

LESSON LI.

Masturbation as a cause of urethral stricture—The author's experience favoring the possibility of such cause—Professor S. W. Gross claims stricture as a frequent consequence of masturbation—Five clinical cases in illustration—Traumatism as a cause of urethral stricture—Accidental excision of the tissue of the urethral orifice in circumcision causing stricture—Clinical case in illustration—Venereal lesions at the urethral orifice a cause, also injuries from passage of urethral instruments—Blows on the perineum, from various causes, resulting in urethral stricture—Urethral stricture most frequently resulting from gonorrhœal inflammation—Necessity of appreciating pre-existing strictures—Gonorrhœa always aggravates and often calls attention to strictures previously formed—Symptoms and diagnosis of stricture following gonorrhœa.

3d. In regard to masturbation as a cause of urethral stricture: I have frequently met with cases of lads from 14 to 18 years of age in whom there was no evidence of lithiasis, nor any history of such difficulty, and where there had been no gonorrhœal trouble or any traumatic accidents, where well-marked strictures were present, constricting the urethra at various points from 10 to 20 millimetres circumference. In all such cases there was a history of excessive masturbation of from 2 to 5, or 6 years' duration. Prof. S. W. Gross of Philadelphia, one of the most accomplished and valued authorities in genito-urinary diseases, wrote me in February, 1876, the following histories of cases in which masturbation was claimed to be the sole cause of urethral stricture, adding the results of examinations in 85 cases of urethral stricture, comprising 147 strictures, showing the proportion in which the various causes of stricture were found to obtain.

NOTES OF FIVE CASES OF STRICTURE OF THE URETHRA FROM MASTURBATION.

CASE I.—Wm. Sharkey, æt. 30, has suffered from the rational symptoms of stricture for four years. He is rather feeble-minded and has occasional attacks of epi-

lepsy. The orifice of the urethra shows a calibre of 27 French gauge, but the penis is short and small. The exploratory bulbous bougie detected two strictures; the first being seated at $5\frac{3}{4}$ " from the meatus, and having a calibre of 18 (F. G.); and the second at 6", and of a calibre of 14. Urethra irritable.

On the 9th of September, 1874, at my clinic at the Philadelphia Hospital, I ruptured both strictures with Voillemier's divulsor up to 30—that being the normal gauge of the urethra. Conical steel bougies were afterwards passed at regular intervals; but he was transferred to the epileptic ward of the insane department on the 2d of October.

This man was a confirmed masturbator, and had been for years. He never had connection with a female. He continued the practice in the insane department, and when I examined his urethra, six months subsequently, contraction had taken place to such an extent that I could pass only a No. 14 bulbous explorer.

CASE II.—W. R., a private patient, aged 29 years, came under my care February 25, 1875, on account of a gleet discharge, diminution in the size of the stream of urine, retention of a few drops after the urethra was apparently emptied, and sexual hypochondriasis, which prevented him from having confidence in his virile powers. Exploration with the bulbous explorer detected a very irritable urethra, and a stricture $5\frac{3}{10}$ " from the meatus, of a calibre of 18. He had practised onanism from his sixteenth to his twenty-fifth year, but had lessened the frequency during the past four years. Up to June the 5th, I treated him with tonics, and, locally, with the steel bougie and astringent applications, but on account of his habits his visits were interrupted. At this time the sensibility of the urethra having almost entirely disappeared, I induced him to permit me to divide the stricture, he having strenuously opposed this remedy up to this date. I incised the coarctation with my urethrotome, and passed bougies up to No. 30. He had no chill, and remained in the house only thirty-eight hours. No. 30 was passed at regular intervals for three weeks, when I left town for the summer. I ex-

amed this man's urethra again, and for the last time on October 26th, when I found it to be perfectly free from obstruction. All his symptoms had disappeared, and he had intercourse without difficulty.

