

All the induration had disappeared from the penis in the points first affected, and had localized itself in a band a quarter of an inch wide at the root of the organ. Erections had been so imperfect that sexual intercourse had been nearly impossible for a year, but now the narrow band at the root only caused the penis to tilt up sharply. The member became fully erect, and intercourse was unimpeded. To improved general health and "the use of the organ" he ascribed his cure. In 1871 (seven years from the commencement of the affection), in response to a letter, exactly the same condition of induration as that which existed in 1868 was reported, with possibly slight improvement. The patient added, further, that he had an older (seventy-seven years) brother living, who was affected precisely as he himself was, though to a less degree, and had been so for a number of years.

CASE VI.—In 1871, a gentleman of sixty-three, in robust health, which he had always enjoyed, called to state the following facts: About three months previously, during intercourse, he felt a slight twinge at the root of the penis on its upper surface, which he ascribed to the increased fatness of his wife. Shortly after this, he noticed a slight tenderness in the same locality, accompanied by a ring or line of hardness. This lump had grown but slightly since first discovered and had not altered in situation. There was upward curving of the penis on erection.

Examination revealed a perfectly circumscribed induration, with a cartilaginous feel, lying across the penis at its root (one-half by one-quarter inch), occupying both corpora cavernosa superficially. There was only very slight sensitiveness on pressure. There was no opportunity for even a suspicion of syphilis in the history or in the examination of this patient.

The treatment suggested was, to pass the constant current several times daily from as many elements as could be endured without actual pain, through wet electrodes placed on either side of the induration. In this case, injury would seem to have acted as a cause.

The induration advanced forward along the dorsum penis, a thickened, slightly-sensitive, rough ridge, occupying the advancing border. Posteriorly, the mass diminished in volume. All the uncomfortable sensations became aggravated at night and after standing.

CASE VII.—In 1871, a fat, healthy gentleman of forty-six, with three children, also all healthy, was sent for advice about an induration, which had come on insidiously in the substance of the right corpus cavernosum, just behind the corona glandis. It had been discovered shortly before by accident. No known injury had preceded it. During erection there was chordee toward the right side, with a little pain. The induration lay along the right lateral half of the penis and measured one by one-half inch. In all its features it resembled the indurations detailed in the two preceding cases, except that it had not yet been observed to move, and had no raised sensitive border.

This patient had had undoubted syphilis of mild and irregular type. He improved decidedly without treatment, and when last heard from was but little incommoded.

CASE VIII.—In 1871, a gentleman of sixty came to complain of a lump on the dorsum penis, the nature of which he feared was cancerous. He had discovered it by accident seven months previously. It had enlarged considerably since first detected. About four months after finding the lump he noticed defective erection, with slight pain at the implicated spot.

Examination reveals a distinct, circumscribed plate of hardness, having a cartilaginous feel, oval in shape, lying along the root of the dorsum penis. A slightly-raised ridge in front is a little painful on pressure and during erection. Its posterior border loses itself under the symphysis. The anterior edge ends abruptly. The patch extends across

both corpora cavernosa, and is evidently situated beneath the sheaths. It measures one and a quarter inch antero-posteriorly, three-quarters of an inch laterally.

Four months afterward the patient returned to say that erections were still more interfered with, rendering intercourse impossible. The lump was extending somewhat anteriorly and laterally.

This case presented no evidence or suspicion of any venereal taint.

CASE IX.—In 1872, a perfectly healthy merchant from the West, aged forty-eight, and married seventeen years, presented himself with a hard, semi-elastic patch of induration across the root of the dorsum penis, about one and a half inch each way, the whole giving the idea of two thin plates joined in the middle line of the dorsum, with some mobility at the line of junction. The edges were slightly thickened and sensitive. The induration had advanced forward one inch in six months. Sexual intercourse was not prevented, but some management was necessary in its performance. No possible cause could be assigned.

CHAPTER II.

DISEASES OF THE URETHRA.

