On stricture of the male urethra : its radical cure / by Fessenden N. Otis.

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ITS RADICAL CURE.

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Clinical Professor of Genito-Urinary Diseases, College of Physicians and Surgeons, New York.

NEW YORK:
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Mr. President and Gentlemen: In a paper which I had the honor to read before this Society, in February, 1873, the importance of the recognition and treatment of comparatively slight contractions of the urethral canal, was insisted on. The entire incapacity of all urethral instruments, in general use, to reach such cases, was demonstrated, and a new instrument, one which combined in its operation the principles of dilatation with complete division, was presented. This instrument had been invented but little more than a year, and had been used in operation upon fifty-eight strictures, occurring in twenty-seven patients. The results, in six cases (comprising eighteen bands of stricture), had been critically examined by a competent committee of surgeons, at periods varying from one year to four months after operation. In every case, without exception, the most careful examination with the full-sized bulbous sound had failed to detect the slightest trace of stricture. In closing my paper I ventured the hope that future experience with this plan of operation on urethral stricture, by complete division, might be found to result in radical cure. I come before you to-day, gentlemen, with the results of a more extended and intelligent experience, bearing upon this important subject.

My first dilating urethrotome was presented to the profession at a meeting of the Medical Library and Journal Association of New York, November 24, 1871. Up to this time there were no means of efficiently treating strictures of large calibre. In point of fact, strictures of the urethra above nine of the English scale, according to English authorities, or twenty-one of the French, according to French authorities, were not considered as requiring treatment. In my paper on strictures of large calibre, read before the New York Medical Journal and Library Association, in November, 1871, and published in the *New York Medical Journal*, in February, 1872, I claimed, that "the slightest encroachment upon the normal calibre of the urethral canal, at any point in its course, was cause sufficient

to prolong an existing urethral discharge, or even to establish it *de novo* without venereal contact." This important proposition, based upon the constant association of stricture or strictures, more or less pronounced, with every case of chronic urethritis, and supported by conclusions which the consideration of a persistent mechanical interference with the act of urination rendered inevitable, has found a necessary practical acceptance by all surgeons who have seriously considered it. As a consequence, a very large class of strictures of the urethra—greatly the largest—once utterly unsought and ignored, have come to be recognized as the mechanical cause not alone of urethral discharges, which defied the most persistent and varied treatment by internal remedial measures and injections, but of reflected nervous disturbance, throughout the genito-urinary tract, and even extending, in well authenticated cases, to distant parts of the economy.

The term "Stricture" is, of necessity, a purely relative one, and can convey no intelligible idea of its value as a disturbing element, until the calibre of the constricted tube has been ascertained. As long as difficulty of micturition was the earliest recognized evidence of a strictured urethra, considered of any value, and the mechanical obstruction to the passage of urine the only direct result of stricture, it was perhaps pardonable to neglect the investigation of the exact mechanical relations existing between the stricture and the urethra in any given case, and to assume a definite standard for the size of all urethræ. In this view of the matter it was perhaps proper to assert, with the French school,* that seven millimetres diameter is the standard size of the normal male urethra, and to claim that this is quite sufficient for the purposes of micturition; or, with the English, that when eight or nine of their scale can be passed through a given urethra, no stricture can be said to exist;† or with the authors of the American scale,‡ who limit urethral measurements to 31½ m. in circumference. But when it comes to be recognized, (as has been proven beyond the possibility of contradiction,) that the capacity of the human male urethra, bears always a constant relation to the size of the penis with which it is associated, and that this organ varies greatly in size in different individuals, it will be at once seen, that no average standard can be arrived at, which will be of practical utility in diagnosis and treatment of

* Curtis.

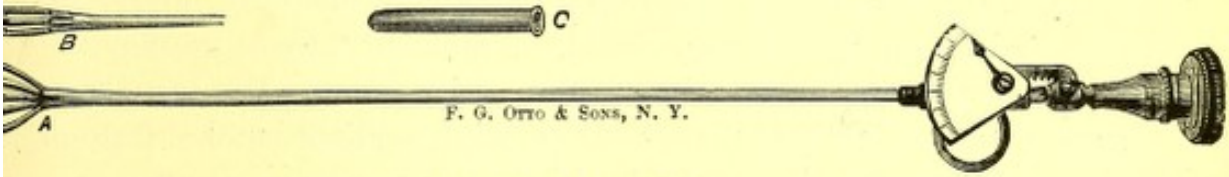
† Thompson: Stricture of the Urethra, p. 147. London, 1869.

‡ Van Buren and Keyes, p. 112. New York, 1874.

stricture, any more than an average standard can be adopted by your shoemaker for the normal human foot. Nothing is now easier than to prove this statement.

I have said that there exists a constant relation between the size of the flaccid penis and the capacity of the urethral canal. During the past year I have subjected more than one hundred urethræ to a careful examination on this point, with the following results, to which there has not been found a single exception, viz.:

That, when the circumference of the flaccid penis was 3 inches, the circumference of the urethral canal was found to be at least 30 of the French scale. When it was $3\frac{1}{4}$ inches the urethra had a capacity of 32. When it was $3\frac{1}{2}$, the capacity would be 34 — $3\frac{3}{4} = 36$; 4 inches = 38. When it was $4\frac{1}{4}$ to $4\frac{1}{2}$ inches in circumference the capacity of the urethra would equal 40, or more. In every case the urethral calibre was over rather than under the figures above given. In a considerable majority, contraction of the meatus (either congenital or from previous inflammatory changes) was present, and in these cases the measurements were made with the urethra-meter or after division of the contraction. The value of the urethra-meter in ascertaining the actual calibre of the urethra, notwithstanding the presence of stricture or contraction of the meatus, cannot be overrated; it is with this instrument that the proportionate relations of the urethral calibre and the size of the flaccid penis have been confirmed.



URETHRA-METER.

With it and the metallic bulbous sound, the thorough examination of any presenting urethra may be made, and the precise locality and value of every deviation from its normal calibre be positively determined. Having then, in any given case, made out the number, size, and locality of strictures, the desideratum is to find an instrument which will completely divide them, with as little injury to the adjacent healthy structures as the possibilities of the case will admit.

Stricture tissue is simply cicatricial material, deposited in accordance with the accepted pathological law, that persistent irritation of living tissue results in the aggregation of cells and the development of connective tissue corpuscles, at the point of irritation, which, becoming organized in the sub-mucous cellular tissue and the adjacent muscular structure of the corpus spongiosum, results in a more or less resilient band or bands always completely surrounding the urethra. We have then always to deal with a resilient band, constricting the urethra more or less, at a given point or points. It may here be urged that stricture is not always a band surrounding the urethra, but that it may be on one side or the other, or above or below, according to many authorities. To this I answer, that a true stricture, always and of necessity, completely surrounds the urethra. That it may have its origin, its commencement, at a single point in the circumference of the canal, I grant; but as soon as the calibre of the urethra becomes lessened at any point, the resistance to the flow of urine which it necessarily occasions, and the resulting interference with the harmonious muscular action, produces an irritation in its whole circumference at the point of contraction, resulting sooner or later in an aggregation of fibro-plastic material, not confined to a single point in its circumference, but around the entire canal; and this fact renders it necessary for us, in all cases of strictured urethræ, to accept the difficulty as one of stricture, in its true sense, and not of obstruction at a single point. Aside from the evident probabilities in such cases, the fact that stricture of the urethra may always be released by division at any point in its circumference, would be greatly in favor of this proposition. Practically, then, we may accept the stricture as constricting the entire canal. We have then a more or less dense, more or less extensive resilient band of fibrous tissue, contracting the urethral calibre at one or more points.

