and a thin layer of wool to form a light "dry poultice." Too early suspension of treatment, and especially of support for the parts, may lead to chronic inflammation of the epididymis and the cord.

The treatment of subacute and chronic epididymitis is that of the declining stages of the acute process. In addition, all predisposing and exciting causes should be removed.

Prognosis.—Epididymitis almost always terminates in resolution; suppuration is very rare except in the uncommon chronic cases. Absorption of inflammatory products is rapid at first, and at the end of a few weeks of good treatment all pain and tenderness have disappeared, and there remains only some swelling and induration of the globus minor or major. This remaining induration may require months or years for its final absorption, and frequently persists permanently in the form of a hard nodule found to be composed of inflammatory deposits in and surrounding the seminal canals, which are thus completely occluded.

Permanent induration is most common in the globus minor, and, as this body is composed of the convolutions of a single tube, the blocking of any portion of it prevents the passage of the semen from the testicle proper to the vas deferens. Even when all apparent induration has disappeared, and this portion of the epididymis again feels normal to the palpating finger, the canal may be filled and obstructed at some point. Complete absorption of the deposit and reopening of the canal in the globus minor can be expected in but a small minority of cases. In the globus major complete absorption is more common, and even if it does not occur, some of the tubules may escape

obstruction. It follows that the large majority of men who have had epididymitis on both sides are sterile. The cause of their sterility lies solely in mechanical obstruction to the passage of semen, since the testicle does not atrophy nor is the man impotent. He retains his sexual appetite and power, and ejaculates a fluid resembling semen except that it contains no spermatozoa.

In a tubercular or syphilitic patient epididymitis may be followed by the appearance of the constitutional disease in the epididymis.

Subacute and chronic cases of epididymitis terminate favorably when proper treatment is continued for a sufficient period.

PROSTATITIS.

I. Acute Prostatitis.—When gonorrhœal inflammation reaches the posterior urethra, it frequently includes the superficial glands and follicles of the prostate, and it may readily involve the entire structure of the organ. Prostatitis commonly appears after the third week of gonorrhœa, its symptoms following or appearing simultaneously with, and possibly obscuring, those of posterior urethritis. It occurs also with chronic urethritis and with stricture. The exciting causes are practically those of posterior urethritis and epididymitis—namely, coitus; prolonged or intense sexual excitement; violent exercise; excessive use of alcohol, tobacco, or highly seasoned foods; exposure to cold; and mechanical or chemical injury due to the use of instruments or injections, or possibly to a concentrated and irritating urine. It is possible that these causes may produce prostatitis independently of gonorrhœa.

Symptoms.—*Follicular Prostatitis.*—If the inflammation be limited to a few follicles, the symptoms will be those of posterior urethritis, with the probable addition of sharp, sticking pains most noticeable at the close of urination. The finger in the rectum may find one or more firm, tender nodules in the substance of the prostate, which is possibly somewhat congested and slightly swollen, but not inflamed or very sensitive. These inflammations may undergo resolution, the symptoms disappearing with those of the posterior urethritis; or they may extend to the rest of the prostate; or, finally, they may linger indefinitely in the form of a chronic folliculitis.

Diffuse or Parenchymatous Prostatitis.—In this form of prostatitis the symptoms are much more pronounced and characteristic. The prostate swells rapidly, notwithstanding the fact that it is surrounded by a firm, fibrous capsule, and the resulting pressure to which the inflamed organ is subjected produces violent pains and interferes greatly with the urinary and sexual functions. There is frequency of urination, tenesmus, and the patient experiences a feeling of fulness and warmth in the rectum, producing an almost constant desire to empty the bowel, and leading him to make frequent and often violent efforts to expel what he thinks is a mass of fæces, but which is really the swollen prostate protruding into the rectum. Defecation is painful, and there may be tenesmus of the bowel. Urination is also painful, especially at the close of the act, when the patient may experience violent sharp pains due to the squeezing of the tender prostate by the sphincter vesicæ muscle, and the last drops of urine may be mixed with blood. The stream of urine is often reduced in size, and the pressure upon

the prostatic urethra may be sufficient to cause complete retention.

