that accuracy may be increased as additional examinations are made. Either hand may be used. Such use of the right hand is illustrated in these colored drawings. The authors of this textbook prefer the left hand. In palpating the lateral areas it may or may not be possible to identify the ovaries definitely, depending on the thickness and tension of the abdominal wall and the size of the ovaries in that patient. (From Netter: Sharp & Dohme Seminar.)
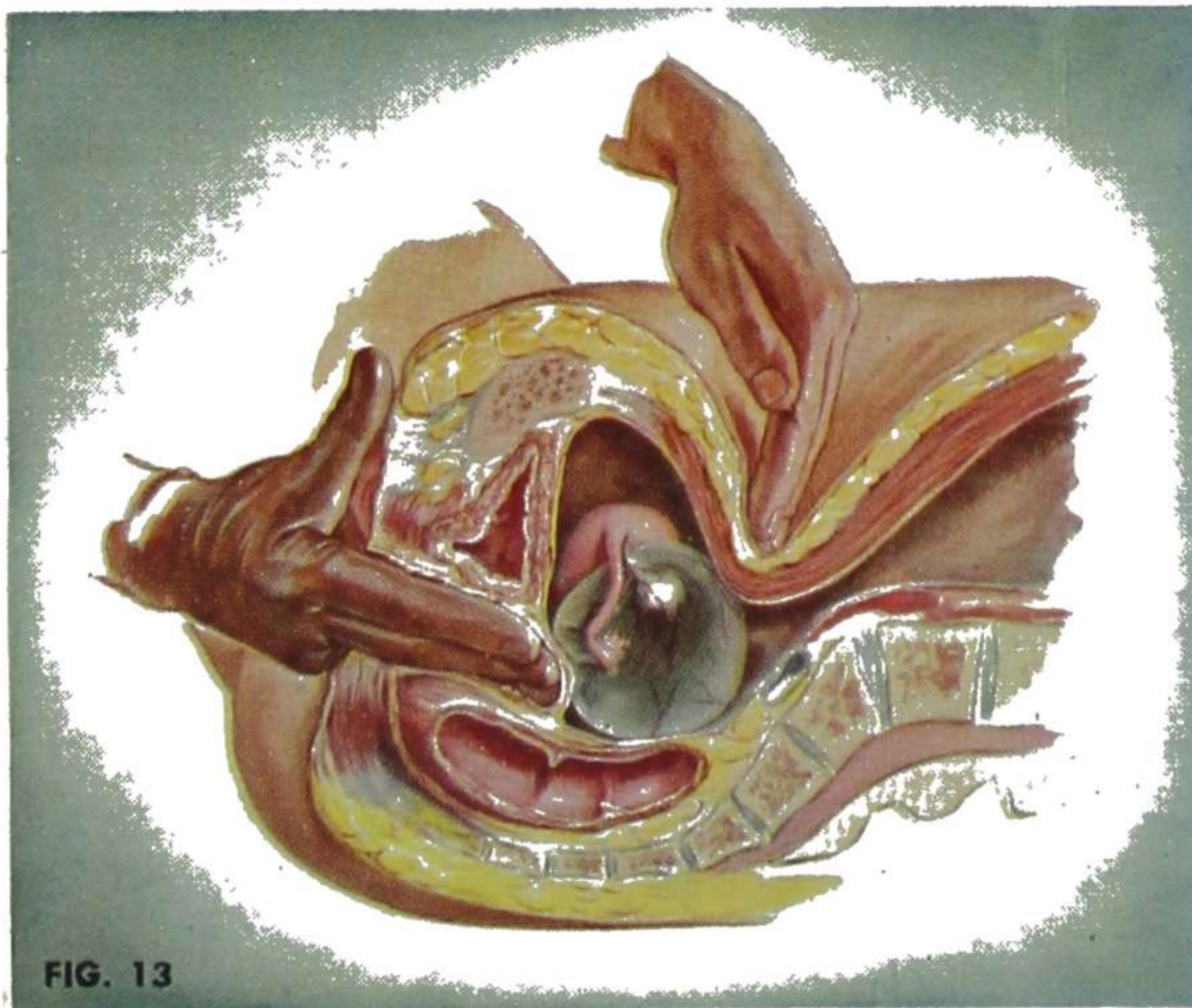

FIG. 13

Fig. 182.—Identifying a cystic tumor in the lateral area of the pelvis. Such a growth is usually from the ovary, but may come from the parovarium. A principal point in identifying a mass as adnexal rather than uterine is the notch extending up between the mass and the uterus—that is, the cervix does not expand into the mass. (From Netter: Sharp & Dohme Seminar.)

6. Mobility. Can the uterus be moved freely up and down, to right and left, forward and backward, or is it fixed more or less firmly by an inflammatory exudate or by a tumor?

7. Attachment.—Does the uterus seem to be attached or fixed to the pelvic wall at some point? If so, where and by what?

When a mass is found in the vicinity of the uterus, its exact relation to the uterus is to be determined as accurately as possible, particularly whether it is a growth from the uterus or is simply lying against that organ. Figs. 176 and 182 indicate the method of determining how intimately a mass is attached to the uterus; whether there is any attachment and, if so, whether at lower or upper part of the uterus. When it is impossible to reach the various parts of the uterus sufficiently to obtain the necessary information, the cervix may be caught with a tenaculum forceps and the uterus pulled somewhat downward as shown in Fig. 177.

In the region, on each side, lies the large area of connective tissue, beside the cervix and lower part of the corpus uteri. Here induration from inflammation or other cause is felt at once, low about the cervix, just under the vaginal wall. Higher, beside the uterus, lie the fallopian tube and the ovary. They are near the upper part of the broad ligament and so close together that ordinarily it is impossible to say, simply from the position of a mass there, whether it springs from the tube .or from the ovary. Hence the region is spoken of as the "tuboovarian" region, as both organs lie there. It is also called the "adnexal" region, the tube and ovary of each side being considered the adnexa of the uterus. The method of palpating in different conditions is indicated in Figs. 178 to 182. The tuboovarian region lies high, and to palpate it satisfactorily requires special care.

PALPATION OF LATERAL REGIONS OF PELVIS

Tubes and Ovaries, Mass, Induration, Tenderness

Steps.—In palpating the tuboovarian region of either side, proceed as follows:

1. Place the tips of the vaginal fingers to that side of the cervix, and then push them backward and outward and upward as far as possible (Fig. 181).

In order to carry the finger tips sufficiently far into the posterior lateral area of the pelvis, it is necessary to push the perineum for some distance into the pelvis. This is best accomplished usually by utilizing the force of the body muscles, transmitted to the elbow either through the knee, with the foot on a small stool, or through the iliac crest. This leaves the arm muscles free for the deep delicate manipulation necessary to accurate palpation of the pelvic contents.

2. With the abdominal fingers locate the anterosuperior spine of the ilium on that side and then bring the fingers directly inward (not downward toward the pubes, but directly inward or slightly upward) toward the median line for about two inches (Fig. 183).

3. Then, at that point, depress the abdominal wall into the posterior part of the side of the pelvis until the tips of the abdominal fingers come close to

the tips of the vaginal fingers. This brings the fingers near to each other **back** of, or at least in the region of, the tube and ovary.

4. If the adnexa are not felt in the back part of the pelvis, then bring the fingers of the two hands, held in the same relation to each other, slowly downward toward the pubes. In this way the tube and the ovary are made to pass between the examining finger tips and may be felt if decidedly enlarged.

In these manipulations the palpation proper is made principally with the vaginal fingers, the abdominal fingers serving simply to push the structures down within reach of the fingers below.

A common error is to bring the tips of the examining fingers together too close to the pubes (Fig. 184) ; hence the palpation is of the tissue in front of the tube and ovary, even if they are in normal position. It must be kept in mind also that the tube and ovary are likely to be displaced, especially if diseased, and the displacement is nearly always backward ; hence the importance of getting far back in the side of the pelvis when endeavoring to palpate these structures accurately.
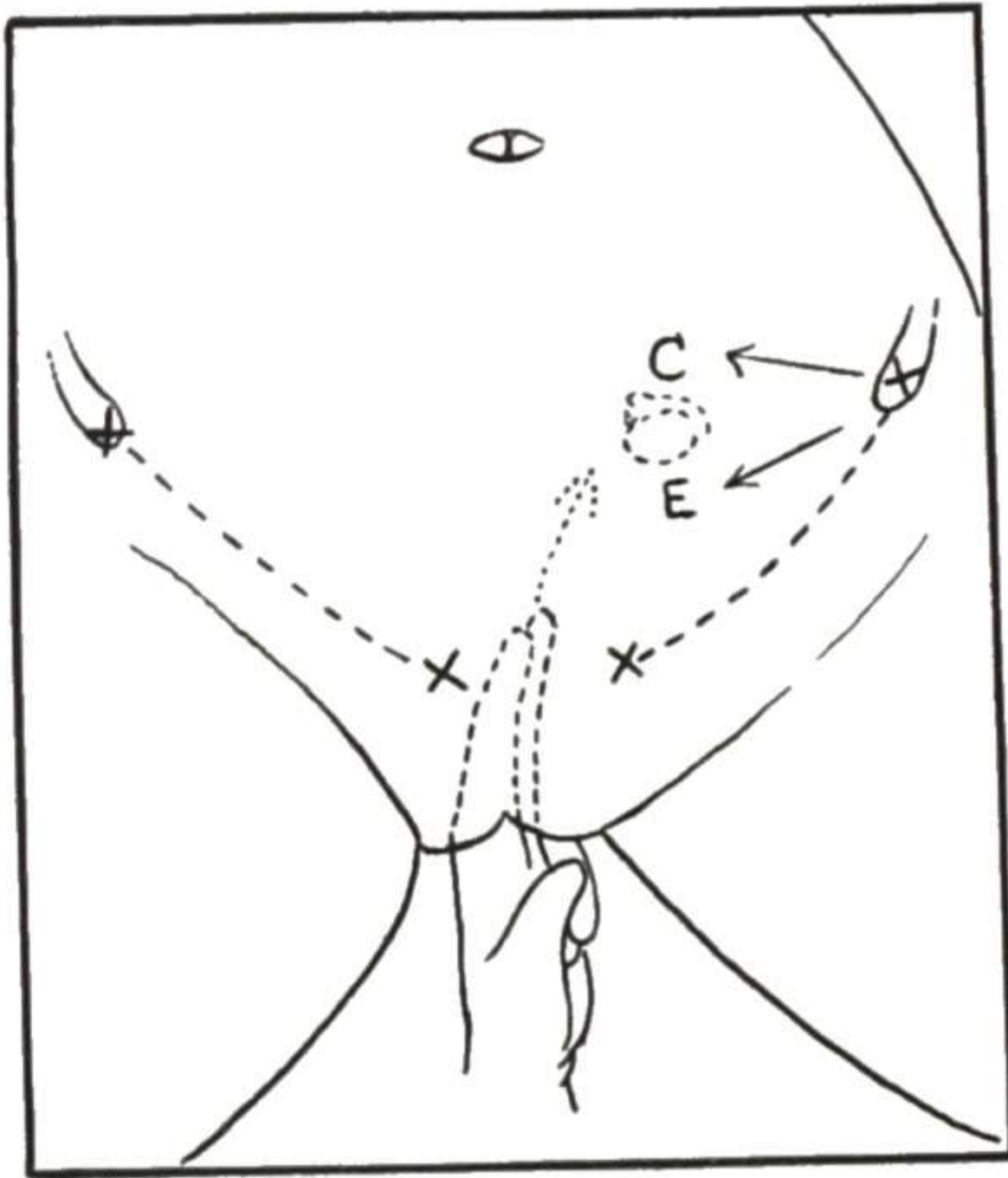

Fig. 183.   Fig. 184.

Figs. 183 and 184.—Illustrating a common error in efforts to palpate the adnexa, namely, placing the abdominal fingers *too low* on the abdominal wall.

In attempting to depress an area of abdominal wall into the pelvis above and back of the adnexa so as to catch the ovary and tube between the abdominal and vaginal finger tips, allowance must be made for a sufficient length of movable wall to reach from the fixed pubic end into the back of the pelvic cavity. This is secured by placing the fingers on an area inward and *upward* from the iliac spine, as indicated in Fig. 183 by *C* (correct). When the necessity of this allowance is overlooked, the fingers are likely to be placed on an area inward and *downward* from the iliac spine, as indicated in Fig. 183 *E* (error) and in Fig. 184 by the solid-line finger tips. The correct area to be depressed is indicated in Fig. 184 by the abdominal finger tips in dotted outline.

Another point of importance, particularly in difficult cases, is to push the vaginal fingers as far back as possible, as indicated by the dotted outlines in Fig. 184, before turning them outward and upward. If this precaution is neglected, as indicated by the solid-line vaginal finger tips in Fig. 184, the ovary and tube are likely to be missed in the examination.

In order to avoid this error, be certain that the point of depression of the abdominal wall is well above the tuboovarian region, so that when depressed into the pelvis it will lie back of the tube and ovary.

By proceeding gently, so as not to excite contraction of the abdominal muscles, and at the same time steadily pressing the two sets of fingers toward each other, a little with each expiration, the finger tips may be brought almost together in the various parts of the pelvis. In order to succeed, however, the abdominal wall must be depressed at the right place and deeply.

FACTS TO DETERMINE

In the exploration in the tuboovarian region, take particular care to search for:

Tube and Ovary—Usually not felt if normal.

Abnormal Mass—Enlarged Tube or Ovary, Exudate, Tumor.

Induration—Inflammatory Infiltration or Exudate, Adhesions, Scar Tissue.

Tender Area—Normal Sensitiveness of Ovaries, Inflammation, Hyperesthesia, Tenderness from other cause.

Tube and Ovary.—In many cases the normal tube and ovary cannot be distinctly felt, even by the experienced examiner, and the inexperienced will find it difficult even in comparatively easy cases. When the tube or ovary is decidedly enlarged, it can be felt to slip between the examining fingers as a distinct thickening or as a small rounded mass.

