albuginea. Consequently, it was taken for granted that a severe inflammation had only one of two outcomes—either suppuration or gangrene. This is not true. The testicle can swell to twice its original size in the course of a few days, and the swelling then subside. Such cases are seen during epidemics of mumps. The epididymis increases in length, corresponding with the increase in size of the testicle.

Marked difficulty may be experienced in the diagnosis of an orchitis or epididymitis of an undescended testicle lying within the inguinal canal. Symptoms resembling strangulation of a hernia may arise, as has been previously stated. We now arrive at the discussion of CHRONIC INFLAMMATIONS of the testicle and its adnexa.

A chronic inflammation of the testicle may exist for years and produce a *diffuse* enlargement of the organ, or a chronic abscess may develop at some *circumscribed* spot. No etiological factor can be found in most cases, and an acute stage is usually wanting. Inflammatory symptoms are commonly but slightly marked; therefore it becomes evident why such cases lead us to think of a new growth, or of a hydrocele with enormously thickened walls, especially when the diffuse form confronts us. In doubtful cases, the following differential points will be of service: A hydrocele, which can be confused with a swelling of the parenchyma of the testicle, always has markedly hard spots in its sac —spots which are harder than those produced by a chronic orchitis. In orchitis we find areas of softening and harder areas, but never such stony, hard plates as in thickened hydrocele walls. In orchitis, the epididymis can usually be felt; in hydrocele, it is obscured quite early. No characteristic points of difference between a chronic orchitis and a neoplasm can be given

unless we specify some exact variety of new growth. A rapidly growing neoplasm—i. e., one which forms in the course of a few months—is suspicious of a malignant tumour. In this case, the epididymis, vas, and lymph glands may already show involvement. It should be kept in mind that the retroperitoneal glands in the neighbourhood of the kidney, and not the inguinal glands, increase in size in tumours of the testicle. Tumours of slower growth can only be adenomata or cystomata. Aside from the special symptoms, which in a given case may be very striking, sudden marked

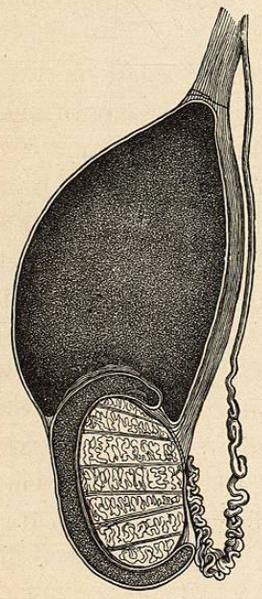

FIG. 35.

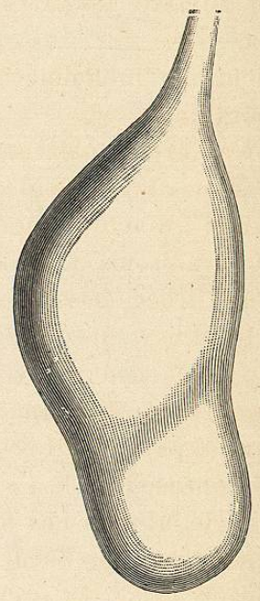

FIG. 36.

Extravaginal spermatocele (diagrammatic).

increase in the rapidity of growth speaks greatly in favour of a neoplasm. Tumours, as a rule, are heavy; non-malignant tumours do not involve the skin, etc.

Chronic inflammatory tumours include both *cheesy* (*tubercular*) degeneration of the epididymis and *syphilitic* orchitis. Tubercular epididymitis can hardly be mistaken. Without cause, a considerable *nodular* swelling of the epididymis occurs, tardily breaks down at one point, and discharges a serous pus. The sinus shows no tendency to heal, and the whole process is unaccompanied by severe pain. Pressure upon the hard knots causes no pain. Later, the other epididymis, the vasa deferentia, the seminal vesicles, and the prostate show similar involvement. The more often examination per rectum in this condition is made, the more often early involvement of the seminal vesicles can be found—a hint which shows how unjustified the practice of castration is in these cases. The cases in which epididymitis appears after gonorrhœa, and later forms the starting-point of an acute miliary tuberculosis, are of special interest.

