Gonorrhœa.	*Bastard Gonorrhœa.*	*Non-infectious Urethritis.*
Period of incubation ranges from one to fourteen days, rarely less than three, and usually from five to seven.	Period of incubation usually one or two days.	No period of incubation. Symptoms usually appear in a few hours.
Begins with slight symptoms, which gradually increase in severity for from ten to fourteen days, when the inflammation is usually of a very high grade.	Usually subacute throughout. When more acute, the symptoms increase in severity more rapidly, but rarely become so severe as in gonorrhœa.	Inflammation reaches its height in a few hours. If resulting from marked violence to the urethra, symptoms may be very severe; otherwise it is usually subacute in type.
Duration is usually from five to eight weeks. Acute stage lasts three or four weeks.	Duration very indefinite—perhaps one or many weeks. Acute stage usually lasts a week or ten days.	Acute forms usually recover in a few days, as do the subacute cases, though the latter may continue in chronic form.
Discharge contains gonococci in large number.	Gonococci usually present in small number.	No gonococci.

The microscopic examination should be conducted with great care, all instruments, preparations, slides, and cover-glasses being scrupulously clean. If the first slide examined shows typical gonococci in abundance, and all the other evidence points to a gonorrhœa, there can be no doubt of the diagnosis; but if the first slide fails to show gonococci, at least two or three others must be properly prepared and examined before excluding gonorrhœa. In very early stages, while the discharge is yet muco-purulent, the number of gonococci present is much smaller, and several slides should be examined on successive days before deciding that gonorrhœa is not present. In the declining stage it is even more difficult to find gonococci, as they are present in smaller number and are not infrequently associated with other micro-organisms which lead to error in diagnosis. Even during the purulent stage the gonococci are not evenly distributed through the discharge, but are usually most abundant in those drops which come from a portion of

the surface most recently inflamed; consequently it is always best, for purposes of examination, to squeeze out a drop from the deeper portions of the urethra, instead of taking that which happens to be at the meatus. In a true gonorrhœa, however, the gonococci are usually present in sufficient number to render their demonstration comparatively easy, and the discovery of only a few diplococci in an acute urethritis does not warrant a diagnosis of gonorrhœa. The dried gonorrhœal discharge found on clothes or the underwear of a patient, if moistened, removed, and properly stained, may show gonococci.

Besides the gonococci and the pus-cells containing them, the microscope shows, in the earlier discharge, many flat epithelial cells. These cells gradually disappear, and the field is completely filled with pus-cells, which in turn become less numerous as the discharge decreases, and, instead of the flat epithelium of the early stage, cells of transition epithelium are seen, often in considerable numbers.

In the examination of any urethral discharge the possible presence of posterior urethritis should always be kept in mind. If the urine be given a careful examination and the two-glass method be employed, the diagnosis will not be difficult.

Treatment.—*Prophylaxis.*—American and English writers have been criticized for neglecting to discuss prophylaxis in their works on gonorrhœa. At first thought such a discussion would seem superfluous, but there undoubtedly exists among the laity, and, unfortunately, among some physicians, the belief that there are means by which a man may protect himself from venereal diseases while indulging in promiscuous sexual

relations. Of the various devices and methods recommended and employed, there are none that can be trusted to ensure the desired end. The large majority of men who resort to these means in illicit sexual relations sooner or later become infected with disease. The only prophylaxis a right-minded physician can advise is clean living.

General Considerations.—In the entire range of medicine there are few diseases in which so many remedies have been tried, and in which so many methods of treatment have been advocated, as in gonorrhœa. An attempt to describe them all would be useless. In these pages space is given only to such methods of treatment as experience has proved to be of value in mitigating the violence or in shortening the duration of the disease. These methods, unless otherwise indicated, relate to the treatment of true gonorrhœa. The discovery of gonococci in a discharge makes it possible to predict, within certain bounds, the intensity and duration of the disorder, demonstrates its contagious nature, and calls for much care and caution not necessary in the management of a non-infectious urethritis. From a therapeutic point of view, however, no important distinction is made between the different forms, an inflammation of a given intensity calling for a given treatment. The duration of any one stage in the non-infectious forms is, of course, brief as compared with a corresponding stage of gonorrhœa, and much treatment other than hygienic is rarely called for. Usually, removal of the cause, rest, and perhaps an alkali to ensure a bland condition of the urine, are all that are necessary. In bastard gonorrhœa the symptoms are usually subacute, though they may be severe. The treatment is that recommended for corresponding stages and degrees of inflammation in gonorrhœa.