After locating the adnexa, as above described, it is sometimes advantageous to try to trace the tube out from the uterus. The fundus uteri is located, the examining fingers (vaginal and abdominal making united counterpressure) pass to the upper outer angle, and then feel for the tube as it leaves the uterus and runs along the top of the broad ligament. The best place to locate it usually, when not abnormally indurated, is just beyond the angle of the uterus. It is a much firmer cord here than farther out where the cavity becomes large and the tube soft.

The normal fallopian tube may be felt in a suitable case (thin patient with relaxed abdominal wall and relaxed pelvic floor), in the position indicated, as a small soft cord about the size of a slate pencil. It presents very much the consistency of a piece of rubber tubing. It may, in a suitable case, be traced outward and is then lost in the region of the ampulla, where the tube becomes very soft and the ovary comes into prominence as a soft, rounded, movable body, a trifle larger than the end of the thumb and sensitive to pressure. When the tube is inflamed, it is firmer and more easily felt. Usually, however, when the inflammation is at all severe, adhesions or plastic exudate surround the tube and ovary, binding them and the surrounding structures together in one mass and making their separate differentiation impossible.

If on examination the pelvic tissues are all soft and yielding, and no particular pain is caused by the palpation, you may be certain that the tubes and ovaries are not seriously diseased, though you may not have felt them.

Mass in Lateral Part of Pelvis.—The pelvic tissues, with the exception of the uterus, are soft and yielding, and any firm body may be felt through them, whether a tumor or an inflammatory exudate or a firm blood clot. Fluid blood or serous exudate cannot be felt unless it is encapsulated. If a mass is found to either side of the uterus, determine concerning this mass the same facts that you did concerning the uterus—namely, its position, size, shape, consistency, tenderness, mobility, and attachments. Determine particularly whether or not it is attached to the uterus, and, if so, whether by a broad attachment or by a narrow one.

Induration in the Lateral Part of Pelvis.—In some cases where there is no distinct mass felt, there is a very definite hardening of tissues at some point. Instead of the tissues being soft and pliable, and easily pushed before the

examining finger, as they are normally, there is a stiffness and fixation and resistance, as though there were infiltration and thickening, and the structures beyond cannot be satisfactorily palpated. This resistance and fixation of tissue without a well-defined mass is designated by the term "induration." It may be due to infiltration (inflammatory, tuberculous, malignant) of the tissues, to inflammatory exudate on surfaces, to adhesions, to scar tissue, or to a tumor not yet developed far enough to form a distinct mass.

Tender Area in Lateral Part of Pelvis.—The ovaries are usually rather sensitive on bimanual palpation, and allowance must be made for this normal sensitiveness when estimating the diagnostic significance of tenderness in this region.

Tenderness on palpation may accompany almost any pathologic condition in the pelvis, but it is especially marked in inflammatory trouble, in peritoneal irritation from blood in the peritoneal cavity and in neuralgic affections of the pelvis.

PALPATION OF OTHER REGIONS

In the same way, as already described, careful exploration is made of the following regions:

Posterior Part of Pelvic Cavity—Mass, Induration, Tenderness.
Anterior Part of Pelvic Cavity—Mass, Induration, Tenderness.
Ureteral Regions—Mass, Induration, Tenderness.
Pelvic Nerve Trunks—Tenderness.
Lower Abdomen—Tension, Tenderness, Mass.

If a mass is found in any of these regions, determine as accurately as possible its position, size, shape, consistency, tenderness, mobility, and attachments. The anterior rectal wall is applied closely to the posterior vaginal wall. Turn the examining fingers so that the palmar surfaces are directed backward, and palpate the rectum. Fecal masses in the lower part of the rectum cause no trouble in diagnosis, for in that location their character is easily recognized. In the upper part of the rectum, however, and in the sigmoid region such a mass may cause confusion in diagnosis, for it may resemble a prolapsed ovary or an inflammatory mass in the cul-de-sac or about the tube.

The distinguishing characteristics of a **fecal mass** are three: (a) it is not particularly tender; (b) it is usually of puttylike consistency and may be dented, the dent remaining; and (c) it may sometimes be pushed along to a different position in the bowel.

The method of determining whether a mass is attached to the posterior surface of the uterus, and, if so, how intimately, is shown in Fig. 176, where the sulcus between the uterus and the mass is being palpated to determine its depth. In the case of a tumor with a long pedicle, it is well to have an assistant hold the tumor up in the abdomen out of the way, while the examiner, by bimanual palpation, feels whether or not there is any connection with the uterus or appendages. Also, the uterus may be caught with a tenaculum forceps and pulled downward (Fig. 177), assisting still further in palpation. Another point is that in the case of a broad attachment to the uterus the mass and uterus move as one body, whereas with a slender attachment the two may be moved separately.

Retroperitoneal tumors are occasionally confused with intrapelvic tumors. Newman and Pinck report a summation of 33 cases. and Fig. 185 shows the conditions present in a case reported by Reich and Nechtow.

The bladder and other tissues in front of the uterus should be palpated to determine whether there is any mass or any marked tenderness.
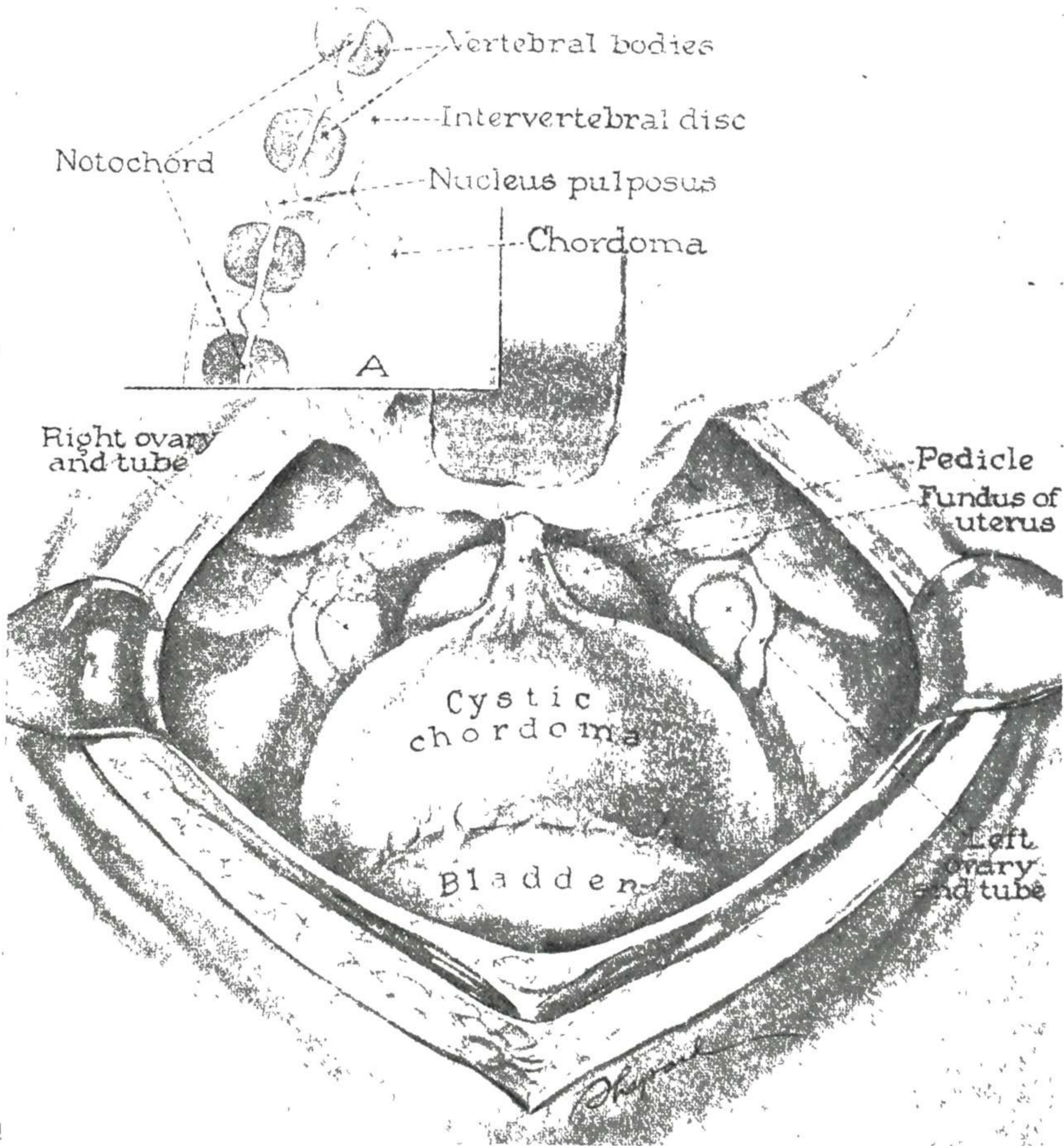

Fig. 185.—Cystic chordoma as seen during laparotomy. (From Reich and Nechtow: Am. J. Obst. & Gynec., February, 1945.)

The region of the ureter on either side is an interesting area which is usually overlooked in pelvic palpation. The ureter extends on each side from the base of the bladder backward, outward, and upward, about half an inch from the cervix uteri. Ordinarily it is not felt. In a suitable case, however, it may be felt as a rather indefinite cord or line of tension, extending from the base of the bladder in the direction indicated. Fig. 186 indicates the method of palpating this region. If inflamed, the ureter is tender on pressure. If infiltrated and thickened, it is easily felt. If a stone is lodged in the lower portion of the ureter, it may be felt. In this way Dr. H. S. Crossen was able to determine that a stone was lodged in the left ureter, a short distance from

the bladder, in the case of a pregnant woman with such sudden severe pain and threatening symptoms that it was at first feared that the trouble was a rupture of an extrauterine pregnancy. The patient eventually recovered and carried the child to term.

If much inflammation has taken place about a stone or an infected portion of the ureter, there may be considerable periureteral infiltration that in a measure obscures the ureter and gives the signs simply of a cellulitis at that side of the uterus and extending toward the bladder. A cellulitis associated with persistent bladder symptoms should be carefully investigated, with the idea that it may come from the ureter. Determine whether the induration runs into the region of the ureter and whether there is tenderness farther up along the ureter or in the kidney.
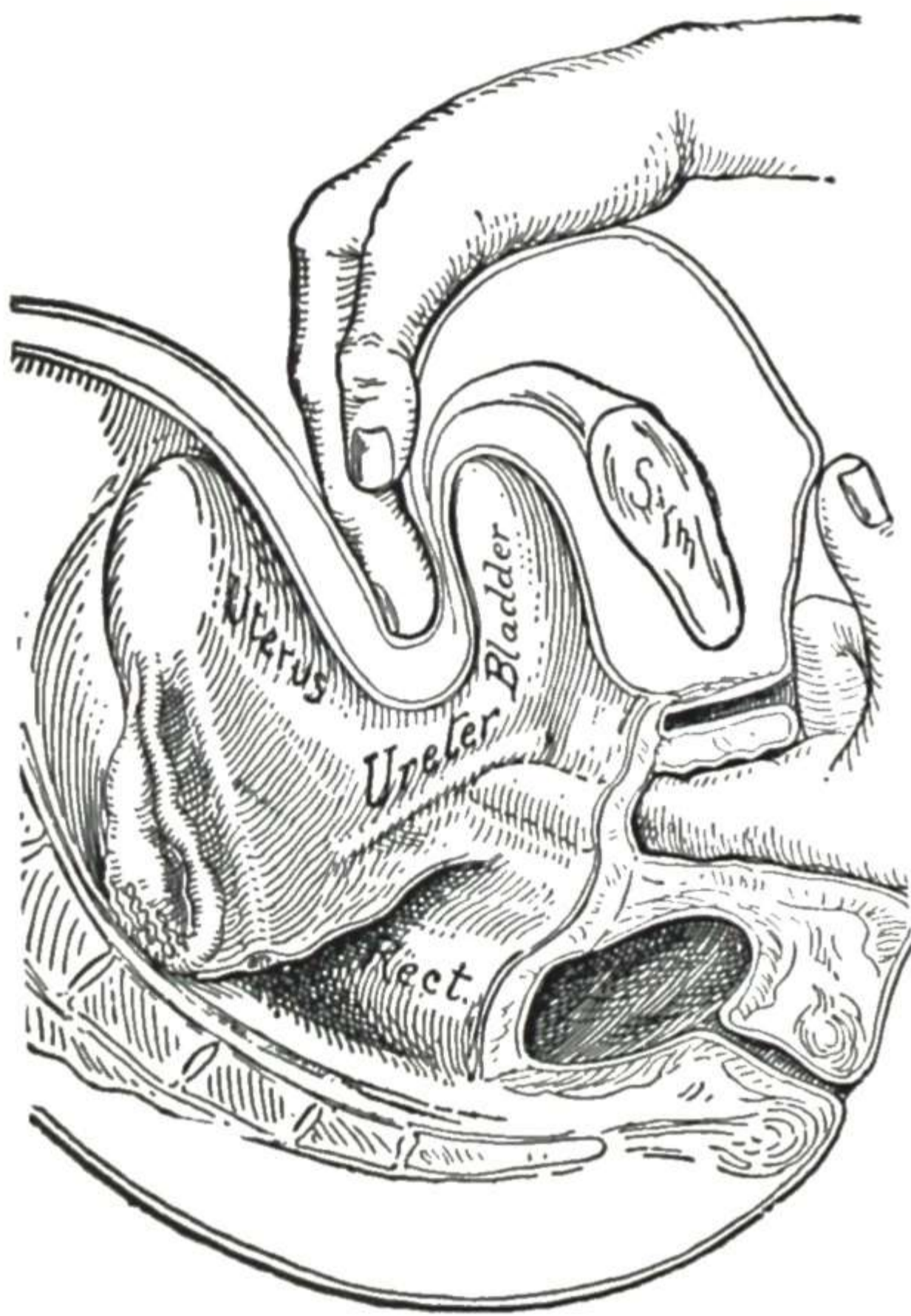
Fig. 186.

