



# *Essentials of* **GYNECOLOGY**

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## Preface

THIS textbook has been prepared to meet the needs of undergraduate medical students and young practitioners of gynecology. The materials included have been carefully selected in order to correlate the physiology, anatomy, and pathology of gynecology with clinical practice. A chapter on the preventive medicine aspects of gynecology has been included. The practitioners of gynecology bear an important role in the detection of malignant disease in its early stages, and in the prevention of disease. For this reason, details of examination of the female breast have been covered both as to the physician's examination and the patient's self-examination. It was felt that newer advances in medicine warranted special chapters on the adrenal gland in gynecology and on the pituitary gland. Malignancies of the genital tract have received emphasis in this text because of their importance and the challenge presented in early diagnosis and proper treatment of neoplastic diseases. The medical, surgical, and irradiation treatment of gynecologic disease have been presented. Current usage of endocrine preparations is covered. Details for study of the infertile couple are given in the text. The usual operative technics used in gynecology, such as total abdominal hysterectomy, radical abdominal hysterectomy, anterior colporrhaphy, posterior colporrhaphy, fistula repair, vaginal hysterectomy, and others, are discussed in detail, and illustrations are included to help the student visualize the principles and objectives of the most frequently used gynecologic operations.

I wish to thank my wife, Ruth, Mrs. Irene Brown, Mrs. Vera Drose, Mrs. Lillian Dumke Mr. Glenn Mills, Dr. Donald C. McCreery, Dr. Louis C. Wollenweber, and Dr. James P. DeMetry for aid in the preparation of the manuscript and the illustrations. I am indebted to Dr. Thaddeus L. Montgomery and Dr. Franklin L. Payne of Philadelphia for reading the manuscript and for providing many valuable suggestions for incorporation in the text. I should also like to acknowledge my staff, residents, and students who have helped me in selecting the material necessary for inclusion in this text.

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## Chapter

# 1

## History Taking, Physical Examination, and Office Laboratory Examinations

History—Physical Examination—Pelvic Examination—Cervical Biopsy—Endometrial Biopsy—Cancer Detection Vaginal Cytology Tests—Microscopic Examination of Vaginal Discharges—Male Frog Test for Pregnancy—Toad Test for Pregnancy—Shorr Stains

**History Taking.**—An adequate medical history is a prerequisite for intelligent diagnosis and treatment. This history should be obtained before the physical examination is made. All the elements of a medical history must be included in a gynecological history. Too often the practitioner concentrates on a few obvious signs or symptoms such as menstrual irregularities, leukorrhea, or pain, and neglects to uncover other important aspects of the patient's health. The patient should be given an opportunity to tell the story of her condition in her own words. After she has done this, the physician should ask the additional specific questions that he wishes to have answered.

An experienced physician taking a gynecologic patient's history should be able to gain considerable insight into the health and life of his patient. Many complaints centering about the female pelvis arise from a psychosomatic basis. Personality conflicts in a man may find focus in cardiac or gastrointestinal symptoms, while the pelvis is often woman's outlet for problems originating in the emotional sphere.

The normal woman dislikes a pelvic examination and only presents herself for examination with much reservation. Because of this, certain considerations must be borne in mind before doing a pelvic examination. Privacy, dignity, and gentleness are necessary. All bimanual examinations should be done in an enclosed space and not in an open ward. The curtain should be drawn or the room door should be shut. A nurse must always be present. One other reason that a third party should be present for a pelvic examination is to forestall possible legal embarrassment or adverse publicity should a patient at some future date suggest that a physician has conducted himself in an unprofessional manner during the examination. It is usually better to perform other steps in the general physical examination before doing the pelvic examination."

Either the right or the left hand may be used for the vaginal part of the examination. Each pelvic examination should be preceded by a few words



of explanation to the patient so that her confidence may be gained. Without preliminary discussion, the patient's sensibilities may be offended.