Anatomy.—Natural Curve of the Urethra.—Proper Curve for Instruments.—Catheterism; Obstacles to Catheterism in the Healthy Urethra.—Deformities of the Urethra; Imperforation, Atresia, Hypospadias, Hermaphroditism, Epispadias.—Urethral and Sexual Hygiene.—Injuries of the Urethra.—Urethral Fever.—Foreign Bodies.

THE urethra is the common duct for the escape of urine and semen, and, in considering its diseases, this double function must not be lost sight of. It is always a shut canal throughout its whole course, except when distended by some foreign substance. Commencing at the neck of the bladder, it tunnels the upper part of the prostate, perforates the triangular ligament, and terminates at the end of the penis. Its size varies greatly, and, like the penis and testicles, it remains comparatively very small until after puberty. Its size is not constant for a given size of penis, a small member being sometimes provided with a large urethra, and *vice versa*. Its length has been estimated at all points between five and fourteen (Pitha) inches. The length varies with the condition of erection or flaccidity of the organ. It may be lengthened by disease (enlarged prostate). In round numbers, the length of the urethra of a well-proportioned adult is eight inches, six lying in front of the triangular ligament (spongy portion), a little less than one inch between this and the apex of the prostate (muscular or membranous portion), a little more than one inch surrounded by the prostate (prostatic portion).

The spongy portion is surrounded throughout by the erectile corpus spongiosum, terminating below in the bulb. Here the canal pierces the triangular ligament—that firm, fibrous fascia, stretching across the space bounded by the ischio-pubic rami—and, becoming membranous, is cov-

ered (besides the muscular fibres of organic life) by voluntary muscular tissue which entirely surrounds it. This muscle has had special names given to different portions of it by Guthrie, Müller, and Wilson. In this muscular group, described as one muscle by Cruveilhier¹ (transverso-urethral), is often the seat of spasmodic stricture; and it is here that muscular contraction may oppose the passage of an instrument into the bladder for several minutes, even when there is no evidence of urethral disease. These are the muscles which constitute the voluntary "cut-off," over which every healthy individual has full control. To allow the urine to pass, these are voluntarily relaxed, with the vesical sphincter, and then the detrusor expels the urine by its tonic tendency to contraction, over which the individual has no control. If a catheter be introduced, so as to do away with any effect of the "cut-off" muscles, no voluntary effort of the individual can arrest the stream of urine, nor indeed cause it to flow with greater force unless the abdominal muscles or diaphragm be called into action.

This "cut-off" then controls urination in health: relaxed, the urine flows; voluntarily contracted during any part of the act, the stream is cut off as sharply as if by a knife.

Some erectile tissue and a good deal of unstriped muscle are found around this as well as around all other portions of the urethra, but the function of the cut-off muscle must be kept clearly in view, on account of its bearing upon catheterism and spasmodic stricture.

The membranous urethra is, of all parts, the most positively fixed. There is no marking on the mucous lining of the canal to indicate any division between it and the spongy portion. The separation into parts is arbitrary. The prostatic urethra bores the prostate, sometimes barely covered by that organ above, sometimes surrounded by a considerable thickness of the same.

Unstriped muscle, of which the prostate is mainly composed, surrounds the urethra from one end to the other, and enters largely into the erectile structures of the penis as well. Stilling² has clearly described and given prominence to the latter fact.

The diameter of the urethra varies even more than its length. It has been estimated at from two to six lines. *A fair, average, well-formed adult urethra measures about three-eighths of an inch in diameter.* Much more important, however, from a practical point of view, is the relative size of the urethra, and this does not vary. Every urethra has normally two points of sensible narrowing, and two of decided dilatation, the former at the meatus urinarius and triangular ligament, of which the meatus is always the smaller. Like every pipe designed by Nature or art to throw a smooth stream, the orifice is smaller than any other portion of the tube, a fact to be constantly held in view. The two

¹ *Op. cit.*

² "Die rationelle Behandlung der Harnröhren Stricturen," etc., Cassel, 1870-'72.

points of enlargement are the fossa navicularis (so called from its supposed resemblance to a boat), which is situated just inside the meatus, and the bulbous urethra, occupying a position immediately in front of the triangular ligament. Of the two, the latter is the larger. The urethra enlarges again in the prostate (prostatic sinus). Fig. 7, from Thompson, shows these points in diagram.

