

8 English, which is equivalent to No. 16 of the French scale. No Stricture can be permitted in any urethra where the No. 8 English bougie finds easy passage. Dr. Curtis, as the laureate interne of the Hôpital Necker, and the successful competitor for the two thousand francs prize of Civiale, in 1873, may well be accepted as representing the present status of urethral science in France; and he states, under the ægis of his distinguished masters, that the *normal calibre of the human male urethra is equal to 7 millimetres in diameter*; that, when a presenting urethra, the previous subject of Strictures, more or less numerous or pronounced, shall have been brought by various kinds of dilatation, or divulsion, or incision, or what not, up to a calibre of *7 millimetres in diameter*, "the conscientious surgeon" has a right to dismiss him as cured. How is it, then, with the poor unfortunates, who cannot conform their urethra to the procrustean dimensions of French and English schools, but find themselves in possession of urethra, the calibre of which extends to the size of 8, 10, or 12 millimetres in diameter instead of 7; or 22, 24, and 26, of the English scale, instead of 8 or 9? Evidently the difference between the *established normal standard* and the figures just named (if they were within the range of possibility) *might* be occupied by Stricture-tissue, which, although it might not be recognized by the No. 8 *blunt-end bougie*, might nevertheless exist, and would inevitably be detected by a bulbous sound of a calibre corresponding with the size of this apparently extraordinary canal—*extraordinary*, if we are willing to admit the size of the meatus to be a sure indication of urethral calibre, without noting variations caused by congenital and pathological narrowings. A careful examination of several hundred urethra, within the past twelve years, by means of the *metallic bulbous sound* (which I presented to the profession in 1861), has demonstrated to me that, while I have seen occasional extremes, varying from 28 to 40, the *average calibre of the male urethra is not less than 30* of the French scale, or 18 of the English scale; and that the great majority of Strictures which are sources of

grave annoyance, and call imperatively for treatment, are *above* what is set down by the French and English schools as worthy of consideration. Within the past two years I have, in more than one hundred cases, recognized distinct bands of Stricture in urethra, where the English bougie of No. 8 and even the French of No. 21 could be readily passed down through them into the bladder *without giving the least evidence of contraction at any point*; and I have frequently demonstrated this fact not only in my clinique at the College of Physicians and Surgeons, but to a large number of professional friends, in my private practice.

On the 30th of December last I invited Dr. Bumstead, the distinguished author of "Bumstead on Venereal Diseases," to see a patient, fifty years of age, at my office, with a view of examining the calibre of his urethra. The flaccid organ was three inches in length from the meatus to the pubis, and three and a half inches in circumference midway of the organ. In Dr. Bumstead's presence I introduced into and through a *normal* meatus a metallic bulbous sound 32 millimetres in circumference, and passed it down without the least force to the bulbo-membranous junction. Dr. Bumstead withdrew it, and pronounced the normal calibre of the urethra equal to 32 millimetres in circumference. I then introduced, in the same manner, bulbous sound No. 34 F.; this also was introduced and withdrawn by Dr. Bumstead, with a similar result. The *normal* calibre of this particular urethra was thus shown to be 34 millimetres.

On Saturday evening, January 10, 1874, I invited Dr. Gurdon Buck and Professor Thomas M. Markoe to examine with me the urethra of a patient, twenty-four years of age, who had never been the subject of gradual dilatation, but who had been operated on by me with the (my) dilating urethrotome for three Strictures in the straight portion of the canal. The meatus, which was originally contracted to 24 F., had been incised two months previously. The length of the flaccid organ was four inches; the circumference, midway of its length, was four inches. In the presence of the distinguished surgeons

above mentioned, I introduced No. 36 F. bulbous sound and passed it down to the bulbo-membranous junction. This procedure was repeated by Drs. Markoe and Buck in turn, and the urethra was recognized by them as possessing a *normal calibre of 36 millimetres in circumference*. Previously to this trial I had announced the presence of an abnormal contraction at one and a half inch from the meatus, which was detected with the No. 36 bulb on the morning of the same day. Neither Dr. Buck, Dr. Markoe, nor myself, was able to distinguish this alleged contraction. Taking the ground that the introduction of the sound in the morning had made the contraction less salient, I took the bulbous sound next in size, which (through a mistake on the part of Tiemann & Co.) had been made of a circumference of 40 F. instead of 37 F. I pressed it gently against the orifice for a minute, when it entered and passed readily down to one and a half inch, where it was arrested by the contraction before alluded to. Dr. F. D. Sturges and Dr. J. De Forest Woodruff had verified with me the passage of No. 34 F. bulbous sound in the same urethra a few days previous.

