GONORRHEA IN WOMEN.

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Although Bernutz and Goupil had called attention to the seriousness of the gonorrheal infection of women as early as 1857, yet the real gravity of the affection was not realized by the medical profession until some time after the appearance of the well-known monograph of Noeggerath.[1] The micro-organism that causes the disease was discovered by Neisser in 1879, and has been named by him the gonococcus. It belongs to the group of diplococci and is distinguished by its relatively large size and by the width of the interspace between the two halves; furthermore, these halves show on the appositional surfaces of the semicircle a slight retraction, which is more marked than in other similar micro-organisms. It most resembles the *Diplococcus intracellularis meningitidis* of Weichselbaum,[2] differing from it, however, in the manner of its growth. The multiplication of gonorrhea cocci takes place by subdivision, and they form in clusters of cocci, never in chain formation. It falls to the credit of Bumm[3] to have first succeeded in obtaining an artificial culture of gonococci. He found that they grow only on blood serum, and that they are most prolific at a temperature of from 30 to 34 C. A temperature above 38 C., if continued for any length of time, entirely destroys, according to Bumm, the multi-

1. Die latente Gonorrhoe im weiblichen Geschlecht, Bonn, 1872.
2. Fortschr. d. Med., 1887, Nos. 18, 19.
3. Der Mikroörganismus der gonorrhoeischen Schleimhauterkrankungen "Gonococcus Neisser," Bergmann, Wiesbaden, 1885.

plying ability of gonococci. Wertheim[4] later demonstrated that human blood serum is not so favorable a culture medium as is a mixture of blood serum and agar, and even that beef blood serum and agar makes a better culture medium than human blood serum without the addition of agar.[5] While human subjects are always liable to infection by inoculation with gonococci, only a few animals (e. g., white mice and guinea-pigs) are susceptible, and they only to a very mild degree.

Moreover, it is due to Wertheim's endeavors that we possess a method that enables us, by means of plate cultures, to isolate the gonococci from secretions containing but few gonococci in a mixture with other micro-organisms. The cocci are extremely sensitiveness to dryness. After several hours' dry exposure, they grow very sparsely; and after they have been exposed to dryness for a couple of days, as, for instance, on linen soiled with gonorrheal secretion, they do not grow at all; hence, secretions exposed to dryness for such length of time are no longer infectious. But when surrounded by moisture, the organisms retain their virulence for a long time, so that a person with a chronic gonorrhea, or even with what may be termed a latent gonorrhea containing but few gonococci, may infect another person with an acute gonorrhea.

The smallest quantity of secretion containing gonorrhea cocci, placed on a mucous membrane with delicate cylindrical or pavement epithelium, will cause a most virulent form of gonorrhea, and will produce it without fail, since there is no immunity against this disease. A physician told me of an instance in which a highly respected married woman, moving in the best social circles in her own city, came on a visit to New York and here dined and wined with one of her husband's old friends. The woman was surely infected and as surely was unaware of the fact. Between herself and her hus-

4. Deutsche med. Wochschr., 1891, p. 1351.
5. Arch. f. Gyn., xlii.

band there had taken place infection and reinfection, so that in course of time both had a chronic gonorrhea without symptoms appreciable to themselves; but the family friend, whose mucous membrane was free from infection, paid for his indiscretion.

We know from observation that chronic gonorrhea (and ninety-nine times out of a hundred it is chronic gonorrhea that causes a particular case of infection) remains infectious indefinitely—ten years, fifteen years, or even longer. So long as gonococci may be found by the more modern methods of examination, there is danger of infection. It is of the greatest importance in examining patients not to be content with a single negative result. Repeated examination of the secretions should be made at intervals under the most searching tests, and only after invariably negative results should one be content to pronounce his patient cured.

If gonococci be surrounded by a medium which is not so constantly renewed as are the secretions from the mucous membranes (as of the urethra) or are transferred to occluded pus cavities, they die. Thus, in some instances of pyosalpinx, the micro-organisms lose their virulence in the course of time, and eventually die, hence the frequent occurrence of sterile pus in instances of gonorrheal pyosalpinx.

THE PRIMARY SITE OF INFECTION.

When a woman becomes infected, the usual primary site is the urethra; but the vaginal and cervical mucosa may be first infected when the vulval entrance is large and the urethral orifice is very high. Follicles with small openings, as well as the ducts of the glands of Bartholin, do not become infected until later, when the gonorrheal secretions have been in contact with them for a longer time. While the rectum may become infected from secretions from the genital tract, the usual cause of infection of the rectal mucosa is cohabitation *per rectum*. A woman practically free from in-

fectious urethral secretion may have a gonorrheal endometritis; so that while at times cohabitation may not cause infection, yet at periods, as after menstruation, the gonorrheal secretion may exudate from the uterus and the cervical canal and thus cause infection.

While in children the occurrence of gonorrheal vaginitis is quite common, owing to the delicate condition of the vaginal epithelium, this condition is rare in the adult female, in whom the pavement epithelium of the vagina seems, in most instances, to form a barrier to the penetration of the gonococci. But in cases in which the epithelium retains in the adult the succulent, delicate condition that exists in childhood a gonorrheal vaginitis may also occur.

The gonococci rapidly penetrate the epithelial layer or layers once they are implanted thereon, so that within twenty-four hours evidence of inflammation is usually present. They largely lose their power of penetration after they have taken up their abode in the epithelial layers, however, since the connective tissue of the mucosa usually stops them. But there are exceptions to this general rule, as occasionally gonococci penetrate into the upper surface of the connective tissue and there give rise to suppuration. Such exceptions, however, must be considered as rare occurrences.

The epithelia of the infected mucosa are infiltrated with round cells. These penetrate between and to some extent loosen the surface epithelia, on which are present numerous pus cells. On the surface clusters of gonococci may be found throughout. The infection of the glands of Bartholin is in most instances limited to a gonococcal invasion of the terminal duct, which may thus become so distorted and distended with an accumulation of unexuded secretions as to form what practically is an abscess cavity. This pseudo-abscess is generally though erroneously, called abscess of the gland of Bartholin. As a matter of fact, when the formation of an abscess does take place, it is the result of a mixed infec-

tion, usually due to the presence of the *Staphylococcus pyogenes aureus,* which finds an entrance into the duct in connection with the gonococci.

Wertheim[6] reports clearly the results of his studies of gonorrheal infection of the uterus; while further carefullv conducted studies of my own tend to verify the deductions made by that author. The uterus is, next to the urethra, the most favored seat of gonococcic infection. Uterine gonorrhea usually begins acutely. The differentiation between an acute and a chronic stage of uterine gonorrhea is justifiable, although a sharp line of demarcation is impossible. Gonorrhea of the uterus invariably causes an interstitial endometritis with a purulent catarrh. In cases of a chronic course, a glandular endometritis is produced. In many instances, in connection with the changes in the endometrium, inflammatory changes in the myometrium are produced. These, on the one hand, characterize themselves as an inflammatory infiltration of the muscle connective tissue, and, on the other hand, as hyperplasia of the vessel wall, and finally lead to a hyperplasia of the connective tissue at the expense of the muscular elements. In the cervical tissue the inflammatory changes become less intense the nearer the external os is approached. In the inflamed endometrium gonococci in variable numbers are demonstrable in many cases, but the deeper we get the greater is the difficulty of demonstrating the presence of gonococci. Although it is probable that gonococci are present in the inflammatory infiltration of the muscle tissue, Wertheim has not succeeded in demonstrating them. Madlener[7] maintains that he succeeded in this respect in a case of recent infection, in which a vaginal hysterectomy was done; yet Bumm, who procured two of the sections from Madlener, states that, while he could substantiate the tissue suppuration, he failed to find gonococci in the deeper structures. Wertheim has conclusively

6. Centrbl., 1895, p. 699.
7. Centrbl. f. Gyn., Dec. 14, 1895.

proved the erroneousness of the supposition that the os internum prevents the ascension of gonococcic infection to the uterine cavity, although this seems in many instances to be substantiated by clinical experience.

