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

suddenly during the course of cystitis, should always lead the physician to suspect the added presence of pyelitis. There is often more or less of the mental distress common to inflammatory disorders of the genito-urinary tract. As in other complications of urethritis, the urethral discharge diminishes or disappears entirely during the course of the new disorder. Cystitis may vary in duration from a few days to several weeks or months, and may terminate in complete resolution or in some of the chronic forms of the disease.

**Diagnosis.** — The subjective symptoms in cystitis, prostatitis, and posterior urethritis are so much alike that they should never be relied upon for a diagnosis. Rectal examination will determine the presence or absence of prostatitis, and careful examinations of the urine should decide if the inflammation has extended from the pars posterior to the bladder, for gonorrhœal cystitis without posterior urethritis rarely, if ever, exists.

Thompson's two-glass method, as described in connection with *Acute Posterior Urethritis*, should be used, though it is often desirable to have the urine passed in three separate glasses. If the inflammation be limited to the posterior urethra, there will be times—when the urine has been retained in the bladder for but a few minutes, possibly half an hour or an hour—when the first portion of urine alone will contain pus, the other portions being clear. When this occurs, cystitis may be excluded. If the vesical neck be also involved, the first glass will contain most of the pus, but all the urine will be more or less clouded. If the cystitis be more extensive, the quantity of pus will be greater, and during the intervals of urination it will settle to the base of the bladder. In this case the amount of mucus and pus in the first glass



depends on the activity of the inflammation in the posterior urethra and at the vesical neck; the second glass contains the more or less clouded urine from the upper part of the bladder; while the urine in the third glass contains the mucus and pus that has collected at the base of the bladder, and is therefore more heavily clouded than that in either of the other two glasses.

If in cystitis the urine be acid in reaction, as it may be in the early stages, and be allowed to stand in a glass for a few minutes, two layers of precipitate will form. The first layer, that at the bottom, is composed chiefly of pus, is white, more or less dense, and crumbly in appearance. Above this is a looser, flocculent or cloudy layer of mucus and muco-pus. This upper layer forms more slowly, but soon settles sufficiently to leave a clear layer of urine at the top. In the more severe as well as in the older forms of cystitis the urine is usually neutral or alkaline in reaction. As the degree of alkalinity increases the pus and mucus form a thicker, glairy, stringy substance which adheres to the membrane of the bladder and to the vessel in which it is placed. It cannot be dropped from one test-tube to another, but goes over in stringy masses. This appearance is most marked in ammoniacal decomposition of the urine, which then not only has a foul odor and contains pus, but also shows under the microscope large numbers of micro-organisms, amorphous phosphates, and coffin-lid, triple-phosphate crystals. This condition of the urine is not found unless cystitis is present.

During the course of cystitis, pyelitis may occur without additional symptoms, so that in every case in which the urine constantly contains pus the possible presence of pyelitis should be considered.

**Treatment.**—The details of treatment are practically those of acute prostatitis. The chief indications are met by rest in bed, large dilution of the urine with bland drinks, hot local applications and hot baths, and anodynes to relieve pain and tenesmus. It is not desirable to render the urine alkaline, as that would favor ammoniacal decomposition. Balsam of copaiba—less frequently oil of sandalwood—is often highly efficacious in reducing the acute symptoms. Boric acid or salol in doses of 5 or 10 grains every three or four hours is valuable in sterilizing the urine and preventing decomposition. Citrate or acetate of potash in 10- to 20-grain doses three or four times a day is sometimes of service as a diuretic.

If the inflammation continues and becomes chronic, the treatment is that of chronic or catarrhal cystitis from other causes.

## PYELITIS.

Inflammation of the pelvis and calices of the kidney occasionally follows gonorrhœal cystitis. Its occurrence is favored by the presence of stricture, enlarged prostate, or any interference with the free outward flow of urine. Cachexia, bad hygiene, and alcoholic excesses may also favor its development.

**Symptoms.**—This complication may develop insidiously, and until severe enough to affect the general health it may present no symptoms in addition to those of cystitis. In the majority of cases, however, there is pain, of a dull, burning character, in the back and the loins, extending possibly to the bladder, testicles, perineum, and thighs. The pain is increased by pressure over the kidneys or by active exercise. There is usually some fever accompanied by chills, that may recur with a regularity suggesting malaria.



**Diagnosis.**—The sudden appearance, during cystitis, of constitutional disturbances should suggest pyelitis. Other symptoms are of value, but the diagnosis rests chiefly upon examinations of the urine. In pyelitis the urine is decidedly acid unless modified after reaching the bladder. The pus is intimately mixed with the urine, and on standing settles to the bottom in a greenish, compact, creamy or oily-looking layer. If decomposition in the bladder is prevented, the urine is not only acid, but on standing remains so for several days, and bacteria do not readily develop in it, as they do in urine from cystitis.