### OUTLINE OF HISTORY

Name:

Age:

- I. *Chief Complaints:* These should be listed in order as the patient states them. After each specific complaint, it is well to write the approximate duration in days, weeks, or months.

II. *Past History:*

- A. *Menstrual:* The age of the patient at the first menstrual period is noted. The frequency, duration, and amount of menstruation is discussed and recorded. Menstrual irregularities should be inquired about and the character of the irregularity is important. The first day of the last normal period is listed; also the first day of the previous period is recorded. If there is pain with menstruation, this should be recorded as part of the history.
- B. *Obstetrical:* List each pregnancy separately by years. Make a statement as to the pregnancy, the labor, the puerperium, and the infant. List abortions chronologically among other pregnancies, and again obtain details as to etiology, course, and complications.
- C. *Vaginal Discharge:* Amount, type, odor, color, and persistence of any vaginal discharge is a subject of inquiry and is recorded in the history.
- D. *Marital:* Dates of marriages, number of husbands, and length of time married are important. If birth control methods are used, this should be in the history. Frequency of sexual relations is important in regard to fertility studies. Dyspareunia may be a symptom.
- E. *Genital Relaxation:* Question in regard to protrusion or a bearing-down sensation.
- F. *Operations:* Dates of operations, type, name of surgeon, and the hospital where operation was performed may be important. Any complication of previous operations should be recorded.
- G. *Past Medical:* Childhood diseases, general health, and serious illnesses should be covered. The systemic review should include a review of the endocrine system, the cardio-vascular-respiratory systems, and gastrointestinal symptoms, if present, should be noted. Particular questions should be asked concerning the urinary tract. The examiner needs to inquire about the absence or presence of stress incontinence or dysuria. Other elements of the past urinary tract history such as pyelitis should be a subject of inquiry. It is important to note if the patient has had any nervous disorders and if her weight has been stable.

- III. *Present Illness:* This should be a chronological story of the patient's condition, relating the important signs, symptoms, and dates. Information gained from the past medical history should be used in the narrative where indicated, since many present illnesses have their roots in the past.

## OUTLINE OF PHYSICAL EXAMINATION

Temperature:	Pulse:	Blood Pressure:
Weight:	Height:	
General Appearance:		
Head:		
Eyes:		
Nose and Throat:		
Mouth:		
Neck:		
Breasts:		
Lungs:		
Heart:		
Thorax:		
Abdomen:		
Reflexes:		
Posture and Skeleton:		
Extremities:		
Lymph Nodes:		
Pelvic:		
External Genitalia		
Urethra		
Perineum		
Vaginal Walls		
Cervix		
Uterus		
Tubes and Ovaries		
Parametria		
Rectal:		
Impressions:		
Advice:		

Routine pelvic examinations are done with the woman in the lithotomy position with the legs placed in stirrups. In special cases, the Sims position, the knee-chest position, or the standing position may be used. Before being placed on the examining table, the patient should empty her urinary bladder. The nurse puts the patient in position and drapes her for a pelvic examination. If the woman is tense or frightened, the information gained from the examination will be limited.

The first part of the examination consists of inspection of the external genitalia. One looks for evidence of infection, neoplasia, hypertrophy, atrophy, or trauma. Specifically, note the character and distribution of pubic hair, size of the clitoris, Skene's glands, Bartholin's glands, and texture of the skin.

The speculum examination follows (Fig. 1). This instrument should be at approximately body temperature, must be clean, but need not be sterile. If the patient complains of leukorrhea, do not place a lubricating material on the speculum blades, for the lubricant will immobilize trichomonads, if present, and prevent a diagnosis of *Trichomonas vaginalis* as the cause for the leukorrhea. If no leukorrhea is present, place the lubricant on the anterior and posterior blades of the speculum.

Inspect the vaginal walls for infection, atrophy, trauma, bleeding, and tumors. Bacteriological specimens may be taken from the cervix or vagina at this time. Smears or hanging drops may also be made. Visual examination of the cervix to determine infection, tumors, trauma, position, size, and shape is done at this time. Following removal of the vaginal speculum and the collection of indicated specimens, the bimanual examination is done.