In addition to the subjective sensations already described, the patient complains of fulness, pressure, weight, and pain in the perineum, which may be hot and so tender that the sitting posture or crossing of the legs cannot be endured. The pain is variously described by patients as sharp, lancinating, shooting, boring, or throbbing in character, and radiates from the prostate and perineum to the urethra, testicles, thighs, and back. With the finger in the rectum the prostate is outlined as a firm, hot, pulsating, more or less irregular tumor, which is exceedingly sensitive to pressure, and which in severe cases may become almost as large as a man's fist, and may entirely occlude the rectum.

The disease is usually accompanied from the beginning with some fever and constitutional disturbance, and by diminution or cessation of the urethral discharge during the swelling of the prostate. A marked feature of prostatitis, and one for which the inexperienced practitioner is rarely prepared, is the mental attitude of the patient, whose restlessness, fears, and anxiety are out of all proportion to the severity of the process. As Keyes well says: "The patient is irritable, despondent, and suspicious, often, in fact, wild to an extent amounting to mild acute mania." He is inclined to be dissatisfied with all that is done for him—in short, is usually a very unsatisfactory patient to treat during the acute process, unless he can have a constant attendant to watch over him and properly to carry out the physician's orders.

The course of the disease, when it ends, as it commonly does, in resolution, is short; the symptoms appear more or less suddenly, rapidly increase to the

highest point, and almost as rapidly subside, so that the acute stage varies in duration from four to ten days, and final recovery follows in another week or two. As the symptoms subside and the urethral discharge reappears, the latter may at times be changed in character by admixture with a thick, viscid mucus and pus from the prostatic follicles; and if the seminal vesicles have been involved, the discharge may contain a few spermatozoa.

Instead of undergoing resolution, the inflammation may go on to suppuration involving portions or all of the prostate. The formation of pus is usually announced by a decided chill and a marked increase in temperature, and the constitutional disturbance may be considerable. The feeling of tension in the perineum is usually diminished, and the pains may lose their intense, boring character and become cutting and throbbing. Retention of urine commonly results. Fluctuation can sometimes be felt through the rectum. If untreated, these abscesses rupture into the urethra, the rectum, or the perineum, the order of frequency being that given. Exceptionally, they extend beyond the limits of the prostate, burrow extensively between the layers of the pelvic fascia, and open into the ischio-rectal fossa, the inguinal region, or even into the peritoneum, and may cause death from sepsis or from peritonitis. Occasionally an abscess will discharge into both urethra and rectum or into the urethra and some other region, as the perineum, and result in urinary fistula. Rupture of the abscess brings immediate relief from pain; if the abscess be a small one, opening into the urethra, it will usually fill with granulations and slowly heal. An opening into the rectum is unfavorable, since the cavity is more liable to infection and can be kept clean only with great difficulty.

Occasionally during gonorrhœa, stricture, or consequent inflammation of the seminal vesicles or of the vas deferens, suppuration may occur in the tissues surrounding the prostate (periprostatic abscess). As these abscesses are situated in looser tissues, their symptoms are less acute than in prostatic abscess, and the finger in the rectum locates them outside the capsule of the prostate; but in other respects their course is practically that of prostatic abscess.

Treatment.—First and most important is rest, which in severe cases should be made as nearly absolute as possible. The patient must resist his constant desire to urinate and to empty the bowel, and must refrain from straining at stool or in urinating if he would avoid the dangers of prostatic abscess. Rest in bed with the hips elevated, the application of fomentations large enough to cover anus, perineum, and hypogastrium, hot sitz-baths or hot enemata given two or three times daily, the internal administration of alkalies and bland fluids in quantities sufficient to keep the urine unirritating (see hygiene of *Gonorrhœa*), and the use of anodynes to control pain and tenesmus, constitute the best treatment of most cases; if begun early and faithfully continued, this treatment will usually render the attack a mild one.