Fig. 187.

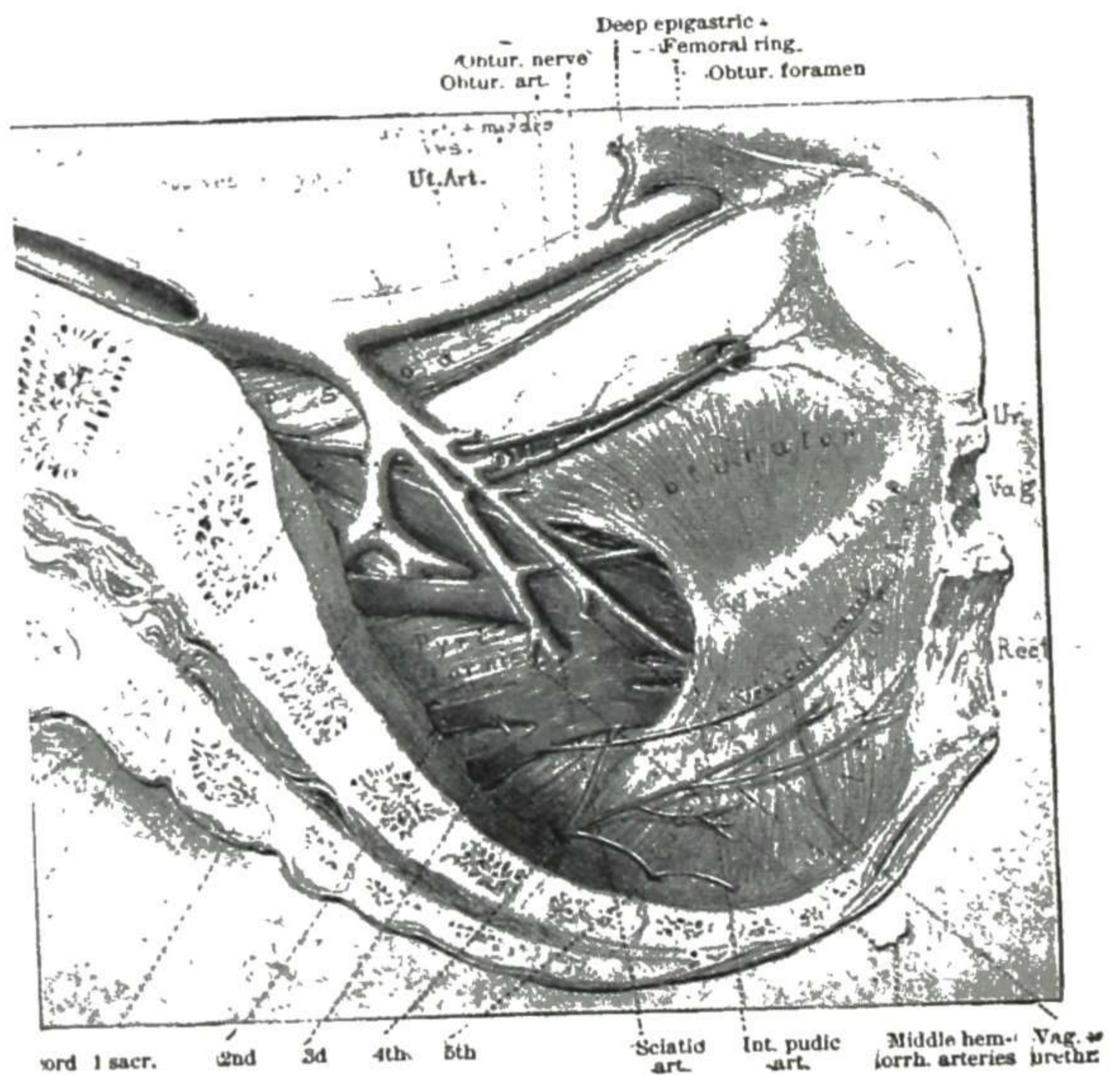Fig. 186.—Palpating the region of the right ureter. (From Ashton: Practice of Gynecology.)

Fig. 187.—Showing the exact situation of the large nerve roots in the pelvis. In the illustration they appear a shade darker in color than the other structures. (From Kelly: Operative Gynecology.)

In cases where pelvic neuralgia or neuritis is suspected, palpate the pelvic nerve trunks (Fig. 187). Sometimes the pelvic tenderness, which at first seems widespread, may be localized in its greatest intensity along the nerve trunks of one or both sides. These may be reached by deep palpation per vaginam or per rectum.

SPECULUM EXAMINATION

By means of certain instruments the vaginal walls may be spread apart so that those walls and the cervix uteri may be seen. Information of much value in some cases may be obtained in this way.

Instruments for Regular Speculum Examination

The instruments needed for this examination are shown in Fig. 188. They are as follows:

A good light.

A speculum for separating the vaginal walls.

A long dressing forceps for sponging out the vagina, usually called "Uterine Dressing Forceps."

A tenaculum forceps, or "Volsellum," for catching the cervix and bringing it better into view.

Vaginal Speculum.—The bivalve speculum is the kind most frequently used in ordinary office work. It consists of two blades, which are introduced closed and then opened by a mechanism at the handle. The vaginal walls are thus held apart and a very good view of the walls and cervix may be obtained. The bivalve speculum is convenient and gives good exposure of the cervix in most cases.
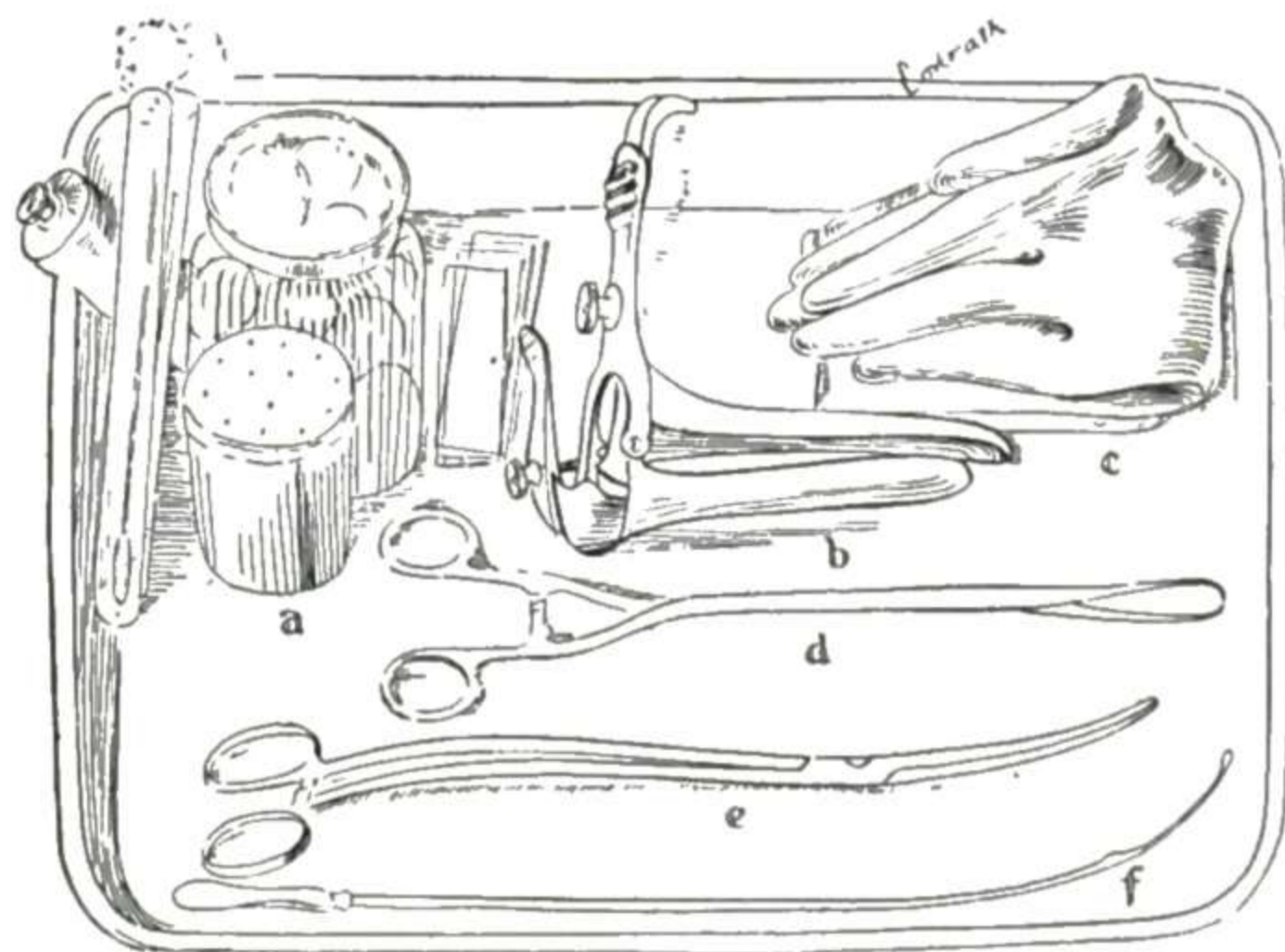

Fig. 188.—Vaginal examination tray with articles unwrapped and arranged for the examination. Group *a*, can of talcum powder, KY jelly, sterile applicators, jar of cotton balls, glass slides; *b*, vaginal speculum; *c*, rubber gloves; *d*, uterine tenaculum; *e*, uterine dressing forceps; *f*, uterine sound, used only in special cases with strict aseptic technique.

There are many different modifications of the blades and also of the mechanism for separating the blades. The most satisfactory form that the authors have found is shown in Figs. 188 and 200. It is called the Graves speculum, after its inventor, Dr. T. W. Graves, who was a general practitioner of Woburn, Massachusetts, in 1878. It has the advantage that it can be easily and quickly transformed into a fairly satisfactory Sims speculum, which is a decided convenience in office work. **Three sizes** are useful—small (virgin), medium, and large. The cervix is easier exposed in most cases of the anterior blade of the speculum is somewhat shorter than the posterior.

Some specula are made with three blades, instead of two, constituting a trivalve speculum. They are made on the same general principles as the bivalve but the mechanism is more complicated and, usually, without corresponding benefit.

The bivalve speculum is used with the patient in the dorsal posture.

The **Uterine dressing forceps** is a long strong forceps for sponging out the vagina and for making vaginal applications. It may be straight or curved

as preferred. The authors find the forceps with a straight shank and a slight curve near the end more convenient than the much curved instrument. A vaginal depressor for pushing the vaginal wall out of the way is usually mentioned in an examining set, but it is generally not necessary, as the vaginal wall may be pushed aside sufficiently with the dressing forceps.

The **Uterine tenaculum forceps** may be needed for catching the cervix to bring all parts of it into view. It should be light but strong, especially about the lock, where it is likely to work loose.

Steps in the Regular Speculum Examination

Introducing the Speculum.—The blades of the speculum are closed and the outer surfaces lubricated and the speculum held in the right hand, while with the other hand the labia are separated and the perineum depressed somewhat with one finger (Fig. 189). The speculum is then introduced and carried all the way to the upper end of the vagina without being opened. In most cases the speculum passes the vaginal entrance most easily when held with its width almost vertical, the edge being held just far enough to one side to **miss the urethra** (Fig. 190). When well within the vagina, it is turned transversely and carried in as far as it will go (Fig. 191).

Fig. 189.—Introducing the bivalve speculum. First step—depressing the perineum to give room for the speculum to be introduced.

Exposing the Cervix.—After the blades have been introduced well up to the top of the vagina, they are opened and the cervix and vaginal walls are exposed (Fig. 192). By turning the speculum in various directions, all parts of the cervix and upper end of the vagina may be seen. If the cervix does not come well into view, it may be caught with a tenaculum forceps and brought downward somewhat and turned from side to side, exposing all portions of it and of the vaginal vault.
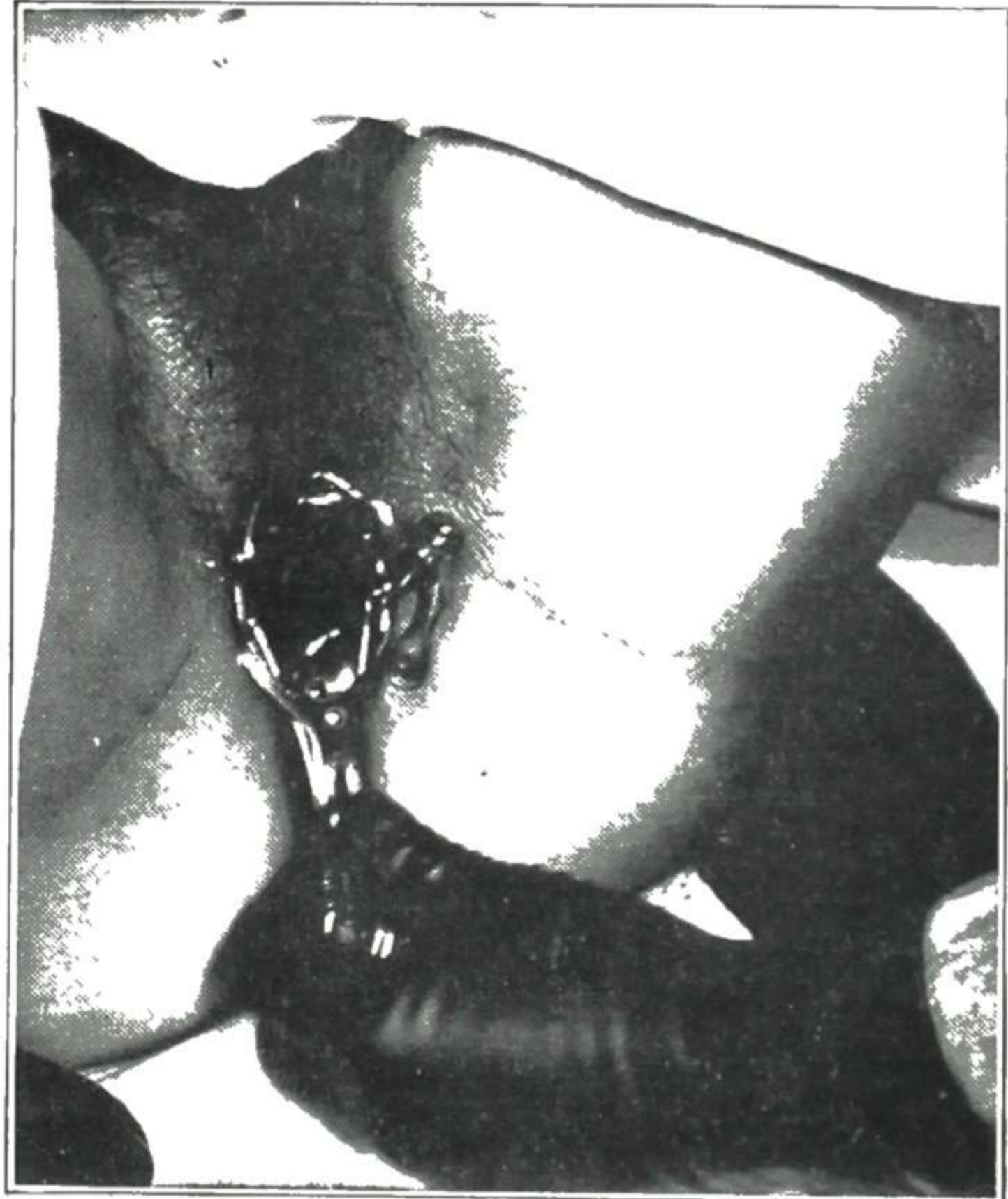
Fig. 190.