The increased size of the infected uterus and the pain caused by the bimanual examination must be ascribed to metritis. The only assertion that I have been unable to verify, is that the uterus alone may be infected, since I have invariably found the urethra also infected. While the inflammatory changes are extensive in somecases, theinvasion by the micro-organisms is usually limited to the superficial strata of the mucosa. This fact seems to me of importance in considering the therapeutic measures to be resorted to for the cure of the disease.

When the infection has passed beyond the boundaries of the uterus to the Fallopian tubes, we find similar inflammatory changes there. But we must deduce that the anatomic changes in the tubes are the result of the inflammation induced by the gonococcic invasion and not of the invasion of the tubal wall by the gonococci, which remain superficial on the tubal mucosa, although an abundance of gonococci may be present in the pus of gonorrheal pyosalpinx. The round cell infiltration of the connective tissue of the mucous folds may at times be very intense, and thence it progresses deeper into the walls of the tubes. The anatomic changes are not necessarily of equal intensity in both tubes. In a not inconsiderable number of cases I have observed on one side a pronounced pyosalpinx, with on the other side only the evidence of an intense catarrhal inflammation, so far at least as the naked eye could determine, a pathologic examination not having been made, because such tubes were left unmolested by the surgical intervention that had been undertaken.

The inflammatory changes may be so intense throughout the tube wall as to produce an exudate of lymph on the peritoneal surface and adhesions of the Fallopian tube with the different surrounding structures. We have,

in this case, well-marked pelvioperitonitis, a condition which is invariably present more or less extensively in gonorrheal salpingitis, although the gonococcic invasion which causes this intense purulent inflammation is usually limited to the superficial tubal mucosa.

When the ovaries become affected the infection must be regarded as having occurred by continuity, as may be demonstrated when operating through the abdomen for salpingo-oöphoritis. In such cases it may be seen that the Fallopian tube and the corresponding ovary are in close contact, the adnexa frequently being imbedded in a mass of exudate, which is probably formed as the result of the escape of trifling quantities of pus from the abdominal opening of the Fallopian tube. The inflammatory changes caused in ovaries in contact with gonorrheal tubes vary in intensity. Occasionally the destructive process may be quite severe, but I have never yet met with an instance in which the ovary was entirely destroyed, so that no functionating ovarian stroma could be found on microscopic examination. This, however, does not mean that such ovaries should always be conservatively dealt with when their possessor comes under surgical treatment, because they may be transformed into an abscess of greater or lesser size, or they may contain a number of small abscesses. Gonococci have sometimes been found in the pus of an ovarian abscess.

Wertheim[8] has experimentally proved that it is possible to cause a gonorrheal peritonitis by inoculation with gonococci cultures. It is important to bear this in mind, as will be seen when we take up the treatment of this form of the disease.

Allusion has already been made to the fact that the connective tissue seems to prevent the gonococci from invading it deeply, and the experimental injection of gonococci cultures into connective tissue has generally produced negative results. Still, isolated instances occur in which gonococcic invasion into con-

8. Arch. f. Gyn., xlii, 46.

nective tissue has caused suppuration, the cocci having been found in multinucleated pus corpuscles. Why these clinical facts have not so far been satisfactorily verified by experimental tests, is not clear. My opinion is that in the clinical cases the infection was of mixed variety.

Although it is denied by many authors that a mixed infection is possible, it has been my good fortune to find positive evidence of the simultaneous existence of gonococci and streptococci in the pus of gonorrheal pyosalpinx. In another case, in which the appendix and the tube was agglutinated, gonococci and colon bacilli were found. Witte,[9] in the case of a patient operated on by August Martin, was likewise able to produce such proof. In another instance[10] staphylococci were found to be present. In Case 34 there were found gonococci, staphylococci, and some bacilli. In Case 42 there were found gonococci, diplococci and bacilli. In Cases 46 and 53 there were present gonococci and diplococci, so that the possibility of a mixed infection, the coexistence of other micro-organisms in connection with gonococci, is certainly adduced.

The epithelia of mucous membranes that are infected with gonococci invariably undergo metaplasia during the course of the disease, and the cylindrical epithelium changes into pavement epithelium; this, however, does not entirely eliminate the micro-organisms, which may be found even in late stages, when the pavement epithelium has become partly regenerated and some of it has undergone amyloid degeneration.

In the earliest stage of urethral gonorrhea the secretion contains more epithelia than pus cells, although gonococci on and between the epithelial clusters may be plentiful. At this time the patients hardly ever complain of anything else than frequent and more or less painful micturition, generally of a burning character. Later, when the disease becomes profuse, the women

9. Centrbl. f. Gyn., 1892, xxiii, 434.
10. Ztschr. f. Geburtshülfe u. Gyn., xxv, 2.

complain of intense pain about the vulva (caused probably by irritation) and frequently pain in the bladder of varying character and intensity. The duration of the disease varies from three to six weeks or even longer. So long as the infection remains limited to the urethra and the patients abstain from irritating diet and cohabitation, and keep the external genitals clean, the majority get well without special form of treatment. It is, however, not advisable to rely on the spontaneous cure of the disease, because even with the most energetic treatment some cases go into a chronic stage which is exceedingly obstinate.

To make the diagnosis in some of the chronic instances of urethral gonococcic infection, a number of examinations are required before secretion containing gonococci can be expressed from the urethra. It is best to prohibit the patient from urinating for five or six hours before the examination. With the forefinger firmly press the bladder end of the urethra and gradually and firmly stroke forward toward the meatus, thus expressing any secretion that may have collected since the last urination. A smear is made from this secretion. A culture is never necessary, in my opinion, because it has always been possible to find the micro-organisms with the aid of the microscope alone if there were any to be found.

One must make a positive diagnosis of the absence of gonorrhea, in these chronic cases, before permitting the resumption of marital relations. Only a short time ago it occurred in my practice that a woman who had been infected by her husband, the husband having been subsequently cured of his infection, reinfected him with an acute gonorrhea which nearly led to serious complications between the couple, because it was a difficult matter to convince the husband that his wife had simply some remnants left of the disease with which he had infected her. Such occurrences are not at all uncommon.

It is further a not infrequent occurrence to have acute

and subacute recurrences of the urethral inflammation in a patient who does not remain under medical care until she is entirely cured. This condition is seen especially in those women who have a urethral stricture, which occurs in some of the neglected cases.

