drops, repeated three or four times a day, I have found of decided benefit in asthenic gonorrhœa, even when the patient does not present the usual constitutional aspect which indicates its use. Iron, in conjunction with cantharides (as recommended by Dr. Bumstead, page 90 of his "Treatise on Venereal Diseases"), I have occasionally prescribed, with prompt beneficial results.

In cases of long standing the discharge is often found to proceed chiefly if not wholly from the deeper parts of the urethra, the bulbous, and even the prostatic portion. Treatment in these need be in no wise different from that already indicated, except perhaps in the use of long pipe syringes, to secure with certainty application of the local remedial agents to the entire diseased surface. Where the bladder evidently participates in the difficulty, as announced by uneasiness and aching in the supra-pubic region, with or without increased irritability of the vesical sphincter, and confirmed by the presence of pus in the urine drawn directly from the bladder, a daily washing out of this viscus with a solution of Squibbs's perchloride of iron, twenty or thirty drops to the pint of tepid water, has usually, in my hands, proved promptly successful in relieving the complication.

In cases where the discharge persists, notwithstanding a faithful pursuance of the above plan of treatment, and no constitutional complications are recognized, I am led to suspect the existence of the third in the list of causes upon which a continuance of the discharge may depend, viz., a granular condition at some point or points in the canal, where, from an unusual activity of the morbid processes, the mucous membrane has been completely stripped of its epithelial covering, the underlying tissue becoming involved in the inflammatory process, and ulceration results. At a certain stage in the declining inflammation, little irregular papillæ organize and sprout from the plastic lymph which has been exuded to repair loss of tissue, and these papillæ are called granulations. The tendency of loose cell-growth to condense into fibro-cellular tissue, which subsequently contracts and produces coarctation



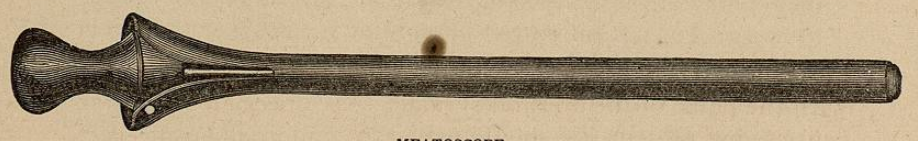
of the urethral walls, renders the granular condition one of great importance, not only because it leads to Stricture, but because it is likewise frequently a source of free purulent secretion.

The granular condition is usually indicated by a localized tenderness on pressure or on the passage through the urethra of a sound or bulbous bougie. These methods of ascertaining the presence of such a complication are, however, liable to lead to incorrect conclusions, inasmuch as such tenderness may be produced by the natural obstructions to the introduction of an instrument at the triangular ligament, the commencement of the membranous portion, and the neck of the bladder. Besides this, such granulations may exist, and yet, on account of the absence of nerve-structure in them, produce no decided sensation on the passage of instruments. In this dilemma we have fortunately another resource, viz., *the ocular inspection of the entire surface of the canal* by means of tubes of proper construction, which may be introduced into the urethra and illuminated, so that every important point is made visible to the careful observer.

As far as known, the credit of first applying ocular inspection to the diagnosis of urethral difficulties is due to Dr. J. D. Fisher, of Boston, who, in 1824, published, in the *Philadelphia Journal of Medical Science*, the description of an instrument identical in all essential points with the endoscope of Desormeaux. At present, however, the names of Desormeaux, of Paris, and Cruise, of Dublin (who improved upon the illuminating apparatus of Desormeaux's instrument), are alone associated with the endoscope.

By their patient and careful observations and experiments, and by their large and valuable contributions to the pathology and treatment of urethral diseases through its use, they are entitled to stand eminent as authorities in that especial province. The endoscopic tubes of Desormeaux and Cruise were constructed of white metal, eight or nine inches in length. In using them I found a serious objection to the metallic surface, on account of the troublesome play of re-

flection along their interior; and, moreover, so great a length appeared unnecessary for examinations of the anterior portions of the canal. Tubes, varying from one and a half to eight inches in length, were constructed of hard rubber by Messrs. Tiemann & Co., under my direction. The smooth, black surface of these tubes, though requiring somewhat stronger light, was entirely free from reflections, and enabled me to define with much greater certainty appearances in the field or bottom of the tube. These were distinct under reflected sunlight, and also from that thrown out by Tiemann's modified student's lamp, burning kerosene oil, with the addition of ten grains of gum-camphor to the ounce. The use of tubes of various lengths made it possible to bring the eye



MEATOSCOPE.

much nearer the desired surface, when it was located at any point anterior to the prostatic urethra, and proved, also, of further advantage in the greater ease with which the light was kept steadily on the field of the tube, and moreover, the shorter tubes perceptibly decreased the absorption of the luminous rays. Like Desormeaux's tubes, they were furnished with an entering shaft, to facilitate introduction into the urethra, and a mortice or cleft in the side, for the greater facility of making applications through them. For accuracy in locating any seat of trouble, they were graduated in one-half inches, and, to distinguish them, were called meatoscopes.

