

ever, I think, prove a valuable aid in completely restoring the natural calibre of urethræ that have been imperfectly operated on by other instruments.

Reybard was constructed required long and deep incisions of the urethral canal, in consequence of which "the instrument, never extensively used, has fallen into disuse" (Thompson on Stricture of the Urethra. Third edition. London, 1869. p. 235).

### CHAPTER III.

#### RETROSPECT.

THROUGHOUT the period covered by the preceding chapter, it will be seen, 1st. That there was a steady progress of the mechanical views in regard to the nature and continuance of gleet.

2d. That the meatus was practically rejected as a guide to the normal urethral calibre (p. 32).

3d. That the incapacity of all the then known instruments for dividing or divulsing urethral Strictures was demonstrated (p. 33).

4th. That complete sundering of Stricture was necessary to prevent speedy re-contraction (p. 34). And hence, that an instrument of wider scope and more certainty in action was required.

5th. That to fill these indications my first dilating urethrotome was invented, and presented to the profession as theoretically capable of completely dividing Strictures of large calibre.

The apparently successful practical application of the instrument in six reported cases was not deemed sufficient to warrant more than a casual mention, and this but as an incentive to a more extended trial of its qualities.

During the succeeding year (1870-'71) my experience in the use of the dilating urethrotome had extended to the division of fifty-seven bands of Stricture in twenty-seven patients. In every case the presence of long standing gleet was associated with the Strictures. In every case, cure of the gleet followed rapidly on the removal of the Strictures and in five cases complete absorption of the Stricture tissue was found to have occurred, a fact verified by the distinguished surgeons mentioned on pages 48, 49. These results, so remarkable and

opposed to the teachings of all authorities and experience, were accepted with reserve by other surgeons who were practically cognizant of their truth, and not less so by myself, final judgment being deferred until a larger experience should have accumulated. They were however deemed so important that it was thought advisable to present the subject up to that date, to the Medical Society of the State of New York, together with a new form of dilating urethrotome adapted for use in Strictures of smaller calibre. Accordingly at the February meeting of that Society in 1873, I read the following paper :

*On Strictures of the Urethra. Results of Operation with the Dilating Urethrotome, with Cases.*

In a paper read before the Medical Journal and Library Association of the city of New York, and published in the New York Medical Journal of June, 1870, especial attention was directed to the influence of Strictures invading but slightly the calibre of the urethral canal, as a cause of purulent urethral discharges. It was then claimed that "the slightest abnormal encroachment upon the calibre of the urethra at any point in its course is sufficient to perpetuate an existing urethral discharge, and even, under favoring conditions, to establish it, *de novo*, without venereal contact." Through an article published in the same Journal, in February, 1872, this position was reënforced by the results of a further experience and study of the subject. A number of cases were then cited, where a chronic purulent urethral discharge was associated with, and apparently dependent upon, the presence of one or several distinct bands of Stricture, and where, on account of the large calibre of the Strictures, the use of the largest divulsing instruments of Thompson, Holt and Voillemier, had proved ineffectual in rupturing them. The entire incapacity of those instruments, as well as of the cutting instrument of M. Maisonneuve, was demonstrated by actual measurements which proved the divulsing capacity of the largest instrument of Thompson to be no more than

17 English, or 28 millimetres in circumference ; that of Holt, as usually constructed, about the same ; that of M. Voillemier 19½ English, or 32 F. ; while the cutting instrument of M. Maisonneuve, with widest blade in use, did not exceed a capacity of 21 millimetres in circumference (corresponding to 11½ of the English scale) ; and this blade had been objected to by eminent surgeons on account of its extreme dimensions.

Among the cases presented in proof of this alleged incapacity was one of Mr. A., in whose urethra some half a dozen bands of Stricture were present, anterior to the bulb. The history of this case is as follows :

Mr. A. came under my observation November 22, 1865, having a chronic urethral discharge, following a gonorrhœa contracted a few months previous. He had used various injections, which failed to afford more than temporary relief. Examination revealed a decided contraction of the meatus, which was at once freely divided with Civiale's urethrotome ; after which, under the use of astringent injections, the discharge soon ceased, and he had no further trouble until May 20, 1867. At this time, after an impure connection, the purulent discharge re-appeared. Again treated with mild injections, and full sized sounds, the discharge ceased on the eighth day. June 29, 1868, he again presented himself with a return of the discharge, which, being submitted to treatment of the same character as before, disappeared, but more slowly, only ceasing on the 22d of July. Remaining well up to June 7, 1871, he returned with the same difficulty. Endoscopic tube No. 20 F. was passed easily down to the bulbous portion of the canal. On withdrawal the urethra was found generally congested, presenting at several points a sensitive, granular surface. Bulbous sound No. 22 F. met with slight resistance at an inch from the meatus, and also at the sensitive points beyond. On withdrawal, the bulb was firmly held at an inch and a quarter from the meatus, when a Stricture, one-fourth of an inch in breadth, was positively defined. This Stricture was incised with a narrow, straight bistoury, and the granular points were submitted to applications of a solution of nitrate

