found lying directly on the other surface on which, in one or two places, a few scattered endothelial or epithelial cells were found.

The contents received from this consisted of 500 cc. of a milky fluid, the specific gravity, 1,020, and abundant albumin. On testing with osmic acid a slight blackish discoloration was noticed. After destroying with sulphuric acid and centrifuging, a curd-like layer was thrown to the top of the tube. On testing this with osmic acid a very marked black precipitate was formed showing the presence of free fat.

Microscopic examination of the fluid showed a finely granular compound in which were numerous large granular corpuscles.

Diagnosis; Chylous cyst.

The diagnosis in this case was extremely interesting to me. It illustrated what I have been preaching and practicing for a good many years, namely, that one must not be too sure in assuming that a case is a grave one or a hopeless one, on the strength of his diagnosis. I never felt more firmly convinced of the truth of my opinion than I did in this case. The chances seemed to me a hundred to one that this was tubercular peritonitis. Whatever one's belief and experience may be as to the practical treatment of tubercular peritonitis — whether by incision, aspiration, or by purely medical methods — a chylous cyst like that in the present case certainly does not admit of any relief except by surgical means. One who does not believe in surgical measures in these cases must be very sure of the truth of his opinion if that opinion is adverse to operation. Time and again I have operated in cases of what I could not but believe to be hopeless disease, and have found an easily remedied condition of things, but a condition which if left to itself would have been necessarily fatal. Not that I would recommend exploratory operation for the sake of diagnosis; but I would raise my voice against the assumption that any human opinion is necessarily correct, especially if that opinion condemns a patient to inevitable death. One naturally believes that there are cases in which his diagnosis cannot be wrong. There are such cases, and the case here reported seemed one of them. I could not believe that my diagnosis was wrong in this instance. Is there not, therefore, in all cases — no matter how hopeless they may seem — some possibility of relief by surgical measures? These lines of thought lead one to the argument which has done more harm than good: "Without operation there is no hope, *ergo* operate." The difficulty lies in the definition of the hopeless case. There are, of course, cases in which the evidence is too strong to give the slightest support to an exploration, — for instance, cases of abdominal distention and masses secondary to cancer of the breast. But even in a case in which, after removal of cancer of the breast, the abdomen is filled with fluid and with solid masses, has one the right to assume that there is a metastasis from the breast? I think the chances of there being an ovarian tumor — a condition of things which surgery might remedy — are quite as good as in the case reported in this paper. There is certainly one chance in a hundred that a curable

abdominal tumor may be coincident with a cured mammary cancer.

There are, of course, many cases in which even the most radical opinions do not permit an exploration. Take, for instance, a case of pylorotomy for cancer of the stomach in which, after two years of extraordinary improvement and a gain of a hundred pounds in weight there is a recurrence reaching to the scar of the abdominal wound, — in which the whole area is a mass of unmistakable cancer. In such a case the liveliest imagination does not suggest a possibility of cure, especially if microscopic examination of the presenting masses confirms the diagnosis.

Chylous ascites I have seen, and chylous mesenteric cysts. A case of the latter lesion I saw operated upon by Dr. Odlin of Melrose. In this case the cysts were so tense as to suggest the diagnosis of uterine fibroid. The sac was situated in the mesentery. Its walls, like the walls of this one, were fragile, and were unavoidably ruptured during enucleation. They were easily separated with the fingers.

In the case of chylous ascites the source of the fluid was evidently in the lacteals, for they were everywhere distinctly visible, distended with white fluid. The effusion was evidently caused by some obstruction to the lymph vessels.

I once removed a cyst from the left upper quadrant of the abdomen in a child,¹ a patient of Dr. Bowers of Clinton. This cyst was recalled to my mind by the one here described. It filled the abdomen; it was easily separated down to, and including its deepest attachments. It contained, however, a clear fluid. The situation of the tumor in close relation to the pancreas, with Dr. Whitney's report, led to its classification among the pancreatic tumors, and it was reported as a pancreatic cyst. The child has now grown to vigorous manhood, so Dr. Bowers reported to me recently.

The effect of a case like the present upon a conservative mind is, I think, to throw healthy doubt upon the infallibility of one's opinion, to give a strong hope in serious cases and a glimpse of encouragement in the apparently hopeless.

THE ACTIVE TREATMENT OF GONORRHEA IN ITS EARLY STAGES.

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THERE should be no need of argument in favor of the active treatment of gonorrhea. It is our duty to afford patients suffering with this disease the most efficient relief possible, and not to palliate symptoms in hope that the disease will run a self-limited course, leaving the patient, meanwhile, to the chance of complications and of chronic disorders. The writer believes thoroughly that gonorrhea is amenable to treatment, that all save the rarest cases may be entirely cured, that treatment should be active, and that it should be instituted as early as possible.

¹ BOSTON MEDICAL AND SURGICAL JOURNAL of March 21, 1895: "A Case of Pancreatic Cyst Treated by Drainage."