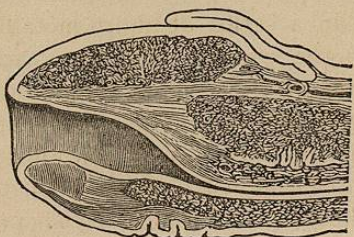
Do you ask, of what value is the recognition of urethræ of such enormous calibre as those just cited? Simply, I answer, *to demonstrate the absurdity of fixing, upon the dictum of any man or school, a standard calibre for the human male urethra*; to show the necessity of making every urethra a law unto itself, and to enable the surgeon to judge of the greater or less degree of contraction, in any given urethra, by the normal calibre of that individual urethra, as ascertained by interior measurement. In the case presented to you tonight, is it for a moment supposed that the fourteen Strictures, ranging from No. 22 F. to one-half of a millimetre in circumference, and extending from the meatus to the prostatic portion of the urethra, came without indication or warning, until the passage of urine was interfered with?

From the original gonorrhœa, contracted more than twelve years ago, up to the time of the first trouble of micturition, five years ago, this man was scarcely free from a chronic

urethral discharge, and any surgeon, previous to that time, and subsequent to the inflammatory condition which initiated the trouble, with proper instrumental means, and sufficient intelligence, could have demonstrated the presence of Stricture, and by a suitable treatment could have arrested the contractile urethral disease in its inception. His gleet was treated by internal remedies and injections; as well attempt to remove a ligature tied *around* his penis, by internal remedies and injections, as to essay the cure of an *internal* cord, the result of inflammatory deposit in the urethral walls. Chronic urethral discharge, commonly called gleet, is the signal which Nature hangs out to notify the intelligent surgeon that an obstruction to the normal working of the muscular apparatus of the urethra has occurred; that plastic material, laid down in the antecedent inflammatory condition, has begun to contract the normal urethral calibre, whether it be 20 or 40 millimetres in circumference, and that nothing short of a complete restoration of the normal calibre of the canal will afford a permanent cure. Sandal-oil may stop it for a time; injections of innumerable variety may, any one of them, temporarily remove it; but a little venous or venereal excess will reproduce it, and thus the case goes on, getting, as many such cases will affirm, *a new clap for every woman looked at*, until finally an attack of *retention of urine* calls attention to the fact that the patient has strictured urethra.

One of the chief stumbling-blocks in the way of the surgeon in recognizing urethral Stricture is the contracted meatus. Authorities concur, as a rule, in asserting that the meatus is the *narrowest portion of the urethral canal*, and yet this is usually accepted as a *test* of its calibre. This opening is subject to great natural variations, in organs of about the same general proportions. The well-developed penis, in a dozen cases, may vary in regard to the size of the congenital meatus, from the calibre of No. 8 or 9 millimetres in circumference, to 32 or 34. It is important to recognize the fact that the meatus bears, necessarily, *no* proportion to the actual size of the urethra. If symptoms of Stricture are

present, such as *persistent urethral discharge, etc.*, or if any chronic irritations of the genito-urinary apparatus present, the meatus should be freely incised, and a thorough examination of the canal with the bulbous sounds should be made.



VERTICAL SECTION OF ANTERIOR
PORTION OF PENIS.

The normal meatus urinarius is well represented by Henle,* who has been more minute and definite in his anatomical researches in regard to it than any anatomical authority with which I am familiar.