Albumin is present in larger amount than would be furnished by the pus alone. Under the microscope the urine shows, besides pus and mucus, cylindrical masses of pus-cells, occasional hyaline or granular casts, some red blood-corpuscles, and epithelial cells that in some cases may be recognized as peculiar to the kidney. Later in the disease there are sudden changes from day to day in the amount of pus present in the urine. Finally, in doubtful cases the bladder may be washed out thoroughly and the urine allowed to collect for fifteen or twenty minutes, when it is drawn from the bladder with a catheter; if pus is evenly mixed with the urine, it undoubtedly comes from the kidney.

**Treatment.**—The treatment of cystitis should be continued in the form of rest in bed, diluent drinks, diuretics, anodynes, and the avoidance of all stimulating articles of food and drink. Hot baths, with hot fomentations or cupping over the region of the kidney, often aid in relieving pain. Copaiba, boric acid, or salol can often be used to advantage. Under such treatment, and with the removal of the cause, this form of pyelitis usually termi-

nates in prompt recovery, though it may progress to graver stages of the disease or may become chronic.

## FOLLICULITIS.

In most cases of gonorrhœa inflammation extends to some of the follicles and glands opening into the urethra. This complication may occur in any part of the canal, but is most frequent in the fossa navicularis, bulb, or prostatic portion, where the glands are large and numerous If the inflammation is mild in type, the follicle becomes slightly swollen and tender and discharges pus into the urethra. This condition may be present in a number of glands during an acute gonorrhœa without adding appreciably to the urethral symptoms, and therefore without being recognized, but it can easily be demonstrated when the follicles at the orifice of the urethra are involved. The lips of the meatus are then red and swollen; if their surfaces be cleansed and slight pressure be made upon them, pus will be seen escaping from the narrow openings of the follicles.

If the inflammation is more severe, the duct may become occluded by the swelling of the mucous membrane, and the follicle or gland becomes a cyst filled with pus. At first no larger than a pin-head, and slightly, if at all, painful, it may remain stationary for some time as a small firm nodule; or it may grow slowly, remain inactive for months or years, and finally be absorbed; or it may increase more rapidly, become sensitive, soften, and discharge externally, leaving a fistula which may persist indefinitely. When, as occasionally happens, one of these cysts opens into the urethra, it may discharge its contents and refill repeatedly, or may become irritated by the urine and result in peri-



folliculitis. Folliculitis may persist in subacute form and furnish a urethral discharge long after the rest of the urethral membrane has recovered.

**Treatment.**—If the inflammatory symptoms are acute, rest and hot applications should be employed. When fluctuation is detected, an incision should be made, to allow the escape of the pus externally and to prevent an opening into the urethra. Later the cyst may be enucleated entirely or the sac may be injected with a drop of pure carbolic acid or a strong solution of nitrate of silver. When a cyst opens into the urethra, the cautious use of the full-sized steel sound is of service in keeping the sac empty. In indolent cases absorption may be promoted by the external use of oleate of mercury in strength varying from 2 to 10 per cent.

## PERIURETHRITIS.

As an unusual result of folliculitis the inflammation extends beyond the limits of the follicle or gland and invades the surrounding cellular tissue. The process may then terminate in a circumscribed abscess or, very rarely, in the suppuration and destruction of large portions of the spongy and cavernous bodies of the penis. The commonest sites of periurethritis are in the fossa navicularis, where the abscess generally forms on one side of the frænum, and in the bulb, where it usually develops in the central line. Beginning in the bulb, the inflammation may involve the root of the penis and the scrotum, or rarely the entire perineum and the tissues about the anus. The abscess usually opens externally, but it may discharge into the urethra, and may result in urinary fistula or in infiltration of urine through large portions of the surrounding tissues, causing suppuration

and destruction of these parts. The conditions favorable to infiltration and abscess-formation are found just back of a stricture, where the urethral walls are damaged and weakened. The abscesses are more or less painful, and may interfere by pressure upon the urethra with the passage of urine. When suppuration is extensive the constitutional symptoms may be marked. The cicatrices which are left after healing of such abscesses may be slight, or so extensive and deforming that an erection of the penis is attended by crooking or bending of the organ, and possibly by pain.