of silver through the endoscope. Under this treatment the discharge diminished, but did not cease entirely, although the granulations had disappeared, and the mucous membrane was of nearly uniform color throughout the straight portion of the canal. Gradual dilatation was then made, and treatment by injections and medicated bougies, resorted to at regular intervals, combined with the internal use of cantharides and iron, and later with the oil of the yellow sandal-wood, until August 14, 1871, by which time the calibre of the urethra was brought up to No. 30 F. The 30 F. bulbous sound was then used, and by its aid a Stricture one inch from the meatus was recognized (on the original site), and passed with some difficulty. No. 28 F. bulb detected the same obstruction, and, being carried to the deeper portion of the urethra, on withdrawal, *five* other bands of Stricture were defined: one at four and a half inches from the meatus, one at four, one at two and a half, one at two (each about a quarter of an inch in breadth), and another, of nearly half an inch in breadth, at an inch and a half, and separated by but a narrow interval from the one previously operated on at one inch from the meatus. No 30 F. conical sound was then passed down through all, immediately after which No. 28 F. bulb was again passed, which on entrance and withdrawal, again positively defined all of the above mentioned Strictures. This was on August 14, 1871. I then introduced the divulsing instrument of M. Voillemier, and drove the largest shaft (No. 32 F.) rapidly down through all. The resistance to its passage was not sensibly greater than that previously found in passing No. 30 F. sound. After the operation and at the same sitting, No. 28 F. bulb was again introduced, and still distinctly defined all the strictured points; even No. 26 F. bulb indicated the points of contraction.

Having thus failed to rupture the Strictures with the largest instrument available, and finding that the largest blade of the urethrotome of M. Maisonneuve could only reach to the calibre of No. 21 F. and the patient continuing unrelieved of his discharge, I devised an instrument for the

purpose of effectually dividing the Strictures, upon the presence of which I confidently believed the persistence of the discharge to depend. This was presented to the profession, in an unfinished state, at a meeting of the Medical Journal and Library Association, November 24, 1871, after a brief allusion to the salient features in the case of Mr. A., just cited, as the one for the complete division of whose Strictures it had been contrived. This instrument, which I have termed the *Dilating Urethrotome*, I had the pleasure of presenting to the Association after having tested its efficiency in the case above related, and in the treatment of other Strictures of large calibre.

On the morning of the 12th of January, 1872, adapting this instrument to the calibre of Mr. A.'s Strictures, and having made such tension as the patient could comfortably bear, I drew the blade of the urethrotome through the anterior Stricture, one and a half inch from the meatus, cutting from behind forward, then giving the dilating screw half a turn more, I incised it from before backward, closed and withdrew the instrument. On examination of the result with the 30 F. bulb, no resistance in entrance or withdrawal could be detected at the site of the Stricture. The patient averred that he had not experienced the slightest pain on the passage of the knife; the subsequent hæmorrhage was very slight, and ceased in a few moments. Mr. A. then went down to his business. He called on the following morning, and stated that he had accomplished his usual work on the day previous and had had no discomfort since the operation, except a slight smarting on urination.

On the 11th of February I operated in the same manner on the second anterior constriction, with the same result as in the first.

On the 24th of February, examination showed a complete freedom from obstruction at the points previously incised, and an entire absence of the purulent discharge. At this date, I operated on the two succeeding Strictures—one at two inches and one at two and a half—and the patient was

directed to use the 30 F. sound daily until no bleeding followed.

On Monday, March 4th, the remaining Strictures, at four inches and at four and a half, were divided, and the cut surfaces kept asunder, by the occasional introduction of a sound, until March 11, 1872, subsequent to which date no treatment of any kind has been resorted to. Early in October last, seven months from the date of the last operation, Mr. A. called to consult me in regard to a difficulty unconnected with his genito-urinary apparatus. On inquiry, I ascertained that he had had no evidence of any trouble with his urethra since his last visit, on March 12th. In a careful examination of his urethra with No. 30 F. bulbous sound, I was now unable to detect the slightest contraction or lack of suppleness at any point.