Thus, as the accompanying plate represents, there is no abrupt enlargement after passing the external border, such as is seen in the usual representations of the urethra, and Henle, in his description, is entirely at variance with those who claim that a sort of sphincter is found at the meatus. There are no *circular* muscular fibres entering into its composition—simply horizontal muscular fasciculi, or plates, as he terms them, which surround the opening, and are continuous with the muscular structure of the urethra. Vertical sections of the penis at the junction of the glans with the body show a nearly uniform calibre throughout the fossa navicularis, as far as its external boundary at the meatus, the opening of which is of corresponding calibre. This may be accepted as the normal condition of these parts, and any variations from such uniformity may be considered aberrations from the normal condition. These are, as a rule, of no practical importance, unless the tissue composing them has been invaded by inflammatory action; in which case the muscular layer being disabled to greater or less extent, by the infiltration of plastic material, its office of aiding in the complete emptying the urethra is interfered with, and urine being retained in the canal may, by its subsequent decomposition, prove an added source of irritation.

* "Handbuch der systematischen Anatomie des Menschen," von Dr. J. Henle, p. 417.

In order to gain a definite knowledge of the calibre of the urethral canal, in cases with or without contraction of the meatus, I have devised an instrument which I term the *Urethra-metre*, or dilating bulbous sound, which I now present.



URETHRA-METRE.

It consists of a small, straight canula, size No. 8 F., terminating in a series of short metallic arms, hinged upon the canula, and upon each other. At the distal extremity where they unite, a fine rod, running through the canula, is inserted. This rod (which is worked by a stationary screw at the handle of the instrument), when retracted, expands the arms into a bulb-like shape, 10 millimetres in circumference when closed, and capable of expansion up to 40 millimetres. A thin rubber stall (Fig. C), drawn over the end of the closed instrument, protects the urethra from injury, and prevents the access of the urethral secretions to the interior of the instrument. When introduced into the urethra and expanded up to a point which is recognized by the patient as filling it completely—and yet easily moving back and forth—the index at the handle then shows the normal circumference of the urethra under examination. In withdrawing the instrument, contractions at any point may be exactly measured, and any want of correspondence between the calibre of the canal and the external orifice be readily appreciated. Among the advantages claimed for this instrument are: 1. Its capacity to measure the size of the urethra, and to ascertain the locality and size of any Strictures present, *without reference to the size of the meatus.* 2. It enables the surgeon to complete the examination of several Strictures by a single introduction of the instrument, and by reduction of its size to avoid the irritation which usually attends the withdrawal of the ordinary bougie-à-boule or bulbous sound.

Returning to the case of aggravated multiple Stricture above related, it will have been observed that notwithstanding the easy passage of a No. 31 F. solid steel sound through the entire urethra, after the operation, there was an *immediate tendency to recontraction*; that within a comparatively short period, the presence of Stricture was again definitely recognized. I do not call your attention to this important fact on account of its novelty, for every surgeon of experience has too frequently observed it; and every writer on Stricture has recorded it in terms the most emphatic; some even going so far as to state, as does Mr. Wade* (quoting the illustrious Dupuytren), that, "whatever care may be taken in the dilatation of Strictures, the *dilatation is but temporary in the greatest number of persons, and the contraction has always a tendency to return.*" Sir Benjamin Brodie says: (*op. cit.*) "After a patient has conceived himself to be cured, and after every symptom of the disease has vanished, it is not an uncommon thing for him to suffer a relapse, in all probability, of far greater danger than the previous attack. . . . From what," he asks, "does this arise? From his not continuing," says Sir Benjamin, "at regular intervals, to pass an instrument (sound) notwithstanding the disease should seem to have disappeared. To pass it once in two or three weeks is enough, but *it must never be thrown aside as useless, during the life-time of the patient, if he desires to be freed from his troublesome affection.*"

Dr. T. B. Curtis, in his prize Essay previously quoted as representing the views of the leading French surgeons, says, page 46, "*All Strictures, by whatever manner treated, and in appearance cured, will relapse almost infallibly.*"

It is, however, an accepted fact, that a certain but *very limited* proportion of Strictures are permanently cured by each of the various methods—dilatation, division, divulsion. We may again ask, with Sir Benjamin Brodie, from what does *this* arise? The answer is, simply, that, *to prevent the return of Stricture after operation, the Stricture must first have been*