Much of the indifference shown in the treatment of gonorrhea arises from honest scepticism as to the results of treatment. In part this is, no doubt, due to the lack of agreement as to methods among those who should speak with authority. In part it is due to failures chargeable to faulty technique and misapplied methods. It is easy to lose sight of the necessity for judgment and care owing to the fact that unfortunate stress is often laid on the medicaments to be used, and little study given to the indications for their use or to their limitations. This has always been true and is even more obvious of late. No year goes by without the appearance of at least one new organic silver compound, each more silvery than the last, less irritating, more germicidal, each accompanied by optimistic assurances that simple injections of *this* preparation assure a rapid cure. One might suppose the whole problem solved with a prescription and a syringe.

There is no doubt of the value of some of these more modern preparations; intelligently used they render good service, but used as a routine treatment, relied on because they kill gonococci *in vitro*, they disappoint us as does any other fixed routine treatment.

There is no ideal treatment of urethritis, and the best methods and the best technique give somewhat variable results, but we have to-day a sufficiently accurate knowledge of the pathology of the disease to know what we wish to accomplish, and means and methods which, properly applied, will realize our aims with very fair success.

In this paper, the writer wishes to outline a scheme of treatment, followed for some years, which is the only one that has, in his hands, yielded any large proportion of satisfactory results — satisfactory both in time required and in freedom from complications. It has, at the same time, given results even in the least favorable cases as good as the average attained by other means.

The scheme may be summed up as a combination of modern irrigation methods with the still more modern germicidal treatment which has definite advantages over either used alone. This is nothing radically new, but a combination resulting from much experimenting with various much-advocated schemes; it was first suggested by a consideration of what we know of the pathology and the repair processes of gonorrhea, being an attempt to accomplish what seems reasonably possible in influencing these processes; the exact methods are, of course, those which best withstood the trying-out on a long series of cases experimented on.

It may be well to take up the matter by considering what is known that is of possible value to us, of the pathology of the disease and the course of cure under natural conditions in uncomplicated cases. Gonorrhea is the result of the introduction of gonococci within the urethra. At first it is confined to the fossa navicularis and its neighborhood, the gonococci multiplying on the surface of the epithelium over a constantly

increasing area. At this stage there are no symptoms. There is some excess of mucus and some increase of the normal desquamation of epithelium. Smears show the gonococci already numerous, but lying on the surface of epithelial cells and in no relation to the scattered leucocytes. Presently pus formation begins; the gonococci having grown down through the loosened epithelium begin to produce results. They are now to be found within the leucocytes as well as on the epithelium; phagocytic action has begun. By this time, or even before pus or definite symptoms appear, the gonococci have already penetrated some distance. According to the best data available,¹ three days suffice for the bacteria to penetrate the full depth of the mucous membrane, especially in the protected follicles. Meanwhile the area involved increases and within a week most of the pendulous portion is contributing its share to the abundant discharge, and the urethral walls have become infiltrated, swollen and relatively rigid, so that even the stream of urine does not suffice to distend them and to cleanse their folds.

After a time, usually three or four weeks, the stage of defervescence is begun. Gonococci become less numerous, the infiltration of the walls gradually lessens, and finally most or all of the gonococci are carried to the surface by the phagocytic cells. The discharge meanwhile decreases till it is represented only by shreds in which pus is more and more replaced by epithelial cells thrown off in the active regenerative process. In favorable cases this process progresses until soon the urethra is normal save for some congestion and a continued overformation of epithelium in shreds.

In this process of repair the phagocytes play an important part, but it is very doubtful if phagocytosis is the whole story. If it were we should have more recurrences, for often gonococci persist in the urethra when there is next to no pus production, while their virulence is attested by the severity of such recurrences as do occur. The theory of protection against reinfection by the new-formed epithelium seems inadequate. There must be some form of serum protection developed in the course of the disease. As yet, however, we know nothing definite about it. What we do know is that after a time the multiplication of gonococci in the depths of the mucous membrane fails to keep pace with their elimination by phagocytic action or otherwise, and they disappear or again become superficial in their distribution.

The early penetration of gonococci into the tissues has been long known and used as an argument. It is quite true that after twenty-four to forty-eight hours it is very improbable that any germicide can reach *all* the gonococci; and the "penetrating" action of the various germicides is doubtful, despite all we hear, and apparently is not established by any data as to their penetration into living tissue. But it does

¹ Finger: Ghon. & Schlagenhafer. Archiv. f. Dermatologie u. Syph., 1894, xxviii, pp. 316.

not follow that germicides are useless. If the bacteria that are accessible can be killed, we shall, at least, have hindered the spread of infection to some extent, and it is at least possible that elimination of gonococci from the deeper layers may be furthered by other means while we depend on germicides for their actual destruction at the surface. Reasoning from analogy with other infections of mucous membranes, it seems not impossible to exert through treatment some effect on this elimination of the deeper infection and on the infiltration and suppuration which accompany it. Later in the disease it is obvious that the mechanical emptying of the crypts may at least render lurking gonococci accessible to germicides, and in the earlier stages this, and I believe much more, may be done toward the clearing out of the cocci.

The lesson of pathology is not that germicides are useless, but that germicidal treatment *alone* will not suffice; that after two days or so we already have an established inflammation to deal with — an infectious disease and not simply a superficial infection.

