

portion of the urethra which are sometimes called into action, especially in irritable subjects, by the presence of a foreign body, and it requires but little practice to make the distinction. Moreover, in spasmodic contraction, a full-sized sound can be introduced with a little gentle coaxing, and, if allowed to remain a short time, is found to be freely movable.

Strictures of the urethra anterior to the scrotum are sometimes appreciable from the surface in consequence of the amount of firm deposit which surrounds them; and external as well as internal examination is always desirable in order to ascertain the presence of any sinus or abscess in the neighborhood of the canal.

However simple the introduction of a sound or catheter may appear to be, and however simple it really is in most instances to a practiced hand, yet cases now and then occur in which the most able surgeons meet with difficulty or are completely foiled on the first trial. The evident rule in such cases is to be sure to do no harm and, if necessary, *patiently to wait*.

TREATMENT.

CONSTITUTIONAL MEANS.—The constitutional management of stricture must of course vary in different cases. It is sufficient, in most cases, to prescribe such measures as will best promote the health, and place the system in the most favorable general condition. An indication of the highest importance is to lighten the duty imposed upon the kidneys, and render the urine bland and unirritating to the inflamed surfaces over which it passes; and this is to be chiefly accomplished by regulating the character and quantity of the food, and favoring depuration of the blood through other channels, as the skin, bowels, and lungs. The diet should be simple but sufficiently nourishing; stimulants, and especially effervescent stimulants, as champagne and beer, highly seasoned food, cheese, cabbage, salt meats, strong coffee, and all articles which tend to load the urine should be avoided; the bowels should be opened daily, if necessary, by gentle laxatives, but violent purges are to be avoided. The skin should be stimulated by frequent bathing and friction; when there is much irritability of the urethra, the hot hip-bath will be found very beneficial; no more exercise should be taken than is sufficient to maintain the appetite and strength; and in general the patient should lead a quiet and regular life. When the urine is alkaline, or contains an undue quantity of lateritious deposit, great benefit will be derived from the compounds of potash and soda with the vegetable acids, as the citrate and acetate of potash, and tartrate of soda and potash, etc. Sir Henry Thompson recommends benzoic acid in these cases.

Probably no class of affections has more thoroughly taxed the ingenuity of surgeons to discover some speedy and effectual method of cure, than have strictures; and a volume might be filled with the different operative procedures which have been proposed for this purpose; but the limits of this chapter require that I should confine

myself to the strictly practical, and speak of those methods only which have stood the test of experience.

DILATATION.—Numerous explanations have been given of the mode of action of dilatation, but the one now generally received, and which is probably correct, is, that, so far as it effects any permanently good results, it acts by promoting absorption. The presence of a bougie within a stricture may mechanically dilate its walls, but sooner or later after the withdrawal of the instrument, the plastic material again contracts; and all the phenomena attendant upon dilatation show that it accomplishes something more than this, and that, like pressure elsewhere, it possesses the power of producing absorption of inflammatory deposits. At an early period of the existence of stricture, before its constituent elements have become firmly organized, there is reason to believe that they may be entirely removed by the treatment now under consideration; at a later stage, a portion only can be thus dissipated, and it is in these cases especially that we are forced to be content with palliating the evil by mechanically enlarging the canal from time to time, or to resort to rupture or urethrotomy.

With regard to the instrument employed in dilatation we are in many instances limited to fine flexible bougies, because these alone can be made to pass the obstruction, and, as previously stated, flexible instruments are advisable in all cases which will not admit a sound as large as No. 12 (French). In less contracted cases, the unyielding material of metallic instruments gives them the advantage of not being indented by the firm walls of indurated strictures; and being inflexible they are entirely under the control of the operator and can be guided with precision in any desired direction; in all cases complicated with false passages they should undoubtedly be preferred. On the other hand, although no instrument can be made to glide into the bladder more gently and safely than a well-polished or nickelled steel sound, yet when used by persons of little experience in urethral exploration, it may occasion much suffering and inflict serious injury; such persons, whether incompetent surgeons, or patients practicing upon themselves, without previous instructions, should only make use of the flexible, bulbous-pointed, French bougies previously described.