The urethral glands, reintroduced to medical literature by the late Dr. Skene under his own name, are often a resting place for gonococci after all signs of them have disappeared from the urethra proper. Skene, in his text-book (p. 880), gives a good description of the appearance of these strictures in gonorrhea. On careful inspection one can hardly fail to recognize the openings of the mouths of the ducts as slight red papules. It is important, in the treatment of the infection, to bear in mind the tenacity with which the gonococci cling to the interior of these glands. A similar obstinacy is found in the treatment of vulval infections, if the vulvar glands become the seat of gonococcic invasion. Bartholin's glands are not affected early, but exceptions may occur, so that I have several times seen the vulvovaginal glands invaded from two to three weeks after the primary infection. The position and size of the duct openings undoubtedly have some bearing on the early or late invasion of the ducts of the Bartholinian glands. I have seen the left gland more frequently invaded than the right, but this is probably only a coincidence, to which no importance should be attached. In the chronic stage the glandular infection is usually bilateral. In diagnosing gonorrheal invasion, the opening of the duct (which looks like a slightly reddened papule) is exposed, and then the gland area and the ducts are stroked in the direction of the duct opening; if the invasion has taken place, the secretion is readily expressed and a smear preparation will show gonococci. The fact that many of the so-called abscesses of the glands are only retention cysts of the ducts, has been previously mentioned, but genuine abscesses of the glands do occur and cause much discomfort to the patient.

VAGINAL INFECTION.

The opinion formerly entertained that vaginal gonorrhea is a common ailment has been disproved, since we have learned properly to apply a cervical tampon which separates the cervical secretion from that of the vagina. If gonococci be found in the vaginal secretion, the contamination is nearly always brought about from secretion of the cervical canal or from the urethra. If one applies a cervical tampon, according to B. S. Schultze, the cervical secretion is readily obtained. It will then be found that the specific micro-organisms are present in that secretion in nearly all instances of gonorrhea, whereas in the vaginal secretion, while it is likely to contain micro-organisms, gonococci are very seldom found. If, however, acute gonorrheal vaginitis does exist, gonococci predominate and other forms of micro-organisms are absent or very sparse; they do not return until the acuteness of the attack has abated, which usually requires from four to five weeks. Women who have acute gonorrheal vaginitis complain intensely of various symptoms, such as a feeling of tension, burning and heat in the external genitals which makes locomotion difficult for them. They seldom, however, have any other symptoms than those of purulent discharge from the vulva and the burning sensation caused by it, the same as in instances of acute cervical gonorrhea. On inspection with a speculum the profuse purulent discharge from the cervical canal is marked. If the infection invades the uterine cavity, causing an acute uterine gonorrhea, the subjective and objective symptoms change to those of an acute metritis, with the addition of profuse purulent leucorrhea. The subsidence of the acute symptoms occurs usually after a few days.

While the recognition of acute gonorrheal endometriris should not be difficult, the diagnosis of a chronic gonococcic endometritis or endocervicitis is by no means an easy matter. Especially is this so for one unaccustomed to treating gynecologic patients, or not in

the habit of making microscopic examination of secretions. The reason for this is that the patients rarely have any symptoms causing sufficient discomfort to induce them to seek the advice of their family physician. In most instances the leucorrhea is the most prominent symptom and that for which they seek advice. The usual complaint, then, is that the discharge becomes quite profuse after physical exertion. Objectively, an increased size of the uterus is often found, due to chronic metro-endometritis. Sometimes such gonorrheal metro-endometritis may be very obstinate. At the present time I have in my care a woman who has had recurrences at times for years, and she has been under the care of two other gynecologists for two years before she came to me. Even when there was reason to believe that she was definitely cured physical exertion brought on a relapse. Repeated examination of the husband by his physician showed him to be free from infectious discharge.

TUBAL INFECTION.

The disease may remain limited to the cervical canal and the uterus, or it may extend to the Fallopian tubes; sometimes the extension to the tubes is very rapid, the tubes becoming infected within a few days after the primary infection. When this occurs, the symptoms of an acute salpingitis usually manifest themselves. These, however, under proper conservative treatment, in the majority of instances disappear in a short time. Some patients may make a complete recovery, so that they may subsequently become pregnant. Others become chronic invalids, showing in later years a chronic salpingo-oöphoritis. The tubes and ovaries may be matted together, or may show only the evidence of chronic inflammation. The uterus may be in physiologic anteflexion, or it may be displaced; it may be mobile, or it may be adherent; it may be increased in size, or it may be normal; or it may be smaller than normal. Its consistence may be normal or it may be altered. Usually I have found such uteri

to be somewhat increased in size and denser in consistence, as the result of the chronic metro-endometritis. I have never found gonococci present in any of these chronic cases, patients who suffered only from chronic salpingo-oöphoritis, the result of gonorrheal infection without pus distension of the tube. It is this class of patients that tries the skill and judgment of the gynecologist.

There is still another outcome of the infection, namely, the formation of pyosalpinges. These vary in size and the inflammatory process affects the ovaries and pelvic peritoneum more or less intensely and extensively. Sterility is the usual rule with this and the former class of cases.

If the abdominal openings have not become occluded as a result of the inflammatory process, pus is likely to escape from the fimbriated extremities and infect the adjacent ovary by the invasion of the germinal epithelium by gonococci. These organisms multiply and later enter a ruptured Graafian vesicle. In this way we have an explanation of the formation of the ovarian abscesses which are frequently met with during operations. Occasionally, when the process is comparatively recent, gonococci may be found in such abscess cavities. With the escape of pus, which comes in contact with the superficial surface of the ovaries, the pelvic peritoneum also is infected, and a localized pelvioperitonitis results. This process may be repeated at varying intervals of time, and then with each slight pus escape, usually only a few drops, a recurrence of an attack of pelvioperitonitis results. It has been mentioned that the destructive activity of gonococci is of long duration when they are imbedded in the epithelium of mucous membranes, where constantly changing secretions afford them a good medium for growth. This is not the case, however, when they are deposited in the pelvic cavity, where they soon lose their virulence and perish, although repeated oc-

currences of pelvioperitonitis may cause very extensive and serious pathologic lesions.

When the gonorrhea has invaded parts above the cervix, there is always an exacerbation of the symptoms, although this may be of only short duration. There may also be a change in the type of menstruation. Menses that before the invasion of the uterus were normal in quantity and intervals, and painless, may become profuse and be accompanied with pain before and during the flow. Such exacerbations, if the infection has been confined for some time to the urethra or to the cervical canal, may be so sudden when the process extends upward as to enable one to determine, almost to the hour, the time of further extension. In some cases, however, the disease may extend throughout the entire genital tract without halting at any one section.

As favorable times for the extension of gonorrheal infection, the menstrual and puerperal periods stand foremost, because the communication between the cervical and the uterine cavity is at these times more patulous. The most prominent traumatic factor in the ascension of the infection from the cervical canal to the uterine cavity, is undoubtedly the introduction of uterine sounds through an infected cervical canal. The best time to look for gonococci in patients who have been ill for some time is immediately after the cessation of menstruation.

The effect of gonorrheal infection on the Fallopian tubes has been considered, and it has been stated that the pathologic changes are sometimes so serious as to become a menace to health. The same effect may occur in the ovaries, although not nearly so frequently as with the tubes. In fact, my observation does not show that in women of middle age, ovulation, the entire functionating property, is ever completely destroyed as the result of gonorrhea. We frequently observe the small cystic degeneration of the ovaries, the cysts attaining the size of a split pea or even larger, and denoting a

form of chronic ovaritis. These cysts, especially if they attain a large size and become numerous, compress the parenchyma of the ovary to such degree that pathologic changes ensue which have a detrimental effect on ovulation and the continuance of regular periodic menstruation.