In the first stage, therefore, we have an infection possibly amenable to germicides alone.

In the second stage we have to deal with a deep infection and infiltration. Our problem is to promote elimination of the infecting gonococci, to destroy such as may be reached, and to do all we can to prevent the involvement of fresh areas (up and backward) in the process.

In the third stage we still have to deal with both elimination and destruction, but the elimination must be a dislodgment of bacteria from follicles and crypts, rather than from the deep layers throughout the walls.

In the final stage we have, in properly treated cases at least, only a mild muco-purulent discharge to cure, a catarrh without gonococci.

To accomplish these things as here outlined in the various stages seems *a priori* practicable, no other scheme of treatment does seem promising. More than this, our knowledge of the pathology does not tell us as yet. We must try to accomplish these ends in such fashion as we can, relying on our own and others' experience of the action of the enormous number of medicaments and methods that have been tried. For our present purpose the writer will consider only those with which he has had some personal experience.

For several years the writer has been working on the large material of the Genito-Urinary Clinic at the Boston Dispensary and in office work, in the endeavor safely to attain reasonably rapid results in gonorrheal cases, and during this experimenting has tried most of the recommended chemicals according to many methods. The beginning goes back to a time when the methods mainly in vogue in this vicinity were two — Finger's plan² of *laissez faire*, followed after the acme by astringent and irritant irrigations to promote chemotaxis; and a method of permanganate irrigation, supposed to be Janet's, which it was not. Very strong (1% or 2%) silver was

then just being abandoned, and for excellent reasons. Corrosive sublimate and weak silver nitrate injections had some vogue for a few years, but as a single routine treatment have proved unsatisfactory and are little used in this way to-day.

Essentially astringent injections, of which sulphate of zinc is a type, are the active ingredient in many of the old formulæ; a few years ago they were much used as a routine, now we know that they do excellent work in later stages, but they are much less used in early acute cases.

Later came the vogue of the non-irritant solutions of silver, argentamin, argonin — argonin I, —itrol, orthophosphate of silver, ichthargin, albargin, largin, nargol, protargol, argyrol, picratal, and a number of others. The later of these are still the vogue. Like the rest they have their place, but that place is not as a sole treatment of an acutely infected urethra. The writer has worked with several of these preparations, beginning with Dr. G. W. Allen in 1898 with argonin applied to a test series of acute first attacks, with fair results.³ To-day protargol and argyrol are in the field. In the writer's opinion they are better than their predecessors and of great value, but valuable only when used with a knowledge of their limitations.

Other recent preparations, acetozone, picric acid, mercuriol, etc., have had their trial and gone their way without apparently winning a permanent place. The only medicaments in the whole list which have kept their reputé may be said to be:

- I. Bland injections: Potassium permanganate.
- II. Germicides: weak silver nitrate, protargol, argyrol.
- III. Irritant and germicide; Corrosive sublimate, silver nitrate in stronger solution.
- IV. Astringent: Zinc sulphate.

This, even brought to these lowest terms, is a considerable list. The question is, What can be accomplished clinically with each or all of these? First as to very early cases — those possibly fully accessible to germicides. In these cases abortion is a possibility. It may *sometimes* be accomplished by any of the germicides, stronger nitrate solutions, corrosive, or even the organic silver combinations. But this is practicable only in those cases where gonococci are found present in the urethra very early after exposure, before the starting of discharge or definite symptoms. Such opportunities are rare. The patient usually comes to the surgeon when and because he has symptoms, and at this stage actual abortion is possible, so far as the writer knows, only by using very strong nitrate solutions, and then only in so small a proportion of cases that the risk of using this injection as a routine is not justified. Weaker germicides are powerless to accomplish this result. There is, however, no reason against a germicidal treatment to diminish infection with the hope not of abortion but of rapid cure, and

³ At the time so many impossibly rosy conclusions were being advanced that we decided to withhold our results. They have never been published.

² Advocated by him in the nineties, not his recent routine.

it is with this end in view that the organic silver salts have mainly been used as sole treatment. The writer has so treated many cases and has seen a good many that have been so treated by others, but cannot heartily commend the results of this routine used alone. In weaker solutions the germicidal action is slight; in stronger solutions there is a germicidal effect, but not all gonococci are killed out, and meanwhile the symptoms of disease do not subside satisfactorily. Often, especially with protargol, if strong enough percentages are used to act as real germicides, the effect is irritant, compelling a change of treatment.

Picratol seems to act better as a germicide in weak solution than either argyrol or protargol, so far as the writer's limited trial of it shows.

On the average, however, none of these germicides alone has given first-rate results in cases where the discharge was already established. Early posterior infections seem unduly common, and persistence of urethral infiltration (even when the discharge is decreased) and recurrence on cessation of treatment have been too frequent. These agents do not, alone, kill out the infection, and there are better methods of mitigating symptoms.