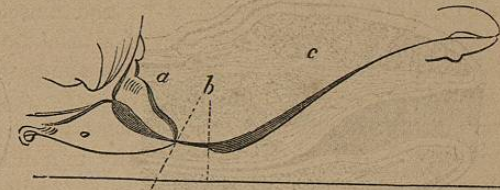


FIG. 7.—(Thompson.)

a, b, and c, represent the Prostatic, Membranous, and Spongy Portions.

In the fossa navicularis lies the valvule or lacuna magna (Fig. 8), a little mucous flap on the roof of the urethra about half an inch from the meatus, shutting in a fossa about two lines deep. In this valvule the points of small instruments are very apt to become engaged. There are other blind pouches or lacunæ of variable size scattered along the urethra, chiefly on its roof, and known as the sinuses of Morgagni. They run parallel with the urethra for perhaps half an inch, and terminate in a *cul-de-sac*. Cruveilhier found one an inch long. The openings of these sinuses all look toward the meatus, and are often large enough to receive the points of filiform instruments, a fact to be remembered in manipulating with fine bougies (see Fig. 29). Another lacuna in the urethra, which may catch the point of a fine instrument, is the sinus pocularis (Guthrie) or utriculus of the prostate, a deep little depression running down in front of and underneath the veru montanum.

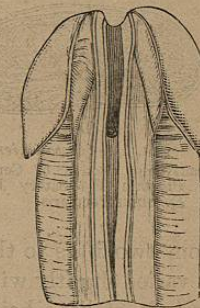


FIG. 8.—(Cruveilhier.)

The mucous glands of the urethra are small clusters of minute follicles, very abundant, opening either on the free surface of the membrane or into the sinuses of Morgagni.

Cowper's glands are small, round, lobular bodies about the size of cherry-stones, lying just behind the bulb of the urethra in the transverso-urethral muscle. Their ducts are sometimes very long, but average a full inch, and open into the floor of the urethra. Their fluid is supposed to aid in diluting the sperm. The urethra has about the same amount of sensitiveness in health as the conjunctiva. In the prostatic sinus, however, sensibility is exaggerated. The color of the membrane is a pale pink. In a state of rest its walls lie in contact, obliterating the cavity of the canal, so that a cross-section presents a slit instead of an opening (Figs. 9, 10, and 11).

CURVE OF THE URETHRA.—In connection with the anatomy of

the urethra, it is advisable to give some details of explorations, and of catheterism and the use of instruments in the normal canal.

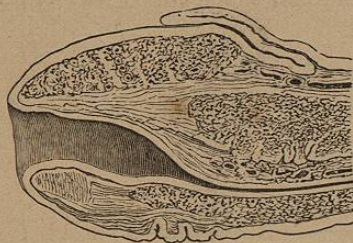


FIG. 9.—(Cruveilhier.)
Vertical Section through Glans and Fossa Navicularis.

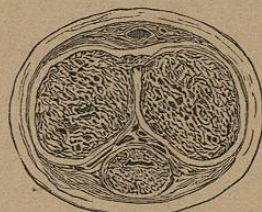


FIG. 10.—(Cruveilhier.)
Transverse Section of Penis.