Anodynes are best given in the form of opium-and-belladonna suppositories, and in quantities sufficient to allay the irritation of the bladder and rectum and to keep the patient quiet. As in posterior urethritis, hyoscyamus is often valuable in relieving tenesmus. Mustard or turpentine may be added to the fomentations to produce counter-irritation, and in severe cases ten or fifteen leeches may be applied to the perineum.

The patient should be put on a light diet, and his

bowels should be moved with enemata, cathartics being generally contraindicated, though a brisk calomel purge at the beginning of treatment, or $\frac{1}{10}$ to $\frac{1}{6}$ grain of calomel given every hour until the bowels move, is often productive of excellent results. Sometimes it is neces-sary to give bromides and chloral to quiet the mental excitement, produce sleep, and allow the patient rest, but usually they are not as beneficial as the presence of a well-trained attendant who will properly execute the physician's orders, keep the patient under control, and add to his comfort and rest by daily sponging or skilful rubbing of the body, etc. All treatment of gonorrhœa should be suspended with the first symptoms of prosta-titis, and the prostate should not be teased by too frequent examinations through the rectum. Retention of urine should be relieved by the use of the hot bath when possible, but if this fails a small soft catheter may be used gently after first injecting the urethra full of warm oil.

Finger and other German surgeons highly recommend the use of cold, instead of hot, local applications. If be-gun early enough, the course of the disease may be cut short by using the cold rectal sound. This instrument is a hollow sound with two longitudinal compartments con-nected at the end, through which water may flow in a constant stream. The sound is well oiled, is gently in-troduced into the rectum until it comes in contact with the prostate, and cold water—even ice cold—is allowed to flow through it for half an hour or an hour, once, twice, or three times a day.

When an abscess forms the treatment is surgical, a peri-neal opening being always the most desirable. If fluctua-tion can be felt through the rectum, the abscess may be

aspirated or be punctured with a trocar, but an opening into the rectum is to be avoided when possible, since some of the contents of the intestine are certain to get into the cavity and to interfere with healing. When a small abscess bursts into the urethra, boric acid or salol and bland fluids internally, to keep the urine aseptic and unirritating, constitute the only treatment required unless further symptoms appear. Abscesses which open in other directions should be treated on surgical principles—with irrigations and astringent injections.

II. Chronic Prostatitis.—Chronic prostatitis may follow an acute attack, may occur in subacute form dur-ing chronic urethritis or with stricture, or may arise from any cause that produces prolonged congestion or irrita-tion of the prostatic urethra. The inflammation may be limited to a few of the superficial follicles and glands opening into the urethra, and be very mild, simply catarrhal in type, or it may involve the entire glandu-lar structures, together with more or less, or even all, of the parenchyma of the prostate.

Symptoms.—In the mild forms, commonly known as *chronic follicular prostatitis*, or *prostatorrhœa*, in which the superficial glands and follicles are alone affected, the chief symptom is the discharge from the meatus of a thick, sticky, bluish or milky-looking fluid composed of a mixture of thick, glairy mucus from the prostatic folli-cles, usually some pus, and more or less mucus from other portions of the urethra. This discharge is inter-mittent, appearing most frequently at the close of urina-tion, at stool, or after an erection, or it can be pressed out of the prostate by the finger in the rectum. The urine in the second glass is usually cloudy; it may con-tain comma-like shreds even when that in the first glass is

clear, since the mucus, pus, and shreds are pressed out of the prostatic follicles by the sphincter vesicæ and the muscular fibres of the prostate in the act of expelling the last drops of urine. Under the microscope the discharge is seen to contain pus-cells, polygonal and cylindrical epithelium, amorphous and fatty matter, and the needle-shaped and whetstone-shaped "sperma-crystals." If, by pressure on the prostate, a drop of the prostatic secretion be obtained free from urine, and to it be added a drop of a 1 per cent. solution of ammonia phosphate, and the mixture be allowed to dry slowly under a cover-glass, these crystals can easily be demonstrated. Spermatozoa are not present unless the seminal vesicles are inflamed.