For the lessening of symptoms *per se*, that is, the relief of ardor and of discharge, and for the lessening of infiltration, the most satisfactory method is that of frequent, profuse, hot, bland irrigations. In practice this means permanganate injections, though it is very probable that the specific action of the permanganate is slight. Janet, who has so strongly commended permanganate in treatment, claims a peculiar resultant edema which gives, he tells us, a soil unfavorable to gonococcus growth, but there are apparently no data to show whether this is due to permanganate as such or merely to the effect of prolonged and hot irrigation. The latter view would seem to be indicated by the apparently equal results of strong or weak permanganate solutions, and especially by the results of hot water irrigation,⁴ and the considerable series of cases reported by Woodruff⁵ with excellent results from very frequent hot irrigations of deci-normal salt solution. The mechanical washing is certainly useful. The oft-repeated stretching and collapse of a proper irrigation give an excellent emptying out of folds and of follicles, and the prolonged contact of fluid at high temperature may have much value. As to any germicidal or other special effect of permanganate the writer is inclined to doubt its importance.

Whatever be the exact explanation, the net result of these permanganate injections, clinically, is marked relief of subjective symptoms, diminution of the discharge to a minimum, a lessened infiltration of the urethra, and, if the technique be satisfactory, a checking of the backward spread of the infection. The gonococci diminish in number or disappear from the dis-

charge, and in time we get cures in a large proportion of cases. No other method approaches this in relieving symptoms, and if these irrigations can be skillfully given twice, or even once a day, the patient is kept very comfortable, free from pain and nearly free from discharge. But rapid cures are not often obtained in this way. In the rule we get gonococci outlasting the symptoms they cause;⁶ a cessation of treatment is followed by a return of pus and we must begin again and are apt to reach a cure only after a month or so. The method is an excellent one, but it is slow. Somewhat more satisfactory is the plan of switching over, when the urethra has become tolerant, to similar profuse irrigations of silver nitrate from 3000 up to 5000. The nitrate has a germicidal as well as an astringent effect. It cannot, however, be used until rather late; used early in any concentration that would be useful it gives rise to much irritation, except in tough and experienced urethra where it may render excellent service from the start. Corrosive sublimate may be equally serviceable after the first stage but has no advantage. The astringents pure and simple often act well at this time, but have next to no antiseptic power. Used early they relieve symptoms somewhat, but that is all. Used later they serve all purposes save disinfection. After the process no longer depends on present infection they are, however, most in place and indispensable to the cleaning up of shreds in some cases that have lasted long.

The writer's method has been to combine the method of profuse irrigation with the use of germicides from the start and in this way to obtain combined results. The germicides may, in this way, be used in stronger solution than if used alone, owing to the lessened sensibility; owing to previous cleansing the solution comes in more direct contact with the epithelium, and since irrigations are done under an alternating pressure that helps empty the follicles even these lurking-places of infection are rendered more accessible. By using silver preparations in this way very fair germicidal results are obtained. At the same time the relief of symptoms is assured by the irrigations. On this basis and only on this basis has the writer attained satisfactory results.

Of course, the results are not uniform. In most cases where the disease is attacked early and the treatment fully carried out the disease is cut short as an anterior process and lasts only from ten days to three weeks and this without subjective symptoms and with a minimal discharge, often no more than a morning drop after the first day or two. Not all cases do this, and with cases where there is already a profuse discharge, whether with or without posterior involvement, the results, while very satisfactory as to reduction of symptoms, are not always so good as far as the cure of the infection is concerned.

⁶ Rarely we find gonococci present in enormous numbers at a time when the total discharge is a matter of a few drops only, and only partly purulent. These cases do not relapse quickly when treatment is omitted, but they do relapse. Whatever inhibition has been exerted on these gonococci is evidently only fleeting. More often the remaining gonococci are so few as to be overlooked, but the result is the same.

⁴ Kiss: Cbl. f. s. Krankh. der Harn- und Sexualorgane, xi Heft 7.

⁵ Woodruff: Med. Record, 1901, lix, 401.

Some such cases do clean up very promptly, others show persistence of a few gonococci and tend to recur. Rarely there develops a posterior infection. In all cases, however, where posterior infections have appeared under this course of treatment they have been very mild and of very short duration as if the virulence of the gonococci had been lessened.

It has been the writer's habit when discharge has ceased and shreds are very few and gonococci have been apparently absent for some days, to cease treatment entirely for about four days to test results. In the cases where there is a return of gonococci and discharge a short course of the same treatment will usually clear up the process permanently. As a rule, however, by this time the urethra is become insensitive and tolerant, and silver nitrate injections are equally serviceable. Moreover, nitrate injections call for less frequent repetition and the treatment can thus be made less burdensome without being less efficient.

The practical detail of this method is about as follows:

(a) *In cases where treatment is begun at the first appearance of discharge.* Immediate gravity irrigation with permanganate of potash $\frac{1}{8000}$, as hot as can be borne comfortably, in large quantity, followed by syringe injection of 5% solution of protargol or argyrol held in for five or ten minutes. This procedure is repeated twice a day in the same way save that at the second or third injection the silver solution is pushed up to 10% and is held in fifteen or twenty minutes.

After three days the interval is lengthened, the routine is carried out but once a day.

At ten days to two weeks the process is usually apparently gone save for some shreds, and treatment is interrupted to test results.