Abortive Treatment.—Many abortive measures for the treatment of gonorrhœa have been recommended by reputable physicians, and "rapid cures" are regularly advertised in the public press. But these novel methods that promise quick results are not unattended by danger. The practitioner who is strongly tempted to try the last highly recommended local treatment in the hope of benefiting his patient should recognize these dangers and should remember that there is a great difference between checking a discharge and curing the disease.

Since the recognition by Neisser of the gonococcus as the essential cause of gonorrhœa, numerous efforts have been made to discover some means of destroying the micro-organism and of thus preventing the further extension and continuation of the disease. Many agents are capable of at once destroying the gonococci when brought in contact with them, but they also either prove so destructive to tissue or so aggravate the existing inflammation that the resulting damage to the urethra is greater than that produced by the gonococcus. Injections of strong solutions of nitrate of silver or of bichloride of mercury or of other preparations have in some instances destroyed the micro-organism, and after causing an intense inflammation of the mucous membrane have seemed to shorten the duration of the disease. More frequently such treatment has failed to destroy all the gonococci, and has resulted in complications which prolong the disease and add to its severity.

The investigations of Bumm and others have shown that the gonococci rapidly find their way beneath the epithelium to the papillary body and to the lymph-spaces

of the upper connective-tissue layers. Here they multiply and are brought to the surface by the leucocytes. It is not strange, then, that abortive measures fail, since parasiticides cannot be brought in contact with the more deeply seated gonococci without first destroying the epithelium. A local application that will meet the three requirements of Neisser—that is, a remedy that will kill the gonococcus, leave the mucous membrane uninjured, and not increase the inflammation—is yet to be discovered. As a consequence, up to the present time all attempts at abortive treatment have been failures. The cases reported to have been aborted by local treatment were possibly of the class of non-infectious urethritis or bastard gonorrhœa, that would in any event have run a brief course. Others were perhaps cases of true gonorrhœa, dismissed and reported as cured as soon as the discharge ceased. It is now known that the urethra may not return to its normal condition for weeks after the discharge disappears, and that often such cessation of the discharge proves to be only temporary.

Local Treatment in the Early Stages of Gonorrhœa.—Regarding the propriety of using local treatment in the acute stage of gonorrhœa authorities widely differ. The treatment of gonorrhœa will at some future date, perhaps, be purely local, but there has not yet been found a method of local treatment in the acute stages of gonorrhœa that is completely efficacious, or even wholly safe, in the hands of any but the expert.

The method by irrigation, which once promised so much and which had so many enthusiastic advocates, is rapidly becoming a thing of the past. When properly pursued, and with mild solutions, it served admirably in cleansing the urethra, in subduing to some extent the inflammation, and in modifying the symptoms. The discharge frequently ceased after two weeks of treatment; but that irrigation restores the urethra to a healthy condition sooner than other forms of treatment has not been proved. It is a difficult method to pursue, except where the patient is under complete control, as in a hospital, and in any but the most skilful hands it often results in complications (epididymitis, prostatitis, posterior urethritis, etc.) necessitating the cessation of treatment. Recently, Finger found that pure cultures of the gonococcus could be exposed for two minutes to the action of bichloride of mercury (1 : 5000), carbolic acid (1 : 1000), potassium permanganate (1 : 1000), or nitrate of silver (1 : 1000), and yet grow when transferred to plate-cultures. This being true, it is apparent that irrigation as usually employed would not destroy the gonococci in the urethra, but would simply remove such as were on the surface.

