Cancer of the penis attacks the foreskin or the glans, and has the usual characteristics of epithelioma elsewhere.

The Testes and Scrotum.

Acute epididymitis, usually a complication of gonorrhœa, appears as a hot and tender swelling behind the testis, often preceded by tenderness along the spermatic cord. Acute hydrocele may accompany it.

Chronic epididymitis, usually *tuberculous,* is painless and insidious in onset, and produces a hard, irregular enlargement low down behind one or both testes, to which, however, the process is apt soon to spread. Caseation and involvement of the skin later produce a suppurating sinus, which is often the first thing to bring the patient to a physician.

Acute orchitis is often due to a blow, to gonorrhœa, or to mumps. The testis is symmetrically swollen and tender, but suppuration rarely follows.

Chronic orchitis, often *syphilitic,* is slow, painless, and may be accidentally discovered as a slightly irregular induration of the testes with little if any increase in size. Ulceration and fistulæ are rare in the syphilitic form, common in the tuberculous.

Cancer of the testis may appear at any age. It is soft, almost fluctuating, and grows very rapidly, soon involving and perforating the skin, so as to produce an offensive, fungous, granulating outgrowth which easily bleeds. The inguinal glands are involved.

Sarcoma of the testis, commonest at puberty, produces a painless, uniform enlargement, and may reach great size. It may resemble hydrocele or hæmatocele and be mistaken for the latter, especially for an old effusion in a thickened sac (see below).

Diagnosis depends on rapid growth, the *entire* absence of translucency, the tendency to adhere to the skin and to present unequal resistance in different portions (Jacobson). Incision should be made in all doubtful cases.

Hydrocele, an accumulation of serous fluid in the tunica vaginalis, may depend on trauma or on an acute epididymitis or orchitis, but is usually chronic and of unknown cause. It may be congenital and communicate with the peritoneal cavity or form part of a general dropsy in heart or kidney disease.

Examination shows a smooth, tense, fluctuating tumor, without impulse on cough, usually without pain, tenderness, or any sign of inflammation, and, above all, *translucent* if examined with a hydroscope tube or in a dark room with a candle.

If the fluid is opaque or bloody, or if the tunica is thickened, there may be no translucency and diagnosis may be impossible without puncture. The *testis lies behind* the effusion and near its lower end.

Hæmatocele usually follows injury and produces a heavy, opaque, non-fluctuating tumor, which may closely resemble sarcoma unless the history and evidence of trauma are clear. Incision or puncture should decide.

Varicocele, an enlargement of the veins about the spermatic cord and vas deferens, is easily recognized as a mass of tortuous, wormlike vessels, generally in the left side of the scrotum.

Scrotal hernia is usually reducible, tympanitic on percussion, and gives an impulse on coughing. If it consists largely of omentum it will be dull on percussion. The history of the case and the progression of the tumor from above downward usually make its origin clear.

Absence of one or both testes from the scrotum should direct our search upward to the inguinal canal, since a retained testis may be the seat of troublesome inflammation or of malignant disease. (For examination of the seminal vesicles, see the Rectum, page 441.)

The Female Genitals.

Methods.

Inspection of the external genitals is easy if the parts are properly exposed by a satisfactory position and a good light. Intravaginal inspection needs a speculum (Sims' bivalve) and usually an assistant to hold it.

Palpation should always be bimanual, the left forefinger in the vagina (or in the rectum if the hymen is narrow), the right hand above the symphysis pubis. The proper co-operation of the hands is hard to describe and depends on practice. The pressure of the external hand helps to bring the pelvic organs within reach of the examining finger in the vagina. Unless the organs can be thus grasped or balanced between the outer and inner hands, no satisfactory examination is possible. Tenderness may prevent this or render an anæsthetic necessary, but gentleness and the avoidance of any sudden or rapid motions do much to facilitate the examination. The left hand, in making its way into the upper parts of the vaginal vault, should press only on the perineum, avoiding the region of the clitoris. It is astonishing how much pressure can be borne without pain, provided it is exerted gradually and upon the perineum only. Many examiners find it advantageous to rest the left foot upon a stool, with the left elbow on the knee.

Lesions.

I. In the EXTERNAL GENITALS one looks for some of the same lesions already described on page 442, viz., chancre, chancroid, local inflammations, and tumors. Only the commonest and most important lesions will be mentioned here.

(*a*) In young children a suppurating *vulvo-vaginitis,* usually gonorrhœal, but non-venereal, is easily recognized by the abundant purulent discharge.