Now, if we found a band of any sort of elastic material surrounding the penis, constricting the urethra, even to a very slight extent, the immediate removal of such a band would at once suggest itself as the best method of getting rid of the irritation caused by it. It would not be considered sufficient to put the patient in the best possible condition to bear it, nor to dilate it frequently, with the same idea; the known resilient property of such a constricting band would suggest the transient character of the relief to be expected from such procedure. But one thought would occur to any person in such a case, viz., to divide the band

completely at some point. Practically we have an analogous condition of things in every case of urethral stricture, with the simple difference that the constricting band is resilient fibrous tissue and surrounds the *urethral canal*, contracting its calibre at one or more points, while the intervening portions of the urethra remain equal to or exceeding their normal capacity. The graver consequences of such contractions were recognized at a very early period in the history of surgery, viz., difficulty of micturition, retention of urine more or less complete, urinary abscess and fistulæ; urinary infiltration, causing death, in other cases causing disease of the bladder and kidneys, which proceeded with almost equal certainty, if not with equal celerity, in terminating existence. For the restoration of the urethral calibre, simple mechanical distension promised the easiest and most natural solution of the difficulty. Thus, bougies and sounds were invented and used at a very early period. The exact point of the contraction, in this method of treatment, it was not necessary to ascertain, as these instruments could be passed through the entire urethra, thus including every point of contraction. As this plan resulted in the temporary relief of a large majority of cases, it came to be considered the method, *par excellence*, to be adopted in all cases of urethral stricture. After a time, however, it was found that, while, by the use of instruments skilfully graduated from the smallest filiform bougies to a size deemed sufficient for the easy performance of micturition, the pressing and threatening troubles resulting from stricture could be relieved in a large number of cases, there were many, where, from the delay which this method necessitated and the irritation caused by its use, instead of the relief hoped for, the gravest consequences supervened.

It was then that more immediate and forcible means of relief were devised, such as rupture or division of the constricted points. The divulsors Perreve, Holt, Thompson, Thebaud, and others—the urethrotomes of Maissonneuve, Civiale, Ricord, etc., came into notice. These were each so successfully used in the hands of different eminent surgeons, that while at first resorted to only when the milder treatment by the different forms of dilatation had proved unsuccessful, advocates arose urging their indiscriminate use in all cases of urethral stricture. It was claimed that when the strictured urethra was raised to the accepted normal standard by a single blow, there were, on the average, less unfavorable results than where, through a long period, the systematic use of gradual dilata-

tion was resorted to; and besides, that the results of the divulsion and division were of a more permanent character. These claims were stoutly resisted by the advocates of a gradual dilatation, and all the possible benefits and advantages accruing from every other mode of treatment were asserted to be possessed, in superior degree, by their more conservative proceedings. Besides this contest between the advocates of gradual dilatation and immediate operation, we now have this latter class divided into those who believe that all strictures are best treated by divulsion, and those who claim that the best results are produced only by division of stricture, with some one or other of the various urethrotomes in use. Each party, however, accepting the necessity of keeping up the results of their operations, by the systematic use of dilating sounds or bougies, for the remaining lifetime of the patient so operated on. It would, therefore, seem to be not so very much matter after all, in the very great majority of cases, whether the little risks, and much trouble and expense, of the patient, in gradual dilatation, were a little less or a little greater in the aggregate, than by one decisive blow, to reach the No. 12 of the English scale, and then start out with it for the lifetime journey. To this complexion do all appear to come at last, the ultimate necessity for continuance of instrumental measures, throughout the lifetime of the patient. In this respect, then, whether the plan of treatment for stricture be that of gradual dilatation, rapid distension, divulsion, or simple urethrotomy, the patient (whatever the surgeon may say) is *never cured*. By each one of these modes life may be saved and much suffering averted.

Thousands, to-day, live in comparative comfort, who, but for the intelligent surgical aid afforded by these instrumental procedures for the relief of urethral stricture, would be in their graves. Yet the *opprobrium medicorum* rests upon the treatment of stricture, and why? Because after the patient is pronounced *cured* by his surgeon, he is obliged to continue the systematic use (always repulsive, and often hazardous), of a sound or flexible bougie, for the rest of his life.* Far be it from me to undervalue the skill, the study, and the experience which have brought relief to those under the very shadow of death, nor the teachings that have enabled the least practised surgeon to operate, with fair assurance of a successful issue, out of difficulties, which, twenty years ago

* Wade on Stricture of the Urethra. London, 1860, p. 352.

would have required a Mott or a Fergusson to combat. I wish to be distinctly understood as appreciating and valuing, to the full *all* the advances in urethral surgery, and they are many and great, which have been made in Europe and America within the last twenty years. It is not possible for me, however, to accept these as the *ultima Thule*, while the patient *cured* (?) of stricture still carries a steel sound in his pocket.

I am a believer in the *true curability* of urethral stricture, notwithstanding that authorities are a unit to the contrary. I think I can bring evidence, that will be convincing, that, in the great majority of cases of urethral stricture, a complete eradication of the trouble is within the reach of every competent surgeon. You are incredulous; you have scarcely patience to listen to such an innovation as a plan for the radical cure of stricture. If such a plan were possible, why have the many surgeons who have devoted years to the studious investigation of the subject of urethral stricture, coincided in the unanimous verdict against the curability of stricture, by any method? Simply, I answer, because there has been a very curious and important oversight in the investigation of the subject, viz—*The mechanical relations of the stricture to the urethra have not been considered.* Strictures have been dilated, or rapidly distended, or divulsed or divided, up to a purely imaginary and arbitrary standard. No inquiry has been intelligently instituted to ascertain the natural dimensions of the urethræ examined for stricture. If the presenting urethra admit No. 9 of the English scale, or 21 of the French, *no* stricture is present. If the urethra is *below* the accepted standard, stricture *is* present. After raising the urethral calibre, by any one of the methods in vogue, up to what the books lay down as the normal standard, or *what the surgeon thinks is about right*, the stricture is *cured;* that the patient is not, is his own misfortune. The favorite expression of some surgeons, when concluding the examination of a case which has been systematically treated, cured up to an imaginary point, is, "that the size of the *urethral* canal is *about right.*" An ancient definition of this term may not be inapplicable in this case—"*Right* is the centre of a circle, and *about right* is the circumference." No such term as "*about right*" can be accepted in such a case; either the urethra *is* of the *calibre that nature furnished*, suited to the patient's own person, *or it is not.* No man, surgeon, or otherwise, can *guess* at this matter. If a urethra presents, the normal calibre of which is equal to a circumference of 30m of the French scale, and only

29f bulbous sound will pass, without detecting obstruction, then the urethra is not "*about right.*" It is strictured to the extent of one millimetre in circumference, and can never be a healthy urethra, while that stricture remains.

Complete freedom from stricture can only be demonstrated by the easy passage of a bulbous sound of a size fully equal to the normal calibre of the presenting urethra. This is what I alluded to when I stated that the mechanical relations of stricture to urethral calibre had not been considered. Strictures are dilated, divulsed, or divided, up to a fictitious imaginary standard, or what is, if possible, even worse, viz., up to the size of the *meatus urinarius*, and then operative procedure is turned over to the patient to be continued ever after. Now, if there is any one point more variable and inconsistent with the calibre of the urethra than *the guess* as to its probable size, it is *the opening of the meatus urinaries.* It is more variable, in different individuals, than the length of the prepuce, and bears no constant, or even general relation, to the size of the urethra. In point of fact, besides varying, *congenitally*, more than any other orifice of the body, it is more often strictured from disease than any other portion of the urethra, and yet it is assumed by authorities, as a guide to the normal urethral calibre. How, then, can it excite surprise that no radical cure for stricture has been found? To warrant the reasonable expectation of cure, the stricture must be *completely divided* at some one point, and this cannot be with certainty accomplished without a knowledge of the *normal* urethral calibre. The normal calibre once ascertained by means of the urethra-metre, or by measurement of the flaccid penis, the method by which the sundering of the stricture, at some one point, is accomplished, may vary, and rest in the judgment of the operator. If dilatation, or divulsion, be selected as the medium through which to effect this result, the procedure must be carried far enough to *completely* rupture every fibre of the contraction; if division, *every fibre* must be completely severed, or subsequent re-contraction is certain. Neither divulsion alone, nor simple urethrotomy, is capaple of effecting this with any certainty. It requires a combination of these two methods to accomplish the desired result. My first dilating urethrotome was constructed for the purpose of meeting these necessary requirements. The results of the use of this, and other instruments involving the same principles, which were reported to your Society in February, 1872, have, as far as could be ascertained, proved

permanent. The six cases then cited have each been carefully re-examined, within the last year, by myself and others, without being able to detect a trace of stricture. One case, that of J. C., (operated on for five strictures between December, 1871, and March, 1872), was re-examined, at a meeting of the Medical Library and Journal Association, of New York, in June, 1874 (more than two years after the final operation), by a committee of surgeons, consisting of Professor Alfred C. Post, Drs. Miner and De Forrest Woodruff, of New York, who reported complete absence of even a trace of stricture.