Fig. 191.

Fig. 190.—Introducing speculum. It has been carried part way in. Notice the oblique position, which prevents painful pressure on the urethra.

Fig. 191.—The speculum carried all the way in and turned into position for opening.

192.—Bivalve speculum in place. Sectional view, showing relations of speculum and exposure of the cervix and vaginal vault by opening the blades.

Information Obtained in the Speculum Examination

The information sought in the speculum examination is obtained by inspection of the following structures:

Vaginal Walls—Color, Discharge, Redundancy.

Cervix Uteri—Position, Color, Size and Shape, Lacerations, Deviation of Axis, Eversion, Erosion, Hypertrophy, Cystic Change, Ulcer.

External Os—Size and Shape, Color of Edges, Discharge, Polypi.

VAGINAL DISCHARGE

If there is discharge, determine whether it comes from the uterus or originates in the vagina. If from the uterus and of a stringy mucous character, it comes largely from the cervix. Discharge from higher in the uterus (endometrium) lacks the tenacious character of the cervical mucus.

Normally the mucosa of the cervical canal secretes a small amount of clear mucus which blocks the canal and protects the vulnerable endometrium above from bacterial invasion. This clear mucus coming into the vagina mixes with the exfoliated epithelial cells, forming the small amount of whitish *muco-epithelial discharge* which constitutes the normal vaginal contents. This normal discharge occupying the vaginal canal is distinctly protective, in that it halts spontaneous invasion by pathologic organisms from outside, and even when such organisms are carried into the vagina it discourages their growth. Investigations as to the cause of this protective quality of the normal vaginal contents brought out some interesting facts (note in Chapter 1 under Physiology of the Vagina).
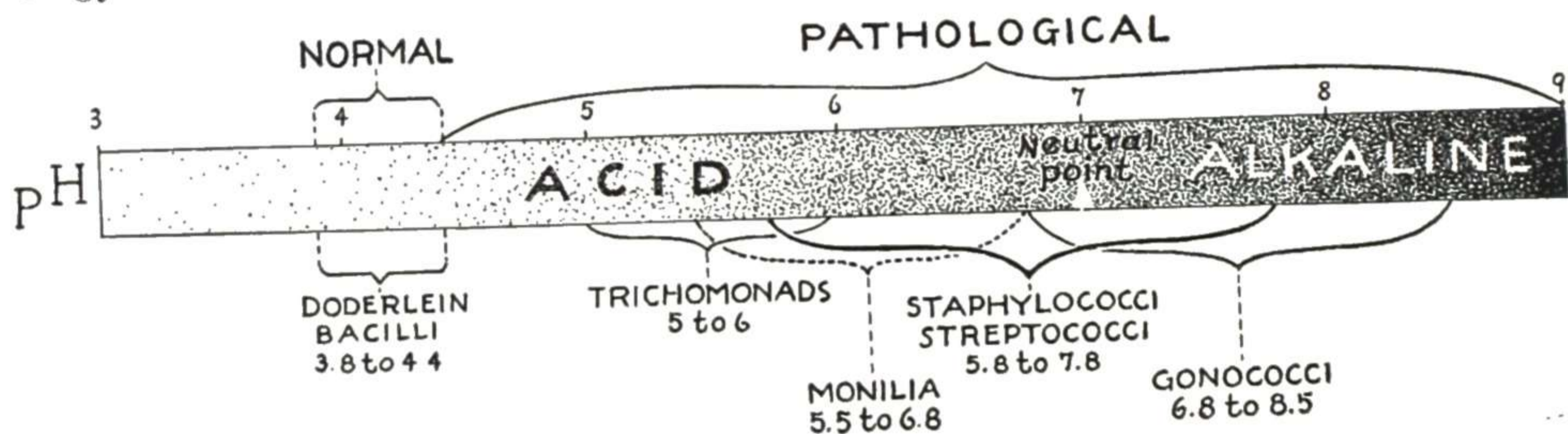

Fig. 193.—Diagram indicating the variations in the pH of the vaginal contents, and also the pathogenic organisms which flourish at different stages of alkalinity. (Modified from G. D. Searle & Company.)

Any considerable diminution of the normal vaginal acidity favors the growth of pathogenic bacteria and protozoa which flourish in alkaline or less acid media (Fig. 193). The resulting inflammation gives rise to various types of pathologic discharge, even causing blood-tinged discharge at times. The growth of pathologic organisms diminishes the glycogen contents of the epithelial cells, which in turn checks the growth of the normal protective bacilli (both by diminishing the glycogen on which they feed and decreasing the acidity, which discourages their growth). When this vicious circle is once established, it is likely to continue with increasing disturbance until nature's efforts at restoration are aided by appropriate treatment. Effective treatment restores normal vaginal acidity and normal epithelial cells (glycogen) and Döderlein bacilli and eliminates the pathogenic organisms. This is accomplished by washing out the mass of invading organisms with a douche, which may contain acidifying material, and supply in good quantity some form of sugar on which the normal bacilli may feed until they again become numerous enough to split sufficient cell glycogen for maintaining normal acidity. The details of such treatment are given under Vaginitis, in Chapter 3.

While measuring the pH accurately was essential to the important investigations which established the relations illustrated, the diagnosis and treat-

ment of most cases is possible without this determination. The pH may be determined by the nitrazine test paper, prepared by the Squibb Company, which records pH readings from 4.5 to 7.5. The introitus is wiped dry, to remove any secretion from the Bartholin glands. Then before any digital examination the speculum is introduced *dry* without turning it in the vagina. The nitrazine paper can then be placed against the vaginal wall at the posterior fornix, or some secretion can be wiped from that area with a cotton swab and applied to the paper. After a few seconds the color of the paper is compared to the color chart, and the pH is read directly from that chart.

Microscopic Features.—The microscopic examination of the vaginal discharge serves to identify the predominating type of cells present and also in most cases the pathogenic organism if any.

PREPARING THE SLIDES.—A small drop of warm water is placed on a slide near one end, a little of the discharge is mixed with it and it is then covered with a coverglass. This fresh or live slide is for examination for trichomonads. Incidentally, the reduced light used to bring out the outlines of the protozoon brings out the outlines of epithelial cells and cell nuclei and also of branches (mycelium) and buds or spores of yeast and other fungi.

Slides for staining may be made at the same time, if such are desired. A small amount of discharge is placed on a slide near one end, the end of a second slide is placed on it, and then the two are drawn apart, leaving on each a film or smear. This maneuver gives a thin film, which is better than a thick one for a stained specimen, and it gives two films of the same portion of discharge, which is advantageous when examination of the blue-stained smear shows forms suspicious of gonorrhea and it is desired to make gram decolorization of a similar smear and compare.

EXAMINING THE SLIDES.—The "warm" slide or live slide is all ready to be placed on the microscope stage for examination. It is examined first with the low power, for focusing and picking out special fields, and then the nosepiece is turned to the medium high power for study of individual epithelial cells and protozoa and fungi. The light-diaphragm is stopped down sufficiently to show the outlines of clear bodies, such as epithelial cells and trichomonads.

CELLULAR ELEMENTS.—The normal cellular elements in the age of active ovarian functioning (between puberty and the menopause) are quite different from those before puberty and after the climacteric decline of ovarian function. The various normal types are described and illustrated under Physiology in Chapter 1.

If inflammation be present at any age, pus cells (dead leukocytes) are massed in the microscopic picture, the extent of the massing of pus cells depending on the intensity of the pathologic process. In addition, protozoa (usually trichomonads) or fungi (mainly monilia) may be found. The distinguishing features of each are described in detail under that disease in Chapter 3.

BACTERIAL ELEMENTS. STAINING THE SLIDE.—When abundant, bacteria may be dimly seen in the plain slide by the refracted light used in outlining the larger cellular elements, but for bacterial examination it is necessary that the slide be stained. The film is first allowed to dry. Then the slide is passed two or three times through a flame (Bunsen gas flame or alcohol lamp) to

fix the film on the slide so it will not wash off. The film may be stained by flooding for fifteen seconds with a weak solution of any of the commonly used aniline dyes. A 1 per cent solution of methylene blue is the one usually employed. Enough is dropped on to cover the film and, after the required time, is washed off in running water, and the excess water is removed gently with blotting paper. The film is allowed to dry, and is then ready for the microscope. Examination may be made first with a medium high power objective for general orientation, and then a drop of oil is placed on the film and more detailed examination is made with the oil immersion objective. For the cytology smears see Special Examinations.

VAGINAL WALLS

Are the walls of normal color or is there congestion? If the walls are bright red, that means active or arterial congestion and is due to inflammation or irritation. If the walls have a bluish tinge, that means passive or venous congestion and indicates either pregnancy or some interference with the circulation, as by a pelvic tumor or exudate or by failure in compensation in heart disease.

Small punctate bleeding areas on the vagina, without large ulceration, are due usually to severe inflammation of the trichomonas or monilia type, or in older women to atrophic (senile) vaginitis. Look for papillomas or ulcers along the entire length of the vaginal canal as the speculum is withdrawn. Frequently lesions are missed because they are hidden beneath the blades of the speculum.

CERVIX UTERI

Is the cervix in low position, so that it is easily exposed when the speculum is in but a short distance, or is it higher than normal, so that it cannot be well exposed with the speculum of ordinary length? Is the color normal or is there congestion? Here, as in the vaginal wall, active congestion means inflammation or irritation, and passive congestion indicates either pregnancy or obstruction of the circulation. A bright red area extending a considerable distance out from the os is usually due to eversion or erosion. Are there cysts or ulcers present?

Is the axis of the cervix directed *across* the vagina, as it should be normally, or *along* the vagina, as in retrodisplacement of uterus or anteflexion of cervix?

EXTERNAL OS

The size and shape show whether or not there has been laceration and consequently are of considerable medicolegal importance in certain cases, because they furnish strong evidence for or against a previous childbirth.

Different appearances of the normal cervix are shown in Figs. 194 to 196. Types of lacerated cervix, with the various shapes resulting, are shown in Figs. 197 and 198. There is normally a clear, sticky, tenacious mucus in the cervix and about the external os. The first effect of inflammation is to make this more abundant and later it becomes mixed with pus. As long as the cervical inflammation is a prominent part of the process, the tenacious, stringy quality will be a prominent feature of the discharge. If there is any suspicion

of gonorrhea, make a spread of the discharge for microscopic examination. If desired, discharge in the uterine canal may be withdrawn for diagnostic or therapeutic purpose with a suction bulb and tube.

Occasionally a polyp will be seen presenting at the external os or hanging by a pedicle. If small, it can be twisted off with the uterine dressing forceps. Such a specimen should be at once dropped into a small bottle of 10 per cent formol or 95 per cent alcohol and sent in a mailing tube to the pathologist for microscopic study. A supposed simple polyp may show beginning malignancy.

Fig. 194.   Fig. 195.   Fig. 196.