Before palpating the cervix, uterus, and adjacent structures, examine for urethrocele, cystocele, and rectocele. To demonstrate a urethrocele, place two fingers of the gloved hand against the posterior vaginal wall and

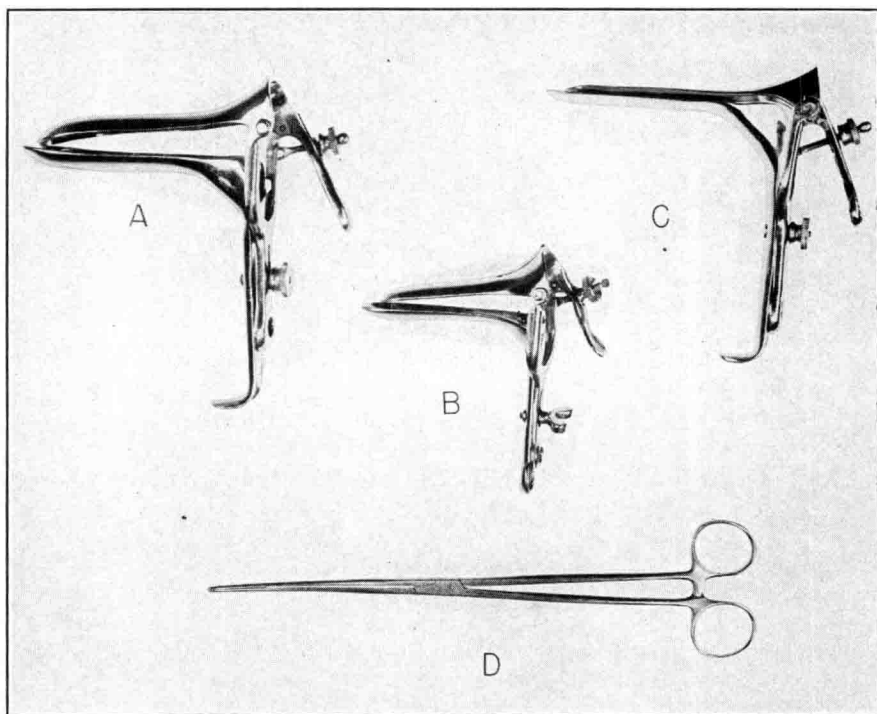


FIG. 1.—Speculums of various sizes: A, B, and C. Uterine dressing forceps, D.

perineal body, thus depressing the perineal body. The patient is asked to cough. This causes a pouching of the urethra below its orifice. Many times a spurt of urine is forced out the urethral opening. A cystocele is demonstrated in a like manner. A cystocele appears as a relaxation of the anterior vaginal wall. The patient may be examined for rectocele by elevating the anterior vaginal wall with the gloved fingers and asking the patient to "bear down." This causes a bulging forward of the rectum against the posterior vaginal wall.

The examiner then proceeds to the actual bimanual part of the examination: palpating the cervix, the uterine fundus, ovaries, and parametrial

structures. The vaginal touch-picture is gained by palpating the internal genitalia between the hands (the vaginal hand and the abdominal hand). The structures of the anterior abdominal wall are interposed between the examiner's two hands (Fig. 2). The physician attempts to determine the

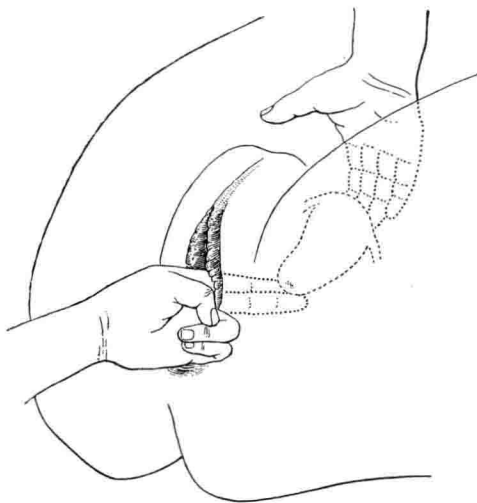


FIG. 2.—Bimanual examination of uterus. (Polak.)