CASE II.—*November 16, 1871.*—Mr. M. S. came to me with the following history: Had gonorrhœa first ten years since; was treated without injections; disease lasted several weeks. A couple of years subsequent to this he had a whitish discharge from his urethra, which he first noticed shortly after connection with a woman who had scarcely completed her menstrual period. The difficulty was quite painless, but lasted noticeably for four or five months. One year after, or seven years ago, he had what was supposed to be a fresh attack of gonorrhœa, in which the inflammation ran very high, and lasted for several weeks. In this seizure he was treated by injections, in addition to internal remedies. A gleet discharge followed the acute symptoms, and lasted for a year, when a third acute attack occurred. To this last he paid no especial attention, until inflammation of the left testicle supervened and confined him to his bed for several weeks. From that time he received occasional treatment for a gleet, which still annoyed him, but he never obtained more than temporary relief. On one occasion, following a connection, severe irritation at the neck of the bladder was set up, which, after a few weeks, appeared to yield to homœopathic treatment, and left him with his old gleet which con-

tinued with slight variations up to November 16, 1871. On this date I examined his urethra; meatus apparently healthy and of normal calibre—No. 28 F. Bulbous sound No. 20 F. revealed a Stricture one and a half inch from the meatus, exceedingly sensitive, and bleeding freely at the slightest touch.

*November 19th.*—Conical sound No. 21 F. was passed under protest, on account of the sensitiveness of the part; free bleeding again followed.

*February 24th.*—Occasional introduction of sound since the last record has relieved the sensitiveness and tendency to hæmorrhage, and raised the calibre up to 23 F. Bulbous sound again used, and showed the Stricture at one and a half inch from the meatus to consist of three distinct bands close together—the first one-fourth inch in breadth, the second half an inch from it, of about same breadth, and the third separated from it by scarcely a quarter of an inch. The dilating urethrotome was then introduced with the blade, set for the posterior Stricture, expanded up to 26 F., which was all the patient would bear, and the Stricture was incised from behind forward, and also from before backward, without moving the instrument. It was then closed and set for the anterior Stricture; this was also divided, the instrument closed and withdrawn. The patient remarked that the pain of the entire operation was not sensibly greater than that following the first introduction of the sound. The incision bled quite freely, but the hæmorrhage, under gentle pressure, soon subsided. The results of the cutting were not then examined.

*February 27th.*—Examination with No. 27 F. bulb showed resistance, on entering upon the site of the second Stricture. On withdrawal, a narrow band was found remaining; this was cut, March 8th, after the manner of the previous operation, and No. 27 F. bulb passed beyond the site of the Strictures, until, at three inches from the meatus, another narrow band was discovered, and at four inches still another. Although these last Strictures were distinctly appreciated by the patient as well as by myself, he expressed an unwilling-

ness to submit to any further interference until he could ascertain whether or not the previous operations would give him relief from his discharge.

*March 23d.*—Patient has introduced No. 27 F. sound past the seat of his anterior Strictures at intervals of a day or two since his last visit, as directed by me, in order to maintain the complete separation of the previous incisions. This was advised to be continued until no oozing of blood followed the use of the instrument. The locality of the wounds made in the previous operation was examined through the endoscope, and healing was seen to have been complete, but the discharge was still present. At this time, by the patient's request, the dilating urethrotome was introduced, dilated to No. 27 F., and the deeper Strictures were again examined and readily defined by means of the indicator attached to the extremity of the canula in which the blade of the urethrotome runs. The instrument was then adjusted for the posterior Stricture. This was rapidly incised on its superior surface. Setting it again for the anterior band, a like incision was made through it; a turn of the dilating screw giving no pain to the patient was the evidence that the division of the Strictures had been complete; but the patient, fearing an imperfect result similar to that occurring in the first operation, requested that the Strictures might be incised on the inferior surface also. Seeing no objection to this, I did so, measuring their locality from the outside, as they could no longer be distinctly defined by the indicator. The incisions on the superior aspect of the urethra were attended with but little hæmorrhage, but those on the inferior surface were followed by copious bleeding, which was only controlled by the introduction of a large flexible bougie. Removing it after an hour, a gush of blood followed. It was then readjusted and retained by a bandage, for the night. The following day, on removal of the bougie, blood again flowed freely. A hard rubber tube was then introduced, through which the patient could urinate. This was worn constantly for the three succeeding days. No. 28 F. sound was then introduced with ease,

and patient directed to pass it upon himself daily for one week, since which time I have not treated him for his Strictures. The gleet disappeared, without other care, in about a fortnight after the last cutting, and he has remained free from it up to the present time. I made a careful exploration of the urethra of this patient in the early part of October last (1872), nearly seven months from the date of the last operation, with No. 28 F. bulbous sound (the previously noted calibre of the meatus), and was unable to detect any remains of Stricture at any point.