CASE III.—A medical student, æt. 24 years, consulted me on the 14th of May, 1875, on account of prostatic rhœa, irritable urethra, and stricture $5\frac{3}{4}$ " from meatus, of calibre of 17, and 1" long. His health was much broken, and he was in a state of constant mental worry from the idea that he suffered from spermatorrhœa. These symptoms were of two years' duration, and were due to masturbation, which he had only left off about twenty-six months previously. Having succeeded in subduing the irritability of the urethra by bougies, astringent applications, and our cauterization of the prostatic sinus, and general remedies, on June 16th I divided the stricture from behind forward, with my instrument, up to the full calibre of the canal, which was 30. He had no chill, and remained in bed 48 hours. He passed out of my sight in three weeks; but his sexual hypochondriasis was not improved.

CASE IV.—W. H., æt. 21 years, consulted me on the 16th of November, 1875, on account of what he supposed to be seminal losses, of three years' duration, the result of masturbation. He had never had sexual congress. He had the rational signs of stricture, and the exploratory bougie detected one $5\frac{1}{2}$ " from the meatus, of a calibre of 13. The meatus was red and pouting, and the entire canal was very sensitive. This patient consulted me only twice, and objected to operative treatment.

CASE V.—A druggist, aged 24 years, was brought to me on the 18th of February, 1876, on account of symptoms of vesical irritability, under which he had labored for six years. He had never had sexual intercourse, but had constantly masturbated from boyhood, until his twentieth year. The entire urethra and neck of the bladder were excessively sensitive, and a stricture of the calibre of 17 was detected $6\frac{2}{10}$ " from the meatus. Both epididymes, particularly the right, were enlarged and indurated. There was no history of venereal dis-

ease. This man had come north to lay in a supply of drugs, and I presume I will see him again before he returns to the west.

During the past 18 months I have kept a full history of the cases of stricture of the urethra that have fallen under my charge. They number 85, and represent 147 strictures.

Of their causation, 75, or 88.23 per cent were due to Gonorrhœa.				
5,	"	5.88	"	"
3,	"	3.53	"	"
2,	"	2.35	"	"
				Masturbation.
				Lithiasis.
				Traumatism.

It is noteworthy that, in all the cases due to onanism, the urethra was unduly sensitive, and the stricture was seated in the curved portion of the urethra. Four were single, and one was double. While the proportion of gonorrhœal strictures is the usual one, those arising from onanism or lithic acid diathesis are beyond the average, and had gonorrhœa existed in these cases it would probably have been noted as the cause of the coarctation and the true antecedent trouble have been overlooked. In other words a stricture of the urethra of large calibre may exist without any very marked rational signs, and be due to inflammation provoked by other than specific causes. In such a case an attack of gonorrhœa will intensify the trouble, and might be assumed to be its existing cause. I have now in my ward at the Philadelphia Hospital a case of three tight strictures, attributed by the patient to an attack of gonorrhœa contracted five months before I examined him. If the clap be the true cause, I have only to say that it is the only case of the kind I have ever met with; as my experience goes to show that multiple and narrow strictures do not form in so short a space of time."

In regard to

TRAUMATISM AS A CAUSE OF URETHRAL STRICTURE.

It is not a very rare circumstance to meet with a contracted urethral orifice from cicatrization, resulting through the accidental excision of the end of the glans penis in the unskillful performance of the

Jewish rite of circumcision. I have seen several such cases, prolonging gonorrhœa, producing gleet, and also various reflex irritations. In one case within the past year, after a long siege, the gleet had apparently been cured by injections, and the patient had received permission to marry. The sexual excitement attendant upon the first week of marriage reproduced the discharge and a sharp gonorrhœa was communicated to the bride. Complete division of this stricture from 18 F. to 35 F. resulted in a cure which now, over 9 months, has continued, notwithstanding a rather excessive degree of sexual intercourse. Venereal lesions of the meatus—the initial lesion of syphilis—also chancroid—are a frequent source of stricture at this point. Injuries from the passage of urethral instruments and lithotrites are not uncommon, resulting in stricture of various parts of the urethral canal. Blows in the perineum falls astride fences, or their equivalent, violent contact with the pommel of a saddle, or through falls upon the wheel in carriage accidents, these are among the most frequent causes of traumatic stricture. From the nature of such injury the cicatricial deposit is much more extensive and dense than in strictures caused by inflammations initiated through the mucous membrane of the urethra, and consequently are less susceptible of permanent relief from any and all varieties of treatment.

