

**The instantaneous method of treating stricture of the urethra : a description of a new dilator, termed the dovetail dilator, and also of a similar form of dovetail urethrotome / by B. Wills Richardson.**

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### **Publication/Creation**

Dublin : John Falconer, printer, 1868.

### **Persistent URL**

<https://wellcomecollection.org/works/fy2wszq3>

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THE

INSTANTANEOUS METHOD

OF TREATING

STRICTURE OF THE URETHRA;

A DESCRIPTION OF A NEW DILATOR,  
TERMED THE DOVETAIL DILATOR, AND ALSO  
OF A SIMILAR FORM OF DOVETAIL URETHROTOME.

BY

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Reprinted from the Dublin Quarterly Journal of Medical Science, August, 1868.

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DUBLIN:

JOHN FALCONER, 53, UPPER SACKVILLE-STREET,

PRINTER TO HER MAJESTY'S STATIONERY OFFICE.

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1868.

1875

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William Macformack Esq  
with B Mills Richardson  
Regards

THE  
INSTANTANEOUS METHOD  
OF TREATING  
STRICTURE OF THE URETHRA.

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IN the *Medical Press and Circular* for April and November, 1867, March, 1868, and in *British Medical Journal* for February of the same year, I published illustrated descriptions of some stricture dilators, which, although different in construction, are identical in principle; the forcers of each being formed so as to dovetail with the lower blade. I am indebted to the Messrs. Oldham, of Dublin, the eminent engravers, for the idea of applying the dovetail principle to the dilator. The first design was—to form the conductor like the male part of an ordinary dovetail joint, and attach it by the apex to the centre of the upper surface of the lower blade, extending from the posterior end of the handle to about an inch of the point. And—that the forcer should be hollowed, having a slit along its under part for the passage or free sliding of the neck of the conductor.

It is unnecessary to delay the reader with any further description of that design, as I am informed a dilator cannot be constructed of small calibre according to it, and at the same time have the strength which should be possessed by an instrument for the instantaneous method of forcing urethral strictures. Fig. 1 represents a dilator constructed upon the above-mentioned plan, but with some modifications of mine in the handle and conductor, the latter being round and not triangular as originally proposed.

If the reader will study Figs. 2 and 3 he can scarcely fail to understand the difference between the original design and that of Fig. 1.

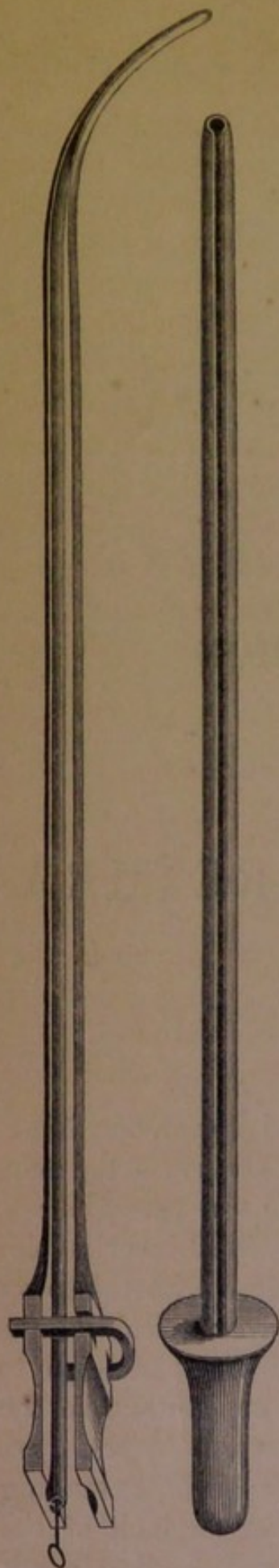


Fig. 1.—The writer's modification of the original dovetail dilator.

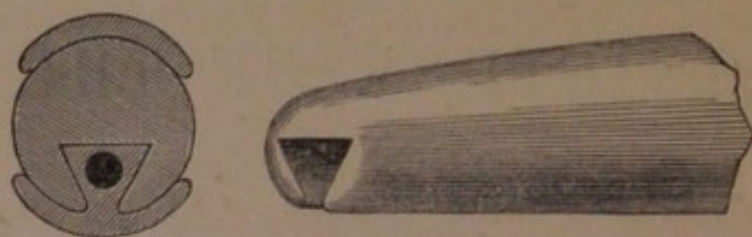


Fig. 2.—Diagrammatic vertical section of the dovetail conductor, forcer, and blades, with separate piece of forcer, of the original dovetail dilator.