The lowest point of the urethra is just in front of the triangular ligament, where it lies about one inch beneath the symphysis pubis. From this to the meatus the canal takes any position according to the direction given the penis; toward the neck of the bladder, however, the urethra is said to have a fixed curve. This is not strictly true,

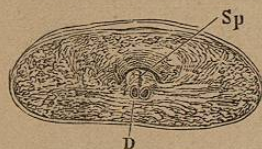


FIG. 11.—(Cruveilhier.)
Transverse Section of Centre of
Prostate Ejaculatory Ducts.
Sp, Sinus Pocularis.

for straight instruments may enter the bladder—a proceeding rather difficult, often painful, never absolutely indispensable, if indeed necessary. At rest, however, the urethra has a curve which, in the membranous portion, is fixed, and runs, on an average, at a distance of from two-fifths to three-quarters of an inch from the symphysis pubis. It varies slightly with individuals and in the same individual at different periods of life; being shorter and sharper in the child, longer in the old man. A distended bladder or enlarged prostate lengthens the curve.

The proper average curve, as recognized since Sir Charles Bell,¹ and insisted on by Sir Henry Thompson,² the one which will mathematically accord with the greatest number of urethræ, is that of a circle three and one-quarter inches in diameter; and the proper length of arc of such a circle, to represent the sub-pubic curve, is that subtended by a chord two and three-quarter inches long.³ An instrument made with a short curve of this description will readily find its way through the normal urethra into the bladder without the employment of any force. It is very desirable that instruments intended for habitual use should be so constructed, inasmuch as many of the difficulties of catheterism are due to a defective curve in the instrument employed. The defect most fre-

¹ "Morbidity Anatomy of the Urethra."

² "Stricture of the Urethra."

³ "In the winter of 1852-'53, assisted by the late Dr. Isaacs, I made a series of careful experiments upon sections of frozen subjects, as well as by injecting the urethra with numerous substances, afterward carefully cutting out the casts. I found the average curve to be identical with the one given above."—VAN BUREN.

quently encountered is a too great straightness of the last half-inch—a deviation of the curve at its most important point. In an instrument properly made (Fig. 12) it will be found that a tangent to the axis of

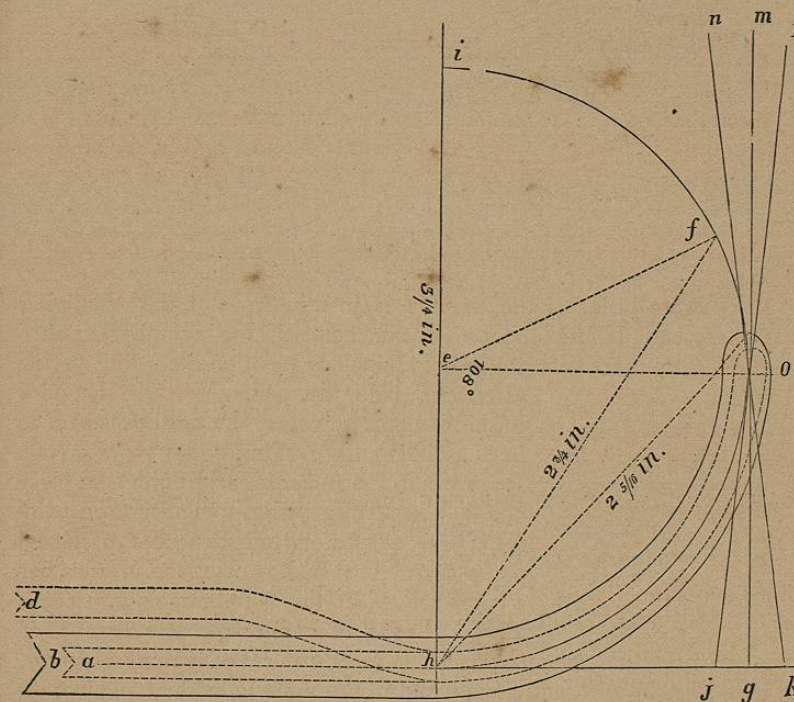


FIG. 12.
Instruments as ordinarily made, with Faulty Curve, *Oa, Od* (Béniqué). Correctly-curved Conical Instrument, *Ob*. Length of Natural Curve of Urethra, *fOh*. Length of Cord of Curve of Sound, *hO*, $2\frac{5}{16}$ in.

the curve at its extremity will intersect the projected axis of the shaft at a little less than a right angle (*nk*). If the curve comprised only a quarter of the circle, the tangent would meet the projected shaft at a

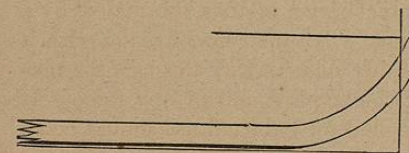


FIG. 13 A.—Faulty Curve.