Since my report of the above-mentioned cases to your Society, I have operated on a very large number of strictures, with various instruments, but chiefly, and latterly almost solely, (except in strictures at the meatus,) with the dilating urethrotomes. One hundred cases of urethral strictures, comprising two hundred and three operations, upon two hundred and fifty-eight strictures, have been carefully collated, from my books of daily record, by my assistant, Dr. J. Fox, and subjected to a subsequent critical revision by myself.

The careful tabular analysis of these cases, which is presented with this paper, embraces the following points: 1. Age of patient. 2. Cause of stricture. 3. Locality and size. 4. Number in each case. 5. Normal calibre of urethra. 6. Complicating diseases or conditions at date of operation. 7. Symptoms at date of operation. 8. Accidents following operation. 9. Results of operation, as determined by a subsequent re-examination with the full-sized bulbous sound, at periods varying from three weeks to three years. 10. Results as shown by continued relief from all symptoms, where no instrumental re-examination has been practicable. Not to absorb too much of the valuable time of this Society, I will only allude now to a few points of greatest importance in connection with the facts which are developed by this summary:

1st. It will be found that out of the 258 strictures, 52 were in the first quarter inch of the urethra; 63 in the following inch, viz., from $\frac{1}{4}$ to $1\frac{1}{4}$; 48 from $1\frac{1}{4}$ to $2\frac{1}{4}$; 48 from $2\frac{1}{4}$ to $3\frac{1}{4}$; 19 from $3\frac{1}{4}$ to $4\frac{1}{4}$; 14 from $4\frac{1}{4}$ to $5\frac{1}{4}$; 8 from $5\frac{1}{4}$ to $6\frac{1}{4}$; 6 from $6\frac{1}{4}$ to $7\frac{1}{4}$.

Authorities claim that the great majority of urethral strictures is found in the vicinity of the bulbo-membranous junction, and cite various possible causes for their frequency in this locality.

By the above statement it will be seen that they occur, as would naturally be expected, in greatest frequency where the inflammation begins the earliest, and rages the hottest, and gradually diminishes in frequency in the deeper portions of the canal.

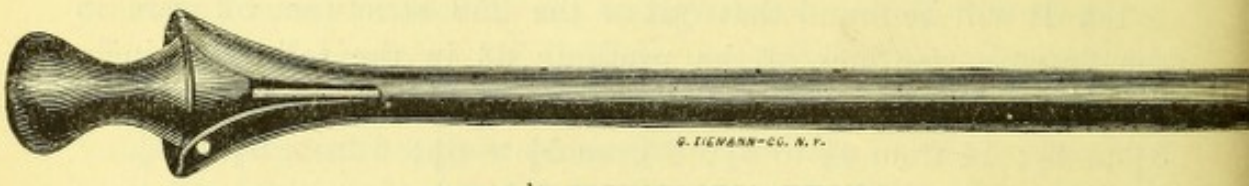
2d. Of the normal calibre of the urethra:

22	Mm.	circumference	1	36	Mm.	circumference	1
28	"	"	3	37	"	"	2
29	"	"	1	38	"	"	6
30	"	"	18	40	"	"	1
31	"	"	25	Not noted			4
32	"	"	19				100
33	"	"	3				
34	"	"	16				

Thus, it will be seen that in ninety-nine carefully measured cases, the *average* normal calibre was 31.84 (deducting the case of child of ten years, 22m), nearly 32 of the French scale.

3d. Of the accidents following operations: Hemorrhage in four cases; prostatic abscess in three cases; curvature of penis during erection in three cases; urethritis in two cases; diphtheritic deposit of wound in three cases; urethral fever in seven cases; retention in one case.

In a small proportion of cases hemorrhage has been quite profuse; not during or immediately following the operative procedure, but coming on after urination, or more commonly, during erection. Especially from the latter cause, it is sudden, and sometimes copious, but readily controlled. The fact that hemorrhage, of any moment, *ever* occurs (although in the one hundred cases cited there were only four), leads me to use, and to advise, such precautionary measures, in *all* cases, as will give complete security against harm from this accident. My usual plan is to have an intelligent attendant instructed to watch the patient during sleep, (when erections are most likely to occur), and to make prompt pressure of the penis at the incised locality. This is usually sufficient to arrest the flow. Applications of ice are also of value for the same purpose. In some cases I have found it necessary to introduce a tube into the urethra, making pressure upon it by means of a light bandage, and to have it retained until the haemorrhagic tendency has passed.



AUTHOR'S ENDOSCOPIC TUBE.

An ordinary endoscopic tube answers well in such cases. Division of strictures, at or near the meatus, is most likely to be followed by hemorrhage. Here a shorter tube will suffice. When the bleeding is from the vicinity of the meatus, it results from the division of a small artery near the frenum. When in the deeper

portions of the urethra, it arises, probably, from incision into the trabecular spaces. In either case, the danger of recurrence is not entirely over before the fourth or fifth day.

4th. Slight urethral fever has followed the operation but seven times. Six times, when for stricture in the curved portion of the urethra; once only, when the operations were in the pendulous portion of the organ, and this occurred in a malarious subject. This leads me to remark, that, in my experience, operations confined to the pendulous urethra, are, as a rule, *never followed by constitutional disturbance*, even when six or seven strictures are divided at the same sitting. But, to insure this result, no instrument, not even a sound for exploratory purposes, should be passed into the bladder, during, or immediately subsequent, to the operation.

5th. Three operations were followed by prostatic abscess. In one of these cases, the patient, who was a physician, sailed for the West Indies in about a week after the operation, (which was for a single stricture near the meatus,) and reported trouble of the prostate coming on soon after, he, meanwhile, using a sound himself, to prevent recontraction.

In the second case the patient, who was accompanied by his physician, left my care three days after operation, and one week after reaching home, (during which a sound was passed every day or two,) the prostatic trouble came on, which ended in abscess. In the third case, the patient, who had been operated on for five strictures, of a very dense character, passed from my observation immediately after the operation. Prostatic trouble came on insidiously during the next ten days, while the sound was being occasionally passed to prevent recontraction. I will not criticise, nor attempt to explain, the causes which led to the prostatic trouble in these cases. I recognize the fact, that the simple introduction of a sound, through the deep urethra, even with the utmost skill and care, may, of itself, give rise to an irritation which may terminate in abscess of the prostate. But I will state that no such accident has befallen any case which has remained under my own personal care, until healing of the wound has taken place.

6th. Curvature of the penis downward, followed in three cases where numerous strictures were divided, but this trouble occurring during erections was unattended with pain and passed off entirely within from two to six months after the operation, in two cases. In one case, at the end of a year, there was slight curvature, but gave no trouble.

7th. Urethritis in two cases; one followed an operation at the meatus, and was set up by forcible use of a tube, by the patient, to prevent recontraction. It lasted acutely for three weeks, and was followed by a gleet, lasting four months, which finally ceased after a second operation, required by the recontraction which had taken place.

The third followed an operation upon four strictures, and occurred within a week. This was complicated by the presence of a diphtheritic deposit, upon the wound, near the meatus. It was supposed to have resulted from a similar action in the wound of the deeper portions of the canal.

8th. Diphtheritic deposit occurred upon the wound, in two other cases, lasting, under treatment by iron and quinine generally, and applications of the strong acetic acid locally, about two weeks, and was followed, in both instances, by a recontraction of the stricture.

Cures. Re-examinations. No recontraction. Thirty-one cases.

TABLE.

Time after Operation.	No. of Cases.	No of Strictures.	Time after Operation.	No of Cases.	No. of Strictures.
3 years	1	4	5 months	1	7
2½ "	1	7	4 "	1	3
1½ year	2	8	3 "	4	15
13 months	3	14	2½ "	1	10
1 year	4	7	2 "	4	11
10 months	1	2	1 month	1	1
9 "	1	1	3 weeks	1	5
8 "	1	1	2 "	1	1
7 "	2	10			
6 "	7	21		37	128

In thirty-one cases none of the strictures had recontracted. In six cases most of them had been absorbed, while some remained.

RESULTS.