FIG. 3.—Palpating the fornix. (Polak.)

consistency, size, shape, and mobility of the uterus. He takes note of pelvic pain elicited by the examination. After palpating the uterus, the adnexal regions are palpated, first on one side and then the other (Fig. 3). Without experience, one does not often palpate a normal tube and ovary.

If a tumor or inflammation is present in these structures, however, the enlarged organ should be palpable. Next, it is important to judge the condition of the parametrial structures.

Finally, a combined rectovaginal examination should be done. In virgins, a rectal examination may be all that is possible because of the hymen.

Each patient seeking medical aid for specialized complaints presumably pelvic in origin should receive the benefits of a complete history and physical examination. It is only in this way that cancer of the breast, heart disease, and other conditions may be discovered in their early stages.

**Cancer Detection Vaginal Cytology Tests.**—The vaginal smear, stained by the Papanicolaou technic, has become a useful adjunct in detection of cancer of the female genital tract. Many gynecologists use this test as an

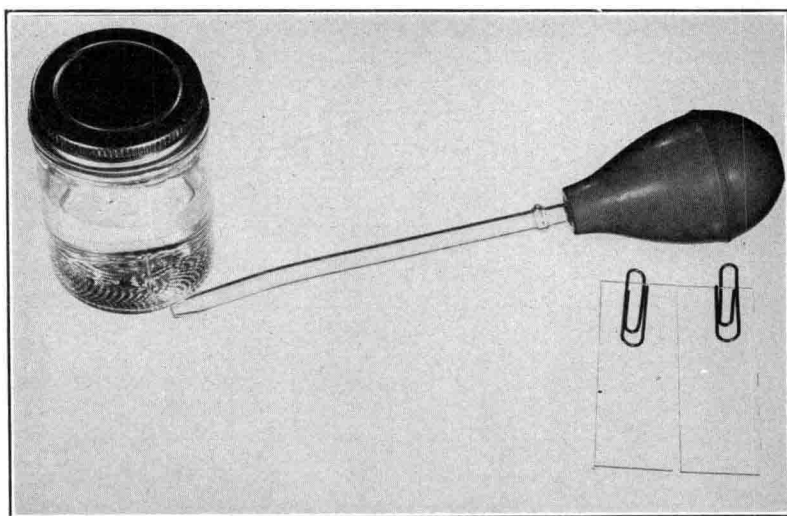


FIG. 4.—Solution of equal parts—95 per cent alcohol and ether, bulb and pipette, and glass slides used for collection of Papanicolaou vaginal smear.

office procedure when performing complete examinations on their patients. Malignancies arising from the vagina, cervix, endometrial cavity, and fallopian tubes exfoliate tumor cells which collect in the vaginal pool and on the surface of the cervix. The exfoliated cells are found in the vaginal secretions. The secretion may be drawn into a pipette or is collected on a spatula and spread on a glass slide (Fig. 4). A small cotton swab on the end of a stick may be used for wiping the cervix. The cotton swab is then used for spreading the secretions obtained from the vaginal cervix on a clean glass slide. The smear is instantly fixed in equal parts of 95 per cent alcohol and ether before staining. The finding of the tumor cells in a smear is an indication for a scalpel conization biopsy of the cervix and curettage of the endocervix and endometrium in order to locate and determine what type of tumor is present before definitive treatment is undertaken. A positive

Papanicolaou vaginal smear should not be adopted as an indication for surgical treatment or irradiation therapy until the positive vaginal smear is supported by a positive biopsy.