Figs. 194 and 195.—Varieties of normal cervix in the virgin.
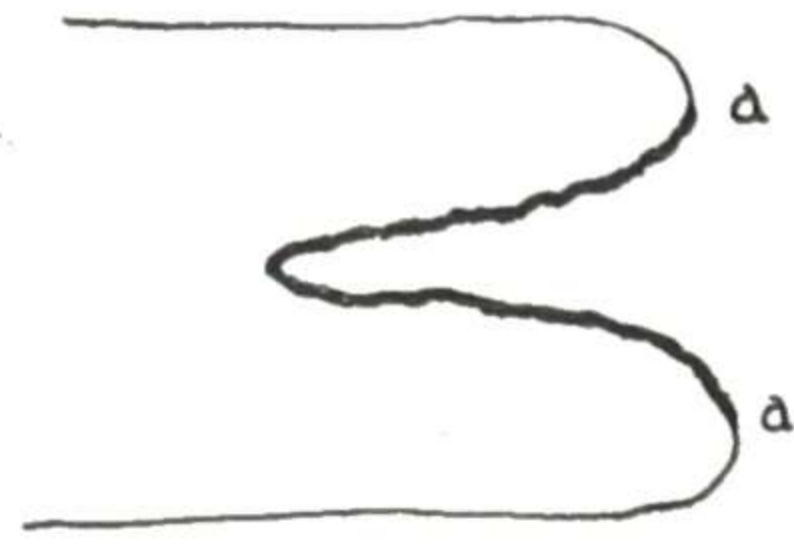Fig. 196.—Cervix of multipara.
(From Norris, after Heitzmann: American Text-Book of Obstetrics.)
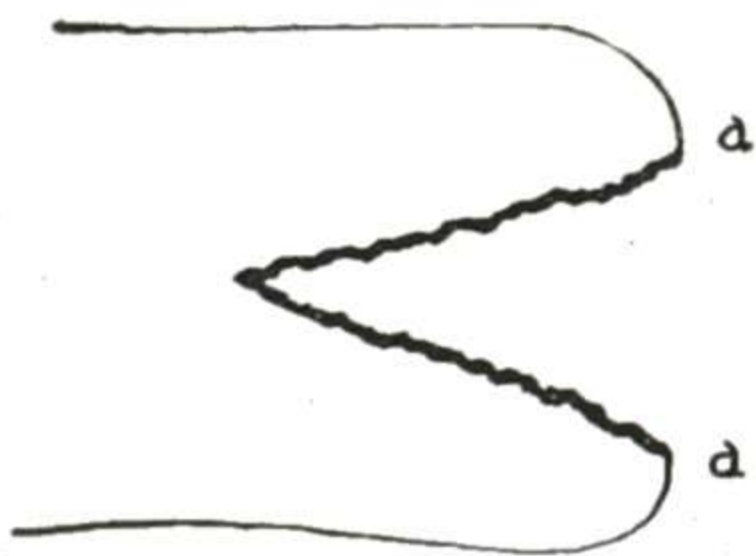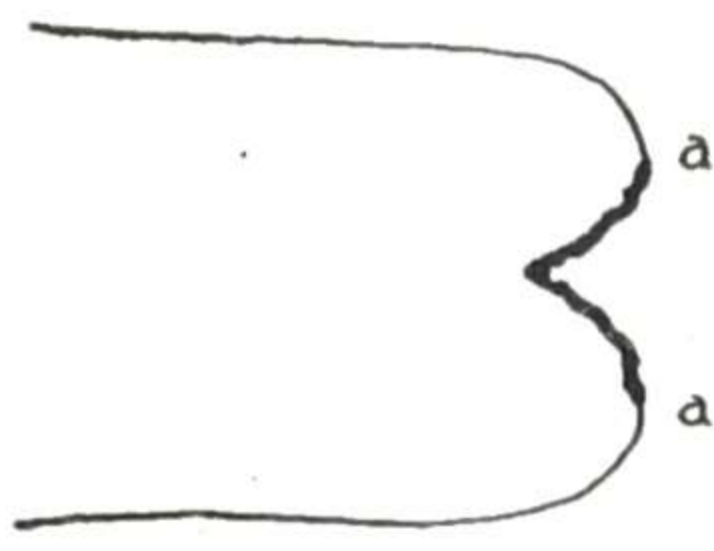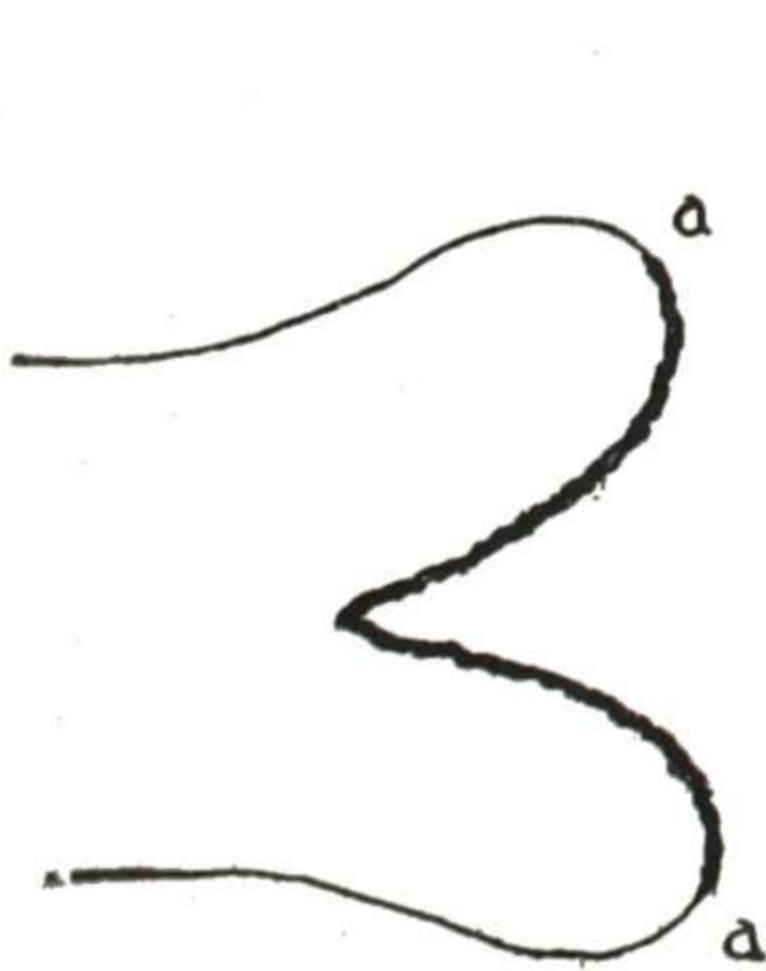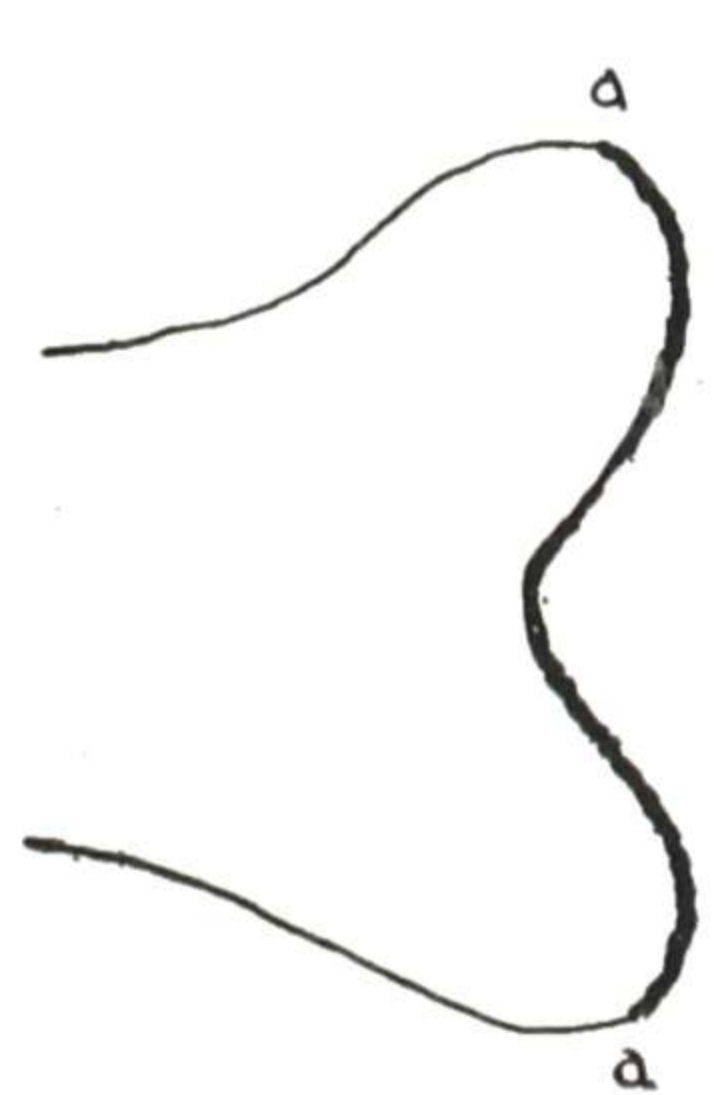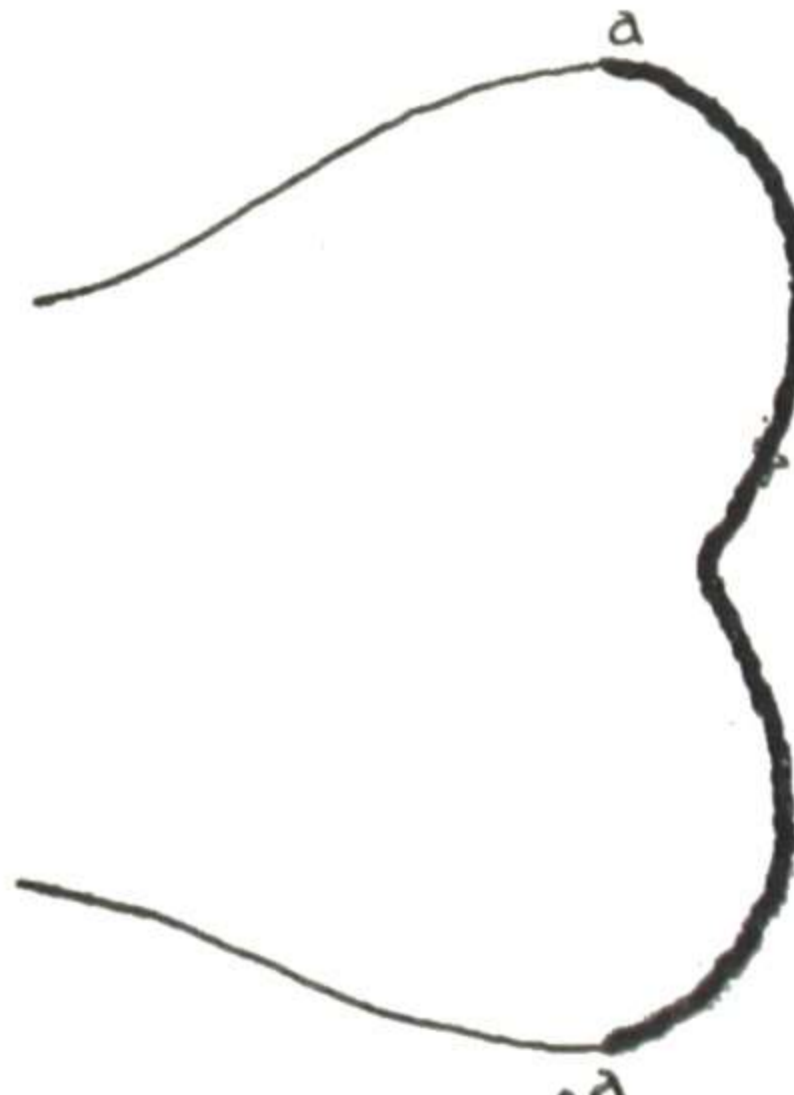

A.   B.   C.

Fig. 197.—Illustrating different conditions in laceration of the cervix. *A*, Fresh laceration with the unchanged lips separated. *B*, Practically healed laceration of cervix, only a small notch remaining. *C*, Deep notch with two lips remaining, but the lips are not thickened. Such a cervix rarely causes trouble or requires repair.

A.   B.   C.

Fig. 198.—Different conditions in laceration of the cervix. *A*, Deep notch with thickened lips and beginning eversion. *B*, more thickening of lips and marked eversion. *C*, Marked infiltration and thickening of lips with complete eversion, forming the "ballshaped" cervix.

If the pathologist's report shows no malignancy, the incident is still not closed. What caused the polyp? A cervical polyp usually means chronic irritation inside the canal. This should be eliminated before adenocarcinoma develops in

that hidden location. The plan of curettage and conization provides effective treatment for this condition, and at the same time gives adequate material for decisive microscopic investigation. Biopsy will be discussed under Special Examinations.

Difficulties in Speculum Examination

Poor Light.—If the light is so poor that the cervix and upper portion of the vagina cannot be seen, an ordinary flashlight is helpful, or, if that is not available, a head mirror may be used to reflect light from any source into the vagina. Also, there are now available small electric lights to use in the speculum, and even specula with lights incorporated.