Powders and soluble suppositories are not to be considered. They almost invariably do harm. Mild astringent and cleansing injections are, however, still largely used, even in the early stages of gonorrhœa. They very rapidly lessen the amount of discharge; clinical experience, however, shows that they fail to shorten the duration of the disease, but rather tend to prolong it in a subacute stage. Certain it is that disagreeable and serious complications occur much more frequently in cases treated by injections from the start than in cases in which no injection is used until the most active stage of inflammation has passed. The substances injected are either antiparasitic or astringent, or both. The parasiticide may destroy some of the gonococci, but it cannot reach many of them during the early stages; the astringent may, and probably does, lessen the intensity of the inflammation,

but it is questionable if it is best to push this effect too far, as inflammation and suppuration are nature's methods of removing the offending micro-organism, which as yet cannot be destroyed by any more rapid process. One cannot hope to eradicate the disease before its cause has been removed. If Metschnikoff's theory of inflammation be accepted, and the leucocytes be viewed as phagocytes, it certainly is not desirable by constringing the vessels to limit the number of such leucocytes, whose duty it is to devour and remove the gonococci. Metschnikoff's theory is both interesting and plausible; applied to urethral inflammation, it is sustained by abundant clinical evidence showing that when the inflammation and discharge are suppressed by the use of injections in the early stages of gonorrhœa, the disease runs a mild but protracted course, and the last lingering discharge shows gonococci for a longer period than in cases which have had the usual two or three weeks of acute inflammation followed by a period of steady but more rapid decline.

The danger in this direction, however, is possibly not so great or so frequent as that resulting from the use of irritating injections which increase the inflammation to such an extent that posterior urethritis, epididymitis, prostatitis, cystitis, or vesiculitis results. These complications are often very painful, necessitating the suspension of all treatment for the gonorrhœa, and frequently compelling the patient to remain in bed for days or weeks. Unless the physician has had large experience in this class of cases, and has his patient under his immediate control, local treatment of gonorrhœa should not be begun until the active has passed into the subacute stage; and many patients will make a complete and satisfactory recovery without receiving at any time local treatment.

Hygienic Management.—There is practical unanimity of opinion on at least one point in the treatment of gonorrhœa—namely, that proper hygienic surroundings are of great importance. There is no better treatment for the large majority of all first attacks of gonorrhœa than rest in bed for three or four weeks, with absolute quiet, freedom from sexual excitement, a light and simple diet, a daily movement of the bowels, and a proper performance of the other bodily functions. Unfortunately, it is rare that such a course can be pursued. Few men with a gonorrhœa are willing, unless compelled to do so, to abandon their usual vocation, and many, through fear of disclosing their condition, will continue their work notwithstanding most painful complications and contrary to their physician's orders. Through fear of betraying his secret to his companions or to members of his household a man will often fail to obey the instructions given him, and refuse to change his habits to meet the requirements of his case.

One of the first points, therefore, to be secured in the management of a case of gonorrhœa is a complete understanding on the part of a patient that it is necessary for him to carry out faithfully the instructions given, and that he is thus responsible, to a great extent, for the result. This is not usually an easy matter, as the idea is often firmly fixed in the mind of the patient that an injection will accomplish all that is necessary, with little or no effort on his part. The practitioner who takes the time and pains to point out the truth will have far better results, and meet with much less annoyance, than if he devote his time to making trial of the last highly recommended and best-advertised injections. The management of gonorrhœa cannot be made a matter of routine,

but requires always some consideration of the individual and his surroundings. Directions should be given clearly and in detail.

(*a*) *Rest.*—The patient should spend all the time possible in the recumbent position. This is of special service during the early acute stages, since, by removing the pressure of blood from above, it lessens the congestion of the parts. All violent exercise, such as gymnastics, running, dancing, and horseback- or bicycle-riding, should not be practised, and even walking or much standing is harmful.