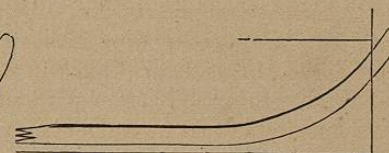


FIG. 13 B.—Faulty Curve.

right angle (*mg*); but instruments made of this length and a little longer, as they are usually found, invariably have the last part of the

¹ An instrument destined for habitual use by the patient is sometimes made half an inch short in the curve, on account of the greater ease of introduction of such an instrument through the pendulous urethra.

curve tilted off into a faulty direction, as shown in the plate (Fig. 12), making the angle, between a tangent to the axis of the curve at this point and the projected axis of the shaft, obtuse ($l j h$), and falling within the right angle.

Figs. 13 *A* and *B* represent faulty curves—still occasionally encountered on instruments. Fig. 14 shows the correct curve.

It is better to prolong the curve around the circle, and even slightly decrease that of the terminal quarter of an inch, as instruments so made are much less apt to be defective, and the point is, for all practical purposes, still at right angles to the shaft, and one and three-quarter inch from it. A knowledge of this relative position and direction

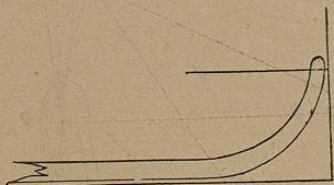


FIG. 14.—Proper Curve.

of the point is of great importance in difficult catheterism. A moderately short curve is as good as a long one, provided it is accurate; indeed better, for, should the instrument be made with the full length of curve, three-tenths of the circle, that portion subtended by a chord of two and three-quarter inches, its point is so far from the shaft that it is sure to "wobble" when the point encounters an obstruction. This objection is all the more applicable to the Béniqué instrument (Fig. 12, *d h o*), on account of its having a posterior as well as an anterior curve. This "wobbling" is not of serious importance in the healthy canal, but it is very distracting to the surgeon when a tight stricture is to be entered. Here the short conical point, at right angles to the shaft and one and three-quarter inch from it, is vastly the superior in point of steadiness, and is equally certain to follow the urethral curve accurately.

EXPLORATION OF THE URETHRA — CATHETERISM. — The introduction of a sound, staff, or catheter into the bladder, is generally spoken of as "catheterism." The use of the staff or sound is sometimes denominated "sounding." The manœuvre in either case is the same. There being given a canal of certain dimensions and curvature, and an instrument to fit it, the problem is to introduce the latter into the former. Nothing is easier, although to perform the operation perfectly is less simple than would at first appear. No amount of instruction, no volumes of directions, can teach the student how to pass the sound. He must learn by doing it, first upon the dead, then upon the living body. Some suggestions may, however, be given.

Always make the patient lie down on his back, with his head on a pillow, his legs slightly separated, his body relaxed, his fears quieted, and himself as comfortable as possible. Both hands should be practised in introducing the sound, and the surgeon should keep his elbow supported during most of the operation, in order that his hand may be more steady. If the right hand is used, the surgeon places himself at

the patient's left, and *vice versa*. To explore the canal, a simple, blunt, steel instrument, of medium size, is selected and properly warmed. The penis is gently encircled by the fingers and thumb of one hand, the instrument held lightly with the points of three fingers and the thumb of the other. The shaft of the instrument is held over the fold of the groin, its handle nearly in contact with the skin, from which latter (the integument, first of the groin and then of the abdomen) it is not to be moved away until the point of the instrument is about to enter the fixed portion of the urethra (membranous). The instrument, at first held along the groin, with its point high and handle low (Fig. 15), is entered at the meatus, and the penis is moulded up over it. It is not pushed into the urethra, but the urethra is made to swallow the instrument, as it were. When the curve, and perhaps an inch of the shaft, has disappeared within the meatus, the handle of the instrument is swept around over the surface of the belly, so