I have used these instruments exclusively for five years past, and believe I am able, through their assistance, to detect the more important tissue changes occurring in the urethral interior. Especially is the meatoscope valuable in diagnosis of the granular condition of the urethra, previously mentioned. Introduced beyond the suspected point



(the shaft being removed), a pencil of light is reflected, by means of a small concave mirror into and to the bottom of the tube, which is then slowly withdrawn. As the folds of healthy membrane roll symmetrically in toward the centre, the observer is able to note the exact point of departure from a healthy condition, and the character and extent of the lesions. The favorite seats of granular ulceration of the urethra are in the natural expansions of the canal at the navicular and bulbous portions, evidently invited by the rich diffusion of crypts and follicles in the ample folds of those parts. Not seldom the difficulty, when occurring in the fossa


MEATOSCOPE (SHORT).

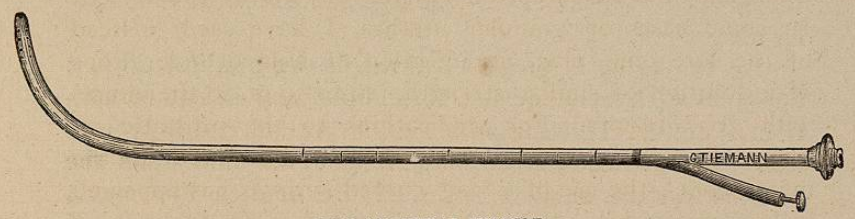
navicularis, is occasioned by frequent and teasing contact with the point of the urethral syringe. No especial localizing cause being present, we should expect to find granular ulcerations of more frequent occurrence in the deeper portions of the urethra, on account of the preponderance there of the spheroidal and columnar varieties of epithelium, the cells of which, less easily detached, are also less readily reproduced than those of the tessellated kind. The location and nature of the diseased surface being determined, topical applications may be made through the reëntered tube, by means of wire stylets armed with a bit of cotton or lint soaked in the fluid selected for use.

I am accustomed to use for this purpose a solution of the nitrate of silver, of a strength, graduated in accordance with the sensitiveness of the parts, of from *twenty* to *thirty* grains to the ounce of distilled water, usually limiting the application to such an extent of surface as can be touched with the cotton at one time—the tube being held stationary. I have not unfrequently extended the application from one-quarter to one-third of an inch, sopping the surface as the tube is slowly withdrawn. I have not usually found it necessary to inspect the urethra under the light after having thoroughly

located the diseased surface. Observing carefully the mark on the tube when the first application is made, it will usually be found that this portion is quite free from pain on the succeeding introduction of the tube, and that commencing sensitiveness indicates the point to which cicatrization has extended. At the first sensitive spot I repeat the application as before, advancing gradually, at each sitting, until the entire lesion is removed. Applications may be repeated once in from four to eight days. The field of the meatoscope should be carefully cleansed from any discharge that may be present, both in the preliminary examination and in that immediately preceding the treatment; this is easily effected by means of a bit of cotton twisted on one of the stylets. In some cases of granular urethra, I have used, instead of the foregoing plan, an injection of four or five drops of a solution of similar strength, (20 to 30 gr. to the ounce) with good results. For applications to the prostatic region—less easily reached with the straight tube of the meatoscope—the use of a long curved syringe has appeared to me preferable. When pursuing this plan, for a long time I was in the habit of locating the prostatic region by the preliminary introduction of a catheter into the bladder, measuring back half an inch from the point where the urine entered the catheter at about the central part of the prostatic urethra, then transferring the measurement to an ordinary long curved syringe. I was thus enabled to apply injections with accuracy to the desired point. About a year since I had occasion to see a patient with Dr. James Bigelow, of Brooklyn, and applied an injection to the prostatic urethra, after the manner above described. The entire success of a single application in relieving the diseased condition was so gratifying to the doctor, and the crude means through which it was accomplished so apparent, that he soon afterwards designed and presented to me a syringe-catheter represented by the annexed figure. With this ingenious instrument, both the measurement and the application are accomplished by a single introduction. The shaft of the