The same method should be followed in performing dilatation as in ordinary catheterism. If the first instrument employed will not enter the obstruction, a second and smaller one must be tried; the dimensions of the stream of urine indicating by approximation the actual size required. All attempts to penetrate the narrowed channel should be made with the utmost gentleness, and any sudden thrusting of the instrument avoided; force is only admissible when the point is felt to be "held," thereby indicating that it is already engaged in the passage, and even then the pressure must be steady, only very gradually increased, and always moderate. False passages are usually

found below or at the sides of the urethra; hence, if there be any reason to suspect their presence, the extremity of the instrument should be carefully guided along the upper surface. It often happens, however, that the orifice of the stricture is eccentric, being above or below, or to one side of the centre of the canal; if therefore previous attempts have proved unsuccessful, the direction of the instrument may be varied; or, if a bougie be used, it may be turned on its axis at the same time that it is gently pressed forwards. Assistance is sometimes afforded, especially in strictures of the spongy and bulbous portions, by passing the disengaged hand down externally to the seat of the obstruction and exercising a certain degree of pressure. In cases of extreme difficulty, Sir Henry Thompson recommends that the urethra should first be freely injected with olive oil, which is to be retained by compression of the meatus while a small instrument is passed; he believes that thus the stricture is not only thoroughly lubricated, but also somewhat dilated by the mechanical pressure of the fluid, and states that this method has proved of very decided advantage in his hands.

A tight stricture may foil our efforts on the first trial, in which case the attempt should not be renewed for at least three or four days, or until all inflammatory reaction has ceased. With patience and perseverance, success may often be obtained after a number of sessions, even five or six. The endoscope may afford valuable assistance, as in several cases reported by Prof. R. F. Weir.¹ The endoscopic tube is to be crowded down firmly upon the surface of the stricture; then on making traction, by grasping the penis tight enough to prevent the tube from slipping, a funnel-shaped depression is formed, into the bottom of which a filiform bougie is passed and there held while the endoscopic tube is withdrawn. The bougie, being thus supported by the urethral walls, can now, in many cases, be readily passed on into the bladder.

In cases of tight stricture, accompanied by hyperæsthesia or spasm, an anæsthetic is desirable.

The length of time that an instrument should be retained will depend somewhat upon the sensitiveness of the canal. Mr. Thompson recommends that it should be immediately withdrawn. I am in the habit of leaving it in for from two to five minutes. The phenomena following the passage of an instrument through a stricture have been carefully studied by Sir Henry Thompson, and are both highly interesting and instructive. At the first succeeding act of micturition, the stream of urine is found to be increased in size: in the course of a few hours it diminishes, and is even smaller than before the introduction of the instrument; finally, after a day or two, it is permanently enlarged. Thompson attributes the first-mentioned effect to mechanical dilatation; the second to reactive congestion and spasm; and the third to the subsidence of the latter, and to the removal by absorption of a portion of the organic deposit. The practical deduc-

¹ Am. J. Syph. & Derm., N. Y., 1870, vol. i., p. 34.

tions from these observations are: that an instrument should not be inserted with such force, nor retained so long, as to excite decided inflammatory action; and that catheterism should not be repeated until the irritation produced by previous applications has disappeared.

An interval of from two to five days between the applications is usually sufficient. At the second visit, the instrument first employed may be introduced for a moment, then withdrawn, and the next larger size inserted. Thus by a gradual advance, the stricture may be enlarged to a calibre corresponding with that of the external meatus, but not to the original size of the constricted portion of the canal, unless the unyielding ring of the meatus be slit up. This should be done, unless the meatus is unusually patent, and the dilatation then be continued until an instrument equal in size to the normal calibre of the urethra, as measured by the urethrometer, can be freely passed; in short, dilatation to the fullest extent is to be recommended. Under no circumstances should catheterism be at once abandoned so soon as the stricture is dilated to the desired extent, whatever that may be; but the patient should be taught how to pass instruments himself and be directed to use them once a week for several months and at gradually increasing intervals for the remainder of his life. Any future tendency to contraction, as evinced by trial, should warn him that the subsequent treatment has not been faithfully carried out.