(b) *Where there is already a discharge, ardor, and a stiff urethra.* Permanganate alone is usually used until conditions improve enough to give the protargol proper access to the urethra wall. Before this it is nearly useless and may be irritant. Usually the protargol can be profitably added to the treatment at the second or third treatment. These cases are not as a rule fit to test as to cure before two or three weeks.

(c) *Where there is already a posterior infection.* The treatment is the same except that about every fourth treatment a posterior irrigation with permanganate is added. This is usually sufficient and the writer has never become convinced of the utility of using silver proteids in the posterior urethra. These posterior cases, of course, last longer, and unless things look very encouraging it has often seemed unwise to attempt treatment even of the anterior process more than once a day.

In any of the cases if a discharge recurs after ceasing treatment to test results or in any case where the disease is not apparently about well within three weeks the writer has found it advantageous to substitute irrigations of silver nitrate $\frac{1}{8000}$ running up to $\frac{1}{1000}$ or $\frac{1}{500}$, or occasionally corrosive sublimate $\frac{1}{15000}$ or $\frac{1}{10000}$.

In cases where there is a persistence of shreds after the infection has gone by zinc sulphate solutions running up to about 1% render excellent service.

Where early active treatment has kept discharge and infiltration down to a minimum there seems to be very little tendency to this persistence of shreds. Astringents are often unnecessary, and in the cases treated according to the above routine the writer has found the late use of the endoscope and the dilator entirely superfluous, which has not been his experience when using other methods.

As to the mechanical technique the writer would insist upon two points only; namely, that all irrigations be from the meatus without introduction of any instrument⁷ and that the irrigations be carried out so that the anterior urethra shall be alternately well-distended and thoroughly collapsed. What form of nozzle and other apparatus is used is of secondary importance so long as it does the work and is familiar to the manipulator through much use.

Personally the writer uses a Rees nozzle⁸ or a Kiefer, and latterly a glass double-current nozzle especially made for him which fits all forms of meatus as the Kiefer does not. With these is used an ordinary irrigator with a head of three feet for anterior and about five feet for posterior irrigation. Irrigations are done with the patient sitting or standing.

Posterior irrigations are done with the same nozzle in the meatus in the way advocated by Janet, by having the patient relax and try to urinate against a pressure of about five feet of water or rather of solution. Rarely this fails to work, and a catheter must be used for irrigation by Diday's method.

The case histories appended are not picked for good results, and as a whole may be classed as worse than the average that should be obtained, because they include cases that did not "tend up." They are chosen simply as giving a fair view of the course of various sorts of cases under this line of treatment.

ACUTE CASES SEEN EARLY. EARLY CURE.

CASE I. One previous infection several years ago; thoroughly cured. Exposure four days previous, seen on the first day that any discharge was noted.

1st day. Discharge already considerable and purulent. Many gonococci present intra- and extra-cellular. Permanganate irrigation, 1-8,000; 5% protargol.

2d day, A.M. No discharge — few shreds. Permanganate; 5% protargol. P.M. A drop of pus at meatus. Permanganate; 5% protargol.

3d day, A.M. No discharge. Permanganate; 10% protargol. P.M. Same.

4th day. Minimal discharge. No gonococci to be found. Permanganate and 10% protargol only once a day.

5th day. No discharge, same routine.

6th day. Same.

8th day. Same. No treatment yesterday.

⁷ Irrigation with a catheter gives no advantage, and does certainly subject the inflamed urethra to needless trauma. Moreover, the writer has rarely been able to produce as satisfactory dilatation and emptying with the catheter in the canal.

⁸ Similar to the Valentine — preferred only because lighter and handier.

10th day. No discharge. Shreds minimal. Changed to irrigations with hot corrosive sublimate, 1-15,000.

14th day. No treatment for four days. No discharge, almost no shreds; corrosive, 1-10,000.

17th day. Same.

20th day. No discharge, one shred only, showing microscopically nothing but epithelium. Urethra calibrated for possible (old) stricture, and prostate examined. Corrosive, 1-10,000. Discharged.

The patient reported some weeks later, no recurrence, entirely well.

CASE II. Seven previous attacks. Last one under my care, entirely cured after about seven weeks, by permanganate irrigations, etc. Exposed three days ago. Now shows meatus puffy, with a drop of pus. Many gonococci, intracellular. Some epithelium with the pus.

1st day. Potassium permanganate, 1-6,000; 7% protargol, held in fifteen minutes.

2d day, A.M. Drop of discharge. Permanganate; protargol, 7%, ten minutes. P.M. Same, protargol, 7%.

3d day, A.M. Same. Permanganate. Protargol, 5%. P.M. Same.

4th day, A.M. Almost no discharge. No gonococci to be found. Permanganate, 1-6,000; protargol, 7%. P.M. Same.

5th day, A.M. No discharge at all. Permanganate, protargol, 7%. P.M. Permanganate, no protargol.

6th day. A drop of watery discharge in morning. Only moderate number of shreds. Permanganate and 5% protargol, once a day only.