(*b*) *Food.*—The more nearly the patient can restrict himself to bread and water or bread and milk, the better; but if he must continue his usual work or a portion of it, or if he be already poorly nourished, a more nutritious diet is necessary. Such he may find in fish, the lighter meats, soft-boiled eggs, and cooked vegetables. As a rule, he should avoid all articles difficult of digestion, all rich or highly seasoned food, and all acids, sweets, and especially fats.

(*c*) *Beverages.*—Alcohol in all forms, and especially in the form of malt liquors, is prohibited. Coffee, chocolate, and cocoa are injurious, but tea in moderation may be allowed. Milk is of value, and may be given freely if it agrees with the individual. Pure water does excellent service if drunk in quantities sufficient to keep the urine bland and unirritating. Smaller amounts of Vichy, seltzer, or other alkaline waters answer the same purpose. If there be much burning on urinating, and frequent desire to pass urine, a thin, strained, flaxseed-tea (made from the whole seed and rendered palatable by the addition of a small quantity of lemon-peel) will often give relief if drunk in quantities of a quart or

more daily. Lemonade is usually agreeable to the patient, and, like some other vegetable acids, is occasionally of service in rendering the urine alkaline, the more so if a small quantity of bicarbonate of soda be added; but it does not answer equally well in all cases, and sometimes proves decidedly irritating.

(*d*) Tobacco in all forms should be avoided. Smoking is especially bad.

(*e*) All sexual relations and stimulation of the sexual organs are harmful, and the patient should avoid company, books, pictures, thoughts, and circumstances that might result in sexual excitement. He must determine to do this at once, since the congestion and inflammation of the parts, due to his gonorrhœa, are alone sufficient to keep them in a state of irritation. For the purpose of lessening the tendency to congestion of the genitals, there should be a daily evacuation of the bowels by the aid of saline laxatives. The patient should sleep in a cool room, on a hard mattress, and without too much covering; the married man should not occupy the same bed with his wife. The immersion of the genitals in water as hot as can be tolerated, and for a few seconds only, just before retiring, often reduces the frequency of annoying and painful erections. A longer use of cold water may answer the same purpose, and both means are valuable in reducing erections which awaken the patient during the night. On the contrary, prolonged hot or warm baths are harmful in that they encourage the local congestion. Urinating while the penis is immersed in hot water usually renders that act less painful.

(*f*) *Dressing of the Parts.*—Cleanliness is of first importance; the parts should be washed daily in warm

water, using soap on all but the inflamed surfaces, and, of course, keeping it out of the urethra. The patient should wash his hands after each dressing, and should be instructed regarding the great danger attending the contact of the smallest amount of the discharge with the eyes. To catch the discharge and to protect the patient's clothing, the penis may be carried in a light muslin bag containing in the bottom a small quantity of cotton, the bag being fastened by means of tape to a suspensory bandage or to a band about the waist. A simple and very satisfactory method is to take two thicknesses of ordinary muslin, about a foot square, and so pin them to the inner surface of the undershirt that the penis can be gathered up in their folds. These cloths are cheap, and can easily and quickly be removed, burned, and replaced by fresh pieces—if necessary, several times during the day. If desired, a pair of swimming-drawers can be worn beneath the other underwear, and will serve to hold the muslin in better position. Keyes recommends wrapping the penis in two sheets of ordinary toilet paper and twisting the free end, forming a paper bag in which to catch the discharge.

Rubber and oiled-silk bags, and all heavy wrappings of the penis, are decidedly harmful, in that they tend to keep the organ hot and congested. Dressings should never be tied to or about the penis, since they interfere with the circulation and usually cause a troublesome œdema of the prepuce. Nor, for catching the discharge, are pieces of cotton or other dressings held in place by a long prepuce to be recommended, since they imprison the pus within the urethra, and also keep it in contact with the sensitive mucous membrane of the glans and prepuce, thus often exciting a balanitis.