THE EFFECT OF GONORRHEA ON CONCEPTION.

There is no unanimity of opinion as to the effect of gonorrheal infection of the uterus and adnexa on subsequent conception, and much more observation is necessary before we can expect that an undivided opinion will prevail. My observation leads me to the conclusion that while many patients may become sufficiently quickly cured of the infection to become pregnant subsequently, there are many in whom the cure takes such a long time, if it is at all complete, that a *restitutio ad integrum* does not take place. The Fallopian tubes thus remain in an inflamed condition, and should conception really take place it is likely to be tubal. I have not observed any case in which conception has taken place after gonorrheal adnexal disease of several years duration, whereas in a number of cases of short duration in which there was seemingly complete cure, pregnancy and normal delivery have occurred.

An infection which has occurred before conception—and it has been proved that conception may take place during the presence of gonorrhea—may not cause serious symptoms, or, in fact, any marked subjective symptoms during gestation. After delivery, however, the multiplication of gonococci may be very rapid and serious symptoms may present themselves. These symptoms have, not infrequently, been ascribed to septic infection, to the detriment of the *accoucheur*. In reality the gonococci, ascending into the uterine cavity, Fallopian tubes, or even to the peritoneal cavity, perhaps causing acute general peritonitis, were the causative factors. Leopold[11] describes a pure gonococcic peritonitis during the

11. Centrbl. f. Gyn., 1906, No. 43.

puerperium, in which he was fortunate enough to cure the patient by abdominal section.

P. Müller[12] states that the excitants of the disease during the puerperal period almost invariably originate from the purulent secretion of a gonorrheal pyosalpinx that has existed prior to the occurrence of impregnation, unless, as exceptionally occurs, the infection did take place during the puerperium. This view, although the author is a man of distinguished reputation in our profession, can not be accepted. In isolated instances Müller's view is probably correct, but usually we should rather look on the conception as taking place in presence of a mild urethral, vulval or cervical gonorrhea. Perhaps it may occur even in the presence of a localized corporal infection which did not terminate in abortion because of the circumscription of the area infected. The disease, then, either after expulsion of the child at term, or, more frequently, later in the puerperal state, undergoes an acute exacerbation, with its manifold subjective and objective symptoms.

An infection may take place during pregnancy, but it may not give rise to serious subjective symptoms, and objectively perhaps only a profuse purulent leucorrhea may be present.

Although, as has been said, the error is not infrequently made of mistaking a gonorrheal infection during the puerperium for a septic infection, it should be borne in mind that we may have the occurrence of a mixed infection in which streptococci and staphylococci aurei predominate, both of which are pyogenic. When this occurs the original character of the disease becomes obliterated and its type is changed to such a degree that it requires a careful microscopic examination to make a correct diagnosis.

That gonorrheal metastases may occur, has been proved, and the circulatory system is probably the medium of transmission.

12. Handb. d. Geburtshülfe, II, 934.

The diagnosis of gonorrheal infection is not difficult in the acute or subacute stages, but may be in chronic cases. It can, however, always be positively made with the aid of the microscope, and one should never express a positive opinion unless gonococci can be demonstrated under the microscope, which is the only reliable test, because all pathologic lesions that may be caused by gonorrhea may also be due to other conditions. The reason why the diagnosis may require time in chronic cases is that sometimes several successive examinations may give an entirely negative result, and one should never depend for his opinion on this negative result. The examination should be made, in case of a negative result, at definite intervals, and especially immediately after the cessation of menstruation; and, further, one should take secretion from all the parts most frequently the resting places of the gonococci—namely, from the urethra, several hours after micturition, from the cervical canal, and from Bartholin's ducts. If this is done, say four times, at intervals of one week, so that at least one of the examinations is post-menstrual, and if the result of each examination is negative, then one may say there is no active gonorrheal infection in the section of the urogenital tract examined. Having obtained positive evidence of the presence of gonococci, it is a comparatively easy matter to diagnose as to whether or not the uterus, its adnexa, or the pelvic peritoneum is affected, this diagnosis depending on the presence or absence of subjective and objective symptoms. One should always take into consideration the history, the existing subjective and objective symptoms, and the bacteriologic findings.

PROPHYLAXIS.

So far as the prevention of gonorrhea is concerned, I desire to place myself on record as saying that it is impossible to prevent the spread of the infection by the method of police inspection as practiced in some European cities. Unless prostitutes are bacteriologically ex-

amined, it is impossible to determine whether or not they are free from the disease. We have seen that the most chronic forms of gonorrhea may cause an acute infection. As police inspection is at present practiced, only the acute and subacute forms are recognized by the examining police surgeon. To stamp out the social evil entirely is also an impossibility: it has existed for thousands of years in the past and will continue to exist for thousands of years to come. It is possible, however, to hold the disease in check by such methods as the Society of Sanitary and Moral Prophylaxis of New York has adopted—by the sending out of circulars and booklets of information on the ravages of sexual diseases—but only to a limited extent. An exemplary and pure home life is far better. Those men who have insufficient will power to restrain their passions, should be taught how to use a proper prophylactic injection immediately after impure cohabitation. This, however, is open to the serious objection that such persons may become impressed with the idea that, so long as the use of such prophylactic injection will prevent infection, it is unnecessary to lead a moral life, and they will cease to be afraid of the consequences of immorality. Yet I firmly believe that such a prophylactic method is more certain than any other to hold in check the spread of gonorrheal infection by prostitutes.

TREATMENT.

So far as the treatment is concerned, it is essential for us to bear in mind that in the great majority of acute cases the disease is limited to the lower part of the urogenital tract, and that if we can bring the patients at once under proper care, we can generally hold the disease in check so that the upper parts of the genital tract will not be infected.

The opinions as to the proper treatment of this affection are as divergent as they were in the case of diphtheria before the discovery of the anti-diphtheritic

serum of Behring. There is no unanimity of opinion; each method of treatment has its advocates and likewise its strong opponents. Most authors, however. are agreed in stating that no active treatment should be employed during the acute stage. Cleanliness, restricted diet and rest are recommended in this stage by nearly all. When the acute stage has subsided, local treatment is begun; but in the employment of local treatment the use of vaginal douches is generally discarded. The secretions should be wiped out dry with absorbent cotton. The most favored remedy for local applications is a 5 per cent. solution of protargol. When the cervical canal is infected this remedy is applied by means of an applicator. In corporal infections the remedy is applied to the uterine cavity. Cysts of the vaginal portion of the cervix should be punctured. If the portio is intensely diseased and the affection does not seem to yield to local treatment Augustus A Hussey[13] advises amputation.

G. Childs MacDonald[14] uses vaginal tampons saturated with a 30 per cent. solution of vitellin of silver, renewing the packing every twelve hours until the gon- to local treatment Augustus A. Hussey[13] advises ampu- into the urethra.