instrument encloses a double canal—one continuous with the barrel of the syringe, following the inner curve of the instrument, and terminating at the curved extremity of the shaft in a number of minute openings; the other continuous with the little branch-tube, and following the outer curve to the extreme end of the shaft. This (the catheter portion) is traversed by a wire which stops the opening at its extremity. On the introduction of the instrument, with the wire slightly retracted, at the moment of its entrance into the bladder a few drops of urine exude from the branch tube; the wire-stopper is then pushed in, the instrument withdrawn half an inch, and the piston driven home. For all topical applications




DEEP URETHRAL SYRINGE.

to the prostatic urethra, this syringe-catheter has, in my experience, proved admirably adapted.

The last, but by no means the least important of the local conditions capable of prolonging a chronic gonorrhœal discharge, is the alteration which may occur in the course and calibre of the urethral canal. Henry Dick, of London, who has written an elaborate monograph on the pathology of gleet, asserts that the continuance of a gonorrhœal discharge may depend on *deviations in the course of the urethra without contraction of its dimensions.* His conclusions were arrived at, by noticing, in cases where no actual disease could be detected and the discharge continued, that, on introduction of a sound, the flat handle always became oblique in the membranous portion of the canal; that wax bougies used for diagnostic purposes, when withdrawn, were crooked at that point, but without giving evidence of constriction; and that these cases were cured by the systematic introduction of sounds.

I have seen cases which apparently presented all the above-named peculiarities, but I was, and am still, of the impression that the irregular, localized muscular action of the urethra produced the seeming deviation, and that the continuance of the discharge depended upon a lack of suppleness from general but superficial contraction or fulling up of the mucous membrane, which disappears, and along with it the discharge, on the return of the urethra to its normal dimensions.

Most frequently, however, chronic gonorrhœal discharges depend for their continuance upon positive and recognizable alterations in the calibre of the urethra—contractures at various points of the canal—the legitimate sequelæ of follicular ulcerations.

As the urine is propelled through the urethral tube, it impinges with more or less force upon any salient or contracted point. The column of fluid is arrested, and in proportion to the degree of arrest is the force of the blow upon the mucous surface at that point. More or less hyperæmia necessarily ensues, and a condition is soon established well adapted to prolong an existing gonorrhœa, or which, upon slight additional cause, such as venereal excitement, or even an unusually acrid condition of the urine, may result in the origination of a muco-purulent or a purulent secretion. We may hence affirm, as a most important axiom, *that the slightest encroachment upon the calibre of the urethral canal is sufficient to perpetuate a urethral discharge, or even, under favoring conditions, to establish it, de novo, without venereal contact.*

It is in this way that gonorrhœas occurring a few hours after exposure are *generated;* and it also explains the apparently unaccountable renewal of a urethral discharge after excitement, in individuals who have had no gonorrhœal disease for years.

Within the last two months, a gentleman, who (according to his own account) had lived virtuously for more than thirteen years, consulted me in regard to a muco-purulent discharge



which gave him painful suspicion of the fidelity of his wife. I found, on examination, that it was dependent upon a Stricture at the commencement of the membranous portion of the canal which scarcely admitted a No. 3 bougie, and yet no suspicion of Stricture had before arisen.

Some four years since, a young man came to me in great distress, requesting an opinion as to the probabilities of contagion from a muco-purulent discharge from which he was then suffering. He had a history of an acute attack of gonorrhœa a year previous, which was cured, all but an occasional very slight oozing of yellowish matter. This, after ten months' persistence, was pronounced innocuous by his medical adviser, whereupon, he went to Chicago and married. Three or four days later, finding his discharge increase, he left his bride and came to this city to inquire concerning the possibilities aforesaid. Examination in this case brought to light a narrow Stricture at the peno-scrotal angle, which had evidently perpetuated the discharge. In regard to the contagious property of such a discharge, I will simply state that, within the week he read me a letter from his bride, containing as classical a description of gonorrhœa in the female as I ever saw.

It will be readily seen that the recognition of Stricture as a cause of the origin or the persistence of a muco-purulent discharge is of the utmost importance, involving, besides the discomfort of the local trouble, other issues of the gravest moment.