In regard to

STRICTURES RESULTING FROM GONORRHŒAL INFLAMMATION.

These are apparently the most numerous of all varieties of urethral stricture. It is not usually borne sufficiently in mind that strictures may exist for a very long period without producing any symptoms which attract attention. Symptoms of strictures occurring at a shorter or longer period, after an attack of gonorrhœa, lead to an examination, and if stricture is discovered to be present the gonorrhœal accident is very likely to get the credit of it. The fact

is that a gonorrhœal inflammation usually causes immediate accessions of plastic material to previously strictured points, and thus calls attention to their presence and locality. It thus becomes quite impossible (with the knowledge of the various causes of stricture, independent of gonorrhœa) to form a just estimate of the number of cases of stricture due to gonorrhœa alone. All strictures appreciated as firm bands of contraction within a few weeks or months after an attack of gonorrhœa may be safely thrown out of the estimate and attributed to previous trouble of some one of the varieties previously mentioned as capable of causing stricture. The contracted urethral orifice seldom causes trouble until after the occurrence of a gonorrhœa which, adding to the obstruction by new accretions of plastic matter, thus, infiltrating the tissues at this point, and, while often apparently not greatly diminished in calibre, are greatly lessened in resiliency, and thus produce the effect of greater contraction.

SYMPTOMS AND DIAGNOSIS OF STRICTURE FOLLOWING GONORRHŒA.

“Gleet” is the signal which nature hangs out to notify the patient and his surgeon that the urethra is strictured at some point.

As the urine is propelled through the urethra, it impinges with more or less force upon any salient or contracted point. The column of fluid is arrested, and in proportion to the degree of arrest is the force of the blow upon the mucous surface at that point. Localized disturbances of the muscular action occur, preventing complete emptying of the urethra. More or less hyperæmia necessarily ensues, and a condition is soon established, well adapted to prolong an existing gonorrhœa, or which, upon slight additional cause, such as venereal excitement, or even an unusually acrid condition of the urine, may result in the origination of a mucopurulent, or a purulent secretion. We may hence affirm, as a most important axiom, *that the slightest encroachment upon the calibre of the urethral canal is suffi-*

cient to perpetuate a urethral discharge, or even, under favoring conditions, to establish it de novo without venereal contact.

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

And yet in some cases the urethra may be strictured at several points, and to a very considerable degree, without any perceptible purulent discharge. So that while gleet is an evidence of stricture, the absence of it does not prove that the urethra is free from important contractions. In other words, an amount of habitual friction of the mucous membrane of one urethra may be borne without marked irritation, which in another will soon set up inflammatory action.

Frequent urination, a twisted and irregular stream, a dribbling at the close of the act, are all evidences of stricture at one or more points, and yet all may be absent without proving the absence of stricture.

All may be present and due to other causes than stricture. Hence it becomes necessary to examine still further before a positive diagnosis can be made.

The first step toward determining positively the presence or absence of stricture in a given case is made by the actual measurement of the normal dimensions or calibre of the urethra. To obtain a convenient test-measure for reference the so-called urethral scale is used.

It is not necessary to enter into an elaborate argument, in order to prove that any and every subject which has an intrinsic value, should in publication be so treated as to render it intelligible in its essential points to scientific men in every part of the world.