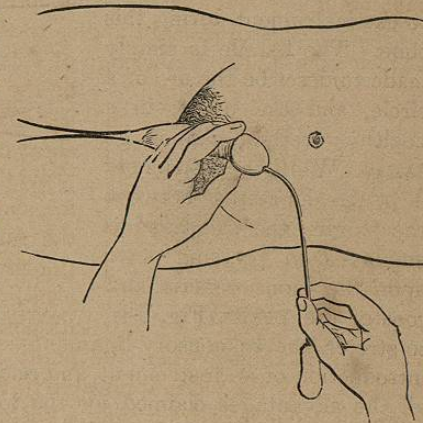


FIG. 15.

as to lie exactly over the linea alba, parallel with it, and still close to the integument (Fig. 16). The whole shaft of the instrument is now to be gently pressed toward the feet, being still kept close to and parallel with the surface of the belly (the penis, meanwhile, being lightly grasped

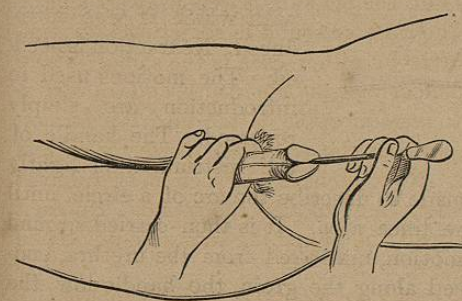


FIG. 16.

behind the corona glandis, and held steady). The point of the instrument should be followed with the little finger of the hand which manages the penis, and, when it gets fairly past the peno-scrotal angle, the whole scrotum, with the testicles and penis, should be largely seized with the hand and pressed up against the pubis, with slight upward traction. The point may now be felt to settle down and adapt itself to the sub-pubic curve, whence on, the weight of the instrument, properly directed, should carry it into the bladder.

As soon as the curve lies well against the symphysis, scrotum, testicles,

and penis should be dropped; the hand which held them takes the instrument, simply steadies it in the median line, and gradually carries the shaft away from the abdomen (Fig. 17), making the handle describe the arc of a circle, and depressing the shaft between the thighs, until it lies nearly in the same plane with them. No pushing movement should be imparted to the instrument during this time. The handle is simply made to describe the arc of a circle, and the point, in a healthy urethra, cannot go astray. While the instrument is being depressed between the thighs, the free hand is employed in pressing down upon the mons veneris and root of the penis (Fig. 18),

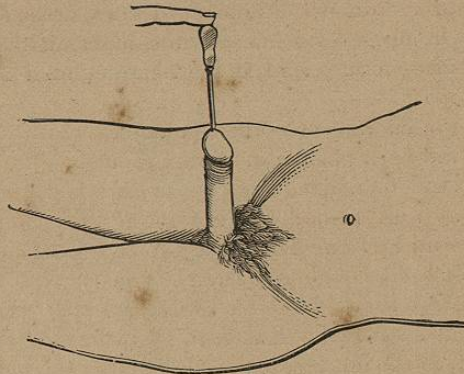


FIG. 17.



FIG. 18.

to stretch the suspensory ligament—a point of importance to the easy introduction of an instrument, and one which supplies to the short curve all the advantages claimed for the longer Béniqué curve. When the instrument is in the bladder, its point may be moved freely from side to side by partly rotating the handle. The instrument should be withdrawn with the same slowness and care with which it was introduced. No traction is needed. The motions used in introduction are simply reversed. The handle of the instrument is lightly caught, and, without traction, made to describe the arc of a circle, until it touches the abdomen over the linea alba. It is then carried around to the groin, and, by a tilting motion, unhooked from the urethra, ending exactly where it commenced along the groin, the handle low, the point high.