While authorities differ as to the precise seat in which contractions may occur, all are agreed that their most common location is at those points where gonorrhœal inflammation runs the highest and dwells the longest, viz., the bulbous and navicular parts of the urethra.

The chief, if not the sole cause of these constrictions is the granular ulceration previously dwelt upon. The plastic lymph which is thrown out becomes organized, and finally condensing or cicatrizing, produces a narrowing of the tube to a greater or less degree, in proportion to the extent of

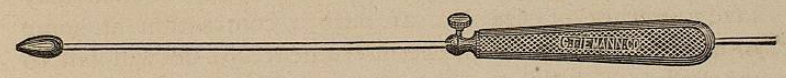
tissue involved, forming, in short, what we are accustomed to designate as *Stricture of the urethra.*

I have already spoken of the difficulty of diagnosticating contractions by means of the ordinary sound or the flexible bougie. The fact that a No. 16 or even a No. 20 can be readily introduced, is no positive proof of its absence. A man may have a urethra of size No. 21, with a contraction at some point of half a line, which the instrument No. 20 will fail to announce. To obviate this source of error, Sir Charles Bell, many years since, invented the *ball-probe,* which consisted, as the name implies, of a slender rod surmounted by a metallic ball. Selecting one suited to the proportions of a given meatus, it was passed down the urethral canal until arrested by the Stricture; then this, or one of a size just permitting its passage through the contraction, was introduced through it, and allowed to remain for a few moments. On attempting to withdraw the instrument, the ball would be arrested at the posterior boundary of the Stricture, thus definitely locating its extent and position.

Le Roy d'Etiolles improved the ball probe of Bell by substituting an acorn shape for the ball, and a flexible material for the shaft, thus facilitating its introduction, and adapting the shaft more readily to the curvatures of the canal. In my own practice I have given a preference to still another modification which appears to me to combine the excellences of both instruments, viz., a metallic *olive-shaped* bulb, whose firm polished surface (like Bell's) glides more readily over the mucous membrane than the gum coat of d'Etiolles' bulb. The olivary shape, while entering as easily and defining with sufficient accuracy, is less painful on withdrawal than the more abrupt base of the acorn shape; and the small soft metal shaft unites great firmness with a degree of flexibility sufficient for ready alteration of its curve. The handle is perforated throughout its extent, thus allowing it to be slipped forward on the shaft to the meatus, and screwed fast, so that, when the situation of the Stricture has been determined, it correctly registers its depth. In explorations of the urethra



with this instrument, I am accustomed to accept the meatus, if apparently of normal size, as a gauge of the urethral calibre; that is to say, any instrument which will pass that orifice will easily traverse the entire canal if no abnormal condition is present. It should be borne in mind, however, that both




BULBOUS SOUND (IMPROVED). HALF-SIZE.

congenital and pathological contractions of the meatus are not infrequent.

A bulb, with its shaft bent to correspond with the curve of an ordinary sound, is accurately fitted to the urethral orifice, then slowly inserted and pushed gently back until some resistance is recognized. Muscular contraction may arrest the instrument at any point along the spongy urethra, but, with a little delay, this will subside. As the bulb advances it may impinge upon the triangular ligament; tilting the shaft upward will clear this point. Muscular contraction will also usually occur at the commencement of the membranous portion and at the posterior part of the prostatic, gently overcoming which, the bulb slips into the bladder. This is the usual course of the proceeding when no contraction has been recognized. After allowing the bulb to remain in the bladder for three or four minutes, it is slowly withdrawn; if contractions are present at any point, slight clinging or want of suppleness will indicate their locality, and, in moving the bulb back and forth, where resistance is appreciated, a diagnostic ridgy feel may be recognized. Should this proceeding fail in locating a constriction, I am then accustomed to slit up the meatus freely, and repeat the operation with the largest bulb that will enter the spongy portion Failing with this, a full-sized meatoscope, without the entering shaft, is introduced under the light, and slowly pressed back along the passage, carefully noting any paling or lack of flexibility of the membrane, at any point. Should this last

effort yield no evidence of undue condensation of tissue, I am forced to conclude that no contraction is present.