Recent vigorous efforts have been made to bring about an adoption of the metric system of weights and measures by the medical profession of all countries. This suggests the practicability of a much-needed application of the same system to surgery, not alone to secure a more accurate measurement of anatomical proportions

and surgical instruments and appliances, but through this, as a common and simple medium, to facilitate the harmonious and intelligible interchange of scientific facts and observations. It is especially in the department of genito-urinary surgery that such a reform measure is needed, as here the most delicate appreciation of anatomical proportions and deviations, and hence the most delicate and accurate adaptation of instruments, is required. The want of some one exact and easily applied system of measurement of necessity depreciates, and often wholly negatives the scientific value of important observations. A rapid survey of this matter, as it affects genito-urinary questions, will serve to emphasize the foregoing statement.

The systems of measurements and estimates of urethral instruments and urethral calibre, in Great Britain, on the European continent, and in America, have always been, and still are, notoriously at variance. In England, such measurements are nominally governed by a fixed scale, but this is readily seen to be without any scientific basis. The normal calibre of the urethra has been estimated and a fixed standard assumed, unsupported by reason, anatomy or experience. Instruments for catheterism, or dilatation of stricture, or other procedures, have been graded by sizes from 1 to 12, while the normal calibre has been fixed at from 8 to 11 of this scale. The advance from the lowest to the highest numbers is by a conventional and irregular progression.

In the most recent work of Sir Henry Thompson, "Diseases of the Genito-Urinary Organs," London, 1876, that eminent English authority says, on page 54: "The ordinary range of our numbers is from 1 to 12. In England we cannot be said to have a uniform scale: one maker makes one scale and another another; and the Scotch scale differs by $1\frac{1}{2}$ from the English, so that the patient who takes No. 12 Scotch takes only $10\frac{1}{2}$ English." The English scale, accurately measured by millimetres in circumference, runs thus: 7 mm., 8 mm., 9 mm., 10 mm., 11 mm., 12 mm., 13 mm., 14 mm., 15 mm., 16 mm., 17 mm., 18 mm., 19 mm., 20 mm., 21 mm., 22 mm.

Hence Sir Henry Thompson advises the rejection of

this English scale altogether, and the adoption of the French scale, which he says begins at 1 millimetre in circumference and increases by 1 millimetre in circumference up to 30.*

In America, the imperfect English scale, introduced largely through the influence of Sir Henry Thompson's earlier writings ("Thompson on Stricture of the Urethra," London, 1853, etc.), came into general employment and is still much in use.

The first authority to protest against it was Dr. Bumstead, in his work on Venereal Diseases, 1861, who there adopted and recommended the French scale, and to facilitate its use among those accustomed to the English scale, had the approximate English numbers stamped on the reverse of the scale.

This was recommended under the impression, as also stated by Sir Henry Thompson, that the French *Charrière filière* scale increased in size by 1 millimetre circumference (Bumstead on Venereal Diseases, second edition, p. 267). Dr. Gouley, in his work on the "Genito-Urinary Organs," New York, 1873, p. 28, also protesting against the use of the English scale, presents a "metrical sound gauge" measuring by diameters instead of circumference. "This new gauge consists of 20 numbers, the smallest 1 millimetre and the largest $10\frac{1}{2}$ millimetres in diameter, with a difference between each two numbers of $\frac{1}{2}$ mm. instead of $\frac{1}{3}$ mm., as in the French scale. On one side of my gauge is stamped the diameter of each aperture in millimetres, and on the reverse side was from $\frac{1}{4}$ to 18, which very nearly correspond to the numbers of the English scale." The Gouley scale, as it came to be called, thus differed from the *Charrière filière* scale adopted and recommended by Dr. Bumstead, 1st, by computing sizes in diameters instead of circumference, 2d, by decreasing the number from 30 to 20; 3d, by carrying them to $10\frac{1}{2}$ mm. in diameter. This multiplied by $3\frac{1}{2}$ shows an increase in range over the *Charrière filière* scale from 30 to 34. Upon the handles of

* "Thompson on Diseases of the Urinary Organs," 1876, p. 54.

Dr. Gouley's sounds both the English number and the diameter were stamped.