The first principle of instrumentation in the urethra is to avoid the use of force. Even in a healthy subject, sometimes, the beak of the instrument will become arrested by contraction of the unstriped muscle surrounding the canal. A little patient waiting will overcome this, and the instrument glides on. The arrest of a sound from muscular con-

traction, however, usually takes place in the membranous urethra, from spasm of the “cut-off” muscle (spasmodic stricture). The practised touch rarely fails to detect at the handle of the instrument the slight contractions of the muscular fibres around its point, and in this way diagnosis with organic stricture is easy. Gently holding the instrument in place for a few minutes, with slight forward pressure, will tire out the muscles, and, if the obstruction is muscular, the sound will shortly pass.

There is another point at which a large instrument is liable to arrest in a healthy urethra, namely—the triangular ligament. Here, it will be remembered, the urethra is narrower than anywhere else within the orifice, and just in front of this point exists, naturally, the greatest width of urethra. Now, if the canal be flabby, or the instrument not large enough to distend it (a small sound is much more apt to catch here than a large one) the point may become arrested along the floor by the triangular ligament, or along the roof (more rarely) in the little fossa lying above the edge of the sub-pubic ligament. The instrument is known to be arrested by the bulging out of the curve in the perinæum, as the shaft is being depressed between the thighs and the rebound of the handle when liberated. The obstacle is overcome by gently manœuvring the point of the instrument, by partial withdrawal and reintroduction, or by slight depression of the beak, then lifting it over the obstacle with a finger in the perinæum, at the same time pulling up the point of the instrument to make it sweep the roof of the canal. This will generally render the introduction of a finger into the rectum unnecessary. The dangerous “tour de maître”¹ might be gently tried, but no force should ever be used in any manipulations at this point, as a false passage is easily made here, and under these very circumstances. The depression of the handle of the instrument alone is capable of exerting enormous power. The sound represents a lever of the first order, and the surgeon has the long arm.

With a little patience a suitable instrument will always pass into the bladder, unless there is stricture. When the point has traversed the membranous urethra, it must continue on freely, if the prostate is normal. The so-called spasm of the neck of the bladder does not exist as an obstruction to the passage of instruments.

Instruments, small enough to engage in the sinuses of Morgagni, are not used in the healthy canal. Instrumentation in morbid conditions will be detailed in connection with the different diseases requiring it.

A silver catheter is introduced in the same manner as the sound. In using soft instruments without a stylet, the penis is slightly pulled upon, so as to efface any circular folds, and the instrument is pushed

¹ The *tour de maître* consists in introducing a sound with the shaft between the legs until the point is arrested at the bulb. Then the handle is rapidly made to describe a semicircle until it reaches a vertical position, when it is at once depressed between the thighs. It is brilliant, effective, but dangerous.

straight onward into the bladder. If it gets arrested, it doubles up, and the hand becomes conscious of a stoppage in the forward gliding movement. Partial withdrawal and rotation during the next forward movement will cause it to pass.

No instrument should enter the urethra unless it is smooth, polished, and well oiled. Warmed oil, thrown into the canal with a syringe, greatly facilitates the passage of instruments.

The sensation experienced by the healthy urethra is that of hot points pricking the canal along the part being traversed by the foreign body. As the instrument enters the membranous urethra, a desire to urinate begins to be felt, which increases as the prostate and neck of the bladder become distended by the instrument, so that the patient sometimes believes that urine is flowing away, in spite of the surgeon's assertions and his own observation to the contrary. Nausea, and even syncope, may occur as the instrument distends the prostate, especially on the first introduction in sensitive young people. Occasionally, distention of the prostatic sinus produces a partial venereal orgasm.