George T. Harrison[15] is, in my opinion, somewhat contradictory in his essay. He says that "in infections of the tubes even the slightest operation on the genital organs may prove dangerous;" yet he highly recommends the method of treatment of the late Dr. Pryor, namely, a thorough curetting to cut off the main source of the infection. He then opens the cul-de-sac of Douglas, and with the finger introduced through the opening, frees the tubes and ovaries. The tubes are then brought out of the opening. Passing a probe through the fimbriated extremity, he inserts a strip of iodoform gauze which is removed when he is through with the rest of

13. Brooklyn Med. Jour., April, 1903.
14. Am. Jour. Derm. and G. U. Dis., 1905, p. 204.
15. N. Y. Med. Jour., Jan. 7, 1905.

the manipulation in the pelvis. Next he packs the uterus and the whole cul-de-sac with iodoform gauze. The uterus is restored to its normal position, and finally the vagina is also packed with iodoform gauze.

J. B. Killebrun[16] favors curetting as soon as possible in acute gonorrheal endometritis. He believes that when the uterus is affected the adnexa are likewise diseased and should be treated. He advocates Pryor's method.

Dr. Wm. B. Small,[17] if he sees the patient within forty-eight hours, uses as an abortive treatment a 20 per cent. solution of argyrol, which he allows to remain in the urethra for five minutes. The application should be made three times daily. In addition, he directs the patient to use a 5 per cent. solution herself. In chronic cases he uses a 20 per cent. solution daily, until the pus cells show no gonococci. When the epithelial cells predominate he uses a 20 per cent. ichthyol solution in glycerin. When the infection has invaded the body of the uterus he advises curetting as soon as possible. A variety of opinions is expressed by those following in the discussion of this paper.

In the early stages Henry T. Byford[18] advocates prolonged irrigation with hot water as a basis, and dwells on its advantage in preventing the spread of the disease to adjacent parts. It does not injure the epithelial covering, and thus it tends to limit the infection to superficial areas; furthermore, it removes more germs and pus cells than either astringents or disinfectants can destroy. Later, when the discharge becomes scanty, the irrigations are not used so frequently, and the application of a non-irritating solution of a silver salt may follow each hot water treatment. Byford's view is correct, so far as my own observation from experience is concerned.

16. Med. News, Jan. 25, 1902.
17. Am. Jour. of Obstet., 1903, No. 1.
18. Am. Jour. of Obst., I, 408.

Ludwig Weiss[19] states in his article on the treatment of gonorrhea that he sent a number of questions bearing on this subject to 127 leading genitourinary specialists and that the answers received showed a considerable divergence of opinion. Weiss advises against using astringents during the first stages of the disease because they retard phagocytosis.

The yeast treatment is favored by H. Schiller.[20]

C. F. Marshall[21] considers the treatment with douches insufficient, because it is impossible to reach the whole of the vaginal surface. He advises wool tampons saturated with medicated fluids and medicated soluble pessaries. The urethritis is treated with copaiba and santal. For endocervicitis he employs a solution of sulphate of copper, forty grains to the ounce. If severe, the cervix should be dilated and the uterus curetted.

A. d'Hotman de Villiers,[22] for instance, considers as insufficient for a cure of gonorrheal vulvo-vaginitis all local remedies other than nitrate of silver, which he uses in a strength of 1-20. No internal treatment is ordered by him.

G. Rossier,[23] on the other hand, is a believer in the value of disinfecting injections, and he does not sanction curetting in endocervicitis until all other remedies have failed.

Th. Perrin,[24] for infections of the urethra, cervical canal and uterus, uses medicated tampons applied by means of a specially constructed instrument. These tampons are left *in situ* about fifteen minutes. He considers yeast a valueless remedy, as opposed to the opinion of O. Abraham.[25] In ulceration of the cervix, the employment of the cautery—the earlier the better—is highly spoken of.

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19. Med. News, Sept. 10, 1904.
20. Am. Jour. of Obst., 1905.
21. Midland Med. Jour., Jan. 1905.
22. Traitement et guérison de la vulva-vaginite Blennorrhagique, 1905.
23. Le blenorrhagie chez la femme, 1902.
24. Rev. Méd. de la Suisse Rom.
25. Centrbl. f. Gyn., 1903, No. 15.

Kiss, quoted by Engelbreth,[26] has demonstrated that gonococci soon disappear with the use of plain water douches. He favors the local use of nitrate of silver as the best remedy for abortive treatment.

T. v. Marschalkó[27] maintains that the most obstinate form of gonorrhea in prostitutes can be cured by the local use of a 1 per cent. solution of argentamin, or solutions of protargol, or a 5 per cent. solution of natrium lygosinatum.

Dr. Max Ziessel[28] says that in the beginning of the acute stages antiphlogistic measures should be used. In acute gonorrheal endometritis local treatment should not be begun until the acute symptoms have diminished. Curetting should be limited to those cases in which there is copious bleeding. Stypticin is highly recommended to control the menorrhagia.

Dr. v. Franqué[29] warmly recommends mud baths during the residual stages.

Johansen[30] warns against curetting and other intrauterine therapy.

A. Martin[31] uses physiologic salt solution, occasionally with the addition of thymol, etc. He has found yeast to yield most beneficial results.

Rudolph Savor[32] uses vaginal douches containing an antiseptic. Local therapy is not begun until the pelvic organs are no longer sensitive to bimanual examination. Curetting should be avoided, because it does not destroy the glandular structure to the deepest parts, and on regeneration the cocci have a new fertile field. He employs a 10 per cent. protargol solution intrauterine, two or three times a week. For menorrhagia, stypticin and ergotin are recommended.

Massasse[33] favors internal treatment with a mixture

26. Monatsh. f. prakt. Derma., 1903, No. 10.
27. Centrbl. f. Gyn., 1903, No. 2.
28. Gonorrhea in Women and Its Complications, Vienna.
29. Centrbl. f. Gyn., 1906, No. 34.
30. Centrbl. f. Gyn., 1903, No. 8.
31. Berlin. klin. Wochschr., March 28, 1906.
32. Die Heikunde, March and April, 1902.
33. Centrbl. f. Gyn., 1903, p. 64.

containing Rad. sarsaparillæ, Hb. portulacæ, and Hb. veronicæ, in addition to mild local therapy.

Dr. Prowe[34] maintains that the gonorrhea of prostitutes can invariably be eradicated so that they will not infect the opposite sex. He further says that endometritis corporis gonorrhea is often primary and the cause of the lower tract infection. Curetting in acute gonorrheal endometritis is advised. Those who were thus operated on remained healthy. Those who were not operated on, on the other hand, after a time came to be treated for swelling of the vulva, salpingitis, endometritis decidua and perimetritis. Those who practiced curetting are, according to Prowe: Doléris, Erand, Trélet, Vulliét and Walton. The objection to curetting is called a theoretical pretext. His deductions are based on 313 cases. In his experience curetting never induced pelvic inflammation. Adnexa disease may be lessened by such radical treatment. He uses a solution of ichthyol after curetting. An irritating application after curetting often provokes contraction of the uterus, which affects the tubes. He further advocates the tamponing of the uterus with iodoform gauze.