In 1874 Drs. Van Buren and Keyes, in their work on the Genito-Urinary Diseases with Syphilis, erected and recommended still another gauge, which they called "the American scale." Rejecting the English scale on account of inaccuracy, and the French because they considered the increase of its sizes unnecessarily gradual, involving a necessity for too many instruments, "a needless expense with no compensating advantage." The so-called American scale, beginning with $\frac{1}{2}$ mm., increases in diameter by $\frac{1}{2}$ mm., like the Gouley scale, up to $10\frac{1}{2}$ mm., but making the sizes from 1 to 20. The numbers of these sizes are stamped under them, while over them is stamped the number of millimetres diameter. On the reverse the sizes are marked with numbers approximating the millimetres circumference of the French scale. For my own part I adopted the French metrical measurements at an early period. My first metallic bulbous sounds (made by Hernstein, 1861), were in 6 sizes, increasing by 2 millimetres in circumference from 18 to 30. By a gradually increasing appreciation of the necessity for more accurate measurement and a wider range, I had by 1870 increased the numbers to 26 mm. from 8 mm. to 34 mm., sizes graded by 1 mm. in circumference; and by 1874, to meet the requirements of practice, I was obliged to increase the numbers to 40. During the same year my urethra-metre was devised and presented to the profession. This instrument was so arranged that measurement of the urethral calibre could be accurately made, and by means of a screw at the handle, which governed the size of the dilating apparatus at the distal extremity, and also an indicator which moved on a dial at the handle of the instrument, thus registering accurately the *circumference* of the dilating apparatus, and also of the urethra when expanded to a size corresponding with its calibre (see p.). The adoption of measurement by circumference in this instrument was a necessity, if for no other reason because of lack of room to express fractions of diameter. It was also

adopted on account of supposed conformity with the Charrière filière scale. In an examination of the matter this was found by the late Dr. Bumstead to be an error, and shortly before his death my attention was called by him to the fact that *the Charrière filière scale increased in sizes by $\frac{1}{3}$ mm. in diameter.* So that while in supposed harmony with the standard French scale (then generally adopted all over Europe), the English and American measurements based upon it differed by $\frac{1}{3}$ mm. in every 1 mm. diameter. Dr. Bumstead, in his latest edition, formulated this error, showing that in practice it may become a matter of considerable practical importance, as will be seen by the following table:

No.	Diameter in Millimetres.	Circumference in Millimetres.	No.	Diameter in Millimetres.	Circumference in Millimetres.
1.....	0.33	1.03	21.....	7.00	21.99
2.....	0.67	2.09	22.....	7.33	23.04
3.....	1.00	3.14	23.....	7.67	24.08
4.....	1.33	4.19	24.....	8.00	25.13
5.....	1.67	5.24	25.....	8.33	26.18
6.....	2.00	6.28	26.....	8.67	27.23
7.....	2.33	7.33	27.....	9.00	28.27
8.....	2.67	8.38	28.....	9.33	29.32
9.....	3.00	9.42	29.....	9.67	30.37
10.....	3.33	10.47	30.....	10.00	31.42
11.....	3.67	11.52	31.....	10.33	32.46
12.....	4.00	12.57	32.....	10.67	33.51
13.....	4.33	13.61	33.....	11.00	34.56
14.....	4.67	14.66	34.....	11.33	35.60
15.....	5.00	15.71	35.....	11.67	36.65
16.....	5.33	16.76	36.....	12.00	37.70
17.....	5.67	17.80	37.....	12.33	38.75
18.....	6.00	18.85	38.....	12.67	39.79
19.....	6.33	19.90	39.....	13.00	40.84
20.....	6.67	20.94	40.....	13.33	41.89

Charrière filière: Diam., 1; Circum., 3.14159.

Fortunately the Scotch scale never emigrated to America, but without this we had practically five scales claiming to be authorities in estimating the urethral proportions: 1st, the old English scale, Thompson; 2d, the French Charrière filière, adopted by Bumstead with

English attachment; 3d, the Gouley scale, French diameters, with approximate English figures; 4th, the American scale with approximate French figures; 5th, the metric scale, increasing by 1 mm. in circumference and going 6 numbers higher than any other of absolute necessity, as I had demonstrated the frequent occurrence of urethræ the normal size of which was equal to 40, and even more.