*Continuous Dilatation.*¹—A more expeditious mode of dilating stricture is by the method known as "continuous dilatation," in which a catheter, if it can be introduced, is retained for a considerable length of time, generally for several days in succession. In the course of twenty-four or forty-eight hours, a purulent discharge appears, proceeding from the seat of the obstruction, and the passage is rapidly enlarged; other instruments gradually increasing in size are then successively introduced, until the desired amount of dilatation be attained. No one instrument should be left in for more than forty-eight hours, lest it become incrustated with calculous deposit or cause deep ulceration of the urethral walls.

This practice is not to be recommended, unless when, from any cause, as for instance the presence of false passages, the difficulty already experienced in introducing a catheter has rendered it probable that it cannot be reinserted if once withdrawn. Continuous dilatation is likely to be attended with untoward symptoms and is always followed by a strong tendency to recontraction. I never resort to it except to the slight extent of enlarging the canal sufficiently to enable me to pass the shaft of some instrument intended for internal urethrotomy or rupture.

Within the last few years, several attempts have been made to revive continuous dilatation, and have acquired some temporary notoriety; one by M. Le Fort,² and another by M. Corradi,³ of Flor-

¹ "Dilatation permanente" of the French.

² Malgaigne, Méd. opérat., édit. Le Fort, 1875, p. 567.

³ See Broca, Rapport sur la prix d'Argenteuil, Bull. de l'Acad. de méd., Paris, t. xxxiv., p. 1215.

ence. Although the names applied by these authors to their methods would lead one to suppose them to be new, the process is essentially

the same as that already mentioned, and is to be judged as such. An interesting paper on Corradi's method is to be found in the thesis of M. Bos.¹

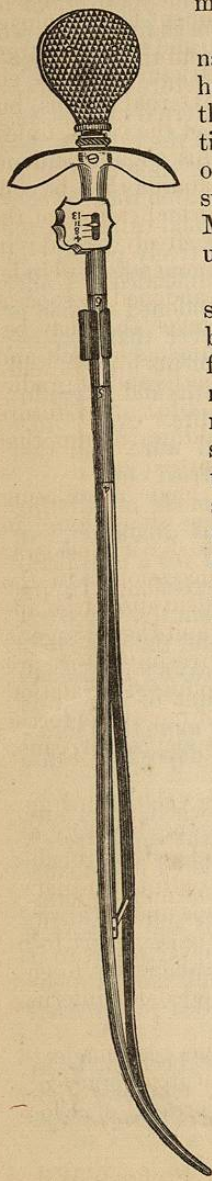
"*Over Distention.*"—Mr. Thompson applies this name to a method which does not differ from that heretofore known as "rapid dilatation," except that the instrument employed by him permits distention to be carried beyond the size which the meatus of the urethra will admit. The action of this instrument will be readily understood from Fig. 79. Mr. Thompson describes as follows the manner of using it:

"The method of applying the power by this instrument differs materially from that in others, in being made slowly (better, therefore, under the influence of chloroform), so that from seven to ten minutes are occupied in slowly reaching the maximum point of distention; the object being to overstretch the morbid tissues as much, and to rupture them as little, as possible, in order to destroy, or, at all events, to greatly impair, the natural tendency of the stricture to contract. Before operating, the distance of the stricture from the external meatus is measured by passing a full-sized bougie down to the stricture; the slide is then placed upon the figure which denotes that distance. The instrument is passed until the slide arrives at the meatus; when the maximum distention is reached, the screw is turned back a little so as not to close the blades; the instrument is withdrawn; a full-sized gum catheter is passed, and allowed to remain twenty-four hours. On the third day after the operation a large metallic sound is passed, and subsequently at longer intervals. If it is preferred to rupture instead of to distend to the same degree, the handle must be turned rapidly, and in a few seconds the full size named can be obtained."

I find it difficult to reconcile Mr. Thompson's commendation of this practice with what he says in the next sentence, when speaking of "rapid dilatation:" "This term and the practice it describes may now lapse into oblivion. The proceeding by rupture, whatever else it may do, must of necessity render wholly unnecessary any resort to the violent measures employed as rapid dilatation!"