The patient usually describes these discharges as seminal losses, and believes himself the subject of spermatorrhœa. In consequence he is often despondent and hypochondriacal and inclined to exaggerate greatly the severity of his subjective discomforts, which are usually confined to some vague and uneasy sensations in the perineum, with possibly some increased frequency in urination and some irritability of the sexual organs.

Extension of the inflammation to the deeper glands and parenchyma of the prostate produces a graver form of the disease, known as *chronic parenchymatous prostatitis.* The symptoms of this form vary greatly, depending upon the extent and severity of the process. In addition to the discharge, there may be tenesmus and increased frequency of urination, with pain and possibly slight hemorrhage at the close of the act. There are burning, heavy, uneasy sensations in the perineal region, with pains radiating to the urethra, testicles, groins, thighs, and back. These sensations are increased on urination, defecation, or sexual intercourse, and the pains

may even be neuralgic in character, being often described as neuralgia of the urethra, testicle, and bladder. There are often teasing, tickling sensations of the prepuce and the meatus. In severe cases the pain is greatly increased by jolting, crossing the thighs, walking, or even by the sitting posture.

The deep urethra and the vesical neck are often exceedingly sensitive, and spasmodic contractions of the sphincter muscles may cause a sudden stopping of the stream near the close of urination. There is usually irritation of the sexual organs, with frequent emissions, which may be bloody; in severe cases, though emissions and prolonged, often painful, erections are common, sexual desire and gratification may be diminished or entirely absent. Spermatozoa are present in the semen, but, owing to the absence of normal prostatic secretions, they are inactive, and sterility results.

The patient is usually mentally depressed, irritable, and melancholy. Other constitutional disturbances are slight at first, and may remain so for months, notwithstanding severe local symptoms and a hypochondriacal state of mind that is most deplorable; but unless the local disorder is relieved and the mental condition is improved, there follows, sooner or later, a long series of morbid nervous phenomena constituting the unfortunate state generally known as "neurasthenia." These symptoms are vague, varied, and numerous. At first they refer chiefly to the genito-urinary system, but later they may apply to any or every organ in the body. Among the earliest and most common complaints of these patients, besides those already given, may be mentioned constant weariness and weakness, aching pain in the back and legs, a heavy, dull feeling in the head, headache, loss

Prognosis.—Recent cases recover under good management; older cases are less favorable, but with time, patience, hygiene, and good treatment they are greatly relieved and usually recover. The general health commonly remains good unless disturbed by loss of rest and long-continued mental depression. Suppuration very rarely results fatally.

VESICULITIS.

Inflammation of the seminal vesicles may occur during or after the third week of gonorrhœa, as the result of a direct extension of the process from the posterior urethra. Acute vesiculitis, however, is less common than the chronic form, which may follow the former, but which more frequently appears in subacute form during chronic urethritis. It may also be due to stricture or to prolonged congestion, irritation, and inflammation of the posterior urethra from any cause. It is more common in neurotic persons. Unrecognized acute or chronic vesiculitis is undoubtedly present in many cases of complicated urethritis.

Symptoms.—In the acute form the symptoms are practically those found in acute posterior urethritis and acute prostatitis, with which disorders vesiculitis is often associated. The differential diagnosis is frequently difficult. In addition to tenesmus, frequent micturition, painful and disagreeable sensations in the perineum, etc., there are usually characteristic disturbances of the sexual functions. Sexual desire is stimulated and may be almost constant, and there are frequent emissions occurring on the slightest provocation, and prolonged, sometimes painful, erections. Ejaculation is usually precipitate, unaccompanied by pleasure or relief, and

extremely painful. The seminal discharge contains pus, dead spermatozoa, and frequently blood.