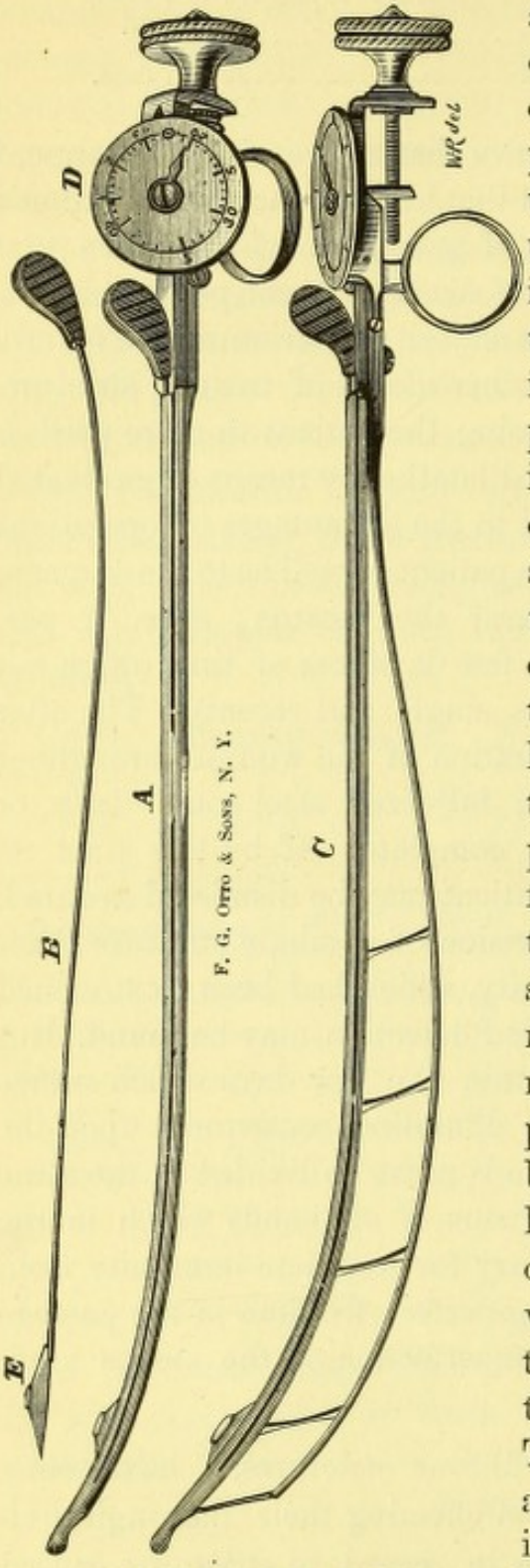
Cures. Re-examined. No recontraction	31 cases.
Cure. Patient perfectly well when last heard from. No re-examination	52 "
Perfect relief for a length of time. Return of symptoms. Re-examination. Stricture found to have recontracted	4 "
Perfect relief for a length of time. Return of symptoms. No re-examination	5 "

Relief of most symptoms. Some remaining. Patient still under treatment	4 cases.
Partial relief	3 "
Result not known	1 case.

It will be seen from these statistics that the results of treatment justify in the completest manner all that has been heretofore claimed by me for the method. In point of gravity it will be seen that cutting operations for the division of stricture in the pendulous portion of the urethra (where the great majority of strictures are found). compare most favorably with all other modes of treating stricture, and cannot be considered as exposing the patient to more peril or inconvenience than simple gradual dilatation by means of graduated soft bougies or sounds. In regard to the advantages of operations as quoted, they are manifold, to the patient as well as to the surgeon, Comparatively painless, except near the meatus; speedily performed, involving at most but a few days loss of time (often not even a day, where the stricture is single and recent). The after treatment, consisting only of separation of the wound throughout its extent by the easy passage of a full-sized steel sound daily, or every other day, until healing is complete. If by this time no other stricture is discovered, the patient may be dismissed as cured. Sometimes, however, after the division of a single stricture other bands of larger calibre in the vicinity, which had been so stretched during the operation that they eluded detection, may be found. But this will always be ascertained within the few days which suffice sor the tissues to recover from the dilatation consequent upon the operation. In such cases these bands must be divided in the same manner as the first. Absolute division of all bands which in the least contract the canal is necessary for complete immunity from after trouble. Failure in obtaining perfect freedom in the passage of a full-sized bulb is due to the imperfection of the means used, and not to any fault in the *method.*

In certain long-standing, dense, fibrous strictures, I have sometimes experienced great difficulty in effecting their thorough division, and this is especially the case in regard to strictures caused by masturbation, or by traumatism. I have occasionally had to use several different kinds of cutting and dilating instruments before the desired object was effected. No one instrument can ever be depended on to succeed with, completely, in all cases. In ordinary strictures, what I term my improved dilating urethrotome, will be found the most easy of management, and is, as a

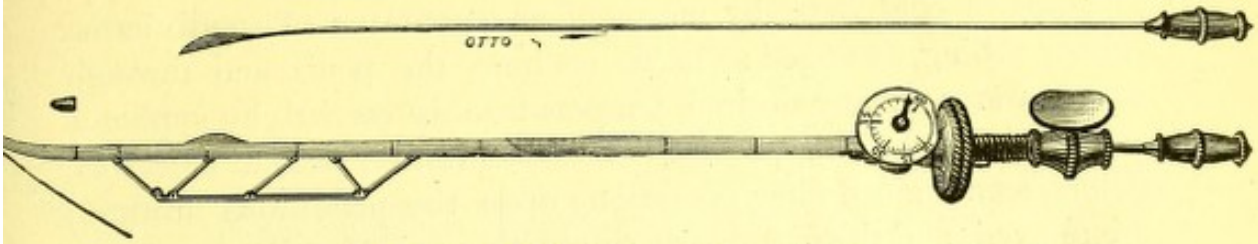
rule, thoroughly effective. It is constructed with a dilating apparatus, which is introduced, closed to a size equal to about 20 of the French scale. Upon its superior aspect, a blade, guarded at the top (after the manner of the urethrotome of M. Maisonneuve), is slid down through a grove to the end of the shaft, possibly nicking the smaller strictures in its passage. The screw at the handle is then slowly turned until the hand on the dial indicates that the instrument is dilated up to two or three millimetres *beyond* the previously ascertained normal calibre of the canal. The blade is then slowly withdrawn—cutting through all the strictures on the superior aspect. The strain of the dilatation falling almost solely on the strictures, they are thus made the most salient points,—receiving the anterior edge of the blade, while the normal portions of the canal are protected completely, or nearly so, by the guard on the top of the knife. In this way the division of the strictures is accomplished with the least possible injury to the mucous membrane covering the sound portions of the urethra. The instrument is then withdrawn and an examination for results is instituted with a full-sized bulb. If any fibres of stricture are then detected, the operation must be repeated, at the contracted point, until perfect freedom to the passage of the bulb is secured.



IMPROVED DILATING URETHROTOME.*

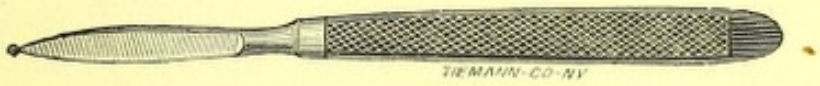
* A modification of the above instrument, known by the maker as "Dilating Urethrotome No. 4," is shorter and straight, and is found better adapted to strictures in the straight portion of the urethra.

For a second operation, I not unfrequently use one of my earlier urethrotomes,* which cut only at a single predetermined point, and



SMALL DILATING URETHROTOME.

the blades of which are not protected by a guard. In all these instruments the incisions are comparatively slight. The tension to which the strictures are subjected renders them thin, and brings them into condition to be completely severed by an incision of the least possible depth. Cutting always upon the superior wall of the urethra and in the median line, hemorrhage is usually slight, and ceases almost immediately. In all cases of stricture, *at or near the meatus*, I am accustomed to divide them on the *inferior* wall of the canal, and very thoroughly, with a straight bulb-pointed bistoury.



BULB-POINTED MEATOTOME.

The utmost freedom to the passage of the bulbous sound must here be insisted on, and not a single trace of contraction left uncut. The after treatment of this class of strictures requires much more care to prevent recontraction than those in the deeper parts of the urethra. Every possible means must be used, such as rest and cold water applications, etc., to prevent the least supervention of inflammatory process; otherwise a recontraction is liable to occur. The *very least* return of obstruction is often sufficient to prevent the cessation of the gleet or of the reflex troubles, for the cure of which this operation is usually performed.

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*The dilating urethrotomes are known to the makers (Messrs. Tieman & Co., No. 67 Chatham Street, and Messrs. Otto & Sons, 64 Chatham Street), as Nos. 1, 2, 3, 4, in the order of their invention—Nos. 1 and 2 dilating and cutting at a single predetermined point, while Nos. 3 and 4 dilate the entire canal. Each has advantages which cannot be combined in the other—but either one will answer in all cases of single stricture. When several strictures are present, especially if close together, the latter numbers are to be preferred. No. 4 has the advantage of being adapted to any stricture in the straight urethra without distending the curved portion of the canal.