¹ De la dilatation rapide des rétrécissements de l'urèthre, Thèse inaugurale, Paris, 1876.

FIG. 79.



I have reason to believe that this instrument is rarely used at the present time, even by its inventor.

In concluding the remarks upon this method of treatment I desire to say that gradual dilatation should be selected as the safest and best method of treatment for the majority of strictures, especially when seated at a greater depth than four inches from the meatus. As we shall see presently, it is not as well adapted for strictures of the pendulous portion of the penis; but even here the general practitioner, who is not familiar with urethral surgery, should not hastily abandon this method of treatment in favor of the more dangerous ones which we have yet to describe.

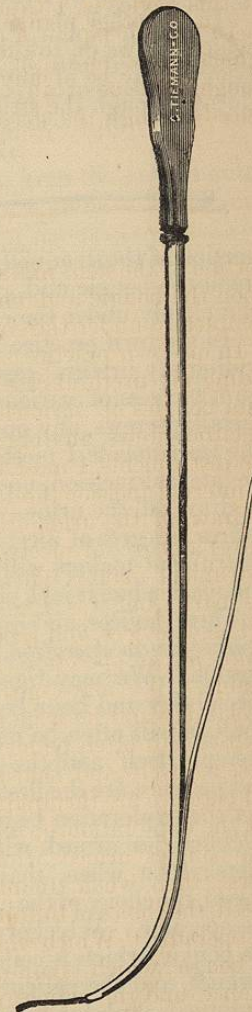
INTERNAL INCISION AND RUPTURE.—There are certain considerations connected with these two methods of treatment which, in order to avoid repetition, it may be well to take up at the outset.

The nearer a stricture is situated to the external meatus the less the danger, as a general rule, from operative interference. Strictures within three inches of the external orifice, and especially those at the meatus, are so unyielding, and recontract so readily, that incision becomes desirable. In the subpubic curvature the vascularity of the tissues would seem to call for rupture in preference to internal urethrotomy, and, in practice, the former will, as a rule, be found to be the safer operation.

There was, formerly, a radical defect in most instruments intended to operate upon urethral strictures from within the canal. I refer to the large size of the shaft of the instrument, which rendered it impossible to employ them in very tight strictures, and hence these instruments were open to the grave objection that a quarter or more of the treatment must first be accomplished by dilatation before they could be used. Two inventions obviate this difficulty in an admirable manner, and enable us to make use of either rupture or internal incision in any case of stricture through which any bougie, however small, can be passed.

In one of these, original with that eminent surgeon, Professor William H. Van Buren, M.D., the extremity of the urethral instrument

FIG. 80.



BIBLIOTECA
FAC. DE MED. U.A.M.L.

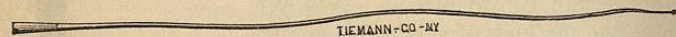
BIBLIOTECA
FAC. DE MED. U.A.M.L.

is perforated like a canula, for a short distance, say the eighth of an inch from its tip, with a groove extending further up the shaft, so that the instrument may be introduced threaded, as it were, upon a fine bougie previously inserted (Fig. 80).

This invention, while commending itself by its simplicity, is only adapted to whalebone bougies; gum bougies are too flexible to serve as the guide; and since the latter can often be passed through strictures in the subpubic portion of the canal, when the former cannot, the use of this device is, I think limited.

In the other plan, a flexible bougie is provided with a metallic cap which screws on to the extremity of the instrument (Fig. 81). The bougie may be of any degree of fineness; if its point can be introduced through the stricture and retained for a short time, the main

Fig. 81.



portion of the stem will soon follow; the metallic shaft is then screwed upon the bougie and passed into the bladder, when the stricture is completely under the control of the operator.

In my own practice I have extended the use of this plan by providing my urethral case of instruments with a dozen or more flexible gum bougies of various degrees of fineness, all of them armed with metallic screws, any one of which will fit the extremity of either of the instruments I most frequently employ for the purpose of rupture or internal incision, and which may also serve as a guide for a catheter to draw off the urine. This plan is only objectionable because it requires a degree of nicety in the adjustment of the screw-tips which few instrument-makers will give unless carefully watched and driven up to the mark; but it is, I believe, the best, and is of extended application.