The vaginal-smear method has a high degree of accuracy when the smears are read by specially trained cytologists and are of greatest value in screening patients and in detecting early cancer before it is grossly visible. It is also valuable in those cases where biopsies are difficult to obtain or where the interpretation is questionable. Vaginal smears should be used

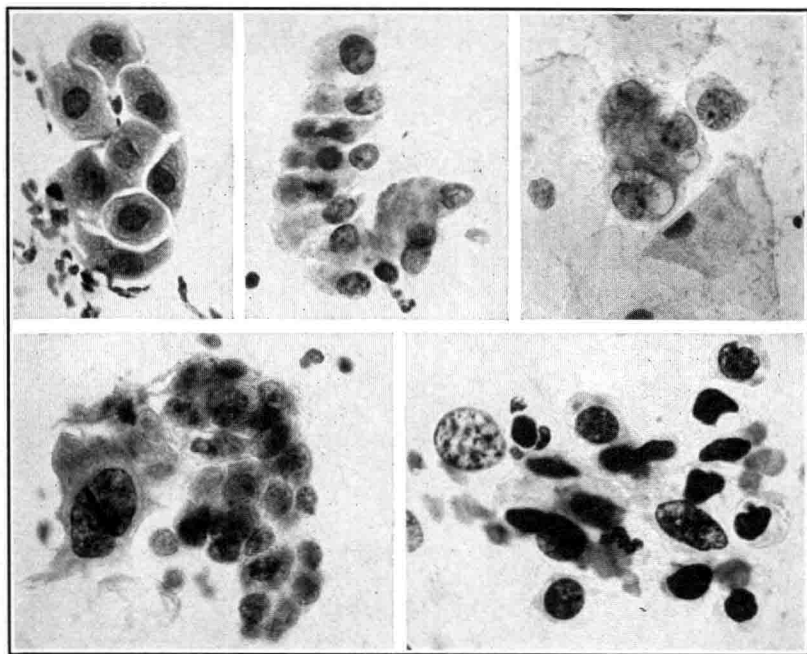


FIG. 5.—Top line, left to right. Non-malignant cells exfoliated from a chronic cervicitis; Normal exfolia of endocervix; Malignant cells in center from adenocarcinoma of endometrium, large peripheral cells are normal vaginal cells.

Lower line, left to right. Exfolia of epidermoid cancer of cervix; Exfoliated malignant epidermoid cells from cancer in situ of cervix. (Courtesy of W. T. Wikle, M.D.).

in the follow-up of treated cancer cases. The Papanicolaou-Traut vaginal cytology test for cancer screening and cancer detection has become a standard procedure. Patients have grown to anticipate use of this test to insure the best possible protection against cancer. The various types of vaginal smears found for malignant and benign lesions appear in Figure 5.

**Cervical Biopsy.**—The biopsy is the most important aid in the diagnosis of malignancies of the cervix and uterine body and is the accepted method of confirming the clinical diagnosis. Its importance in the examination of the cervix and in the investigation of abnormal uterine bleeding cannot be over-emphasized. Biopsy has never been shown to increase the dissemination of the disease. It is much safer to obtain a biopsy early than to procrastinate

and wait for the development of clinically-recognizable malignancy. It is a necessity in differentiating between cancer and the benign lesions such as erosions, ulcers, tuberculosis, and syphilis.

The area selected for biopsy is most important. The normal appearing cervix may be the site of an early cancer, but there usually is some evidence of an abnormality. Most of the suspected areas are located at the external os where the slightly red, columnar epithelium of the endocervix joins with the somewhat pale, smooth, stratified squamous epithelium of the portio vaginalis. The lesion may appear as a small, granular, slightly elevated, and somewhat hardened area that characteristically bleeds when touched with a cotton applicator or even with the examining finger or speculum. Occasionally, the neoplasm spreads beneath the epithelial surface and is felt as a hard nodule covered with normal epithelium. The cancer may be only