**Treatment.**—Absolute rest of the genital organs, and, when possible, of the entire body, is of the greatest importance. To this end a light diet, gentle evacuation of the bowel, absence of all sexual excitement, and horizontal position of the body are necessary. If the inflammation be recognized early, it may be aborted by cold compresses and inunctions of the oleate of mercury. If suppuration begin, boric-acid fomentations should be constantly applied, and an early, often a deep, incision is necessary to evacuate the pus and to prevent an opening into the urethra. It is neither wise nor safe to wait for fluctuation before using the knife. If there are other evidences of suppuration, or if the inflammation has been in progress for a week, it is better to make a free incision than to run the risk of allowing the abscess to open into the urethra. This is especially true of an abscess situated in the bulb, where an internal opening is liable to be followed by extensive infiltration of urine and by perineal abscess. After discharging, the cavity should be cleaned daily and packed loosely with iodoform gauze until healthy granulations are obtained. All manipulations should be gently and carefully performed, lest



communication between the gland and the urethra be re-established and a urinary fistula be formed.

When an abscess ruptures into the urethra, the treatment consists in rest, fomentations, and a position that will favor drainage. The case must be watched carefully, and as soon as local swelling, pain, interference with urination, or fever indicates extravasation of urine and further suppuration, an external opening should at once be made. The further treatment is that of urinary fistula.

Resolution may be incomplete, leaving a small, indolent nodule which persists for months. Such a condition will usually disappear under inunctions of oleate of mercury.

## COWPERITIS.

Inflammation of Cowper's glands is a rare complication of gonorrhœa. It may occur after the second week, but it usually begins between the third and fourth weeks. The patient complains of a sticking pain, of tension, or of tenderness in the perineum on pressure (as in sitting). On examination a deep-seated, round or oval, tender nodule, about the size of a bean, is discovered midway between the anus and the posterior border of the scrotum and at one side of the raphé. It is sometimes pear-shaped, in which case the larger end is toward the anus. The tumor usually grows rapidly in size, and by pressure upon the urethra may interfere with micturition. The surrounding tissue becomes involved, so that the tumor loses its sharp outline, becomes doughy or boggy to the touch, and may extend somewhat beyond the median line. Suppuration is attended by local throbbing pain and by chills and fever. Many mild cases undergo resolution, but a large abscess may form and may open ex-

ternally or internally. In the latter case there is great danger of infiltration of urine and deep perineal abscess.

**Treatment.**—The treatment is that of periurethral inflammation and abscess.

## LYMPHANGITIS.

In severe cases of gonorrhœa more or less lymphangitis is common. In its simplest and mildest form there are no subjective sensations, but one or more lymphatics, usually on the dorsum of the penis, can be felt beneath the skin as small indurated cords. Occasionally such a cord may be traced to the groin. If the inflammation runs a little higher, perilymphangitis results and is manifested by reddish streaks along the course of the lymphatics, which may be knotted and tender. There may be a more diffuse redness of the skin, which is then œdematous, swollen, hot, and sensitive. The inguinal glands may become swollen, tense, and painful.

**Treatment.**—Rest, elevation of the penis, and boric-acid fomentations are usually all the treatment necessary. As a rule, the inflammation terminates in resolution. If pus forms, it should be evacuated early to prevent burrowing in the loose tissues, as a considerable portion, or even all, of the skin and the subcutaneous tissue of the penis could be thus destroyed.

## ADENITIS.

During a severe case of gonorrhœa it is not uncommon for one or more of the inguinal glands to become slightly swollen and tender; but suppuration is quite unusual, and when it does occur the abscess heals kindly after discharging the pus, which is not auto-inoculable.



**Treatment** for the adenitis, aside from that given for the gonorrhœa, is usually unnecessary. When the gland first begins to swell and become sensitive, it may be well to paint the overlying skin with tincture of iodine or to apply a 2 per cent. oleate of mercury. If pain and swelling become pronounced, rest, hygiene, and boric-acid fomentations give relief. If pus forms, the abscess should be opened and treated on surgical principles. Scraping is rarely necessary, since the cavity usually heals kindly and rapidly under daily cleansing and packing with iodoform gauze.

## GONORRHŒAL RHEUMATISM.

In certain individuals gonorrhœal infection is always attended by a complication known as "gonorrhœal rheumatism." These individuals are not, as a rule, subject to other forms of rheumatism.

**Etiology.**—Various theories are offered to explain the cause of this disease and its relation to gonorrhœal infection, but none of them have yet been proven. In some cases there seems to be no doubt that the gonococci are carried through the blood to the joints, for, although these micro-organisms have not been discovered in the blood, they have been found in the fluids in the affected joints, and their identity has been fairly well established through their behavior with stains and through culture-experiments. Successful inoculations from these cultures are, however, wanting. In other cases the joint disease seems to be essentially pyæmic, and to be due to infection with the pus coccus, which gains admittance to the circulation through the urethral or other epithelium that has been damaged or destroyed