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

thoroughly sundered at some point, and that those Strictures which have been *permanently cured*, have been so sundered, either by rupture through dilatation more or less rapid, by divulsion or division. In this number I do not include those facetiously termed *cured*, where the patient is obliged to use or have used a sound every two weeks for the balance of his life, but those that never reappear after operation. The reason why the treatment of Stricture after the usual methods is imperfect, and that there is always a tendency of the Stricture to return, arises from the fact that, as in the case cited, the Strictures were not *completely sundered* at any point, but were only *distended*, not *completely divided*. All urethral Strictures are composed of elastic tissue, and any operative procedure that falls short of *complete* division of the constricting band *can never produce more than temporary results*. As long as No. 8 of the English and No. 21 of the French scales are accepted as representing the *normal* calibre of the human male urethra, and as long as *curative* treatment ceases when this calibre has been reached, there will never be *radical, permanent cure of urethral Stricture*. Sooner or later, however, it is certain to be accepted that urethrae vary in size in different individuals just as widely as any other constituent portions of the human body, and that, consequently, Stricture of the urethra is a *relative term*; that, while No. 8 bougie, English, or No. 21, French, will determine the presence or absence of Stricture in a urethra of corresponding calibre, it fails to recognize it in urethrae of larger size. These have been positively demonstrated in certain cases to reach as high as 36 or even 40 millimetres in circumference. *Complete* division of Stricture, *of whatever calibre*, having been accomplished, *recontraction may be prevented*, and thus strictured urethrae can, by appropriate treatment, be with certainty restored to their normal dimensions, without fear of subsequent recontraction.

This I do not assert unadvisedly or rashly, as the records of more than fifty cases, occurring in my own experience, will demonstrate. Several of these cases, in which five and six

Strictures were present two years ago, and then thoroughly divided, have been carefully examined by me, within the last month, and can be shown to-day, free from the *slightest evidence of recontraction*. This goes far to prove that complete division of Stricture, with appropriate after-treatment, will give complete immunity from recontraction. The results of operations with the dilating urethrotome, which were presented by me to the profession at a meeting of the New York Medical Journal Association more than a year ago (May, 1870), have remained permanent; that is to say, *that the Strictures operated on, having been thoroughly divided, were afterward completely absorbed*. These results were subsequently published in the New York Medical Journal of March, 1873. One of the cases (Case III.) there reported, presenting originally five distinct Strictures, (including one at the meatus—defined by 24 F.) was operated on in January, 1872, and the completeness of the operation was demonstrated by the passage of a 30 F. bulbous sound through the urethra, and its withdrawal without giving evidence of the slightest obstruction at any point. This was one of four cases (comprising operations on eighteen bands of Stricture) critically examined in February, 1873, by a committee of surgeons composed of Dr. Henry B. Sands, Dr. J. W. S. Gouley, Dr. Robert F. Weir, Dr. Thomas T. Sabine, and Dr. Frederick D. Sturgis, of New York, and Dr. Frederic D. Lente, of Cold Spring, N. Y., with the 30 F. bulbous sound at first, and subsequently with 31 F., *without being able to detect any contraction, at any point, in any one of the presenting urethræ*. I am able to afford this Society further proof of the absolute absorption of the above-mentioned Strictures, by presenting this case (No. III.) to you for a reëxamination to-night, more than two years subsequent to the operation, in which five distinct Strictures were completely divided. In the case of multiple Strictures presented, (see page 67) it will be remembered that while 25 F. solid steel sound was easily passed through the urethra without detecting any Stricture, No. 18 F. bulbous sound was arrested at the Stricture-points. I propose, therefore, in order to put

the crucial test to this case, to examine the urethra with No. 30 *bulbous sound*. This, you now observe, passes readily and easily through the urethra, and is withdrawn without the slightest retention at any point.