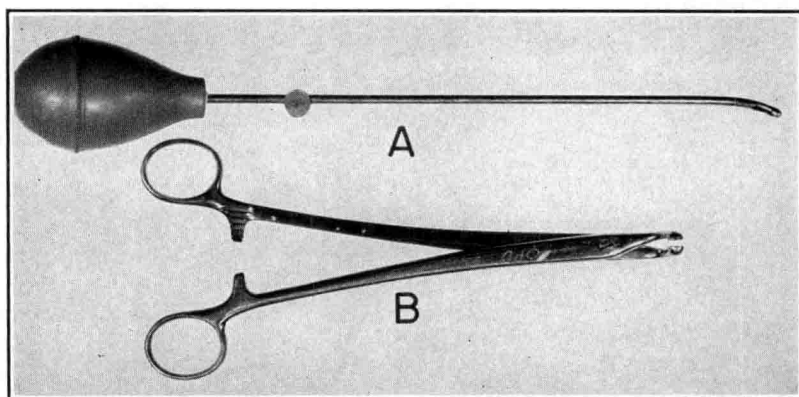


FIG. 6.—A, Endometrial biopsy instrument (Novak curet). B, Cervical biopsy punch.

a small, excessively vascularized area of induration, or a papillary growth on the surface. It may start as a small, discrete ulcer. In later stages, the tumor may be an everted papillary or cauliflower-like growth occupying most of the cervix. The other extreme type is the endophytic growth which spreads through the cervix with little visible change other than enlargement of the cervix and an inversion of the os.

The Schiller test, which consists of painting the cervix with Lugol's solution or Gram's iodine, stains the normal epithelium a mahogany brown. It is thus of some aid in showing where the normal glycogen-containing stratified epithelium is. The abnormal epithelium stains lightly or not at all.

The biopsy specimen should be taken at the edge of the lesion so that it shows both normal and abnormal epithelium and the underlying stroma. In readily accessible areas, this is best done by excising a wedge-shaped section with a sharp scalpel. A biopsy punch instrument (Fig. 6) may be used for obtaining tissue for histologic study. Specimens should be taken from several different areas, including the junction of the stratified and columnar epithelium. Multiple punch biopsies taken at nine, twelve,

three, and six o'clock at the junction of the endocervical and vaginal portion of the cervix are very satisfactory (Fig. 7). The cervical canal should be investigated with a probe and, if bleeding occurs or suspicious areas are felt, it should be scraped with a small curette. Any tissue which comes away easily from the cervical canal is likely to be cancerous. No anesthesia is necessary for the biopsy in the majority of cases. Most bleeding can be controlled with a cotton tampon, although it may be necessary to touch the wound with a cautery or strong silver nitrate solution. The removed tissue is placed immediately in 10 per cent formalin or other fixative agent and paraffin sections are made. Since speed is not generally essential, frozen sections are rarely used. The biopsy should be repeated unless both clinician and pathologist are satisfied that the tissue truly represents the suspected area.

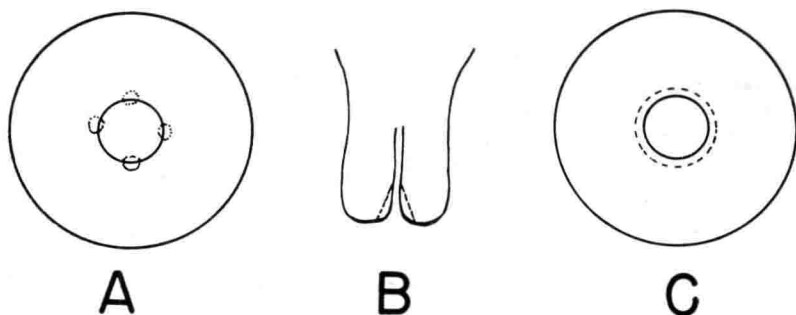


FIG. 7.—Areas for taking cervical biopsies. A, Four quadrant punch biopsy. B, Conization biopsy with scalpel. C, Conization biopsy with scalpel.