As a means of avoiding inflammatory action after operations upon the penis, I am in the habit of insisting upon a constant application of cold water by means of an apparatus of small india-rubber tubing, arranged so as to encircle the penis, and through which, water of any desired temperature is carried by syphonic action.* The healing process is thus facilitated; painful erections, (which sometimes follow operations upon the pendulous urethra,) are allayed, and the chances of urethritis avoided. By proper arrangement of the vessels containing the water the patient can use the cold water coil while in bed, sitting, or the water bottles may be so arranged in an upper and a lower pocket, that the patient may, if necessary, even walk about and attend to pressing business without removing it. The above directions refer entirely to operations within the pendulous urethra. Surgical operations in the curved portion of the canal demand rest in bed, until the healing process is complete.

In none of the cases above reported has any dilatation been attempted after the healing of the wound made during the operation. The use of sounds† subsequent to the operations, is simply to separate the cut surfaces, and not for purposes of dilatation, and their use is discontinued as soon as a full-sized bulb can be passed

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* The apparatus which I have designated the "Cold Water Coil" is formed of a line of the small-sized India-rubber tubing of one-sixteenth of an inch calibre, and six or seven yards in length. At the middle portion this tubing is coiled upon itself, so that, by half a dozen turns or more, it presents sufficient capacity to loosely encircle the entire penis or scrotum.

This coil, with the length of tubing proceeding from it, forms an apparatus through which, on placing one extremity of the tubing in a bowl or tumbler of ice water, exhausting its contained air (by suction, or by drawing the tube through the finger), a syphonic current is established through the coil. The discharge pipe being placed on a lower plane than the water supply, the current may be kept up until the vessel is emptied.

The rapidity of the flow can be regulated either by raising or lowering the end of either tube, which is the simpler plan, but the more convenient one is by a tapering, double silver tube, attached to the discharge pipe, a sponge being fitted to the inner tube. This sponge, when the inner tube is pushed down into the smaller end of the outer tube, becomes compressed, and gradually obstructs the flow of water, until not a drop will exude. This contrivance may be regulated so that either a free stream can pass, or that the single drops shall follow each other, more or less rapidly, with the regularity and precision of a timepiece.

† I prefer the solid steel sound, with short curve, as represented in the cut, and use Nos. 30f. to 40f.

through and beyond the previous site of stricture, and withdrawn without a trace of blood accompanying or following the use of the instrument.

SOLID STEEL SOUND—SHORT CURVE.

Recontraction of stricture, after operation, is simply due to incomplete division, and this will, as a rule, be detected within one week, or at most two weeks, by which time stricture tissue distended—not divided—will sufficiently recontract to become readily recognizable by the full-sized bulb. If, then, no stricture can be recognized, the cure of the difficulty may be considered *complete*, and no further treatment, by sounds, or otherwise, will usually be required.

Strictures of a calibre of less than 16 or 18 of the French scale, (7 or 9 of the English) and hence *below* the capacity of the dilating urethrotomes, as at present constructed, require enlargement by gradual dilatation, with soft bougies when this is well borne, if not, by divulsion, or by the urethrotome of M. Maisonneuve. After having been brought, by any one of the methods above referred to, up to a capacity permitting the passage of the dilating urethrotome,* complete division of the strictures by means of this instrument may be readily effected.

108 West Thirty-fourth street,
NEW YORK, March 25, 1875.

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* The dilating urethrotomes are very perfectly manufactured by Messrs. Tieman & Co., and also by Messrs. Otto & Sons, of New York, through whose intelligent co-operation these, as well as all the other instruments I have designed, have been brought to their present completeness. F. N. O.

STATISTICAL TABLES OF ONE HUNDRED CASES OF URETHRAL STRICTURE TREATED BY INTERNAL URETHROTOMY.

Number of Case.	Age.	Cause and date of	Number of Strictures.	Locality of Strictures.	Size of Strictures.	Norm. Calib. of Urethra.	Condition at date of Operation.	Complications.	Number of Operations.	Accidents after Operation.	Results.	Re-examination.
1	60	Congenital contraction.	1	⅓ in.	24	38	Frequent and painful micturition. Pain in penis, scrotum, perineum, abdomen. Urine purulent and mixed with blood.	Cystitis, small calculus in bladder.	2	----------	Relief from all trouble. Recontraction. Second operation. Relief up to date.	----------
2	38	Gonorrhœa fifteen years ago. Several times since. Last attack four years ago.	3	½ in. 2 in. 2½ in.	28 28 28	34	Gleet. Pain in urethra, scrotum, thighs, knees, legs, feet, groins. Painful movements of the testicles.	Gleet.....	1	----------	Immediate relief, following operation. Recurrence of symptoms reported. No re-examination.	----------
3	32	Gonorrhœa ten years ago.	1	Meat..	22	31	Gleet.....	Gleet.....	1	----------	Cure in six weeks.....	----------
4	54	Gonorrhœa twenty eight and eight years ago.	3	⅓ in. 1 in. 2 in.	20 24 28	31	Frequent micturition. Pain in urethra, perineum, scrotum and thighs. Urine purulent and mixed with blood.	Retention repeated by gravel.	2	----------	Immediate relief Cure of reflex symptoms.	----------
5	68	Gonorrhœa forty-seven and forty years previously.	--	Meat.. 2¾ in.	29 29	32	Gleet. Lumbar and perineal pain. Frequent micturition.	Gleet. Cystitis. Enlarged Epidymis.	2	----------	Immediate relief and cure in one month.	----------

6	54	Gonorrhœa	1	1 in.	29	34	Gleet.	Gleet	1		Cure, complete in two weeks.	Thirteen months after operation no recontraction.
7	33	Gonorrhœa several times during the last ten years.	1	½ in.	33	33	Gleet for five years	Gleet	1		Cure in two weeks. Perfectly well one month after operation.	One month after operation no recontraction.
8	27	Gonorrhœa seven years previous.	3	3½ in. 1 in. 1¾ in.	20 19 19	31	Frequent and painful micturition. Pain in perineum	Enlarged prostate.	3		Cure	Three months after last operation. No recontraction. Perfectly well
9	24	Gonorrhœa	1	Meat.	20	32	Gleet. Irritation in urethra.	Gleet	1		Cure	One year after operation. No recontraction.
10	30	Gonorrhœa four years previous.	9	½ in. 1 in. 1½ in. 2½ in. 3 in. 3¼ in. 4 in. 4½ in. 5½ in.	23 28 28 30 30 30 28 28 28	37	Frequent micturition. Gleet	Gleet	3		Slight gleety discharge remaining ten days after operation. Not since heard from.	
11	37	Gonorrhœa nine years ago.	1	Meat.	23		Granular spots in urethra. Painful erections.	Painful erections.	1		Granular spots disappeared after operation. Painful erections still persist.	
12	..	Gonorrhœa twelve years previous.	2	½ in. 2½ in.	26 26	34	Pain in perineum, left hip, over the region of left kidney.	Redundent prepuce. Circumcision.	1		Immediate relief of pain in perineum, hip and back.	
13	46	Gonorrhœa twenty years previous.	1	Meat	22	31	Frequent micturition. Imperfect erections.	Imperfect erections.	1		Cure	One year after operation. No recontraction. Sexual power perfect.