CASE III.—Mr. J. C. came under my care in July, 1870, with the first attack of gonorrhœa, which lasted for two months, under a combined treatment of copaiba and injections. Subsequent to this, from drinking much beer, he had several returns of the discharge, which readily disappeared under the use of mild injections. In July, 1871, a profuse, painless purulent discharge followed a suspicious connection. This resisted the usual local means, but was controlled by large doses of the oil of the yellow sandal-wood (twenty drops three times a day), but reappeared on the withdrawal of the remedy. Examination, December, 1871, revealed a congenital contraction of the meatus, admitting only 16 F. I cut it with Civiale's Urethrotome, and introduced 24 F. Examination with the endoscope showed two broad inflamed and granular surfaces, involving the entire circumference of the urethra, at about two inches and five inches from the meatus. These were treated by the application of a 30-grain solution of the nitrate of silver through the endoscope, at intervals of three or four days, for about a month. Under this treatment the mucous membrane was apparently restored to its normal condition, the discharge ceased, and the patient was believed to be cured. Within a few weeks, however, after a debauch, the difficulty returned, and continued, without treatment, for several months. January, 1872, he presented himself with a scanty, thin, purulent discharge. Examination detected Stricture at two inches from the meatus; No. 24 F. bulb passed it with difficulty, and on withdrawal was sharply and firmly

held. Passing the instrument farther, another band of Stricture was recognized at four and a half, one at four and three-quarters, and one at five inches. The anterior Stricture was then divided by the dilating urethrotome, and 30 F. sound passed easily through. This instrument was directed to be passed daily until healing of the wound was complete. March 30th, some discharge, though thin and scanty; no obstruction to passage of 30 bulb through site of anterior Stricture, but it was arrested at  $4\frac{1}{2}$  inches. The dilating urethrotome was then introduced, and the three posterior bands previously described were dilated and cut above and below; after which operation 30 bulb passed without hinderance through all. Patient directed to use 30 F. sound, until no bleeding ensues.

After this time I lost sight of this case, until January 30, 1873, a period of ten months, when, accidentally meeting him, I requested an opportunity of ascertaining the results of the operations. He stated that the discharge continued for about six weeks after the last operation, and that he had had none since, although he had drunken very largely of beer, which had, previous to the operations, always brought back the discharge. Examination with bulbous sound 30 F. failed to detect the slightest trace of a Stricture in the course of his urethra. No. 31 was also passed and withdrawn without detecting any unevenness in the urethral walls at any point.

In connection with the three cases above cited, it seems proper for me to state that, with the consent of the gentlemen operated on, I invited several prominent surgeons of the city of New York to meet them at my office on the 20th day of December, 1872, for the purpose of critical personal examination of the results of operations with the dilating urethrotome. Dr. Henry B. Sands and Dr. Robert F. Weir made the examination in the first case, that of Mr. A., with No. 30 F. bulbous sound; in that of Mr. S., the second case, with No. 28, and completely confirmed my impressions as to the entire absence of any abnormal condition in the urethra in both cases. Again, on the first day of February, 1873, the three cases above related, together with that of Mr. W. (op-

erated on in May, 1872, for two Strictures, one at one-third of an inch from meatus, and one at an inch and a half)—making in all four cases (comprising originally eighteen bands of Stricture) were critically examined at my office by Drs. J. W. S. Gouley, Thos. T. Sabine, and Fred. D. Sturgis, of New York, and Dr. F. D. Lente, of Cold Spring, New York.

The examination of Mr. S. (previously examined by Drs. Sands and Weir) was made with the bulbous sound No. 28 F. In this case there had been no abnormality at or near the meatus, and 28 had been accepted and registered as the normal calibre of his urethra before the operations were made. In the remaining three cases the 30 F. bulb was first used, and afterward No. 31, without detecting in either case any obstruction or unevenness in the course of the urethra, either in the insertion or in the withdrawal of the instrument. I have now operated with the dilating urethrotome on 58 bands of Stricture, presenting in 27 patients. The presence of long standing gleet was the cause of their seeking relief in every instance. And in every instance, with one exception, the gleet had disappeared within 24 hours as the shortest and one month as the longest time after the final operation. The exception was in the case of J. C., case third reported, where frequent indulgence in venery and alcoholic stimulants was kept up throughout the treatment. This list, moreover, includes four cases where a Stricture was left uncut in the curved portion of the urethra beyond the reach of the instrument as then constructed.