Decided Stricture is not likely to escape notice; it is the *slight* diminutions of the urethral calibre that are usually overlooked, and which may keep up indefinitely a troublesome discharge. Especially at or near the meatus is Stricture likely to elude observation, and, in my opinion, the occurrence of Stricture at these points has been greatly understated by authorities. Not only is the inflammation unusually acute at this extremity of the canal, but the irritation and even excoriation, which often result from the use of improperly constructed syringes, plainly increase the tendency to plastic effusions about the urethral orifice. I will cite a single instance in point. A gentleman consulted me not long since on account of a muco-purulent discharge from the urethra, stating that he had never had gonorrhœa, nor any suspicious exposure for many years. I found a decided contraction at about a third of an inch from the meatus. On inquiry I ascertained that, in times past, when he was in the way of carnal communication with loose women, he was in the habit of using an injection of alum-water as a preventive of disease. The Stricture appeared in this case, (which I consider typical of a class) to be due to the teasing contact of the membrane by the point of the syringe. The presence of a warty or polypoid growth may interfere with the integrity of the urethral calibre—a complication which can be readily recognized by means of the meatoscope.

The treatment of contractions of the urethral canal cannot be fully considered in the limited scope of this paper. I am in the habit of employing the usual methods, gradual dilatation, rupture or internal division, according to the indications presented in each case. Always bearing in mind the tendency of Strictures to recontract, I endeavor to leave the strictured part *above*, rather than equal to the normal size, using healthy portions of the urethra as the guide, and *not* the numbers marked on the sounds. The standard measurements of the normal urethra are very well to philosophize upon, but, practically, we must recognize and respect a distinct individuality in each case, irrespective of standards, or even of general physical proportions. A few days since I introduced with ease a No. 20 English sound into the bladder of a boy of sixteen, not overgrown. I have frequently seen adults whose normal urethral calibre did not apparently exceed half that size. The not uncommon remark, that such-and-such a sized sound has been passed, and consequently no Stricture can exist, leads to frequent error.



Engorgements of the urethral tissues occur readily after the discharge has nearly or entirely ceased. The introduction of a sound, or even the passage of urine, may cause the lips of the orifice to become suddenly florid, as though acute inflammation were present; evidently due to a want of contractility in the vessels of the part. Patients likewise complain of an aching sensation along the urethra, especially in the perineal portion, where the deeper parts of the canal have been involved in the preëxisting inflammation. For this condition I have been accustomed to make applications to the relaxed membrane of equal parts of the submuriate of mercury and tannic acid, by dipping an undersized bulbous bougie in oil, then rolling it in the dry powder, previously mixed, introducing the instrument with care until the bulb enters the bladder, then slowly withdrawing it with a twisting motion.

Sounds with little cup-shaped depressions at their extremity (designed by Dr. William H. Van Buren, of this city) are also valuable for carrying medicated unguents into the urethra. The judicious introduction of unmedicated sounds or bougies of large size is also beneficial.

For the same purpose I have frequently applied free carbonic-acid gas to the urethra, throughout its entire extent, by means of a flexible catheter attached to an India-rubber gas-receiver of two or three gallons' capacity. The receiver is placed in a chair opposite the patient. Passing the catheter down to the prostatic urethra, the stop-cock is turned, and pressure made upon the receiver by the knee of the operator.

The escape of the gas along the sides of the catheter, with a sputtering sound, announces the successful application of the gas to the entire mucous surface of the canal. The tonic and sedative effect of this procedure is prompt and curative in many case of abnormal sensitiveness of the urethra, following chronic inflammation.

## CHAPTER II.

### RETROSPECT.

IN a careful perusal of the foregoing chapter it will be seen, 1st. That the subject of Gleet was entered upon with a general, if not a complete, appreciation of the causes which might be supposed capable of establishing and perpetuating it.

2d. That an essential *virus* for its establishment was denied, and that its continuance was considered to depend upon pathological conditions, the result in every case of simple inflammatory changes, complicated more or less by the anatomical peculiarities of the parts.

3d. That the diagnosis, in every case, was sought to be established through an acceptance of all the then recognized pathological processes associated with disease of mucous membranes, and by all the mechanical aids then in use, or which a critical study of the subject could suggest.

4th. That the treatment of Gleet was, at first, based upon the popularly accepted value of known remedial agents, general and local.

5th. That failure of treatment addressed to assumed pathological conditions, independent of mechanical interference with the functional integrity of the urethra, became gradually more and more apparent, until, on page 21 the mechanical obstacle was made to assume the *first* rank as a cause of gleet.

6th. That the slightest contraction of the normal calibre of the urethra was sufficient, not only to prolong a gleet in spite of treatment addressed to the inflammatory state, but "to establish it *de novo* without venereal contact."

7th. That the value of the bulbous sound was more and more highly appreciated and an improved form was presented, page 23.