If the patient is required to be active or on his feet much of the time, and particularly if with a former gonorrhœa he has had an epididymitis, he should wear a well-fitting suspensory bandage. The first object of a suspensory is to support and elevate the scrotum and the testicles, relieving the tension on the cord, at the same time slightly lessening the blood-pressure and aiding the return circulation. This object can be accomplished by a single bag of proper depth and width to fit the parts, suspended only from a waistband. The bag must not be too deep, or it will not furnish support; while if too shallow it will exert uneven pressure and will slip off, not retaining the parts. Frequently a bag that does not fit well can be made to do so by lining and filling out some parts of it with antiseptic wool. Cotton is not so good, as it soon mats and becomes hard.

This simple suspension of the genitals may be sufficient in many cases, but if there be the slighest tendency to involvement of the cord or the testicles, another object is to be accomplished—the subjection of the testicles to as little motion as possible in walking or during other movements. For this purpose the suspensory bandage described above will need, in addition, some perineal or thigh-straps that will hold the organs snugly against the symphysis. In order to do good, and not harm, a suspensory must fit snugly, but must not be too tight, nor should it press upon any portion of the urethra. It is usually most serviceable when it is most comfortable to the patient. Instead of a suspensory bandage a jock-strap may be used, though it is not so convenient and is usually more difficult to fit properly. Tight-fitting swimming-drawers of firm material often answer every purpose. An excellent substitute for any of the pre-

ceding may easily be made as follows: Pass a bandage, of such material and width as will be comfortable, around the waist for a belt; take a strip of soft linen or several thicknesses of cheese-cloth or mull, about eight inches wide, and fasten one end of this to the middle of the belt behind with safety-pins; bring it between the buttocks, over the perineum, and up to the belt in front, where, by fastening at several points, it can be made to fit the genitals, elevating them and holding them close against the body.

Internal Treatment.—In the early stages hygienic management is of first importance. Fournier and other French authorities advocate no other treatment internally or locally until the stage of decline. This is the so-called "expectant plan." While the use of large doses of the balsams with a view to aborting the disease is not to be recommended, its early stages may be rendered much less severe, and the entire course of gonorrhœa be shortened, by the proper use of internal remedies.

Alkalies and diuretics are of decided value in keeping the urine bland and unirritating, and should be used in sufficient doses throughout the disease to accomplish that end, unless the fluids daily ingested prove sufficient for the purpose. Excellent results are obtained from the use of bicarbonate of soda or of citrate of potash in doses of from 5 to 20 grains three or four times daily; the latter acts also as a diuretic, and is in some cases to be preferred. The quantity required will vary from day to day, enough being given to keep the urine alkaline. If taken about two hours after eating, the effect upon the urine is more pronounced than if given at any other time, and interference with digestion is not so marked as when taken immediately after eating. Consequently it is often well to prescribe these remedies in the form

of compressed tablets of 5 grains each, that can easily be carried in the pocket and swallowed at any time with a glass of water. They may also be given in simple solution, in peppermint-water, or with any flavoring desired.

Balsam of copaiba, if easily digested by the patient, is one of the most valuable of drugs, but there are unquestionably certain individuals who cannot digest it. It should never be ordered if it disturbs digestion and nauseates so that the patient cannot eat, though many who at first had some difficulty in its digestion soon manage very well if it be taken in small but gradually increasing doses an hour or two after eating (occasionally some other hour will be found to be better), or if some preparation of pepsin be taken with it. Occasionally a few doses of the drug cause the appearance of an exanthem known as the *copaiba rash*. This is a bright red eruption of macules or maculo-papules over the abdomen and the extremities, or even over the entire skin-surface. The eruption appears rapidly and is accompanied by pruritus. It is a trifling complication, disappearing promptly on withdrawal of the copaiba, but it is a source of annoyance to the patient and necessitates the abandonment of the drug.

If copaiba is digested reasonably well, it is usually of great service and may be given from the beginning, though if digested with some difficulty its use should be postponed until the stationary stage, at which time it is of pronounced value. Many object to the use of the balsamic preparations in the early stages of gonorrhœa, on the ground that they are stimulating to the mucous membrane. Clinical experience, however, teaches that copaiba very markedly lessens not only the discharge, but also the painful and distressing symptoms