It will be readily seen that great embarrassment in appreciating descriptions of cases, when urethral measurements are considered, must of necessity arise, unless the profession throughout the world will take the time to acquire a familiarity with some *one* reliable mode of urethral measurement.

Nothing is more common than for a surgeon to publish a case stating that he had dilated the urethra up to, say, No. 21, omitting to state whether it was 21 French, 21 English, 21 American, or Van Buren and Keyes, 21 Gouley, or 21 mm. in circumference, and most likely if inquired of would say that it was the number marked on his sound, and he did not *exactly* know to which scale it belonged. Even if he were able to say, various readers would fail to appreciate any scale they were not in the habit of using. I would, then, urge the adoption of a uniform urethral scale graded by millimetres in circumference, and for the following reasons:

1st. That the metric system in all other matters is being rapidly adopted by the medical profession, for the sake of accuracy and uniformity throughout the world.

2d. That it is already the standard in France, whose surgeons have done more to advance the science of urethral surgery than those of any other country, and that through their influence the continental surgeons have already adopted the metric system of urethral measurements *in circumference*. This system is in use by the best English surgeons and recommended by them, and it is also more generally adopted in America and in other parts of the world than any other.

3d. That it meets all the necessary requirements and may be used to express any and all urethral sizes without the possibility of any misunderstanding or uncer-

tainty. I would still further propose that all surgeons, as far as in them lies, should use their influence in *erasing* the numbers of all existing urethral instruments which are now marked with measurement figures other than those expressing measurements by millimetres in circumference, and having them *remarked* with the French figures *in circumference*. And finally, that all instruments hereafter ordered should be made and marked in conformity to the metric measurement by circumference. Dr. C. H. Thomas, of Philadelphia, in the *Philadelphia Medical Times*, June, 1879, in an article urging the necessity of a uniform scale of measurement for surgical instruments and apparatus, presented an ingenious contrivance of his own for ready and accurate measurement of instruments *by millimetres in circumference*. This is manufactured by Messrs. Gemrig & Sons, surgical instrument makers, No. 109 South Eighth Street, Philadelphia, who have generously offered to send this measuring scale gratuitously to any member of the medical profession desiring the same.

LESSON LII.

Urethral measurements—Necessity of the adoption of a uniform method—Note—Showing the want of some exact and common standard of measurement—Value of the urethrometre—Description of the instrument—Mode of using it—Proportionate relation between the size of the penis and the urethra—Table showing this relation—Verification of its correctness through actual measurements with the urethrometre of over one thousand cases—Difference in calibre between the bulbous urethra and the portion anterior—The bulbous sound—Usual locality of strictures—Stricture most frequent in the anterior portion of the canal—Statistics on this point—Solid steel sounds—Different varieties—Mode of introduction.

The Urethral Scale.—This is graduated by the French millimetre from 1 m. in circumference to 40. On the opposite side are the numbers of the English scale. "The scale for grading the sizes of instruments has never been very accurately fixed, except in France." * The French scale increases by one millimetre in circumference. This is a recognized standard scale in all countries at the present day, and the sizes of all other scales must be translated into this, in order to become intelligible in descriptions of cases. It is not rare to find urethræ with normal calibre of 40. The entire set, from 8 m. to 40, is absolutely essential to every surgeon who desires to make complete and accurate urethral measurements. The stricture which will permit say 25 of this scale to pass without obstruction, will often hold distinctly and firmly upon a bulb measuring 26 f. It is thus shown that the gradation of this scale is not too fine, and that no numbers can be dispensed with.

For actual urethral measurement we have *the Urethra-meter*.—With this instrument an accurate measurement of the normal urethral calibre may be made, in any case, within the compass of the instrument, the

* "Genito-urinary Diseases." Drs. Van Buren and Keyes, New York, 1875, p. III.