In subacute and chronic vesiculitis the above symptoms may be present in lesser degree, or there may be great diminution of sexual desire, with, however, frequent and more or less painful emissions. The discharge contains less pus and blood and fewer spermatozoa, but is thicker and more gelatinous than normal, and, if obtained pure by expression with the finger, shows a tendency to coagulate. There are often neurasthenic and other symptoms described in connection with chronic prostatitis.

If the bladder be full and counter-pressure be made above the pubes, the finger in the rectum will reach, just above the prostate and to either side, a considerable portion of the seminal vesicle, which in acute cases is swollen, hot, throbbing, and sensitive, and in subacute cases is distended with abnormally thickened secretion and is tender on pressure. (The normal vesicle can rarely be recognized by the finger in the rectum.) The condition of the prostate should be determined before concluding the examination. Under favorable circumstances acute vesiculitis subsides in a week or less, and usually terminates in resolution; but it may result in abscess or be followed by chronic inflammation.

Treatment.—In acute vesiculitis the treatment is that of acute prostatitis—namely, absolute rest, hot applications, anodynes, and general treatment of the patient. Much pressure upon the vesicle or frequent local interference should be avoided, for fear of rupturing the vesicle or encouraging suppuration. If abscess forms, the treatment is surgical, as in prostatic and periprostatic abscess.

In chronic vesiculitis hygiene and constitutional treatment have proven of greater service than local measures. Irrigation of the rectum with hot water may help in some cases. "Stripping" the vesicle, as recommended by Dr. Eugene Fuller,[1] sometimes gives good results. The following is a brief outline of the method: The patient stands with his back to the operator, bends (at the hips only) forward, and rests his hands upon a chair. With one finger in the rectum and with the other hand making counter-pressure over the bladder, which should be full, the operator gently presses upon such portions of the distended vesicle as he can reach, and empties it of its contents. The secretion may appear at once at the meatus or be washed out later by the urine. The frequency with which the operation may be repeated varies greatly in different cases, but averages about once a week. Too frequent or rough manipulations aggravate the existing disorder and may result in acute vesiculitis.

CYSTITIS.

If, during gonorrhœa or gleet, the posterior urethra is involved, the inflammation may readily extend to the adjacent mucous membrane of the bladder. Such a cystitis, though it may include all the vesical membrane, is usually limited to the surface about the urethral orifice, the region commonly known as the neck of the bladder. It is probably due to simple extension of the inflammation from the urethra or to pus-infection, and not to invasion of the membrane by gonococci, since cystitis accompanying gonorrhœa is usually much more amenable to treatment than is the primary disease. It is

[1] *Journal of Cutaneous and Genito-urinary Diseases*, Sept., 1893, June and July, 1894.

often classed as a mixed infection, though gonococci have never been demonstrated in the tissues of the bladder. The exciting causes of this form of cystitis are those of posterior urethritis, and they are found chiefly in such acts, surroundings, treatment, etc. as tend to congest or irritate the deep urethra or to convey pus from the urethra to the bladder.

Symptoms.—The symptoms are essentially those of posterior urethritis. They may be very mild and scarcely noticeable, or so severe that there is a constant, almost irresistible, desire to urinate, with violent tenesmus and the expulsion every few minutes of a few drops of urine mixed with pus and blood. Between these two extremes the symptoms may vary greatly.

There is frequently a feeling of weight and discomfort in the perineum, with pains which radiate to the penis, testicles, groins, and back. The pubic and hypogastric regions are often tender and sensitive. In severe cases, in those of long duration, and especially in those complicated by the presence of stricture or enlarged prostate, there may be atony of the bladder-walls and partial retention of urine. If unrelieved, this condition is usually followed by ammoniacal decomposition of the urine, which then has a strongly fetid and ammoniacal odor, and contains a quantity of thick, viscid sediment that adheres to the bottom and sides of the vessel in which the urine is voided. Such urine is necessarily irritating to the mucous membrane of the bladder, and increases the severity of the inflammation.

Constitutional symptoms are usually slight; but if large areas of the vesical mucous membrane be involved, there may be chills, fever, and other systemic disturbances. Such symptoms, however, appearing somewhat