STATISTICAL TABLES—*Continued.*

Number of Case.	Age.	Cause and date of	Number of Strictures.	Locality of Stricture.	Size of Stricture.	Norm. Calib. of Urethra.	Condition at date of Operation.	Complications.	Number of Operations.	Accidents after Operation.	Results.	Re-examinations.
14	45	Gonorrhœa fifteen years previous. Several times since.	1	1¼ in.	30	32	Gleet for twelve and a half years.	Gleet.....	1	----------	Cure of gleet in one month.....	----------
15	42	Congenital contraction.	1	⅛ in.	--	34	Irritability of vesical neck. Imperfect erections.	Imperfect erections.	4	Hemorrhage controlled by tube.	Cure. Recontraction three times. Perfectly well two and a half months after last operation.	----------
16	--	Gonorrhœa four months previous	1	Meat.	21	32	Gleet.....	Gleet.....	1	----------	Cure. No re-examination after one month	----------
17	24	Masturbation	5	Meat. 1½ in. 2¼ in. 2¾ in. 3¼ in.	18 29 24 23 23	32	Frequent micturition.....	Weekly seminal emissions.	2	Curvature of penis during erections.	Cure of all trouble.....	Seven months after operation no trace of stricture.
18	25	Gonorrhœa one half a year previous.	1	½ in.	20	34	Frequent and painful micturition. Pain in perineum. Gleet.	Gleet.....	5	----------	Cure. Four re-contractions with partial return of symptoms. Final cure after last operation ten months ago.	----------
19	48	Gonorrhœa twenty years previous.	1	Meat.	22	31	Frequemt seminal emissions. Incomplete erections.	Frequent seminal emissions. Imperfect erections.	1	----------	Cure.....	----------

20	25	Gonorrhœa three years previous.	2	1⅓ in. 6 in.	23 21	31	Gleet lasting one year	Gleet	1		Cure of gleet. Deep stricture not divided.	
21	25	Gonorrhœa one and a half and one year previous.	4	2 in. 4½ in. 4¾ in. 5 in.	24 24 24 24	30	Gleet	Gleet	2		Cure	Ten months also two and three years after operation. No recontraction.
22	20	Gonorrhœa. Masturbation.	2	⅛ in. 1½ in.	24 24	30	Gleet.	Gleet	2		Cure. Remains perfectly well two years and three months after last operation.	One year after operation no recontraction.
23	30	Gonorrhœa ten years previous.	3	¾ in. 2½ in. 3½ in	31 31 31	31	Gleet	Gleet	2		Cure	
24	50	Gonorrhœa thirty and twenty-five years previous.	1	⅛ in.	18	29	Painful and frequent micturition. Gleet.	Gleet	2		Cure. Recontraction after six months. Second operation. Relief, which after two years remains permanent.	
25	54	Gonorrhœa	2	½ in. 3 in.	16 26	31	Irritability of vesical neck. Gleet.	Gleet	2		Cure, which remains complete three years after last operation.	
26	40	Gonorrhœa twelve years previous.	5	⅓ in. 2 in. 2¼ in. 2½ in. 2¾ in	20 28 28 28 28	31	Frequent and painful micturition.		2	Chills	Cure	Six months after last operation, no recontraction.
27	35	Masturbation	4	Meat. ½ in. 1 in. 2 in.	19 19 27 27	31	Chronic discharge from the urethra.	Gleet	2		Discharge disappeared	Recontraction at meatus. None of deep strictures.
28	17	Masturbation	3	⅓ in. 2 in. 3¼ in.	20 22 22	32	Frequent and painful micturition.		2	Prostatic abscess.	Cure	Four mos after operation. No recontraction.
29	40	Gonorrhœa three years previous.	1	½ in.	36	38	Frequent micturition. Sense of foreign body just behind the meatus, causing great nervousness. Gleet.	Gleet	1		Cure within two weeks	Nine months after operation. No recontraction.

STATISTICAL TABLES—*Continued.*

Number of case.	Age.	Cause and Date of.	Number of Strictures.	Locality of Stricture.	Size of Strictures.	Norm. Calibre of Urethra	Condition at Date of Operation.	Complications.	Number of Operations.	Accidents after Operation.	Results.	Re-examinations.
30	19	Gonorrhœa two years previous.	7	1 in. 2¼ in. 3 in. 3½ in. 3¾ in. 4 in. 5½ in.	25 31 26 22 31 31 27	31	Frequent and painful micturition. Repeated urethral chills, caused by attempted dilatation. Gleet.	Gleet	1	Chills	Cure	Five months after operation. No recontraction. Perfectly well at date, January, 1875.
31	19	Masturbation	1	¼ in.	26	32	Frequent and painful micturition. pain in perineum, glans penis, thighs, testicles, nervousness.		2		Relief for three months. Return of symptoms. Recontraction discovered. Second operation. Partial return of symptoms four months after.	
32	24	Gonorrhœa	2	Meat. 2 in.	29 29	31	Gleet	Gleet. Spasmodic stricture at seven inches.	1	Prostatic abscess.	Immediate relief of spasmodic stricture, under other care Pros. abscess reported ten days after.	
33	25	Gonorrhœa six years ago. Frequently since.	1	½ in.	22	32	Gleet for four years	Gleet	1		Cure	Two mos. after operation. No recontraction.
34	29	Gonorrhœa six months previous	5	½ in. 3 in. 3¼ in. 3½ in. 4½ in.	24 25 24 26 29		Gleet. Vesical tenesmus	Cystitis, gleet, pleurisy, with effusion. Aggravation of symptoms from diuretics.	1		Immediate relief of all symptoms connected with the urinary organs. Tolerance of diuretics re-established.	

35	46	Gonorrhœa	1	¼ in.	19	31	Frequent and painful micturition. Pain in shoulders, knees, legs. Painful erections.	Painful erections.	4		Recontraction of stricture three times. Last operation about a month ago. Perfect relief after each operation, until recontraction occurred.	
36	38	Gonorrhœa six years previous.	2	in. 2 in.	26 30	32	Painful micturition. Gleet.	Gleet. Spasmodic stricture.	1		Cure of troubles within a month. Gleet, etc.	
37	41	Gonorrhœa six years previous.	2	Meat. 1 in.	24 24	30	Gleet. Unpleasant sensation in testicles.	Gleet	1		Cure of gleet and the nervous trouble in testicles.	
38	47	Gonorrhœa twelve years previous.	1	¼ in.	28	32	Frequent micturition. Irritation in deep urethra. Had been treated for deep stricture.		1		Cure. 32 passes with ease into the bladder after division of the meatus. No re examination after two weeks.	Re-examined two weeks after operation. No recontraction.
39	28	Gonorrhœa six and five years previous.	5	Meat. 1 in. 1¾ in. 2 in. 2¾ in.	22 31 31 31 31	34	Frequent and painful micturition. Gleet. Weakness.	Gleet	2	Diphtheritic exudation on surface of wound at meatus after first operation	Cure of gleet and frequent micturation.	Three months after operation recontraction at meatus. No trace of deep strictures.
40	28	Gonorrhœa seven years previous.	1	¼ in.	30	34	Gleet	Gleet	2		Cure of gleet for one month, when patient aquired a fresh gonorrhœa.	
41	29	Gonorrhœa	5	Meat. 2¼ in. 3¼ in 4½ in. Memb. port.	9 9 9 9 8	32	Frequent and painful micturition. Gleet. Frequent attacks of retention of urine.	Gleet. Retention of urine.	1	Uretnra fever Hæmorrhage, causing retention and necessitating perineal incision and aspiration of the bladder.	Recovery with thirty f. calibre. To continue use of sound as recontraction at some point had taken place. Further operation deferred.	Recontraction slight after one month.

STATISTICAL TABLES.—*Continued.*

Number of Case.	Age.	Cause and date of.	Number of Strictures.	Locality of Strictures.	Size of Strictures.	Norm. Calib. of Urethra	Condition at date of Operation.	Complications.	Number of Operations.	Accidents after Operation.	Results.	Re-examination.
42	39	Masturbation.....	1	¼ in.	28	32	Frequent painful micturition. Pain in thighs, knees and legs.	Frequent seminal emissions.	1	----------	Immediate relief of all reflex troubles. Cessation of seminal emissions for one month. Return of trouble. No re-examination.	----------
43	57	Follicular ulceration.	3	From Meat to 1 in.	13	32	Frequent and painful erections. Very severe pains in thighs and feet. Extreme sensitiveness of glans penis.	Urethral fistula. Urinary abscess over right crus penis.	2	----------	Cure. Immediate relief following operation. Urinary abscess healed in ten days. Perfectly well four months after operation. No re-examination.	----------
				2½ in.	26							
				2¾ in.	23							
44	24	Masturbation.....	1	¼ in.	28	34	Excessive sensitiveness of glans.	Freq'ent seminal emissions. Premature discharge of seminal fluid	1	----------	Cure of sensitiveness of glans, and consequent relief of seminal trouble.	----------
45	32	Gonorrhœa six years previous.	1	Meat..	23	31	Frequent micturition.....	Retention of urine repeatedly. Spasmodic stricture at membranous portion.	1	----------	Cure. Perfectly well four months after operation.	----------