These devices, and especially the latter, enable us to *seize the opportunity for an operation*. Strictures are not at all times equally permeable. We may "get through" one day and not another. If a special day and hour be appointed for the operation, unexpected difficulties will often be met with. When a difficult case of stricture presents itself and the first trial fails to pass the contraction, time and patience are the first requisites. Haste is almost sure to do harm. Let the exploration be repeated at proper intervals, always with flexible bougies armed with screws available when the opportunity offers; then when, thanks to skill and chance, the contraction is passed, the choice of the operation, whether rupture or incision, is left to the operator. Whichever instrument he prefers may be attached to the bougie, which is coiled up in the bladder as the shaft is made to advance, and the patient is relieved of his distress upon the spot by a rupturing tube or incising blade.

There are certain considerations pertaining to the treatment before and after the operation, whether by rupture or incision, which may as well be mentioned here.

No one should think of operating upon a stricture, unless in case of special emergency, while the patient is depressed from any cause. I find that many patients from the South and West are suffering with symptoms referable to malarial influence, aggravated probably by their urethral trouble, and this condition should first be removed by quinine and tonics.

A still more important point is to examine into the condition of the kidneys. It should be an invariable rule before operating in any case of stricture, to make one or more thorough examinations of the urine, and to its amount in twenty-four hours, its specific gravity, the presence of albumen, casts, etc. The importance of a continued low specific gravity as indicative of renal trouble, even if casts cannot be found, should not be forgotten. It is almost needless to say that any evidence of kidney disease makes the prognosis a grave one, and should lead us to avoid an operation if possible.

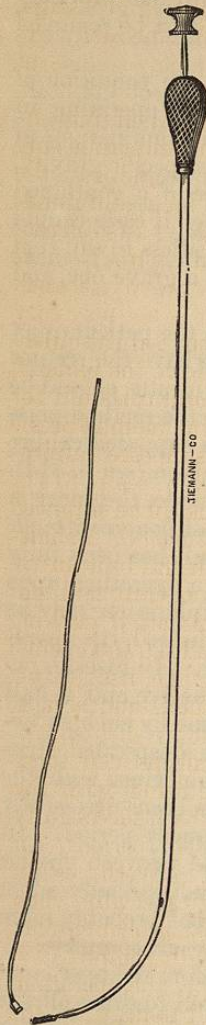
If an operation be decided upon it is best to keep the patient quiet for a few days beforehand, and to take measures to have the rectum empty. At the time of the operation the size of the meatus should be carefully examined, and if necessary be enlarged, by the method presently to be described, to a size corresponding to the supposed calibre of the urethra, as estimated by Otis's rule, already given (see p. 314).

Supposing the incision or rupture to have been made, the surgeon is naturally inclined to explore the canal by means of *bougies à boule* or otherwise, in order to ascertain if the desired result has been fully attained, and that no band of stricture remains. In operating upon the first three or four inches of the canal, this exploration may be made within reasonable limits with impunity, and, indeed, the operation may be repeated on the spot if found necessary. In cases, however, of tight stricture at the depth of from four to five and a half inches, I am satisfied that much harm is often done by such subsequent exploration over the raw surface. In these deep-seated strictures it is far better to remain satisfied, for the time being, with the fact that the divulsing tube or the incising blade has been successfully passed, and leave further exploration to a subsequent period. In short, it is one of those instances in which the old proverb *festina lente* is of great value, and in cases of tight stricture, especially when deep-seated, it is well to tell the patient beforehand that probably more than one operation will be required to render the result complete.

If the bladder was not emptied a short time before the operation, or if the operation has been prolonged, it is now well to draw off the urine, so that any further call to micturate may be delayed as long as possible. For this purpose we may employ an ordinary catheter, or, under those circumstances just mentioned, when the repeated introduction of instruments is undesirable, a fine catheter (Fig. 82) may be screwed to the bougie-conductor without withdrawing the latter from the canal any further than is necessary to detach the metallic shaft of the instrument employed in the operation. A steel stylet traverses this catheter, in order to give it greater firmness and prevent the eye from being clogged with blood.