Syphilitic inflammation attacks the testicle itself. It runs a painless course, similar to that of a cheesy degeneration of the epididymis. The testicle also is painless on pressure, the areas of softening break down without causing pain, and the discharge is but scanty. Symptoms of syphilis in other parts of the body confirm the diagnosis.

NEW GROWTHS of the testicle form solid or cystic tumours; others are partly composed of fluid, partly of solid tissue.

Among the cystic tumours, the *spermatocele* deserves mention. If a hydrocele of the tunica has been diagnosed, but on aspiration a fluid which contains spermatozoa is obtained, the condition is called *hydrospermatocele*. This is explained by assuming that a spermatocele has

ruptured into a hydrocele. But what is a spermatocele? It is best to accept Kocher's definition, that a spermatocele is a retention cyst which has developed somewhere between the rete of the testicle and the vas deferens. Not until of sufficient size do they assume a clinical significance. These cysts can be confused only with a hydrocele of the tunica or of the cord, as they are both fluctuating and translucent. From the former they are distinguished by the fact that in spermatocele the anterior and lateral surfaces of the testicle can be plainly felt, while a hydrocele first obscures these surfaces of the testis.

A hydrocele of the cord differs from a spermatocele in the following points: The spermatocele appears to lie between the testicle and the epididymis, so that the testicle is in front and the epididymis behind it. In these cases the former can not be isolated from the cyst, but in hydrocele the testicle can readily be separated from the sac. Pitha has called attention to the shape of the tumour: the spermatocele, having the testicle beneath, forms a pear-shaped mass, with the smaller end of the pear pointing downward. Although it must be acknowledged that a hydrocele may assume a similar form, a tumour of such configuration should always direct our suspicions to spermatocele. Before attempting any therapeutic interference the tumour should be aspirated, and the fluid obtained examined for spermatozoa.

In addition to the varieties of spermatocele illustrated by Figs. 35, 36, 39, in which the tumour has spread outside the tunica vaginalis propria, there is a variety of intravaginal spermatocele. In these the swelling—composed of a distended portion of the seminal duct—projects into the tunica vaginalis, above the testicle. The tumour, if of

moderate proportions, gives the impression of a second testis placed above the true one.

The *solid* tumours of the testis have, from time immemorial, been divided into sarcocele and fungus. Sarcocele embraced all benign neoplasms; if any marked physical qualities were particularly striking, a further classification, such as chondrocele, osteocele, etc., were

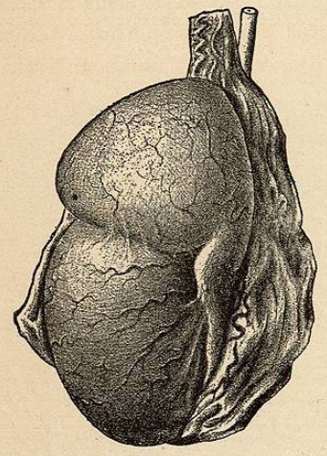

FIG. 37.—Intravaginal spermatocele.

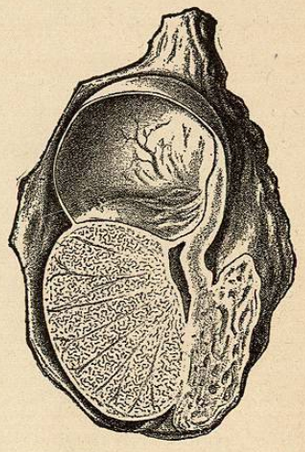

FIG. 38.—Cross-section of Fig. 37.

added. Medullary cancer of the testis (Breihode, pulpy testicle) is the name given to soft tumours which show great rapidity of growth. Their malignancy was so well known that in times gone by the proverb ran: The patient who refused operation survived the castrated one. To-day benign and malignant growths are operated upon without distinction, and from the practitioner's standpoint it is sufficient to make the diagnosis of "neoplasm." Even this is not made without difficulty in some cases. For instance, an hemorrhagic periorchitis—i. e., a strongly marked thickening of the

tunica with a moderate amount of fluid within the serous cavity—may readily be confused with a neoplasm of the testis or with syphilitic orchitis.