Painful Abrasions.—If there are painful abrasions or fissures about the vaginal orifice which interfere with the examination, the sensitiveness may be diminished by the application of a small piece of absorbent cotton soaked in a 10 per cent cocaine solution. Leave this in place for from three to five minutes, then remove it and proceed with the examination.
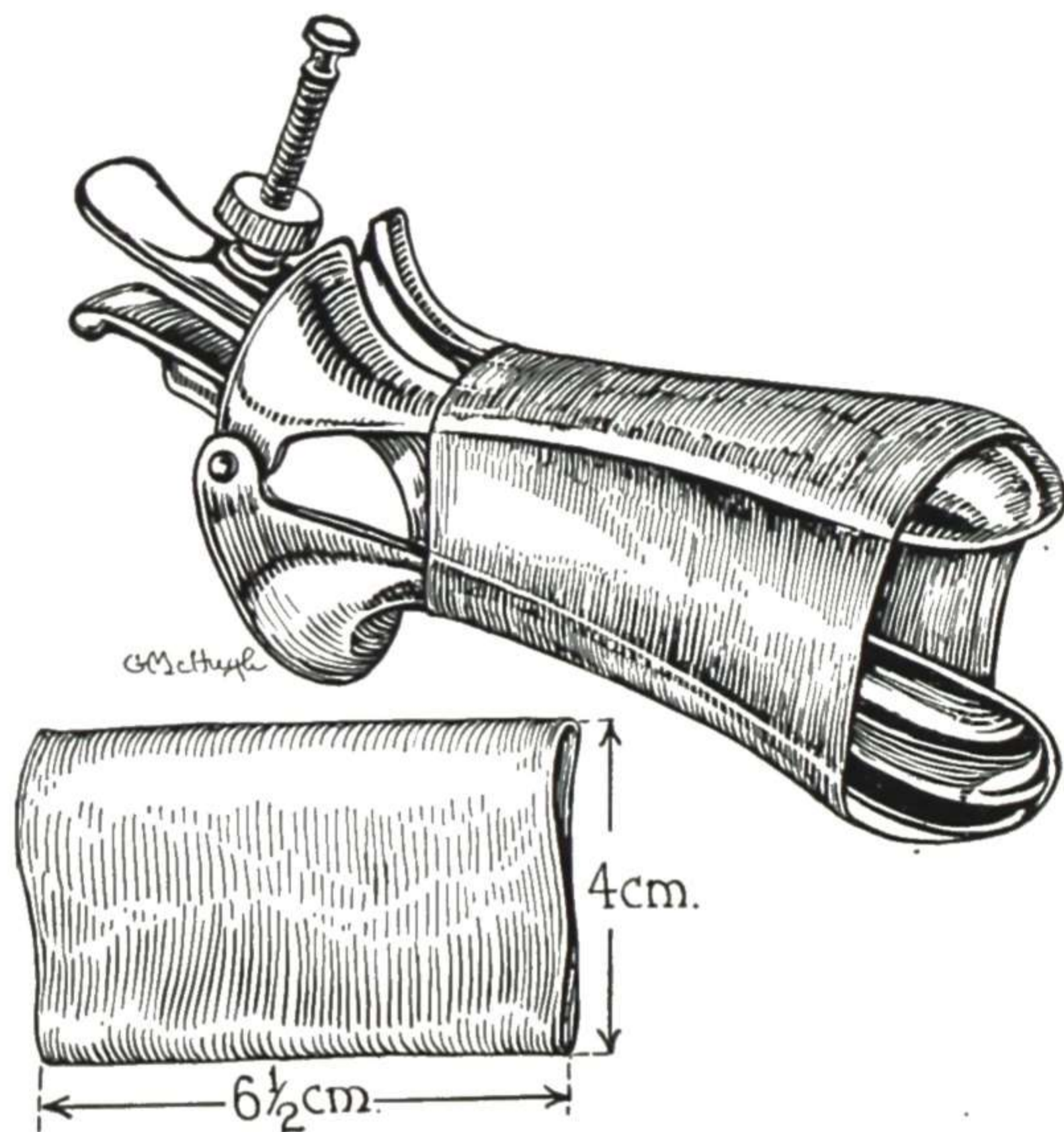

Fig. 199.—Device to improve specular examinations, consisting of bivalve vaginal speculum with a section of Penrose drain used as a sleeve. (From Tucker: J. A. M. A.)

Redundant Vaginal Walls.—When the vaginal walls are very lax and redundant, as sometimes occurs because of subinvolution following labor, they collapse about the speculum in such a way as to hide the cervix. This difficulty may in some cases be overcome by using a longer speculum. When this does not expose the cervix satisfactorily, the redundant walls may be held out of the way by the use of a rubber sleeve over the speculum, as shown in Fig. 199. Another method of overcoming the difficulty is to put the patient in the Sims posture and use the Sims speculum.

Examination With Cylindrical Speculum

The cylindrical speculum consists simply of a tube with the outer end flaring and the inner end cut obliquely. It may be made of metal or hard rubber or glass. The cylindrical speculum is useful in certain forms of treat-

ment, particularly when it is desired to apply to the cervix medicines from which the vaginal walls should be protected, but it is not much used in examination work.

When in the examination of a girl it is necessary to inspect the cervix, this may be accomplished without disturbing the hymen by use of a small cylindrical speculum for which Kelly's cystoscopic tubes do very well. Light may be furnished by a flashlight or a head mirror or a miniature electric light in the speculum.

Examination With the Sims Speculum

The Sims speculum is a perineal retractor, and for use requires the patient to be put in the Sims posture. Like any other retractor, it must be held in place either by an assistant or by a mechanism (speculum holder), of which there are several varieties.
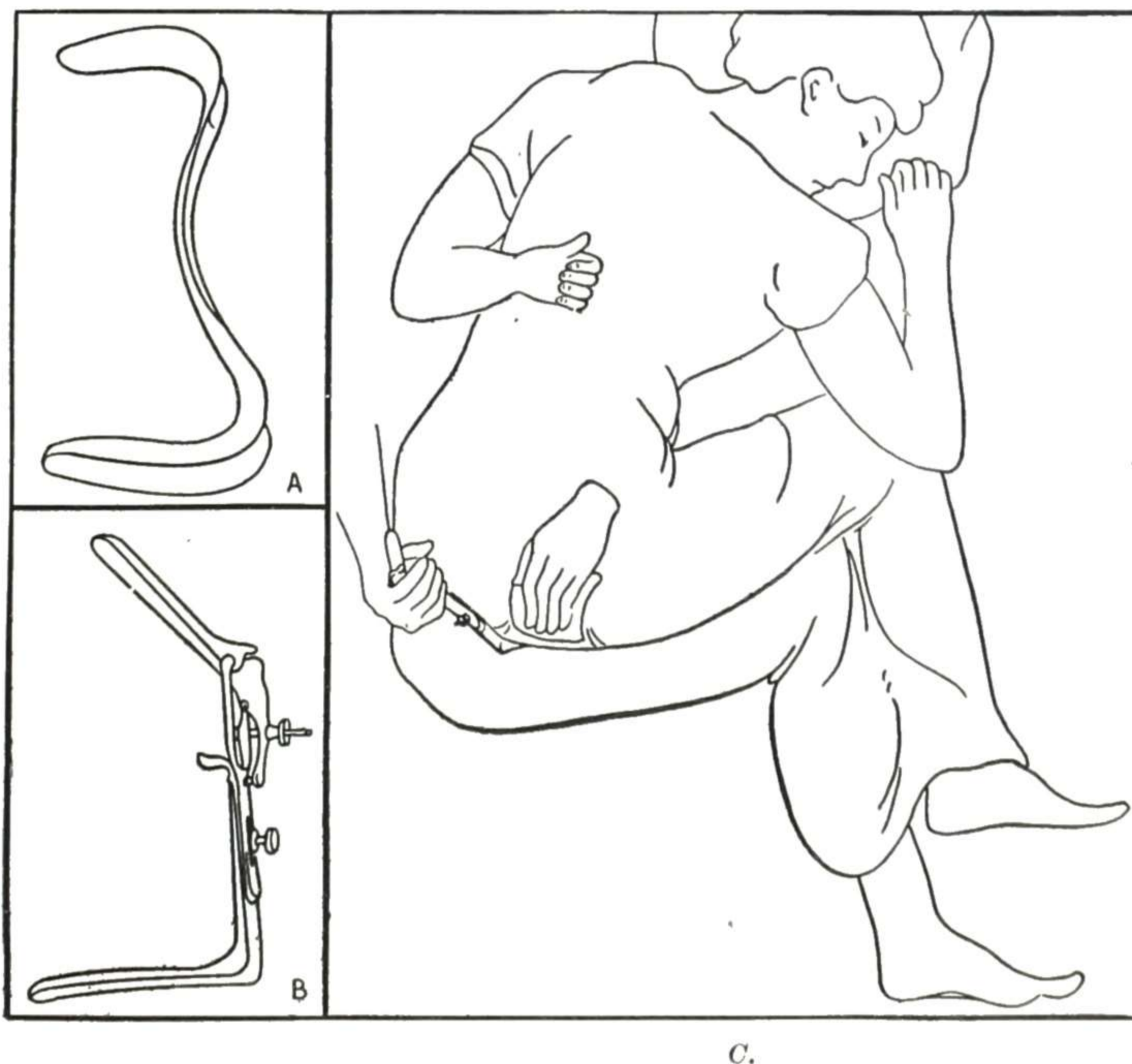

Fig. 200.—*A*, Sims' speculum; *B*, Graves' bivalve speculum changed to the Sims type. *C*, Patient in Sims' posture. View from above.

The Sims speculum consists of a blade, somewhat resembling a duck's bill, and a handle. As usually made, two blades are placed on one handle, a large blade at one end and a small blade at the other (Fig. 200, *A*). A further improvement is a flange near the larger blade. This flange holds the fleshy part of the right buttock up out of the way. The Graves bivalve speculum mentioned above is easily and quickly changed into a satisfactory Sims speculum (Fig. 200 *B*), so it is not usually necessary to buy a special Sims speculum.

The Sims Posture.—The principal points about the Sims posture, called also "left lateral posture" and the "semiprone posture," are as follows:

1. All constriction must be removed from around the waist.

2. The patient lies on her left side, with left arm and hand behind her and the front of the chest turned toward the table as far as possible without discomfort. When in proper position, the upper part of the body rests on the left breast.

3. The hips rest near the lower left corner of the table and the body extends diagonally across the table toward the right side.

4. The left thigh is drawn up so that it forms an acute angle with the body, and the right thigh is drawn up still more, and allowed to drop over the lower one. This puts the patient in the position shown in Fig. 200, *C,* and it permits the abdominal wall and the intestines and uterus to fall forward.

Fig. 201. Fig. 202.

Fig. 201.—Introducing the Sims speculum.

Fig. 202.—Speculum in place, and showing also the method of holding it and of keeping the upper buttock out of the way.

Use of Sims Speculum.—To introduce the speculum, the right labia are raised, thus exposing the vaginal opening, and then the speculum point, well lubricated, is carefully worked into the opening. At the same time, the perineum is pulled somewhat backward with the speculum point, in order to give more room for the point to slip in (Fig. 201). The blade is then carried all the way in. The speculum is then grasped firmly and pulled backward, thus retracting the perineum and exposing the interior of the vagina (Fig. 202).

As the speculum is introduced, the vagina becomes distended with air, and when the perineum is retracted the cervix and anterior vaginal wall may be seen. To bring the cervix into still better view, catch it with the tenaculum forceps and bring it slightly toward the opening.

When Indicated.—The Sims speculum with the Sims posture is of decided advantage in the following conditions:

When the bivalve speculum fails to expose the cervix satisfactorily. This may be due to the vaginal walls being so lax that they fall about the blades and obscure the cervix, or it may be due to the vaginal opening being so small that the blades cannot be sufficiently separated. Again, in some cases of inflammation of the uterus or about the uterus, the bivalve speculum cannot be opened sufficiently because the anterior blade causes pain by pressure on the inflamed structures. When examining or treating a lesion in the vaginal fornix, such as a vesico- or rectovaginal fistula, that is difficult to expose with the bivalve speculum, the employment of the Sims speculum and Sims posture may aid.

RECTOABDOMINAL PALPATION

In all cases it is of decided advantage to follow the vaginoabdominal and speculum examinations with rectoabdominal palpation. This is made primarily for high palpation back of the uterus and peritoneal cul-de-sac and parametrium. It is particularly helpful when there is marked retrodisplacement of the uterus or a mass in the cul-de-sac or parametrial infiltration. In cancer of the cervix, rectal palpation in front of and back of the parametrium on each side will add much information as to the extent of parametrial involvement, for the sweep of the examining finger is not limited as it is when examining within the vaginal vault.

The index finger of the gloved hand, well lubricated, is introduced into the rectum and carefully worked up high back of the uterus and parametrium and between the uterosacral ligaments. Then with the abdominal hand the structures are pressed down for palpation with the rectal finger, as indicated in Fig. 203. The posterior surface of the retrodisplaced uterus may be outlined and also any mass in the cul-de-sac. Fluctuation there may be made out and the presence and extent of parametrial infiltration determined. When seeking the pedicle of a movable tumor, it is sometimes helpful to have an assistant push the tumor upward as shown in Fig. 204.

Incidentally, this rectal palpation will show whether or not there is any marked disturbance in the hemorrhoidal area, and trouble there is sometimes an important factor in the patient's distress. The hemorrhoidal area is usually somewhat tender and there may be sphincter spasm with considerable pain on introduction of the examining finger. This may be lessened by directing the patient to "bear down," thus relaxing the spastic muscle as much as possible. If there is sharp pain, as from a fissure, an application of 10 per cent cocaine solution may be made for the rectal intrapelvic palpation. Of course, if there is definite rectal trouble of undetermined character, a regular proctoscopic examination is advisable.

The importance of rectal examination in gynecologic diagnosis as well as its importance for the discovery of rectal conditions is stressed by Lowrie in an Editorial in the *American Journal of Surgery*. Fig. 205 from an article by Welch and Giddings gives a graphic illustration of its importance.