From this point on, daily permanganate, protargol omitted; with this omission the watery discharge ceased. On the tenth day the few shreds showed hardly anything but epithelium; and silver nitrate and corrosive irrigations were used. At sixteen days treatment was interrupted to test. There was no recurrence, and on the twenty-fifth day, a week after the last treatment, the urethral caliber, and the prostate were overhauled.

This patient reported eight days later, entirely well, without any shreds on examination. He has remained well for two years.

CASE III. One previous attack a year ago under my care; thoroughly cured after six weeks of irrigations, without remaining shreds. Exposure four days ago.

1st day. Discharge first noted to-day. There is now a moderate purulent discharge containing a good deal of epithelium. Many gonococci on epithelial cells, few in leucocytes. Permanganate, 1-6,000; protargol, 5%.

2d day, A.M. No discharge; few shreds. Permanganate. Protargol, 5%. P.M. A drop of pus. Permanganate, 1-8,000; protargol, 5%.

3d day, A.M. Few shreds. Permanganate; protargol, 10%. Infiltration gone. P.M. A little discharge; protargol, 10%.

4th day. No discharge. Shreds purulent, no gonococci found. Permanganate, 1-8,000. Protargol omitted.

5th day. Same. Permanganate once a day till tenth day. Meanwhile active exercise, some alcohol on ninth day.

10th day. No discharge. No symptoms. Shreds few and without gonococci, but with pus. Corrosive sublimate anterior irrigation, 1-15,000.

The sublimate injection was repeated (running up to 1-10,000) every three days till the twentieth day, there was then but one shred to be found, of epithelium only. Routine examination of urethra and prostate negative.

This patient was seen some weeks later. There had been no return of trouble and the urine was free from shreds.

ACUTE CASE SEEN EARLY; INFECTION CURED EARLY. LONGER "SHRED STAGE."

CASE IV. One infection previous. Well for a year save occasionally few shreds.

1st day. Slight discharge appeared to-day. Incubation four days. Drop of pus only, but shows intra- and extra-cellular gonococci in fair number. Permanganate, 1-6,000; protargol, 5%, for ten minutes.

2d day, A.M. Same. P.M. Same.

3d day, A.M. Urethra dilatable without pain; no discharge except drop in morning. Same treatment, but 10% protargol.

This treatment continued twice a day until fifth day, permanganate, 1-6,000; protargol, 10%, held for ten to twenty minutes. There was no discharge after the second day, but persistent shreds containing gonococci up to the fifth day.

6th day. No discharge. A very few shreds without gonococci with a good proportion of epithelium. Urethra dilatable, insensitive. At this time the patient left town and carried out his own injections of 10% protargol for a week.

14th day. Still shreds, but no discharge or symptoms and no gonococci in the shreds. Permanganate irrigation every other day for a week, then astringent irrigations every four days.

34th day. No discharge. One shred only, showing only mucus and epithelium. No gonococci. Discharged.

This patient was followed by telephone for several weeks; there was no recurrence, and an examination, a month later, showed a normal canal and normal urine.

ACUTE CASE SEEN EARLY, PROGRESSED SATISFACTORILY FOR A TIME. RELAPSED FOR CAUSE, RETREATED. RELATIVELY EARLY CURE.

CASE V. One previous infection, cured. Seen on the second day of discharge.

1st day. Profuse purulent discharge; very many gonococci. Permanganate, 5% protargol.

2d day. Discharge much less. Permanganate, 10% protargol.

3d day. Discharge entirely gone. Treatment repeated. This was repeated once daily until the eleventh day. There was a minimal discharge twice during this time. Then he absented himself for three days and returned with a discharge containing gonococci and with a mild posterior infection without symptoms.

Under routine permanganate and silver nitrate all this cleared up in thirteen days.

26th day. Very slight, thin discharge, shreds; no gonococci.

32d day. Discharge gone. Silver nitrate.

34th day. Last appearance for treatment; apparently cured, few epithelial shreds in first portion only.

This patient reported a few weeks later; had had no return. Urine examined showed one or two shreds only, of epithelial type.

ACUTE CASE SEEN EARLY, RELAPSED FOR CAUSE. LONG PERSISTENCE OF GONOCOCCI WITHOUT OBVIOUS CAUSE. EVENTUAL CURE.

CASE VI. Two previous infections. The first with a gleet of some months, the second recovering promptly and without recurrence or persistent shreds.

1st day. Four days incubation, one day of symptoms. Discharge slight, containing much epithelium and some pus. Gonococci in fair number extra- and intra-cellular. Some infiltration of walls of urethra. Permanganate, 5% protargol, for four minutes.

2d day, A.M. Discharge gone; few shreds, no

gonococci. Permanganate, 3% protargol, five minutes. P.M. Same. Permanganate, 2% protargol, five minutes; urethra already fully dilatable.

3d day, A.M. Two or three shreds only. Permanganate and 3% protargol for five minutes. P.M. Same, but protargol, 1% only.

4th day. A.M. Few shreds only. No gonococci in them. Permanganate, 1-8,000, protargol, 2%, for four minutes. P.M. Same.

5th day. Same A.M. and P.M.

6th day. Same. Once a day only. Now no discharge. No symptoms, very few fine shreds.