It is evident, from the quotations made, how widely the treatment of gonorrhea varies and how futile it would be to look among the therapeutic measures at our command for any specific that could be depended on to abort an attack. He who has seen the suffering a patient endures when treated by the method advised by Ricord, with strong silver nitrate solutions, is not likely to advocate it. Furthermore, we must remember that all remedies so far known (strong solutions of chlorid of zinc excepted) have only a superficial action and do not affect the deeper layers of epithelial cells. Physiologic salt solution, as suggested by Martin, or some mild antiseptic in plain water, has decided therapeutic value to wash away the superficial cocci and is not painful. This

34. Berl. klin. Wochschr., Nov. 11, 1901.

treatment should, however, be relied on only during the acute stages. When the acute stage has passed we get quicker results by using more heroic treatment. The silver preparations are by far the most reliable remedies. I prefer protargol in 10 per cent. solution. After all secretions have been thoroughly wiped off with absorbent cotton, the vaginal mucosa is freely painted with protargol solution; a pledget of absorbent cotton soaked in the solution is then applied over the vaginal portion and is held in place by an ordinary wool tampon. If simple erosions are present on the portio, they are painted with a 5 to 10 per cent. silver nitrate solution, this having been found the most effectual remedy. Follicular erosions must be treated by opening the follicles with a scarifier. If urethritis is still present an application is made to the urethra by means of an intrauterine applicator syringe (Fig. 1). The medicament is aspirated into the barrel and the long tip is evenly wrapped with cotton. The patient should have urinated shortly before the application to the urethra, so that the superficial gonococci on the urethral mucosa are washed out. The cotton-wrapped syringe nozzle is then carefully introduced the required distance and the medicament injected into the cotton. This is left in the urethra by compressing the thin tampon at the meatus and withdrawing the syringe nozzle. The cotton is left for ten or fifteen minutes and is then removed by the patient. The ducts about the vulva are carefully examined and, if infected, the secretion is gently expressed and the medicament injected. A cotton pledget saturated with the same solution is placed between the labia and is covered with a non-absorbent cotton pad, which is held in place by a napkin. The treatment is repeated every second or third day. During the interval, the patient is directed to use copious vaginal douches consisting of four quarts of mild boric acid solution about four times daily. So long as the disease remains as a specific urethritis and vulvo-vaginitis, the treatment is comparatively sim-

ple, and in most instances it can be limited to these sections of the genital tract, if we can get the patient under care in the early stages of the disease. No internal treatment, beyond restriction in diet, is prescribed. If the ducts of Bartholin are involved, they must be treated on surgical principles. If a cyst forms, it should be exsected. If an abscess results, it should be opened by a long incision parallel to the inner lip of the labium. The cavity, after being cleansed out, may be swabbed with pure carbolic acid, followed immediately by pure alcohol. The cavity should then be packed with iodoform or other gauze.

In instances where the infection remains obstinate in the small ducts, I split them and use the actual cautery. Condylomata are best removed with a cautery knife. Each one is seized with a pair of thumb forceps and cut off, and a dry dressing is then applied.

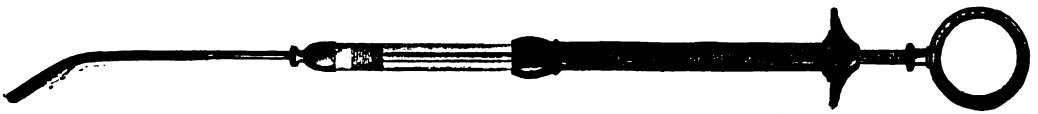

Fig. 1.—Intrauterine applicator syringe.

The use of the silver solutions is based on our knowledge of their strong antibacterial action. Yet the fact that so many are placed on the market makes it evident that there is not one that can be considered infallible. So far as my observation goes, no matter which one of them is employed, the disease takes about the same length of time to cure. Some patients are cured in from four to six weeks, while others are not entirely well after six months' treatment. I have frequently observed that women with subacute infection which has not encroached on parts abeve the cervical canal do much better if they can keep themselves free from physical exertion. I have a number of times seen women from whom I could no longer get gonococcal secretion, but who, after a couple of weeks' physical exertion, came back complaining of more discharge and of a fullness in

the vagina. On microscopic examination, the secretion showed the presence of cocci, due to the fact that isolated gonococci had remained latent in the deeper epithelial layers, while as a result of exertion they had again become active. Generally the purulent discharge increases at the commencement of active local treatment, but soon it becomes less and loses its purulent character. It is important in all cases to see that the husband is made to appreciate the danger of reinfection, so that cohabitation is not permitted until both husband and wife are absolutely cured.

A more serious matter is the treatment of gonorrhea when it has passed beyond the vulvovaginal and urethral tract, so that the cervix, uterine cavity, adnexa or pelvic peritoneum is invaded. A number of physicians, deserving of the distinction which they hold as authorities in the medical world, treat gonorrheal endocervicitis so that the local treatment is limited to that part. After wiping out the secretion with a cotton-wrapped applicator, the vulvovaginal tract having previously been carefully cleaned, an application of the remedy to be employed is made to the cervical canal. If the os uteri is small, as is the case of multipara, the cervix should first be dilated, or, as Bumm recommends, a discisio should be made. If a discision is made, the wound must first heal before the local treatment is begun. The remedies mostly approved of are the silver preparations, as nitrate of silver, protargol, ichthargan, etc. Other applications are the insertion of a strip of gauze saturated with a 5 to 10 per cent. solution of ichthyol in glycerin, the application of strong solutions of sulphate of copper, mild chlorid of zinc solutions, etc. The preference is altogether a matter of individual opinion.

While it must be accepted as correct that for a time the gonococcic invasion may remain limited to the cervical mucosa, it must also be admitted that it is extremely difficult to determine just when in some patients the invasion has reached the uterine cavity. I

have, therefore, recently placed myself on the side of those who at once attack the entire uterine mucosa. Opinion on this point is more divided than on any other question involving the treatment of gonorrhea in women.

If a patient permits me to follow my preference, she is put under anesthesia and the genital tract is disinfected with most scrupulous antisepsis. The uterus is copiously irrigated with a double current bladder catheter; then the cervix is dilated slowly and gently so that no tears are caused, but the dilatation should be thorough to be effectual. Next, a thorough curetting is done with a sharp curette. I prefer a Martin curette for the first general abrasion of the mucosa, and then substitute for this a small size sharp curette to use around the tubal openings. After the effectual abrasion has been done, the uterus is again copiously irrigated with plain sterile water or a mild antiseptic solution and is then fully tamponned with a long strip of gauze soaked in a 5 per cent. protargol solution. The rest of the genital tract is tamponned with iodoform gauze and the patient is put to bed. If urethritis is still present, this is at the same time locally treated, as are also the ducts if they are infected. The gauze is removed on the following day and the entire treatment is repeated, excepting the curetting, and again on the third day. The repetition of treatment should not cause much annoyance to the patient if the cervical dilatation has been sufficiently effectual.

If consent to curetting is not given, office treatment is used. An intrauterine application is made by means of the intrauterine applicator syringe. The intrauterine tampon is left in the uterus for two or three hours, and the patient is directed then to remove it, which can readily be done by means of a string which is tied to the proximal end of the tampon before it is introduced. The intrauterine tampon is left in by grasping the prox-

imal end around the silver nozzle with a pair of dressing forceps and holding it while the syringe is withdrawn. A medicated tampon is then placed in the upper part of the vagina, if desirable, and is held in position by a plain non-absorbent wool tampon. The strings of the vaginal tampons are marked so that the patient may know which to extract first. At first the intrauterine tampons are necessarily quite thin, so that they may be readily introduced, but afterward the cotton wrapped around the syringe nozzle may be increased in thickness, because the remaining of the intrauterine tampon causes the cervical canal to become more readily dilatable. After removal of the tampons a copious antiseptic douche is made by the patient. Although every precaution is used as to cleanliness, I consider this treatment not so desirable as the more heroic treatment first described, some it is fraught with more risk of subsequent pelvic inflammation. With my present views I feel justified in calling it "tinkering," and hence not to be employed if a patient will consent to take an anesthetic and have curetting done. It is obvious that other infected parts of the genitourinary tract should also be treated at the same time. The treatment should be repeated every second or third day.