46	21	Gonorrhœa three and a half years and also two months previous	5	Meat. ¼ in. 2 in. 2¾ in. 1 in.	26 26 26 26 30	36	Gleet	Gleet	1		Cure of gleet within two weeks. Re-examination three weeks after operation. No recontraction.	Three weeks after operation. No recontraction.
47	28	Gonorrhœa six years previous.	7	Meat. 1 in. 2 in. 2¼ in. 1½ in. 4 in. 4½ in.	22 22 30 30 30 30 30	32	Gleet, lasting six years	Gleet	4		Cure	One and two and a half years after operation. No recontraction.
48	25	Gonorrhœa ten and also seven years previous.	5	¾ in. 1¼ in. 1½ in. 3 in. 4 in.	20 20 20 27 27	28	Gleet for seven years	Gleet	3	Hemorr'age controll'd by tube.	Cure	Seven months after operation. No recontraction.
49	--	Gonorrhœa five years previous.	4	Meat. 2¼ in. 2½ in. 3 in.	23 26 30 31	32	Gleet	Gleet	4		Cure	Three months after last operation. No re-contraction.
50	--	Gonorrhœa twelve years previous.	1	Meat.	22	32	Gleet	Gleet. Frequent erections. Urinary sinus near meatus.	3		Cure of gleet. Sinuses healed. No re-examination.	
51	62	Gonorrhœa forty-one years previous.	2	Meat. 2 in.	28 30	33	Frequent micturition	Spasmodic stricture at membranous portion, dilated for twenty yrs.	1		Immediate relief followed operation. Intervals between micturition, eight hours. One month after operation, relief permanent. No recontraction.	
52	72	Masturbation	3	Meat. 2½ in. 3¼ in.	28 28 28	34	Frequent micturition, followed by severe pain in back and soreness in urethra.	Weekly seminal emissions. Priapism.	1		Relieved from frequent micturition and priapism for about three weeks. Return of trouble. No re-examination.	

STATISTICAL TABLES—*Continued.*

Number of case.	Age.	Cause and date of	Number of Strictures.	Locality of Strictures.	Size of Strictures.	Norm. Calib. of Urethra.	Condition at date of Operation.	Complications.	Number of Operations.	Accidents after Operation.	Results.	Re-examinations.
53	25	Gonorrhœa ten years previous.	5	1½ in. 3 b'nds 4½ in. 2 b'nds	20 27	30	Gleet. Irritable bladder...	Gleet	2	.....	Cure.....	Re-examined thirteen months after operation cure still perfect.
54	..	Gonorrhœa.....	8	Meat. 2½ in. 2¾ in. 2¾ in. 3 in. 3¼ in. 4½ in. 5 in.	22 22 26 24 30 30 24 24	31	Gleet	Gleet	5	Chills (slight). Curvature of penis during erection.	Cure.....	Thirteen months after last operation. No re-contraction.
55	..	Gonorrhœa two and also one and a half years previous.	3	2⅝ in. 3¼ in. 2¼ in.	29 27 27	30	Gleet.....	Gleet	5	Hemorrhage not very severe. Controled by tube.	Cure.....	One year after last operation no re-contraction.
56	..	Gonorrhœa five and two years previous.	1	⅜ in.	24	30	Gleet.....	Gleet	2	.....	Cure.....	Half a year after last operation no gleet no re-contraction.

57	23	Gonorrhœa one year previous.	10	Meat. ¾ in. 1 in. 1¼ in. 1½ in. 1¾ in. 2 in. 2½ in. 3½ in. 4½ in.	24 22 31 22 31 40 33 37 37 37	40	Gleet	Gleet	8	----------	Cure of gleet. No re-contraction at any point after six months. Contracted another gonorrhœa.	Six months after last operation no re-contraction.
58	30	Gonorrhœa	2	Meat. 2½ in.	21 18	30	Pain and uneasiness in perineum and glans penis.	Great nervousness.	3	----------	Freedom from symptoms following each operation, and continuing from one to two months.	----------
59	27	Gonorrhœa	1	Meat...	24	30	Gleet. Profuse purulent discharge, caused by intercourse.	Gleet. Spasmodic stricture at membranous portion.	1	----------	Cure, remaining complete one year after the operation.	Six months after the operation no recontraction.
60	32	Gonorrhœa ten years previous. Masturbation.	1	Meat...	22	30	Gleet.	Frequent seminal emissions. Nervousness Gleet.	1	----------	Cure of gleet within two weeks. Married at the end of one month. Re-examined two months after. No return of trouble.	Two months after operation. No recontraction.
61	40	Gonorrhœa twelve years previous.	1	⅓ in.	26	30	Frequent micturition. Pain in penis. Gleet.	Gleet. Intense pain following seminal emissions.	2	----------	Cure. Relief of pain and frequent micturition. Cessation of discharge for three months, when it returned, and also the frequent micturition. Re-contraction found. Second operation followed by renewed relief, which continued for six months when he contracted a fresh gonorrhœa.	----------

STATISTICAL TABLES.—*Continued.*

Number of Case.	Age.	Cause and date of.	Number of Strictures.	Locality of Strictures.	Size of Strictures.	Norm. Calib. of Urethra.	Condition at date of Operation.	Complications.	Number of Operations.	Accidents after Operation.	Results.	Re-examination.
62	45	Gonorrnœa twice.	1	Meat...	28	38	Irritability of bladder. Pain after connection.	Spasmodic stricture at membranous portion	2	----------	Immediate relief. Recontraction after two months. Return of trouble. Second operation followed by relief, which was permanent six months after operation.	Six months after operation. No recontraction.
63	34	----------	1	¼ in.	15	34	Pain in back, hypogastrium, groins, testicles, inner aspect of thighs and knees	Double hydrocele. Frequent seminal emissions.	3	----------	Immediate relief of pains. Disappearance of hydrocele within a month. Two recontractions with returnof Symptoms Third operation followed by relief, which continues one year after operation.	----------
64	50	Gonorrhœa twenty five years previous.	1	½ in.	18	30	Irritability of bladder. Gleet for five years.	Gleet-------	2	----------	Cure; return of symptoms five months after first operation.	Two and a half years after second operation, remains perfectly well
65	37	Masturbation ----	4	Meat. 1 in. 3 in. 3½ in.	30 34 34 34	38	Constant desire to urinate. Burning in penis. Pain at meatus, in back hypogastrium, right testicle and legs.	No erections; no venereal desire for four months	1	Diphtheritic exudation. Acute urethritis	Relief of pains. Patient still under treatment three weeks after operation.	----------

66	59	Gonorrhœa first twenty-nine years previous. Several attacks since.	4	¼ in. 1¾ in. 3½ in. 4½ in.	20 20 20 15	34	Frequent and painful micturition. Stranguary. Pain in perineum, above pubes and in groins.	Cystitis	4		Immediate relief of pains and stranguary. Pus in urine diminished. Frequent micturition persists. Still under treatment.	
67	47	Gonorrhœa twenty five years previous.	2	½ in two bands.	28	32	Frequent and painful micturition. Small stream.		1		Cure	Two months after operation, no recontraction.
68	51	Gonorrhœa twenty years previous.	1	Meat.	21	34	Micturition every hour	Loss of sexual power.	1	Diphtheritic deposit.	Immediate relief of frequent micturition. Recurrence of erections. Patient still under treatment.	
69	52	Gonorrhœa	2	3¾ in. 5½ in.	fil fil	..	Frequent micturition. Pus in urine.	Subpubic and perineal fistulæ.	1		Relief of symptoms	
70	31	Gonnorrhœa four times; last attack three years previous.	3	Meat. 2 in. deep.	.. .. fil	30	Difficult micturition. Blood in urine. Urine in drops. Pain in back.		2		Cure of symptoms. No re-examination.	
71	35	Gonorrhœa	1	½ in.	25	34	Gonorrhœa acute for five months.	Gonorrhœa	2		Immediate relief to acute symptoms. Still under treatment.	
72	32	Gonorrhœa seven years previous. Several times since.	2	Meat. 3 in.	34 19	38	Gleet	Gleet	2		Relief of discharge. Slight recontraction after one month.	Recontraction after one month.
73	29	Gonorrhœa three months previous.	2	⅛ in. 2¼ in.	26 29	30	Gleet	Gleet. Spasmodic stricture.	3		Relief of spasmodic stricture. Slight discharge remains.	Recontraction at meatus. None of deep stricture.
74	28	Paraphimosis Occidental.	4	1½ in. 2⅛ in. 2¾ in. 2⅞ in.	16 21 21 21	31	Gleet	Retention of urine. Gleet.	3		Relief of symptoms	Three months after operation found contraction at three inches.