Rectovaginal Palpation.—In exceptional cases when making the rectoabdominal examination, it is advantageous to introduce the thumb into the

vagina in order to palpate the rectovaginal septum between the finger in the rectum and the thumb in the vaginal canal, the structure being pushed down within reach by the abdominal hand (rectovaginal palpation, Fig. 206).
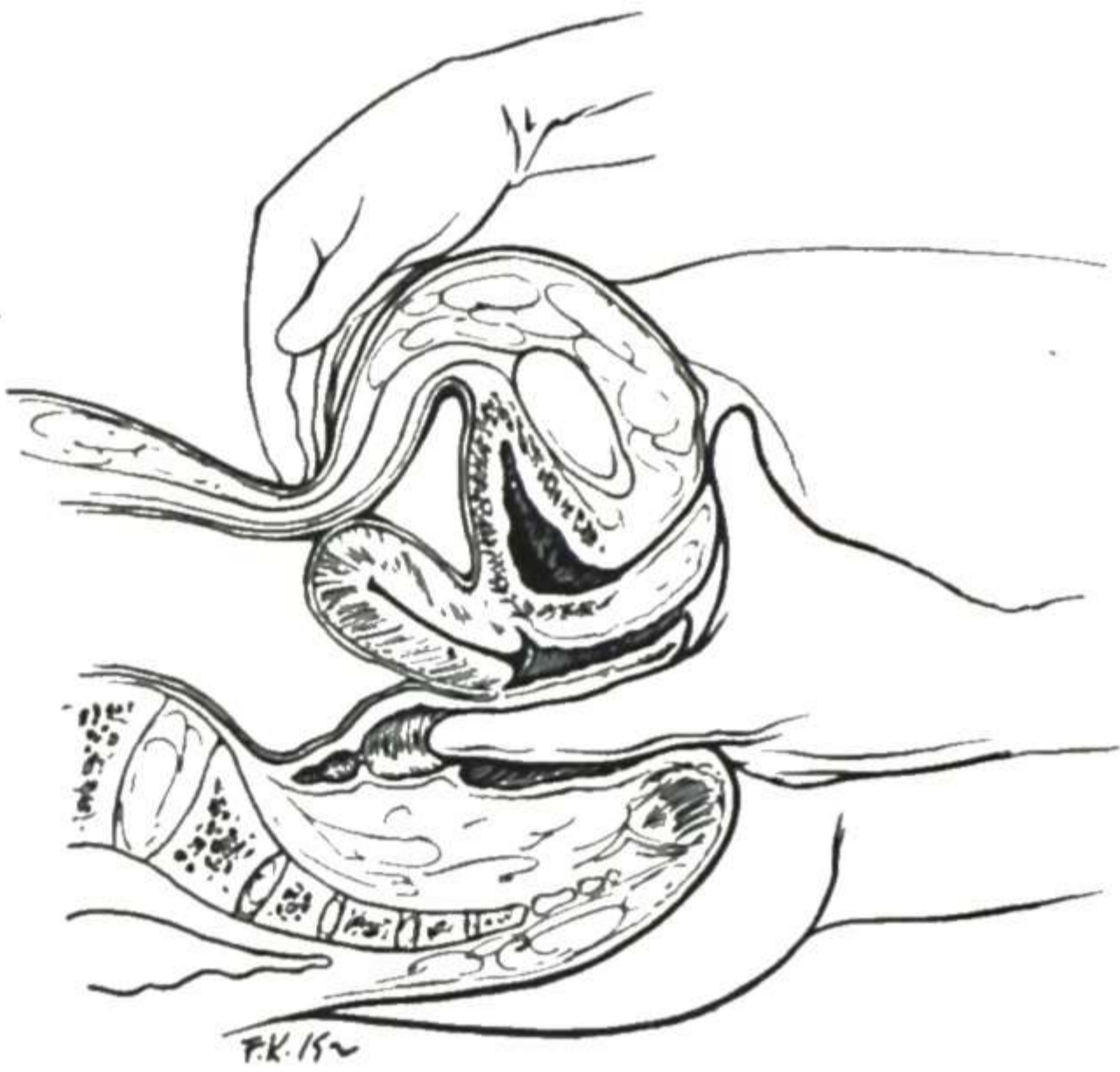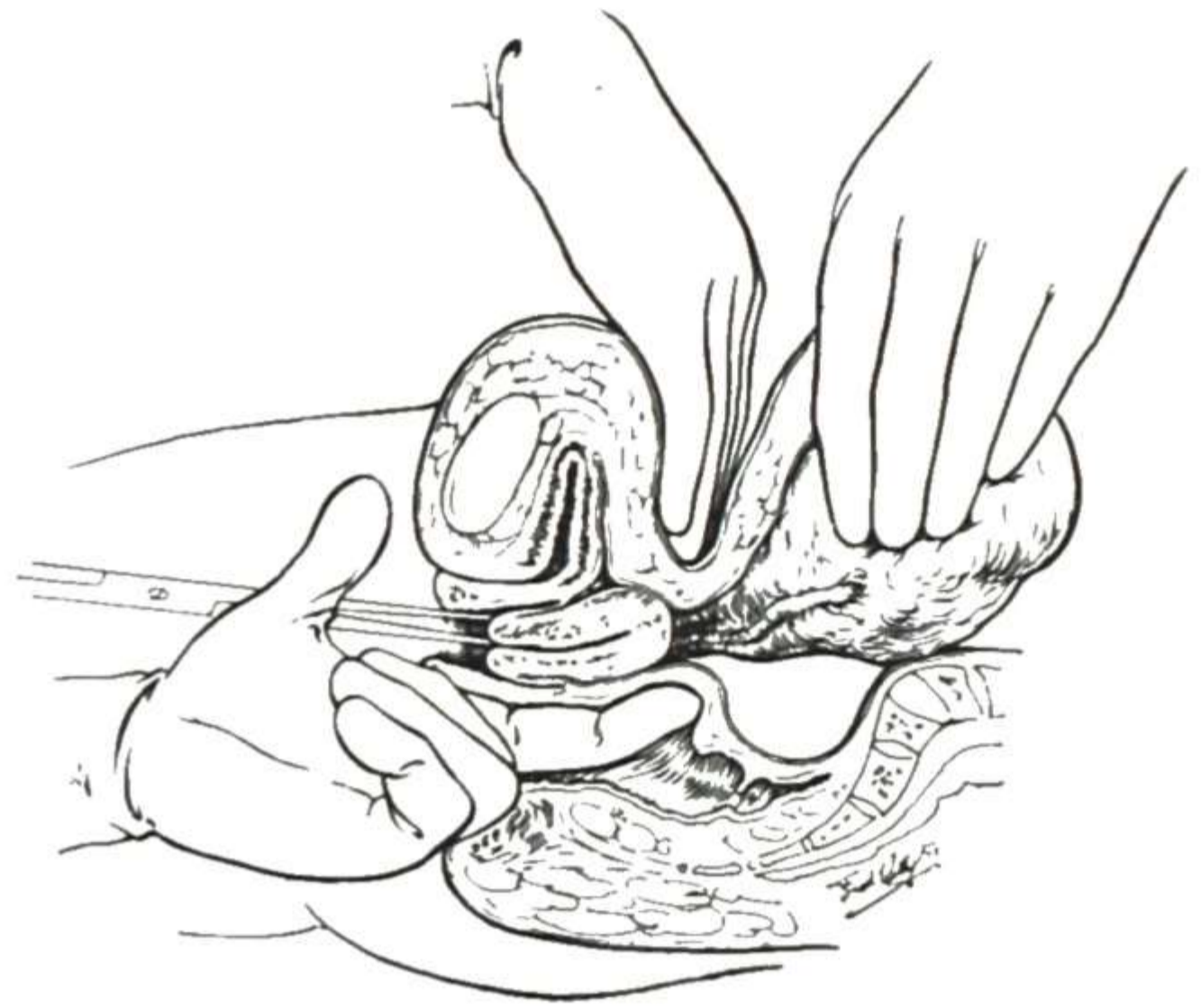

Fig. 203.

Fig. 204.

Fig. 203.—Rectoabdominal palpation.
Fig. 204.—Palpating the pedicle of a tumor, with the tumor pushed up into the abdominal cavity and the uterus caught with a tenaculum forceps and pulled downward.
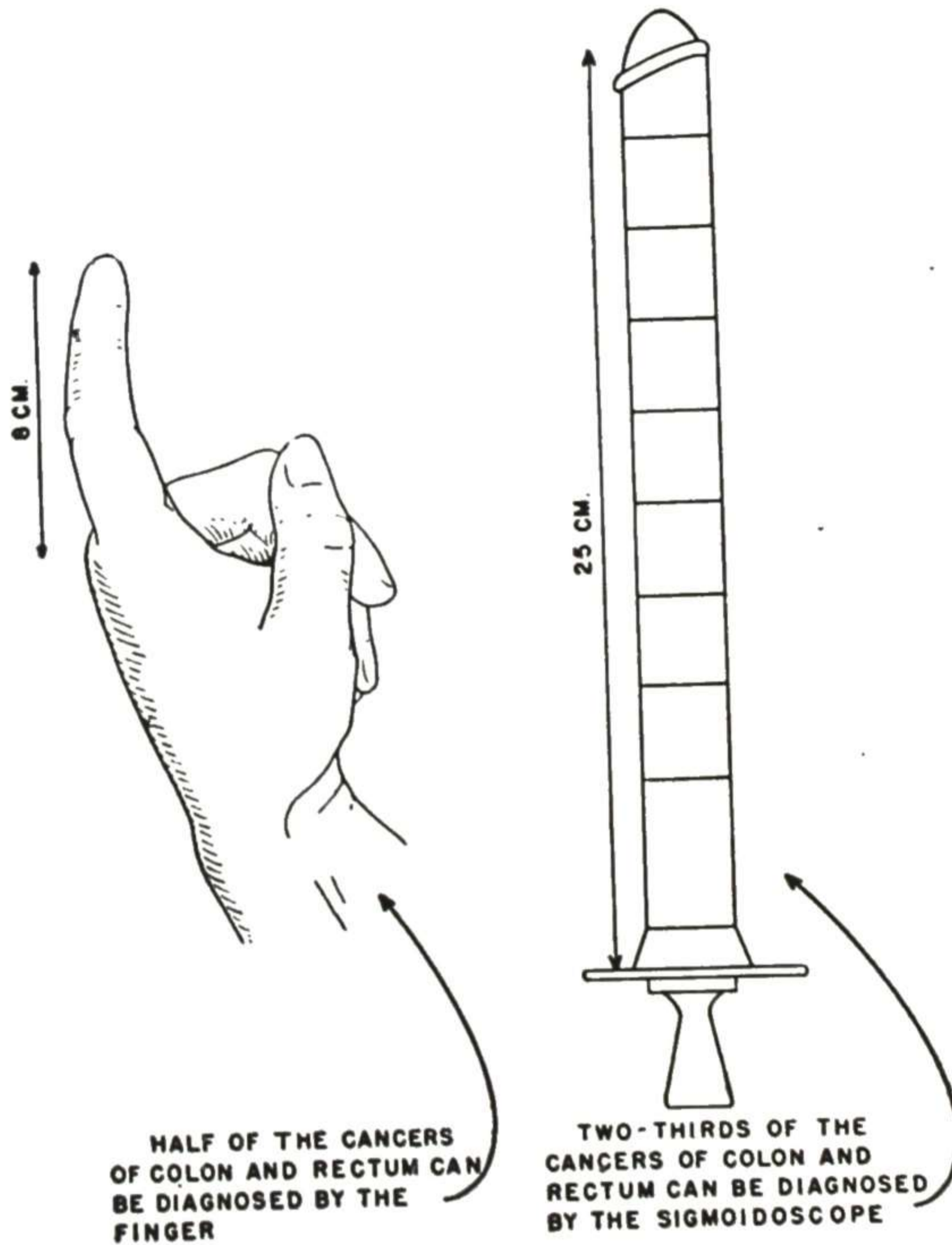

HALF OF THE CANCERS OF COLON AND RECTUM CAN BE DIAGNOSED BY THE FINGER

TWO-THIRDS OF THE CANCERS OF COLON AND RECTUM CAN BE DIAGNOSED BY THE SIGMOIDOSCOPE

Fig. 205. (From Welch and Giddings: New England J. Med., June 7, 1951.)

Palpation of Coccyx.—Patients who are suffering from an acutely painful coccyx walk stiffly, and when sitting down they do it very slowly and tend to rest on one buttock on the edge of the chair. The rectal examination is done with the patient on her side in the Sims position. When the condition

is acute, there are spasm and tenderness of the levator ani and coccygeus muscles and these muscle groups can be easily detected on rectal examination by lateroposterior pressure (Figs. 207 and 208).