Many authorities advise that after these operations a catheter should be tied in the bladder, and retained for 24 or 48 hours. I have never done this in my operations of rupture and internal incision, and I have seen no reason to regret my course. On the contrary, I believe that patients do better without this source of irritation. If the permanent catheter be used, its extremity should be left open and connected with a urinal by means of an india-rubber tube. Even then the urine is apt to dribble away by the side of the instrument and come in contact with the incision, the very thing that the employment of the catheter was intended to avoid.

FIG. 82.



Author's catheter, with screw-point so that it may be attached to any filiform bougie employed in previous rupture or incision.

Before leaving the patient it is desirable to introduce into the rectum a suppository containing a quarter of a grain of morphia, and to give by the mouth one or two drops of the tincture of aconite root, ordering its repetition every two to three hours, for the purpose of preventing urethral fever. This use of aconite, which is certainly of great value, is said to have been first suggested by Mr. Long.¹ The patient should be directed to delay passing his urine as long as possible, and if he should have a chill on the first act of micturition, to take a hot bath. Rest in the horizontal posture is necessary for the ensuing twenty-four hours, but in most cases it is not longer required.

His temperature should be carefully watched, since it is found by experience that this is the best test of his condition. Even if all other symptoms are favorable, a high degree of temperature should lead us to defer any introduction of an instrument. Much mischief is often done by too early catheterization after the operation, the surgeon either regarding it as necessary in order to keep the urethra patent, or perhaps, mistaking suppression of urine for retention. Nothing appears to be lost by delay, for I have found the canal open after a week, a fortnight, and, in one case, even as late as a month. Provided that all goes on well, that there are no unfavorable symptoms as of urethral fever, and that the temperature remains normal, we are able to pass a sound by the third or fourth day, taking at first one of moderate size, and then one as large as the normal calibre of the urethra. This should be repeated

¹ Liverpool M. Chir. J., Jan., 1850.

every second day at least, until the absence of blood, even if some purulent discharge still remains, indicates that the wound has healed, and this usually takes about a fortnight.

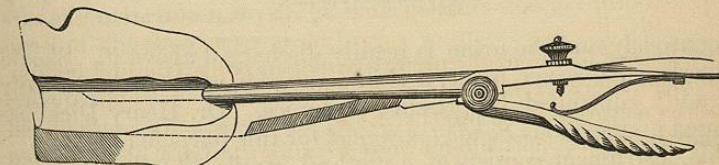
In the previous edition of this book occurs the following passage, which expresses the generally received opinion as to the necessity existing for any one who has once had stricture to employ sounds at intervals for the remainder of his life.

There is no fact with regard to stricture better worthy of remembrance than this, that after any mode of treatment a stricture is sure to return in time, unless the patency of the canal be kept up by the intermittent use of sounds. How often these should be used depends upon the amount of tendency to contraction, and varies in different cases; a safe rule is at intervals of four days for a month, then at intervals of a week for six months, and finally at intervals of a month or two for years or for the remainder of life. But it is not necessary or even desirable that a patient should be dependent for this after-treatment upon a surgeon; he should be taught to do it for himself, and after a little practice will do it better than any one can do it for him; his instruments should be selected by the surgeon, and he should be impressed with the importance of his using them faithfully.

There can be no question that the above course should be followed in all cases which have been treated by dilatation alone. It is, however, asserted by Otis and others that the thorough division of strictures by internal urethrotomy effects a permanent cure, and that the canal will ever remain free after the operation, even if nothing has been done meanwhile. I have met with several cases which would seem to confirm this view, but a sufficient time has not yet elapsed either in my own cases or in those published by others, to warrant any one in expressing a decided opinion.

Internal Urethrotomy.—Strictures at or near the meatus were formerly divided by means of Civiale's concealed bistoury (Fig. 83), or

FIG. 83.



Civiale's concealed bistoury. (After Phillips.)

by a curved sharp-pointed bistoury, its point being protected by wax on its insertion. Both of these instruments are now regarded as less desirable than an ordinary blunt-pointed tenotome, which affords the surgeon greater precision in making his cut. Professor Otis prefers one curved; Professor Piffard one straight as here represented (Fig. 84). There is but little to choose between these two forms. The cut