STATISTICAL TABLES—*Continued.*

Number of Case.	Age.	Cause and Date of.	Number of Strictures.	Locality of Strictures.	Size of Strictures.	Norm. Calibre of Urethra.	Condition at Date of Operation.	Complications.	Number of Operations.	Accidents after Operation.	Results.	Re-examinations.
75	40	Gonorrhœa seven years previous.	1	Meat.	28	32	Difficult micturition, followed by pain in urethra. Gleet.	Gleet	1		Cure	
76	29	Gonorrhœa two years, also two months previous.	1	⅛ in.	26	31	Burning in urethra during micturition. Pain in back. Gleet.	Gleet	1		Cure	
77	38	Gonorrhœa thirteen years previous.	1	Meat.	24	33	Frequent micturition. Pain in deep urethra and testicles. Nervous feeling in thighs and legs. Burning of hands and feet.		4		Cure	
78	54	Gonorrhœa fourteen years previous.	2	3½ in 6 in.	26 fil	--	Frequent and painful micturition.		1	Chills	Perfect relief	
79	40	Gonorrhœa twelve and also one yr. previous.	1	⅓ in.	21	34	Frequent and painful micturition. Pain at glans penis. Purulent urine. Burning in urethra during seminal emissions.		4		Cure	

80	40	Use of syringe to prevent gonorrhœa.	1	Meat..	22	30	Frequent micturition	----------	1	Relieved of frequent micturition for two years. Return of same trouble. Recontraction found. To be operated on again.	Recontraction found after two years.
81	43	Gonorrhœa repeatedly.	1	½ in.	20	28	Frequent and painful micturition.	Cystitis. Follicular infiltration of urine into the perineum Deep, spasmodic stricture.	1	Division of meatus and incision into perineal abscess, followed by immediate relief of symptoms Cure of cystitis in two weeks without other treatment. No subsequent re-examination.	----------
82	35	Gonorrhœa fifteen years ago. Several attacks since. Use of powerful injection.	3	½ in. 2 in. 2½ in.	28 28 28	31	Pain in groins extending to feet. Peculiar motion of testicles, causing great suffering.	Peculiar movements of testicles, causing great suffering.	2	Reflex movements ceased after operation, also pains. Eight months after operation return of trouble. No re-examination.	----------
83	51	Congenital contraction.	1	Meat..	20	30	Frequent micturition	----------	3	Urethritis, followed by gleet, lasting 4 months.	Perfect relief for one year. Return of symptoms. Second operation followed by urethritis and gleet. Third operation followed by complete relief, which after eighteen months remains perfect.	----------
84	54	Gonorrhœa twenty and also eight years previous.	3	¾ in. 1½ in. 2¼ in.	20 24 28	31	Frequent and painful micturition. Pain in penis, testicles, thighs, perineum. Long attacks of retention of urine. Gleet. Chronic cystitis.	Cystitis. Gleet. Gravel. Retention of urine previously.	2	Cure. One month after first operation, re-contraction. Re-division of stricture at meatus. Relief. Perfectly well three months after, as reported by his physician.	----------
85	--	Gonorrhœa five months previous.	1	Meat..	16	30	Gleet	Gleet	2	Cure	----------

STATISTICAL TABLES.—*Continued.*

Number of Case.	Age.	Cause and date of	Number of Strictures.	Locality of Stricture.	Size of Strictures.	Norm. Calib. of Urethra.	Condition at date of Operation.	Complications.	Number of Operations.	Accidents after Operation.	Results.	Re-examination.
86	22	Gonorrhœa five years previous.	3	½ in. 2¾ in. 2¾ in.	24 24 24	31	Occasional increased frequency of micturition.	Redundent prepuce Circumcision.	1	----------	Gleet ceased for six months. Then he had a fresh gonorrhœa, followed by gleet.	Six months after operation recontraction at meatus. None of deeper strictures.
87	47	Gonorrhœa twenty and three years previous.	1	½ in.	22	28	Return of gleet after each venereal indulgence.	Gleet	1	----------	Cure. No return of trouble six months, also one year after operation.	----------
88	28	Gonorrhœa	2	Meat. 2 in.	24 24	31	Gleet for two years	Gleet	1	----------	Cure of gleet. No return when patient was seen last.	----------
89	30	Gonorrhœa ten years previous.	1	¾ in. 3 in.	17 17	34	Gleet	Gleet	3	Gonorrhœal rheumatism.	Cessation of gleet for three months. Recontraction at three inches and return of discharge. Still under treatment.	Recontraction at three inches six months after operation.
90	45	Gonorrhœa twenty years previous.	2	Meat.	22	34	Several attacks of retention of urine. Treated for deep stricture. Trouble referred to neck of bladder.	Spasm. Stricture. Retention of urine.	1	Prostatic abscess.	Complete relief. After division of meatus thirty-four sound passed into bladder. Passed out of observation one week after operation.	----------

91	47	Gonorrhœa twenty five years previous.	2	⅓ in. two bands.	28	37	Frequent micturition Granular urethra and great sensitiveness of urethra.	Granular urethra.	1	----------	Cure. Immediate relief to frequent micturition. Urethral trouble disappeared without further treatment.	----------
92	34	Gonorrhœa ten years previous.	1	½ in.	27	31	Frequent micturition. Sense of fullness in urethra. Highly spasmodic condition of urethra.	----------	1	----------	Cure of frequent micturition and abnormal sensations in urethra	----------
93	47	Gonorrhœa twenty years previous.	7	Meat. 1 in. 3½ in. four bands. membr portion filifo'm	24 22 15	31	Frequent micturition. Two attacks of retention of urine. Small stream.	Retention of urine.	1	Chills.....	Relief of all symptoms which continues.	Two months after the operation no recontraction.
94	10	Balanitis --------	1	Meat.	12	22	Incontinence. Frequent micturition.	Phymosis circumcision.	2	----------	Cure. Immediate relief of incontinence. Return of incontinence. Recontraction. Redivision of meatus. Perfect relief of incontinence up to date.	Three months after last operation.
95	50	Gonorrhœa twenty years previous.	2	½ in. 2¼ in.	27 30	32	Frequent micturition. Pain and tenderness in hypogastrium and back. Small stream. Dribbling.	----------	1	----------	Immediate relief of symptoms, which continues up to date.	----------
96	27	Masturbation-----	1	Meat.	30	38	Frequent micturition. Sense of wetness about glans. Dribbling.	Frequent seminal emissions.	3	----------	Cure. Remains perfectly well eight months after last operation. Recontraction with return of symptoms twice.	Eight months after last operation no recontraction.
97	27	Gonorrhœa seven years ago. Several attacks subsequently.	2	¼ in. 1 in	20 19	31	Frequent and painful micturition. Pain in penis, perineum, rectum. Constant desire to defecate.	Postatic enlargement.	2	----------	Cure. Relief of all symptoms for two months. Recontraction with return of symptoms. Second operation followed by relief, which after ten months remains perfect.	Ten months after last operation, no recontraction.

STATISTICAL TABLES—*Continued.*

Number of Case.	Age.	Cause and date of.	Number of Strictures.	Locality of Strieture.	Size of Stricture.	Norm. Calib. of Urethra.	Condition at date of Operation.	Complications.	Number of Operations.	Accidents after Operation.	Results.	Re-examinations.
98	33	Gonorrhœa thirteen years previous.	14	Meat..	22	30	Gleet. Retention of urine. Urine in drops.	Gleet. Retention.	2	Chills after introduction of instrum'ts.	Complete relief of symptoms External and internal operations combined.	Recontraction of two strictures to 24.
				1 in.	19							
				2 in	15							
				3 in.	10							
				3 to 4½ in 6 bands	8							
				4½ to 6¼ in 2bds	1							
				6¼ to 7½ in 3bds	½							
99	30	Gonorrhœa	8	¾ in.	..	31	Gleet for two years	Gleet	3	Curvature of penis during erection. Disappeared after one year.	Cure of gleet	One year and a half after operation, no re contraction, except at two points, between three and four ins.
				1½ in 3bds	27							
				3½ in.	25							
				2 in.	26							
				2½ in.	26							
				3¾ to 4								
100	30	Gonorrhœa ten years previous.	2	Meat..	..	30	Frequent and painful micturition. Gleet.	Gleet	2		Cure	One year and a half after last operation, no recontraction.
				6½ in.	17							

Total number of operations, 203