**Endometrial Biopsy.**—The endometrial biopsy is used in the office study of fertility to determine whether or not ovulation has occurred. The procedure is also quite helpful in the differential diagnosis of causes for uterine bleeding. Before making a final diagnosis of functional uterine bleeding, it is usually necessary to have a histological specimen of the endometrium of the patient. This procedure may be done without anesthesia. The patient suffers mild discomfort during the endometrial biopsy. The Novak suction curette is most satisfactory for this procedure (Fig. 6). A nulliparous patient cannot be examined as readily in this fashion as a patient with a multiparous cervix. The Novak curette can be gently scraped over the surface of the endometrium at twelve, three, six, and nine o'clock positions, and a very adequate sample of endometrium can be obtained. If the procedure is discomforting to the patient, she may breathe a small amount of Trilene gas while the endometrial biopsy is being performed. Endometrial biopsies taken as part of an infertility investigation are usually best performed during the first two or three hours of menstruation. One does not chance the dislodgment of an early gestation if endometrial biopsy performed as part of an infertility investigation is done only after menstrual bleeding has started.

**Microscopic Examination of Vaginal and Endocervical Secretions.**—Vaginitis or endocervicitis often needs microscopic confirmation before an



accurate diagnosis can be made. A small glass pipette may be used for aspiration of endocervical secretions. A suction bulb is used to draw the secretions into a glass pipette. A drop of the endocervical secretion is then placed on a glass slide. After putting a glass cover slip on the drop of mucus, this secretion can be examined as a wet preparation for presence of leukocytes, bacteria, or spermatozoa.

Microscopic examination of a vaginal discharge can be made by examination of a drop of the discharge material placed on a glass slide and covered with a cover slip. Usually the exudate should be mixed with a drop of saline solution before it is examined under the microscope. When this is done, the debris and leukocytes are better separated and a more positive identification of the *Trichomonas vaginalis* organism is possible. If *Monilia albicans* is being sought, a drop of the vaginal discharge should be mixed with a drop of 20 per cent sodium hydroxide solution. The preparation is then examined as a wet unstained drop beneath the microscope. Again a cover slip preparation seems suitable.

**Male Frog Test for Pregnancy.**—The male frog test was developed independently in 1933 by Shapiro and Zwarenstein and by Belleray. The frog test has many advantages for office practice of obstetrics and gynecology because of its simplicity, speed, and low cost. The results of the test are available in from one-half to three hours after the test has begun. It is about 96 per cent accurate as a test in the winter months. During the spring and summer months the accuracy of the test falls to about 84 per cent. This disadvantage can largely be overcome by refrigeration of the test animals. The frogs may succumb to toxic urine specimens, and false negatives may occur within the first ten days after the patient's last menstrual period. The latter may occur because of the patient's low urinary gonadotrophin levels during the early days of pregnancy. The false negative difficulties can usually be overcome by using a concentrated urine specimen. The toxicity problem can be avoided by using the patient's blood serum instead of her urine for the test.

The male *Rana pipien* is used for the test. A concentrated urine specimen is obtained by discontinuing all fluids by mouth for the patient following her evening meal. One milliliter of the patient's first voided urine specimen of the morning is injected by hypodermic needle into the dorsal lymph sac of two male frogs. One-half hour later, and at intervals of one-half hour for three hours, a glass pipette is used to withdraw a drop of urine from each frog's bladder. The urine of the frog is examined under the microscope. A positive test for pregnancy is indicated by the presence of spermatozoa. Gonadotrophins of placental origin cause the male frog to have an emission of spermatozoa into the urinary bladder. The test animals may be kept in a refrigerator in a pan containing a few millimeters of water. Very little, if any, food is needed for the frogs. After one week's rest, the same animal may be re-used for a test. The pregnant patient's serum may be used instead of the concentrated urine specimen.

**Hogben *Xenopus* or Toad Test for Pregnancy.**—The South African clawed toad is used for pregnancy tests. This animal may be made to extrude eggs by injection of pregnancy urine into its peritoneal cavity or dorsal lymph-sac. The urine is concentrated by absorption with kaolin and sub-