If the patient faints, the instrument should be withdrawn at once and the legs elevated, while the head is hung over the edge of the lounge upon which he has been lying. The facility with which this may be done, if necessary, is one of the reasons for placing the patient on his back. The introduction of special instruments (lithotrite) will be given, with their description.

DEFORMITIES OF THE URETHRA.

The urethra is subject to arrest and error of development, but is not often seriously deformed. Among curiosities of deformity may be mentioned the abnormal position of the meatus on the side of the glans penis; the termination of the ejaculatory ducts in a separate canal, running along the dorsum of the penis and opening behind the glans¹ (gonorrhoea of this canal has been noted); termination of the urethra in the groin.² Only isolated instances of these rare deformities are known. The urethra is absent where there is no penis. The bladder is usually also lacking in these cases, and the ureters discharge into the rectum. No case of double urethra is known, except with double penis. Valvules, pointing backward (Guyon), occasionally exist congenitally in the urethra, and partially prevent the outward flow of urine, but offer no obstacle to the introduction of instruments. They are found about the veru montanum, or near the bladder. Congenital stricture has been observed several times by Nélaton³ and by James Syme.⁴ In these cases dilatation alone was not effective. Internal urethrotomy was required. Congenital urethral dilatations of great size have been observed in a

¹ Cruveilhier, *op. cit.*, p. 420.

² Haller, quoted by Pitha, *op. cit.*

³ Phillips, "Traité des Maladies des Voies urinaires," p. 271.

⁴ *British Medical Journal*, p. 1, 1862.

few cases, attended by atrophy of the corpus spongiosum at the dilated point. Their relief is effected by cutting away the redundant tissue, accurately coapting the edges of the wound, and treating as for longitudinal incision of the urethra.

All the foregoing anomalies are exceedingly rare, and would not probably be met with at all in general practice. There are other deformities, however, which are more common, namely—imperforation, atresia, hypospadias, and epispadias.

IMPERFORATION AND ATRESIA.—The meatus alone may be imperforate (or nearly so), or any portion of the canal may be obstructed by a membranous partition, or replaced by a fibrous cord: in these cases the urachus sometimes continues open for the escape of urine. They all call for surgical interference, and that too, at once, if the urachus be closed.

If the meatus alone is occluded, an opening is made at the point where it ought to be, and the healing of the wound prevented by daily use of bougies. If a diaphragm exists farther down, it may be punctured with a fine trocar. The same instrument may be used where there is atresia, the point being pushed along the course which the urethra naturally follows. If the atresia involves a portion of the pendulous urethra only, success may be confidently hoped for, leaving the patient in a condition of serious organic stricture, requiring the persistent use of means to keep the canal open. The bleeding is not great, and may be arrested by cold and pressure. When, however, the whole urethra is replaced by a fibrous cord, the prognosis is very bad; yet, even here, it is the surgeon's duty to attempt to open a passage into the little sufferer's distended bladder. A direct opening from the perinæum into the bladder would be the most judicious surgical proceeding in these cases, the urethra being attended to afterward. Without a previous opening in the perinæum, a fine trocar, a blunt tenotomy-knife, or a silver probe, may be used, to cut and break down the connective tissue, occupying the position where the urethra ought to be, and this may be continued on from the meatus into the region of the neck of the bladder. Sometimes immediate success crowns this desperate course, while again the attempt has been abandoned, and after a number of hours urine has found its way out through the artificial opening. Several very interesting cases have been collated by Guyon.¹ Such openings necessarily tend to recontract, and throughout life occasional use of the sound would be required.

HYOSPADIAS AND EPISPADIAS are the most common congenital deformities of the urethra. According to Baron,² epispadias occurs once for one hundred and fifty cases of hypospadias.

¹ "Des Vices de Conformation de l'Urèthre chez l'Homme et des Moyens d'y remédier." Thèse, Paris, 1863.

² Quoted by Guyon, *op. cit.*, p. 25.