(*b*) *Local eczema,* often red and angry, is commonly the result of the irritation of *diabetic urine.*

(*c*) *Varicose veins* and œdema of the vulva are common in pregnancy and occasionally result from large pelvic tumors.

(*d*) *Ruptured perineum,* with more or less protrusion of the vaginal walls, carrying with it the bladder (cystocele) or rectum (rectocele), is readily recognized if the normal anatomy of the parts is familiar.

(*e*) *The hymen* may be *imperforate* with retention of menstrual

fluid, or tender, irritated remains of it after rupture may cause pain and need removal.

(*f*) *Urethral caruncle* (a small vascular papilloma at the entrance of the urethra) is a bright red excrescence, usually the size of a split pea or smaller. It may cause no symptoms or may produce irritation, especially during micturition.

(*g*) *Small abscesses* of the glands within or around the urethra may cause pain in coitus or during micturition.

II. THE UTERUS.—Only the commonest lesions will be dealt with here, viz.:

1. Laceration and "erosion" of the cervix.
2. Malpositions of the organ.
3. Endometritis.
4. Cancer of the uterus.
5. Fibro-myoma of the uterus.

1. (*a*) *Lacerations of the cervix* following childbirth are very common and frequently produce no symptoms. They are readily recognized by inspection and palpation, and are often combined with:

(*b*) "*Erosions,*" an ulcerated, raw surface at and around the os uteri, with or without the formation of small cysts. At times the os assumes a warty, irregular appearance, suggesting cancer, from which it can be distinguished only by histological examination of an excised piece.

2. (*a*) *Malpositions* (backward or forward) may involve the whole organ (ante- or retroversion) or represent a bending of the organ upon itself (ante- or retroflexion). These lesions may be variously combined and frequently exist without producing any symptoms. Indeed, it is doubtful whether there is any single "normal" position for the uterus. Its position is recognized by bimanual palpation, which should also determine whether the uterus is freely movable or whether it is bound in place by adhesions, such as are very often found with backward displacements.

(*b*) *Prolapse of the uterus* toward the vaginal outlet is often a result of pelvic lacerations unrepaired. When the uterus is outside the vaginal outlet, we call the condition *procidentia.*

(*c*) *Lateral displacement* of the uterus by pressure of tumors or traction by old adhesions is less common.

3. *Endometritis* may present no definite physical signs except a muco-purulent discharge (leucorrhœa, "whites") and perhaps unduly frequent, profuse, or prolonged menstruation. The slightest touch of a uterine sound may produce bleeding. It often accompanies disturbances of digestion and neurasthenic conditions, probably as part of a general prostration rather than as its cause.

4. *Cancer of the uterus* usually attacks the cervix, and in marked cases is easily recognized by sight and touch as a "cauliflower"-like, *fungating mass* on the cervix. In its early stages it may be confounded with "erosions" and inflammatory conditions, and only microscopic examination can satisfactorily determine its nature. *Profuse hemorrhage*, especially in a woman about the period of the menopause, and the *offensive* odor of the *discharge* suggest the diagnosis. The vaginal wall is soon involved in the growth, and irritability or obstruction in bladder or rectum may result.

5. *Fibro-myoma of the uterus* is by far the commonest tumor of that organ. It produces hemorrhages at or between the menstrual periods, and anæmia results. Otherwise its effects are those of pressure on the bladder and rectum, or on neighboring nerves or vessels (pain, œdema).

Bimanual palpation determines, first of all, the fact that the growth is connected and moves with the uterus. This determined and cancer excluded by the absence of any involvement of the cervix or of the vaginal wall, the chief difficulty may be in distinguishing the growth from a pregnant uterus. Usually its irregular shape, the persistence of menses, and the lapse of time settle the question.

Lengthening of the uterine canal is an important confirmatory sign of fibromyoma, but sounds should never be passed to determine this fact unless pregnancy can be definitely excluded.

III. FALLOPIAN TUBES.—Salpingitis (acute or chronic) and tubal pregnancy are the most important diseases of the tubes.

(*a*) *Salpingitis* is usually gonorrhœal, occasionally tuberculous, sometimes of unknown origin. A painful, tender swelling or induration in the region of the tube, with or without fever, chill, or leucocytosis, constitutes the evidence for diagnosis. From pelvic peritonitis of the tubal region diagnosis is impossible.