Omitted treatment and indulged in alcohol. Pus and many gonococci reappeared. Permanganate and protargol again abolished discharge in six days. Gonococci disappeared after three days. Shreds persisted and treatment with permanganate and protargol was carried out for two weeks. Shreds persisted and irrigations of silver nitrate were substituted, but on ceasing treatment (after a long interval of minimal shreds without gonococci and of nearly pure epithelium) there was a recurrence of pus and gonococci on the thirty-second day, and nitrate treatment was resumed for ten days, then dropped. There were then only one or two epithelial shreds, and the usual calibration and prostate examination before discharge a week later, with indulgence in liquor and coitus left a clean urine. There had been no return of trouble for a year after he was discharged.

ACUTE CASES SEEN LATE. RAPID PERMANENT CURE.

CASE VII. Discharge of two weeks duration. No previous attack for many years. Has been under treatment for two weeks with methyl blue and with protargol bougies with no great improvement.

1st day. Moderate purulent discharge; gonococci. Permanganate, 1-5,000.

2d day. Discharge almost gone. Shreds moderate in number. Permanganate and 3% protargol. No gonococci.

3d day. No discharge at all. Permanganate only.

4th day. No discharge. Permanganate, protargol, 3%, held in eight minutes.

5th day. Same. Exploration revealed a stricture two inches from meatus about fifteen F. in caliber.

6th day. Same.

7th day. No discharge, few shreds. Silver nitrate, 1-4,000.

8th day. Same.

9th day. Same.

12th day. No treatment for three days. Some shreds, but only of pure epithelial type.

Reported at twenty-three days; only epithelial shreds.

At thirty-eight days a fresh discharge appeared two days after fresh exposure. Considerable pus; no gonococci; entirely gone after one treatment with permanganate and 10% protargol. A few shreds persisted until a week later, when the anterior stricture was cut, they then rapidly and permanently disappeared. No recurrence, and no shreds when seen a year later.

CASE VIII. One infection fifteen years ago or more. Present infection of eight days' duration, treated only with santal oil.

1st day. Moderate discharge, rather thin; a good many typical gonococci. Irrigation with permanganate.

2d day. Discharge gone; shreds in fair amount. Permanganate, 5% protargol, for eight minutes.

3d day. Shreds rather few. Permanganate, protargol 10%, for ten minutes.

4th day. Shreds few. Permanganate, protargol,

10%, for five minutes. From fourth to ninth day he had to carry out treatment at home.

9th day. There are only a few shreds with no infiltration remaining. Anterior injection of 5% protargol.

11th day. No treatment for past two days. Few fine shreds only. Protargol, 5% every other day.

18th day. Nothing in urine, apparently well.

This patient reported some weeks later; there had been no recurrence of trouble; there were then no shreds in the urine.

CASE IX. One previous infection years ago. Seen two weeks after fresh discharge began.

1st day. Moderate purulent discharge, showing many gonococci. Daily permanganate irrigations and acetone for a week. No improvement.

7th day. No better. Permanganate, 5% protargol, for ten minutes.

He could come in only every other day at which times permanganate and 5% protargol for ten minutes were used.

17th day. No discharge; very few shreds.

This patient quit treatment at seventeen days, but reported a few weeks later. There had been no return and an examination of the urine showed no shreds at all.

ACUTE CASE, SEEN LATE, RELAPSE FOR CAUSE, RETREATED. RELATIVELY RAPID CURE.

CASE X. First infection. One week duration.

1st day. Profuse purulent discharge; gonococci present. A severe acute anterior infection. Permanganate irrigation every other day.

5th day. Discharge somewhat less. Permanganate irrigation daily, followed by 5% protargol.

9th day. Discharge has wholly disappeared. Daily irrigation, anterior, with silver nitrate, 1-5,000.

17th day. For some days only a few shreds in first urine. After indulgence in soda water without other cause, the discharge has recurred with slight posterior infection without symptoms. Gonococci again present. Silver nitrate continued as daily anterior irrigation, and every three days posterior injection as well.

28th day. Gonococci again gone.

29th day. No discharge, few shreds; no gonococci no sign of posterior infection.

Treatment continued every two or three days for twelve days with anterior injections of weak silver nitrate. In the meantime there was no discharge and only a small and diminishing number of shreds. The patient reported five days after omitting all treatment. There was no trace of shreds in the urine.

This is not a brilliant showing compared with some series published, but it is contended that it compares most favorably with what is actually accomplished. It may be repeated that these are not picked cases except in so far as notes on many cases were insufficient. The cases were of fresh urethritis with demonstrated gonococci and were in each case followed up long after to make sure of entire and permanent cure.⁹ The way to make a more brilliant showing is to report cases earlier; when discharge has ceased most patients, unless warned strongly, pronounce themselves cured and omit treatment; moreover, it is fair to draw conclusions only from results obtained in fresh infections in urethrae not previously infected, or at least known to have been really cured of any

⁹ A cure in the writer's notion means: (a) disappearance of all discharge; (b) disappearance of gonococci; (c) disappearance of "gluing" of the meatus; (d) disappearance, permanently, of practically all pus from the few remaining shreds; epithelial shreds are, of course, not pathological.

previous infection. The very frequent acute processes occurring in the course of quiet chronic gonorrhea often can be quickly cleaned up under any treatment, even with internal use of the balsams alone.