One of my friends, who deserves all praise both as an experienced diagnostician and as a skilful operator, had the misfortune to perform castration in a case in which he and several surgeons agreed in the diagnosis of chondroma testis. He employed Zeller's method, i. e., removed the testicle and the portion of the scrotum covering it at one stroke of the knife. The tumour proved to be nothing but a hemorrhagic hydrocele. Other operators, as Desgranges, Baum, and Kocher,

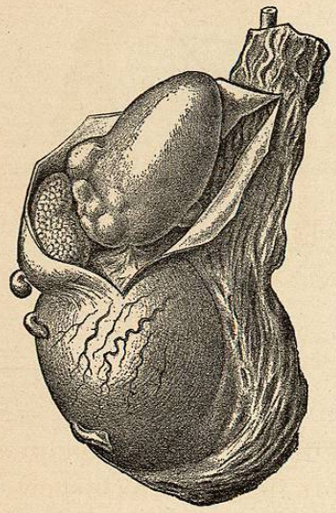

FIG. 39.—Spermatocele extravaginalis.

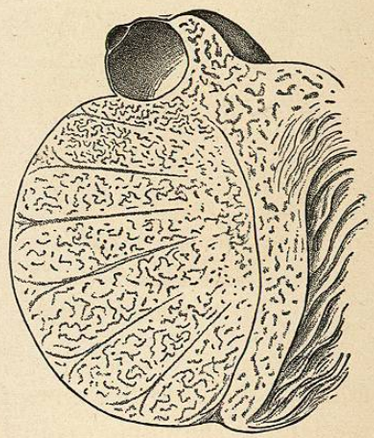

FIG. 40.—Small cyst of the testicle.

found that after incision of such a hydrocele, a latent cancer (due to the inflammatory irritation), showing rapid increase of growth, unmasked itself, and eventually made castration necessary.

At the present day it is customary, in doubtful cases, to exclude syphilitic orchitis by antispecific treatment, unless the tumour is particularly hard. If its consistency is harder, and it has been decided to per-

form castration, the method of Zeller is not employed. On the contrary, the tumour is exposed and the diagnosis verified, according to the maxim, "Do as you would be done by."

In a typical case, the course run by a *malignant* tumour of the testicle does not differ from that of a malignant tumour of any other organ. Rapid growth, rapid extension from testicle to epididymis, or vice versa,

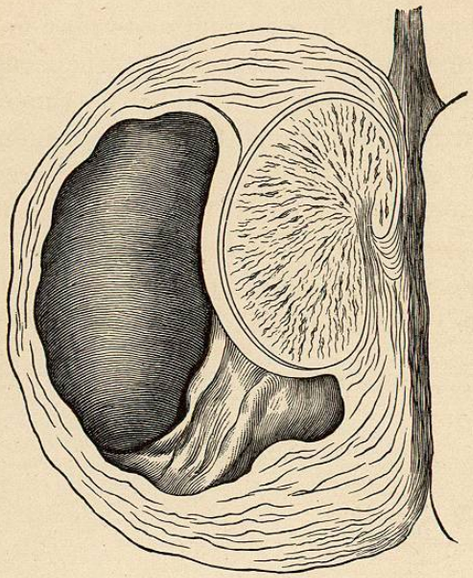

Fig. 41.—Periorchitis prolifera.

then involvement of the vas, early infiltration of the retroperitoneal glands, adhesion, and rupture through the skin—these are the symptoms of malignancy. Retroperitoneal glands should always be sought for, as they enlarge early in the disease.

Tumours which are hard in one spot, fluctuate in another, of rapid growth, but showing no tendency to

involve the epididymis and vas, and unaccompanied by enlargement of the lymph glands, may be called *cystoid*. The prognosis, however, should not be made absolutely favourable.

A congenital tumour which shows both hard and fluctuating spots is undoubtedly a *teratoma*; that is, a neoplasm which is composed of tissues which normally occur elsewhere in the body, such as skin, mucous membranes, muscle, nerves, and even bone with periosteum and marrow. The fluctuating spots may contain fluid of varied nature, mucus, serum, or sebaceous material.

Solid teratomata also occur. The tumour may be designated as a teratoma (1) if it is congenital; (2) if the testicle can be felt alongside it—for teratomata develop next to the testis; (3) if the tumour bursts open and discharges hair, teeth, or bones.

Œdema, elephantiasis, and cancer of the scrotum require no discussion from the point of view of diagnosis.