In unusually obstinate cases of corporal gonorrheal endometritis I have a few times, with benefit, resorted to very heroic intrauterine treatment with chlorid of zinc, sometimes as strong as a 50 per cent. solution. It is applied in the same manner as protargol solution, but one should not have more than from three to five drops of the solution in the syringe barrel, depending on the size of the uterine cavity and on the quantity of cotton that is wrapped around the nozzle. If more of the full strength solution is used, there is danger that it will come in contact with the cervical canal and cause a subsequent stenosis, which I have never observed when the quantity was limited to the amount stated.

The disadvantage of the chlorid of zinc treatment is

that it sometimes causes intense pain. It is, therefore, advisable to let a patient go to bed for a day or two after its application, in order to determine what its action will be in this particular. Should pain ensue, absolute quiet is insisted on, and also the application of an ice bag on the lower abdomen. Sometimes the pain also necessitates the administration of a narcotic. A further disadvantage of chlorid of zinc solution is that its destructive action may go too deep; thus almost the entire endometrium may become destroyed, with subsequent atrophy of the uterus and the cessation of menstruation for a few months.

In using the solution with the precaution mentioned I have never seen it cause such a result permanently; the longest resulting amenorrhea lasted five months. I repeat, however, that this treatment must be reserved for the most obstinate and protracted cases. It takes from three to five days before the intrauterine tampon is sufficiently loosened to permit of its removal. I have seen only one instance in which it was necessary to repeat the treatment more than three times, and usually one or two treatments suffice. I have never been able to observe any marked beneficial action from the use of iodin, which, besides, causes considerable pain, just as often as does the intrauterine use of chlorid of zinc.

THE INTRAUTERINE APPLICATOR SYRINGE.

The advantage of a perfectly-made intrauterine applicator syringe (Fig. 1) over all other methods for applying intrauterine medication through a cervical canal that has not previously been dilated by mechanical means, can not be overestimated. The tip should be four and one-half inches long and slightly curved near its terminal end. It should be absolutely smooth and even in its entire length and have only one opening at the terminus. It should be made perfectly tight at its proximal end so that no fluid can escape there while the medicament is being ejected into the cotton. The medicament comes into direct contact with the parts for

which it is intended, because the cotton is soaked first at its very end and is gradually saturated with the medicament from above downward. If, on the other hand, the medicament is applied by means of one of the various applicators that are on the market, the active value is lost to a greater or less extent in its passage through the cervical canal. This holds good especially with nitrate of silver solution, which becomes coated with albuminoids before the applicator reaches the fundus. Besides, if it is intended to use a medicament possessing irritating qualities, as, for instance, tincture of iodin, the passage of a medicated applicator is more or less impeded through a cervical canal of ordinary diameter. It took a long time for me to get the instrument perfected in all its requirements. The ready leaving of the intrauterine tampon *in situ*, if this is desired, is facilitated by slightly anointing the tip with vaselin.

While the treatment by copious intrauterine irrigation with weak antibacterial solutions gives fairly satisfactory results, as is evidenced by the number of its adherents, yet in my hands it has not been so satisfactory as the before-mentioned methods, especially that with curetting. Furthermore, with the latter method the danger of the irrigating fluid entering the peritoneal cavity is obviated, if the treatment is properly carried out and the pressure is not too great.

It should be remembered that even after the disappearance of the gonococci in the secretions there is still some discharge, which is best eradicated by the use of mild astringent douches.

In case of menorrhagia, which sometimes complicates gonorrheal endometritis, I have found patients to be benefited by the internal administration of hydrochlorid of cotarnin. This is given in doses of three grains, in gelatin capsules, three times daily, if the previously instituted treatment did not have the desired effect; alone, however, without local treatment, as curetting, it gave unsatisfactory results.

There is a class of patients in whom menorrhagia and metrorrhagia are almost uncontrollable; this condition tries the endurance of both patient and physician to the extreme. Such patients are multipara with firm uteri, and in connection with the gonorrheal infection they have a chronic metro-endometritis. I have tamponed such women with gauze saturated in strong solutions of ferropyrin, iodoform gauze, etc., practically without any benefit. The best remedy that I have found in such cases was to await a non-bleeding period and then make intrauterine applications of pure carbolic acid, leaving the intrauterine tampon *in situ* for a couple of hours. The treatment must be repeated every second day until from six to eight treatments have been applied, and at the next menstruation interval it should be repeated. Despite the dangers mentioned by a number of authors in connection with the local application of carbolic acid to the uterine cavity, I have not seen an instance of serious result, although I have made the application hundreds of times.

INFECTIONS OF THE ADNEXA.

We now come to that class of patients in whom the invasion of the disease has passed beyond the limits of the uterus. In acute gonorrheal infections of the adnexa, with or without invasion of the pelvic peritoneum, it is of the greatest importance to enjoin absolute rest in bed and the application of an ice coil. If this is not readily obtainable, ice bags will do or, what I have found still better, a mixture of cracked ice with linseed meal, made into the shape of a large poultice and applied to the abdomen.

It is further desirable to keep the intestinal peristalsis at a minimum, and for this purpose the administration of some form of narcotic is necessary; this preferably should be so administered as not to tax the stomach, which can best be done by the employment of suppositories. If the diagnosis of an acute inflammation of the

pelvic organs has been made, subsequent local examinations should be avoided, unless there is a special reason for making a bimanual examination, because even the slightest traumatism may be productive of harm. Should it be desirable to make a bimanual examination the greatest care should be exercised to avoid rude handling.

In most instances where the patients are treated by the method outlined, improvement begins to show itself in a few days. This, however, should not lead us to permit the patients to be less careful, and we must give them the most nutritious and easily digested food stuffs during the entire course of their illness.

As soon as the most acute symptoms have subsided we may begin with warm vaginal douches containing a mild antiseptic. The douches should be of large quantity, at low pressure, and be given at frequent intervals. The cold applications should not be discontinued until the temperature is normal and the patient is free from pain. Neither should such a patient be permitted to leave her bed until the temperature has remained normal or nearly normal for at least a week. After the subsidence of the acuteness of the ailment we may, with benefit, begin with local treatment consisting of sufficiently large absorbent cotton tampons to cover the entire vaginal roof, saturated with a 5 to 10 per cent. solution of ichthyol in glycerin and held in place by a wool tampon. The tampon should remain in place for from twelve to twenty-four hours, and after its removal the patient should use a copious hot water douche. The temperature of the water should be as high as the patient can bear without discomfort. Intrauterine treatment must still be avoided, even if the discharge from the cervical canal is purulent, because of the danger of causing a fresh attack of salpingo-oöphoritis with pelvioperitonitis. Should the patient at any time show an exacerbation of symptoms she should at once be returned to bed and the rest treatment be resumed. Once the adnexa have been implicated, intrauterine therapy

should never be used until all evidence of adnexal disease has disappeared, unless, as will be considered later, it is intended to resort to a thorough surgical intervention.