To sum up, the writer believes thoroughly that all cases of early acute gonorrhea except in the presence of some contra-indication (such as phimosis or acute folliculitis) do better under active irrigation which in itself much reduces the severity of the disease, and he believes that the "organic" silver preparations used not alone but in combination with profuse bland irrigations accomplish definite results by germicidal action.

By following out a routine based on this, varied to suit varying cases, we can effect a very rapid cure in a certain proportion of cases, a very considerable diminution of time of treatment required in the other cases, a very comfortable condition as to symptoms during the course of treatment and, by no means least, the most efficient limitation as yet possible of the area involved as well as of the duration, and hence the best chance for avoidance of complications and chronic processes.

GLYCOSURIA IN PREGNANCY.*

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BLUT in 1856 found a physiological glycosuria in the urine of all women at the lying-in period, in all nursing women, and in a certain number of pregnant women. Sugar was present in amounts as high as 8 gr. per 1,000 cc. of urine. He did not state the kind of sugar found, and it was not until 1877 that Hofmeister demonstrated it to be lactose. Since that time many observers have noted the existence of glycosuria in this class of cases and have brought forward different theories to account for its presence. Brocard in 1898 found a temporary glycosuria in 60 out of 125 cases of pregnancy between the seventh and ninth months, the varieties of sugar being glucose and lactose. Marie des Bouvenes in 103 pregnant women out of 353 examinations found 109 positive glucose reactions, or about 40%. Commandeur and Porcher recently found glycosuria present in twenty cases just prior to delivery. Very frequently the proportion of sugar found was so small that ordinary methods of determination were not always delicate enough to demonstrate its presence.

Brocard thought the glycosuria due to a disturbance of general nutrition. Charrin, his co-worker, suggested that the excess of fat in the liver of pregnant women might explain this tendency. Commandeur and Porcher in a recent article upon the subject maintain that the uncertainty of the physiology of the breast has been the difficulty in determining the cause. They state that from the experiments of Paul Bert in 1884, which

they have since confirmed, it has been definitely proven that glucose, which is made in the liver, is transformed in the breast into lactose. This process increases as lactation appears. When there is an excess of glucose in the liver or when the breast is not ready for action this excess of glucose is thrown into the blood and appears in the urine. Then there is a temporary glycosuria which may occur from various causes as fright, injuries, nervous conditions, creatinine and its bases febrile attacks, acute diseases, action of certain toxic substances, ingestion of saccharine foods, anesthetics, and others. Pathological glycosuria is due only to the condition known as diabetes mellitus. In this condition glucose is present in quantities from $\frac{1}{2}$ to 10%. The urine is increased in quantity and possesses various properties which are recognized as being associated with that disease.

The relation of glycosuria to pregnancy is an interesting one and a number of cases of this condition have been collected. It has been possible to divide the cases into two classes:

(1) Showing a temporary glycosuria during some part of the pregnancy where no other symptoms existed, where the glycosuria was small in amount and varied but little; and

(2) Showing a glycosuria present where the amount was larger with a tendency to increase, and where other symptoms existed.

Through the courtesy of Dr. Geo. M. Craigin of Boston and Dr. Ingalls of Hartford, Conn., we are able to report three recent cases of glycosuria in pregnancy and we desire to express our thanks to them here.

(1) CASE OF DR. GEORGE A. CRAIGIN. Primipara; thirty; family history negative. Always well, robust physique, accustomed to considerable exercise and a hearty eater. Last catamenia May 8. Urine examination negative up to Dec. 29. Urine examination, Dec. 29, 1,036; alb., 0; sugar, faint trace. General condition, excellent; fetal heart, strong; 140.

Jan. 5. 1,036; alb., 0; sugar, .25%.

Jan. 10. 1,023; alb., 0; sugar, .42%; urea, 350 grains.

Was well save for slight indigestion. Walked several miles daily.

Jan. 20. 1,031; alb., 0; sugar, .42%.

Jan. 22. Put on rigid diet.

Jan. 28. Alb., 0; sugar, .22%.

Feb. 15. After difficult breech labor was delivered of an eight-pound girl. Patient has been well since delivery. At no time since delivery has sugar been discovered in the urine. The child died on the third day with convulsions. This death was probably due to the difficulty in delivery.

(2) CASE OF DR. INGALLS. Primipara; thirty; seen when six months pregnant. Was suffering considerably from pruritus. Three per cent sugar was found in the urine. Labor was induced with catheter. Pruritus disappeared and urine was sugar free soon after uterus was emptied.

(3) CASE OF DR. J. M. JACKSON. Primipara; twenty-seven; last catamenia June, 1902. First seen by Dr. Jackson Dec. 31. Urine was said to have been examined prior to this time and no sugar was found.

Dec. 31. Urine examined: Twenty-four degrees, amount 1,500 cc.; 1,028; alb., 0; sugar, 4%; urea, 24 gms. No acetone or di-acetic acid.

* Read before the Obstetrical Society of Boston, Oct. 25, 1904.