I now pass the case over to your committee for the verification of my examination. (Drs. Post, Minor, and Woodruff, having confirmed fully the absence of Stricture by introduction and withdrawal of the bulbous sound No. 30, and so reported to the Association, Dr. Otis resumed.) In order to show more fully the complete absorption of the stricture-tissue in this case, I now take a larger bulb than has at any time been used. The urethra, when free from Stricture, is very distensible, and, by a little pressure, will admit an instrument above the normal calibre. Thus, as you see, this larger bulb, pressed firmly, not violently, against the meatus, now enters and passes without perceptible difficulty through the urethra. The size of this bulb is 34 millimetres in circumference.

In closing this somewhat desultory paper, I would like to be distinctly understood as claiming, that Stricture, as ordinarily met with, is *absolutely within the reach of curative measures*. If completely divided, and the division maintained by suitable means until healing of the parts has occurred, no *recontraction* can ever take place. Dilatation, temporary or persistent, is *never more than a palliative measure*, unless carried to a point sufficient to *completely rupture the Stricture*. Division of Stricture is not more hazardous, to say the least, than persistent dilatation, by introduction of instruments, which are required to remain *in situ* for hours or days, or than rapid dilatation, which requires instruments of increasing sizes to be introduced at one sitting. And I venture to say it is scarcely more likely to produce trouble than temporary or transient dilatation, as usually practised by surgeons, at intervals of two or three days or weeks, for the rest of the natural life of the unfortunate patient. I here call your attention to a point in the history of Mr. W. C. H., whose numerous Strictures in their relation to the foregoing *résumé*, are very instructive. His chills occurred on two occasions during the

progress of the case, each time following the *easy and gentle introduction* of a No. 29 F. steel sound; while the *division* of the Stricture was not followed, in either instance, by any such result. This gives me an opportunity to state that, in nearly two hundred operations with the dilating urethrotome, performed by me on urethral Strictures, chiefly in the straight portion of the canal, within the past two years, I have met with no untoward result, beyond four troublesome but not serious cases of after-hæmorrhage. Slight chills have occurred in but six cases, and these were all associated with operations in the curved portion of the canal.

Among the inferences to be drawn from the foregoing cases and remarks are, first, that Stricture may be present before difficulty in urinating occurs; second, that it is always present when *gleet* is present, (*gleet, as a rule, means Stricture*) third, that dilatation of Stricture is, at best, but a temporary expedient, valuable in close Stricture, where urination is interfered with, and when the Stricture is too close for the introduction of instruments for completely dividing it. Fourth, that dilatation is not only without permanent value, except in such cases, but that *it is pernicious*, because while never curative, it takes the place of curative measures; that nothing short of complete division of Stricture can ever result in radical cure.

CHAPTER V.

RETROSPECT.

THE direct attacks upon important and time-honored teachings which are contained in the foregoing papers failed to elicit any response, either in this country or in Europe, notwithstanding that they were reprinted in pamphlet form, and freely distributed at home and abroad.

The common sense of the profession, however, did not fail to appreciate the position of authorities who claimed a fixed standard for the size of the human male urethra. This error, exploded hopelessly by the urethra-metre, and the average size raised from the old estimate of 21 mm. French to 32 mm. (with extremes 28 and 40), the importance of Strictures of large calibre began to be appreciated. Though the journals were silent the instrument-makers were at work. Dilating urethrotomes — of various patterns — bulbous sounds from 8 mm. to 40, urethra-metres, etc., found ready sale. Soon, by the force of a common sense mechanical view of the subject as opposed to baseless conventional dogmas, the operation of dilating urethrotomy ceased to be a novelty, and surgeons began to contemplate the possibility of Stricture of 30 F. (or more) in a urethra of 40 mm. without a sneer, almost without a smile.

The first published intimation, however, that the profession had begun to indorse the claims of a greater normal calibre for the urethra now appeared in the volume on "Genito-urinary Diseases, with Syphilis," by Van Buren and Keyes, New York, 1874, where, on page 28, they say, "*The diameter of the urethra varies even more than its length.* It has been estimated at from two to six lines" (that is to say from 13 to 40 millimetres), and—in italics—"A fair average well-formed adult urethra measures about three-eighths of an inch in diameter." This