In no case was any after-dilatation practised by me or by my direction, subsequent to the healing of the incisions. In one case a gentleman, who had for years been in the habit of occasionally passing a steel sound, continued to do so every two weeks for a couple of months succeeding the division of his Strictures; but finding, as he said, "*not the least resistance*," he abandoned its use. With the exception of the operation in Mr. S., which was followed by a troublesome hæmorrhage, nothing has occurred in any case to interfere with the regular habits or occupation of the patient. The

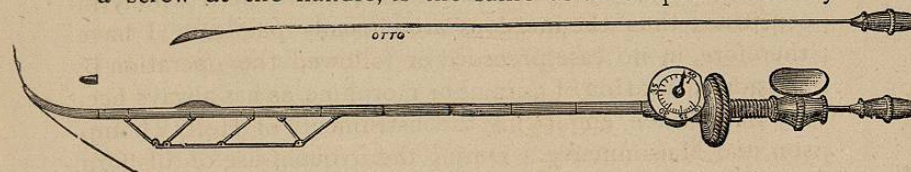
dilatation is capable of being made so gradual that no shock is experienced from that cause, and the tension falling solely on the Strictures, renders them almost and often wholly insensible; thus the incisions are virtually painless. I have, therefore, in no case preceded or followed the operation by the administration of quinine or morphine, as has always been my habit when employing the instruments of Holt, Thompson, and Maisonneuve. During the frequent use of this form of dilating urethrotome, the objections which have suggested themselves are—1. Its large size, it being of a circumference of 23 millimetres, equal to 13 of the English scale, when closed, and not capable of material reduction. 2. That it is incapable of being used in the curved portion of the urethra. Recognizing the importance of combining dilatation with division in the treatment of urethral Strictures, and appreciating the defects in my instrument, my friend, Dr. J. W. S. Gouley, of New York, contrived an instrument, with expanding springs, intended to remedy these defects. Dr. Gouley's



DR. GOULEY'S DILATING URETHROTOME.

instrument possessed the great advantage of having a circumference of no more than 12 millimetres, equal to No. 5 of the English scale; but it was open to the objection that, on account of the elliptical shape which the dilated springs necessarily assumed, the tension on the Stricture might be easily lost by slight slipping of the instrument, when failure in complete division of the Stricture would inevitably result. To avoid the possibility of such an accident, and to reach the deeper portions of the urethra, I devised the instrument which I now present. This specimen, also constructed by Messrs. Tiemann & Co., is equal in size to 13 millimetres, or  $5\frac{1}{2}$  of the English scale, and is capable of material reduction.

Its mechanism is exceedingly simple. The principle of its action being that of the parallel ruler, expanding by means of a screw at the handle, is the same as that upon which my



SMALL DILATING URETHROTOME.

original instrument is constructed. The cutting apparatus is also virtually the same. An independent rod, terminating in a blunt elevation, plays the part of the *bougie-à-boule* for the detection and location of the Stricture points. In order that it may readily be passed down into the curved portion of the urethra, its shaft, which terminates in a copper probe-point, may be easily adapted to the curves of the deeper portions of the canal, and also enables the operator to arrange it for cutting at will upon either the superior or inferior aspect of the urethra, and, when straightened, can be used as well for operation upon Strictures in the straight portion of the canal; a movable hard rubber slide marks the required depth of insertion. Its efficiency was demonstrated at my office, January 29, 1873, in the presence of Dr. F. D. Sturgis, of New York, by the complete division of a Stricture of a previously ascertained breadth of three-fourths of an inch, and situated one and three-fourths inch from the meatus; the calibre of the canal was thus raised from 23 to 28 millimetres by a single passage of the knife. This instrument has an expanding power up to 40 F.

In the above recital of my experience with the use of the dilating urethrotomes, it will be observed that two somewhat novel ideas are suggested—1. That a very considerable number of cases of chronic urethral discharge are dependent upon the presence and influence of comparatively slight contractions of the urethral calibre; and 2. That the complete division of the cicatricial tissue producing such contractions may be followed by an entire absorption of the cicatricial, or