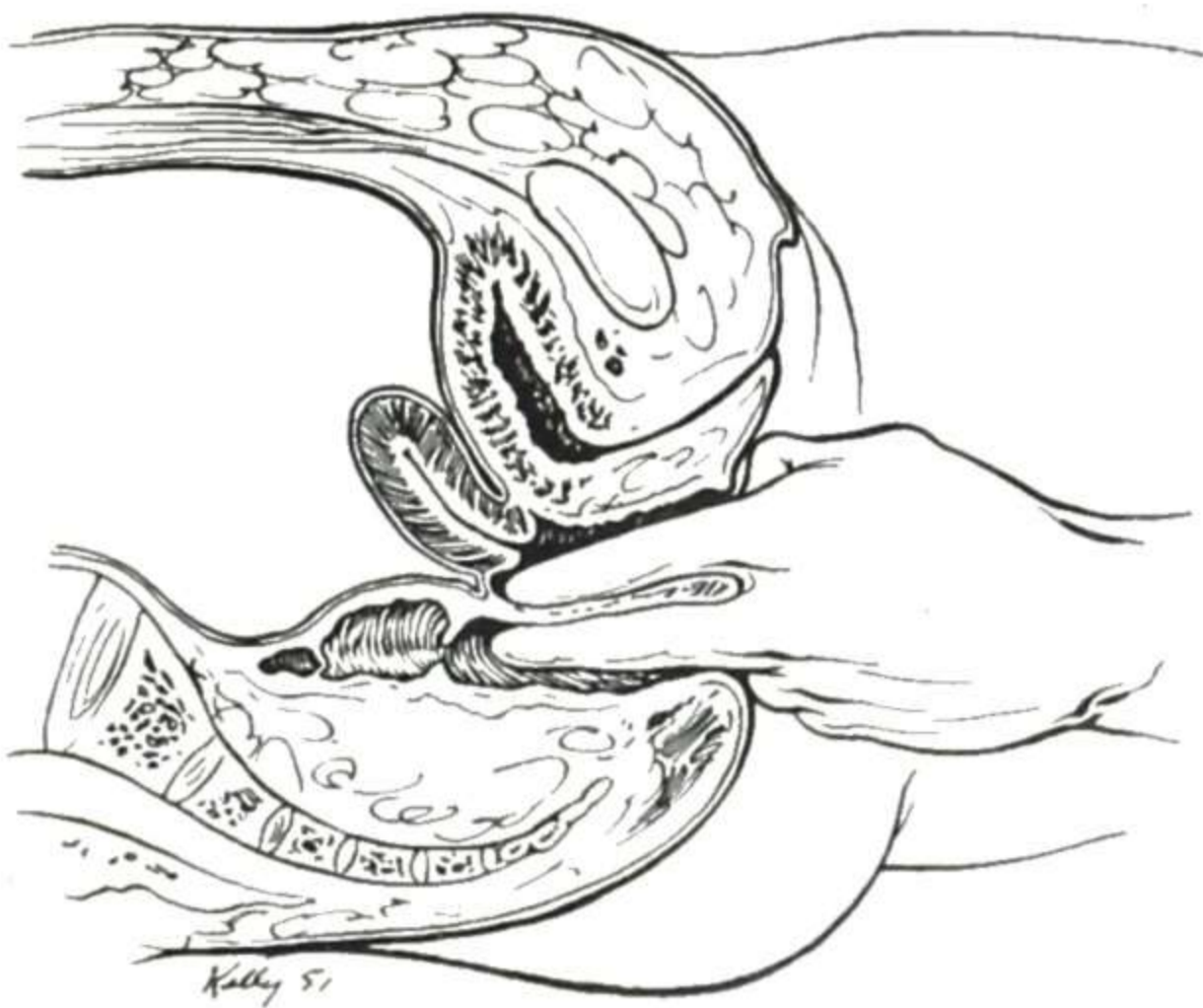

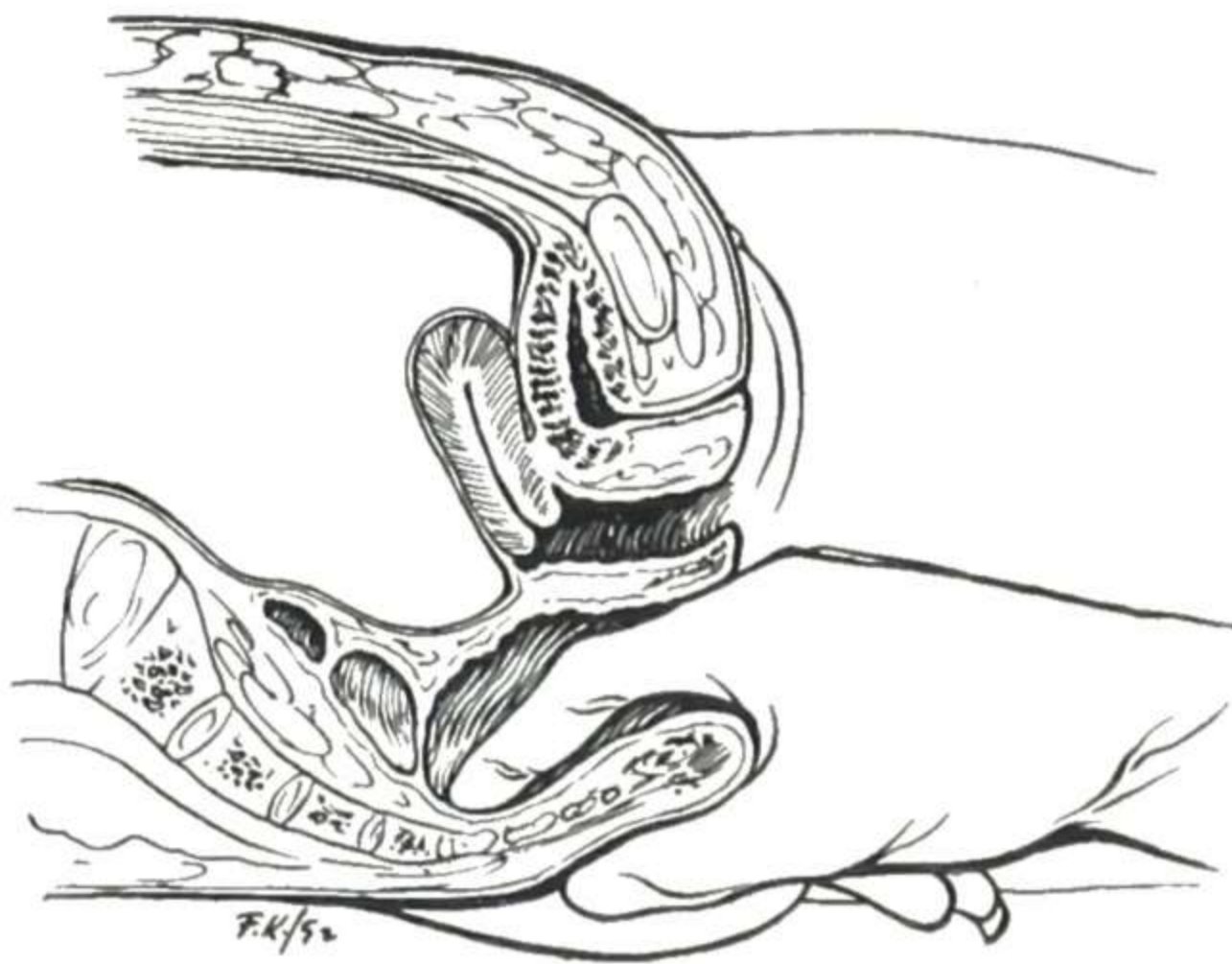Fig. 206.   Fig. 207.

Fig. 206.—Rectovaginal examination with a finger in the rectum and one in the vagina.
Fig. 207.—Palpation of the coccyx for mobility and tenderness.

Fig. 208.—Anteroposterior view showing the position of the finger during examination of the levator ani, coccygeus and piriformis muscles. Note that only the finger tip reaches the piriformis muscle. (From Thiele: J. A. M. A., October, 1937.)

In cases of pelvic pain where no sufficient cause is found about the uterus or adnexa, the coccyx should be palpated. This small bone at the tip of the sacrum is not infrequently the site of neuritis or arthritis or a chronic inflammation resulting from an injury sustained months or years before. These

injuries can usually be traced to childbirth, though occasionally such a condition will result from a fall. In some cases, disturbance may become manifest here without previous injury. In some cases the coccyx appears to be normal until an attempt is made to move it, when there is severe pain, indicating trouble in the joint or about the fasciae or muscles.

LOCALIZATION OF BACKACHE

Pain in the back is a prominent symptom in many pelvic diseases, and in many extrapelvic diseases as well. Its diagnostic significance depends on its location, that is, upon the structure involved. Consequently, a careful localization of the backache should be made in each case, just as pain or tenderness in the abdomen is accurately located.
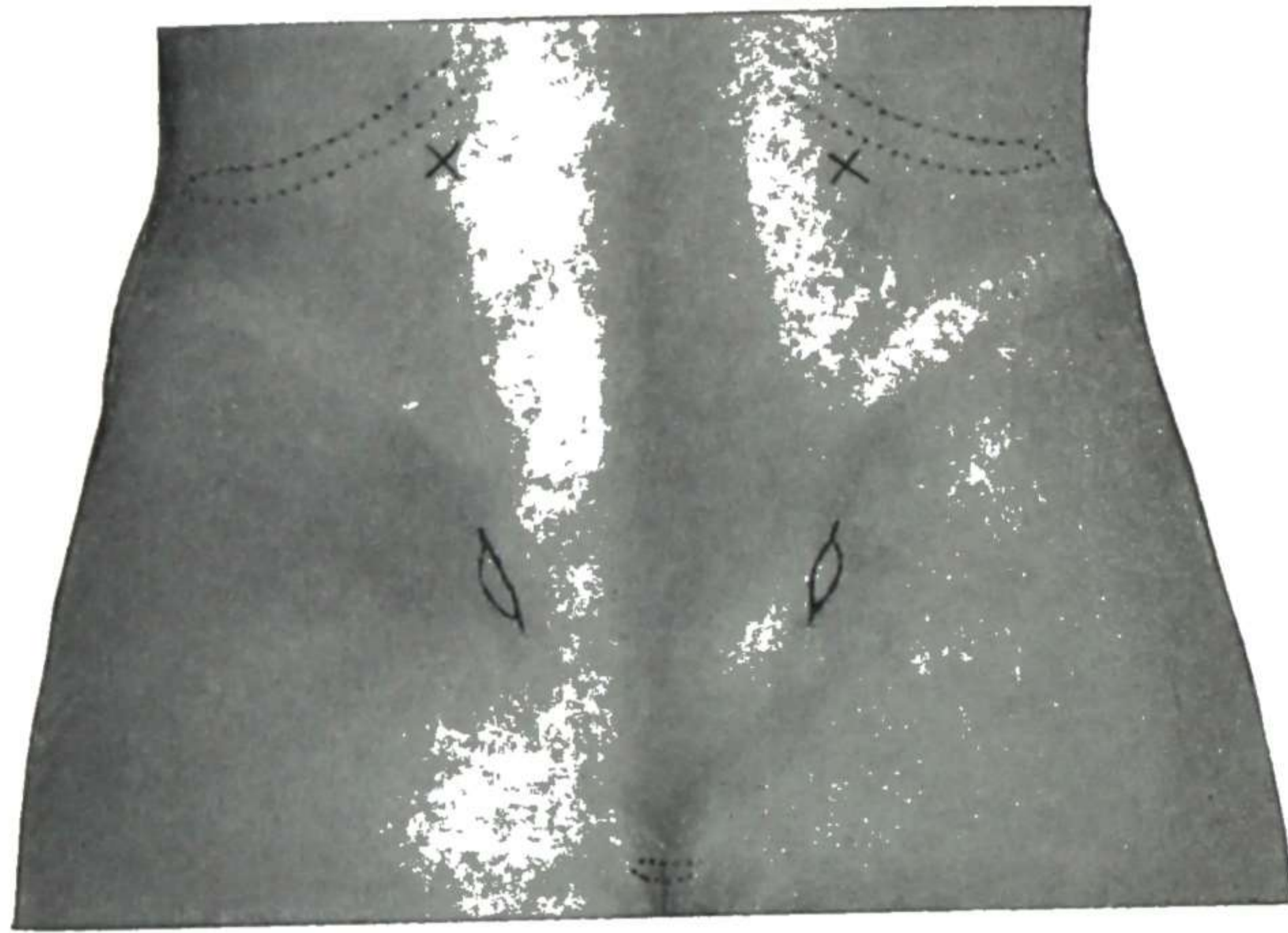

Fig. 209.—Areas to be palpated for point-tenderness. Area of kidney tenderness shown by *x*. Below, area of sacroiliac tenderness, and, still lower, area of coccygeal tenderness.

After finishing the intrapelvic examination, have the patient sit up on the table. The clothing is raised from the lower back and the patient is requested to indicate exactly where the backache is or comes at times. Notice whether it is in the lumbar region or over the sacrum or in the coccygeal area. Then palpate firmly with the finger tips over the region indicated and elsewhere, to determine if there is point-tenderness or if the trouble is just a diffuse aching. Give particular notice to the sacroiliac joints to see if there is tenderness from arthritis on either side (Fig. 209). Bending forward causes severe pain in patients who have trouble in the lumbosacral spine or sacroiliac joints.

Backache From Genital Diseases

Backache may be caused by any genital lesion which leads to intrapelvic congestion or pulling or pressure. The pain in the back due to intrapelvic disease is usually diffuse across the sacrum. Definite tenderness on palpation is not ordinarily a part of this type of backache, though tender areas due to other conditions may be associated with it.

Though retrodisplacement of the uterus causes backache in some cases, it does not do so in all cases or as uniformly as popularly supposed. A considerable proportion of patients with retrodisplacement have no pain in the back. One condition that causes a most persistent and annoying backache is para-

metritis posterior, and it is frequently overlooked in a pelvic examination. Another genital lesion that nearly always causes backache is prolapse of the uterus with cystocele and rectocele.

Backache From Extragenital Conditions

Backache from extragenital disease is of very frequent occurrence and must be given due consideration when determining the diagnostic significance of this common symptom.

SPECIAL EXAMINATIONS

It is not necessary to take space for details of all the examinations required in regard to probable or possible conditions or complications in gynecologic patients. Perusal of the list near the beginning of Physical Examination will direct attention to the possibilities in various directions and the necessity of following them up—either personally or through consultations. The importance of this is emphasized by the growing demonstration that the body functions as a unit in physiological and pathological activities and consequently that the whole must be considered when trying to determine the cause of special action in a part. By keeping this in mind many serious diagnostic mistakes will be avoided, such as the employment of radical gastric and dietetic measures for persistent nausea and vomiting without determining if the patient is pregnant, or the employment of pelvic operation for severe pelvic distress that is only a psychic fixation. Space is available here only for those special examination measures particularly related to the genital organs. They are taken up in the following order:

> Through the Speculum. (Vaginal smears and surface biopsy, colposcopic examination, Schiller test, cervical biopsy, endometrial biopsy, cul-de-sac puncture with aspiration.)
>
> Pregnancy Tests.
>
> Endocrine Examination.
>
> Tubal Patency Tests (Rubin).
>
> X-ray Examinations. (Hysterogram to outline uterine cavity; hysterosalpingogram for cavity and tubes; gynecography as additional aid in obscure cases. For fetal bone shadows, calcified tumors, stones, metastatic bone lesions, bony deposits in a skull, and size and shape of sella turcica.)
>
> Pelvic Examination under Anesthesia. (Curettage, biopsy, conization.)
>
> Intra-abdominal Inspection. (Culdoscopy, peritoneoscopy, incision.)
>
> Urinary Tract Investigation.
>
> Premarital Examination and Advice.

VAGINAL SMEARS AND SURFACE BIOPSY

In 1928 Papanicolaou suggested the use of the vaginal smear as aid in the diagnosis of early genital cancer in women. In 1943 he reported a special method of staining vaginal smears, which stained the cytoplasm and nucleus clearly and gave clear differentiation between basophilic and acidophilic cells. Until the last ten years there was little acceptance of the method clinically in