Furthermore, frequent bimanual examinations during the course of absorption treatment are to be avoided. It will be found that most patients will make a good

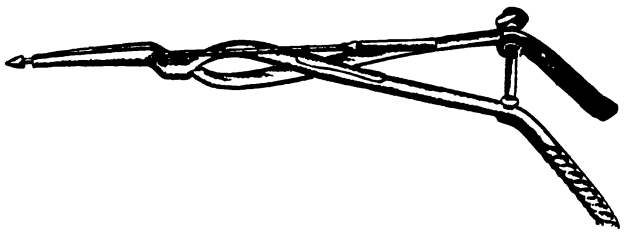

Fig. 2.—Pelvic abscess instrument. For opening Douglas' cul-de-sac.

recovery by employment of the conservative treatment outlined, and some may even go to a *restitutio ad integrum* and subsequently become pregnant.

Should at any time the Fallopian tubes become distended with pus and gravitate to the floor of the pelvis so that a bulging is felt behind the uterus, further delay with the purely conservative treatment should not be

Fig. 3.—Pelvic abscess instrument. For dilating the opening made in Douglas' cul-de-sac.

practiced, not even in the presence of acute pelvioperi-
treatment as previously outlined, the danger to life
treatment as previously outlined, the danger to life
is not only not imminent, but, in fact, the majority of such patients recover from the attack. I believe that it is a better and safer procedure for the patient's future to resort to surgical treatment. The patient should be

anesthetized and the cul-de-sac of Douglas be widely opened. For this purpose I prefer the pelvic abscess instrument (Figs. 2 and 3) which I devised some years ago, for the greater safety in not causing injury to the larger blood vessels in the case of such a large opening. The Fallopian tubes can then be incised and evacuated, and a strip of gauze placed in the incision after they have been washed out, to prevent the incision from at once closing. The uterus at the same time should be thoroughly curetted and packed with a strip of gauze saturated with whatever medicament is preferred. The cul-de-sac should now be packed with iodoform gauze. The dressings should be changed as frequently as may be necessary; the first dressing may be allowed to remain in position three days, but after that the dressings usually need to be changed every second day, if not every day, this depending on the amount of secretion which exudes. While I have never seen a complete *restitutio ad integrum* in any such case, nor a subsequent pregnancy, yet the latter possibility has been reported by a number of other observers. A symptomatic cure will result often by this method of treatment, more often, I believe, than if the non-surgical treatment is relied on. The recognized surgical axiom, "where there is pus evacuate it," is applicable in such cases.

Some patients do not recover either by purely conservative medical treatment or by conservative surgical treatment mentioned for the acute cases which develop large pyosalpinx tumors that are attached to the pelvic floor. These pyosalpinges do not settle low down in the pelvis, so that they are not readily approached through the vagina, nor do they attain such size as do those to which allusion has been made as being on the pelvic floor and are best treated by simple incision and drainage.

The patients to whom I now refer have made a good temporary recovery from the acute stage, but they have not regained their health. They suffer more or less

pain either constantly or at varying intervals; their menstruation is perhaps irregular and perhaps also painful. Occasionally they have an exacerbation of the acute symptoms which they originally had, although usually in a less marked degree. On bimanual examination one finds the objective symptoms of salpingo-oöphoritis, with a condition of the uterus which may be recognized as metro-endometritis; the organ is perhaps somewhat enlarged, and it may be harder or softer than normal. Its mobility is usually more or less impeded by adhesions, and perimetritic exudate may also be present. The Fallopian tubes are more or less distended with pus, which is recognized by the doughy sensation imparted to the examining finger. It may be that the uterus and adnexa are so matted together in the perimetritic exudate that the pelvic organs feel like a single inflammatory exudate. It may be possible to demonstrate the presence of gonococci, although usually they are not to be found in the urethral, vulval, glandular or cervical secretions in these cases; indeed, they are frequently absent in the pus contained in the tubes, and nearly always so in those patients who have been ill a very long time.

The life of such patients is perhaps seldom or never menaced, if they keep out of the hands of physicians who use intrauterine treatment in such cases or who curette indiscriminately. The health of these patients, however, is undermined. If they belong to the poorer class, those who must attend to their household duties—and the majority of the women who are ill with these affections belong to that class—they should be relieved by operation. Local treatment, no matter of what kind, has been found useless in my experience. Surgical treatment is the only form that holds out some hope. The only question is as to which form of surgical intervention is the most desirable, and here we have one of the numerous classes of women's ailments for which the "specialty of gynecology is not passing," despite what

Roswell Park said in his excellent address at the last year's meeting of the New York Medical Society.

To decide what to do in this class of patients demands the experience gained by having under observation a large number of such patients.

Some prefer to do a radical vaginal operation in all instances in which bilateral tubal affection has been diagnosed. I am opposed to such a radical view, as I have stated in an address at the January meeting of the College of Physicians of Philadelphia.[35] There I made it clear that we frequently get a satisfactory result by doing a salpingectomy, provided the tube is exsected from the cornu of the uterus, and in the cornu from which the tube was exsected we implant the corresponding ovary, or a part of it.

I stated then that it seldom became necessary to sacrifice both ovaries. Since the delivery of that address it has been my good fortune to have had several cases in which, despite their apparent hopelessness, it was possible to do conservative surgery. What the remote results will be in those cases one can not yet predict with certainty. I can, however, add two additional cases to those cited in the article referred to, in which the ultimate result from the conservative operation was excellent. This means that if there is some reason to expect that conservative technic can be practiced, the vaginal method should not be chosen, but the abdominal route should invariably be selected. If it is necessary to sacrifice both ovaries, then the uterus also should be extirpated.

There is still another class of patients, those in whom the disease has to a large extent become spontaneously cured, so far as the pyosalpinges are concerned, while the residue of old chronic pelvic inflammation is still present. This consists of chronic inflamed adnexa, the tubes thickened and adherent but not containing pus, the ovaries also in a state of chronic inflammation, and the

35. Am. Jour. of Obst., April, 1907.

uterus either smaller or larger than normal. Especially in those instances in which the organ is smaller than normal it is likely to be displaced and adherent as the result of an old perimetritis. Menstruation in this latter class of patients is likely to be at long intervals, say from six weeks to three months. In some cases it may be frequent, at intervals perhaps of only two or three weeks, and the amount of blood lost is likely to be variable and the dysmenorrhea usually severe.

When we go carefully into the history of these patients, it may seem doubtful whether, in some instances, they had at any time a suppurative condition of the adnexa. Yet these women, when we get them under our observation, are chronic invalids, despite the fact that they look well, so far at least as their appearance is concerned, if one is to judge from the sometimes ruddy face and the stoutness of some of them. Local therapy rarely benefits these women, who in the majority of instances have always been sterile, but occasionally have had one child. One must exercise judgment as to therapeutic measures. If the suffering is such that the women find it difficult to pursue their vocation because of pelvic pains, and if they have attained an age past the middle of the thirties, a radical vaginal operation is likely to be the most expedient to afford them relief. If younger, then a salpingectomy should be resorted to. In all instances in which a salpingectomy is contemplated, a thorough curetting should precede the opening of the abdomen; not infrequently a ventral fixation of the uterus may become a desirable adjunct of the other surgical treatment. In all instances in which a conservative operation is resorted to, we must state clearly to the patient that the object of the proposed operation may not be achieved by conservative measures, that after a radical operation may eventually become necessary, and that she must herself assume the responsibility of deciding what is to be done.