From tubal pregnancy diagnosis may be very difficult, and suspicions are rarely aroused until rupture occurs (*vide infra*). If the signs and symptoms of pregnancy are absent and tenderness is marked, the condition is usually called salpingitis; but even then mistakes often occur, as the menses may persist in tubal pregnancy and the fœtal tumor may be tender. Only when pregnancy can absolutely be excluded is diagnosis sure.

(*b*) *Tubal pregnancy*, as just explained, is rarely to be diagnosed until the growth of the fœtus ruptures the tube—an event which usually occurs between the third and the twelfth week of pregnancy.[1] Sudden pelvic pain with tenderness, vomiting, and evidence of internal hemorrhage (*i.e.*, pallor, fainting, weak, rapid pulse, thirst, air hunger) suggest the diagnosis, especially if a tumor in the tubal region can be detected bimanually.

IV. OVARIES.—A *prolapsed* ovary is often felt during a vaginal examination, being recognized by its size, shape, and relation to the uterus.

Ovaritis, enlargement, and tenderness of one or both ovaries is usually part of tubal disease and not sharply to be distinguished from it before operation. In other cases it is associated with *cyst formation*, and the cysts may be palpated bimanually. *Abscess* of the ovary is not commonly diagnosed, but is met with in operations for pus tubes.

Ovarian Cystoma.

(*a*) *Small Tumors.*—In their earlier stages these growths produce symptoms only when complications arise, *i.e.*, suppuration or twisting of the pedicle. *Small, suppurating cysts* give practically

[1] If disturbances of menstruation, morning nausea, changes in the breasts, and cyanosis of the vagina are combined with an extra-uterine tumor and an unusually slight uterine enlargement, the diagnosis of tubal gestation may be *suspected* prior to rupture.

the same signs as those of a pus tube, and are recognized only at operation or autopsy.

Twisted pedicle gives rise to symptoms and signs often indistinguishable from those of intestinal obstruction. Only the recognition of the tumor as ovarian can suggest that the acute symptoms may be due to twisting of its pedicle.

(*b*) *Large ovarian tumors* have been confused in my experience with pregnancy, fibroid of the uterus, ascites, and tuberculous peri-

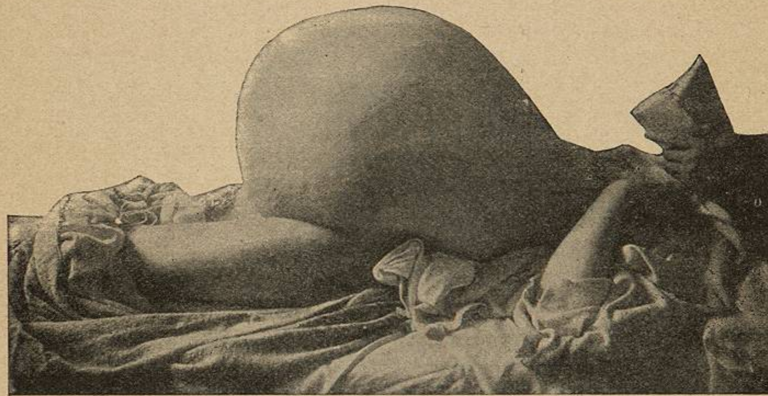

FIG. 201.—Huge Ovarian Cyst.

tonitis. From these we may usually distinguish an ovarian tumor by its history, its origin from one side of the belly, by the shape of the belly, the area of percussion dulness, and the pelvic examination.

By the history we should attempt to exclude disease of the heart, kidney, and liver, and tuberculosis of any organ, should inquire into the position of the tumor in the earlier stages of its growth, and establish the presence or absence of the ordinary signs of pregnancy and of uterine hemorrhages such as occur with fibroids.

In ascites or tuberculous peritonitis the flanks often bulge (see Fig. 180, page 372), whereas in ovarian disease the bulging is central and greatest just below the navel (see Fig. 201).

If by the history or by palpation and percussion we can determine that the tumor is fluctuant and springs from one side of the abdomen, it is in all probability ovarian. High psoas abscess sometimes presents identical signs, but is associated with evidence of spinal tuberculosis (see below, p. 489). *Moderate* ascites or tuberculous peritonitis leaves an oval, resonant area about the navel, which is absent with large ovarian tumors; but if the amount of free fluid is large, percussion and palpation may give results identical with those found in ovarian disease.

Vaginal examination may exclude fibroid by showing that the uterus is not directly connected with the tumor and by demonstrating with a uterine sound that the uterine canal is not elongated.

Solid tumors of the ovary, carcinoma, sarcoma, or fibroma are rarely recognizable before operation and are often mistaken for pedunculated uterine fibroids.