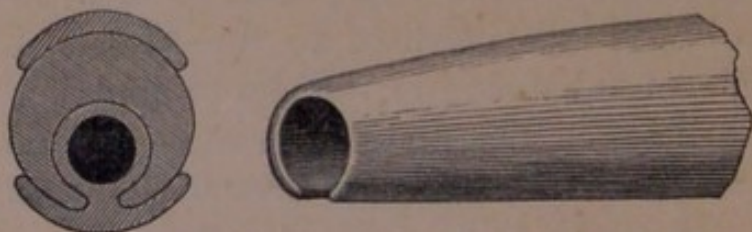


Fig. 3.—Diagrammatic vertical section of the dovetail conductor, forcer, and blades, with separate piece of forcer, of the author's modification of the original dovetail dilator.



Although the dilator delineated in Fig. 1 cannot be made of the required fineness and strength, the design, nevertheless, was the first step in enabling me to perfect a dilator, the tunnel-handled instrument, which, judging by the favourable testimony I have received regarding it, and my own experience of its action, I am induced to consider one of the safest instruments now in use for the instantaneous method of overcoming a stricture of the urethra.

When the positions of the component parts of the dovetail, seen in Fig. 1, are mutually transposed, then a dovetail dilator can be made of the necessary fineness, strength, and solidity. An instrument constructed conformable to this plan, was made for me by the Messrs. Weiss, and first described in one of the November numbers of the *Medical Press and Circular* already alluded to. This dilator is wonderfully strong, and of very small calibre for an instrument of the kind, being only No. 2 at the point, thence gradually rises to No. 3, and finally to No. 4 (Weiss' gauge), which it retains to the handle.

*Description of the Perrève-handled Dovetail Dilator.*

The Dilator (Fig. 4), like Perrève's Fig. H. model<sup>a</sup> (Fig. 5), is composed of two blades soldered together at their vesical ends. Instead, however, of having an oscillating conducting rod, this form of conductor has been dispensed with; and, therefore, when the instrument is in use, it is composed of, viz.:—

- (1). The two blades, with their corresponding half-handles.
- (2). The two clamps, fixed by screws to the lower half-handle.
- (3). The forcer.

The lower blade differs very much from the corresponding blade of the Perrève dilator, which is but slightly grooved for the play of a small portion of the circumference of its conical forcer.

In the dovetail dilator, the lower blade forms the greater portion of a cylinder, and would be complete only for an interspace (Fig. 6) along its upper part, for the passage of the neck of the male dovetail attached to the forcer. Fig. 7 is a diagrammatic section of the forcer and two blades, and shows the relations these parts should bear to each other. The upper blade is slightly grooved to fit the upper margin of the forcer (Figs. 6 and 7).

<sup>a</sup> *Traité des Rétrécissements de l'urètre. Emploi Méthodique des Dilateurs Mécaniques dans le Traitement de ces Maladies. Par Victor Perrève. A Paris, 1847. Pl. 3.*





Fig. 4.—Dovetail dilator with forcer between the blades. The posterior clamp is not so deep as the corresponding clamp of the handle of Perrève's dilator. Perrève used the deep clamp as a point of resistance for his fingers in his method of pushing the forcer home.

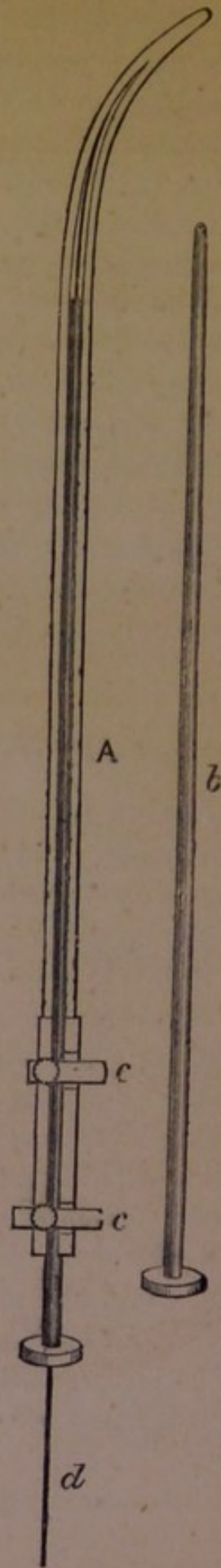


Fig. 5.—A. Perrève's Fig. H Dilator. c c—Clamps. d—Long conducting rod. b—Separate forcer.

In this dilator, as I mentioned in November, 1867, the posterior

part of each blade is soldered in a central groove channelled the whole length of its own half-handle (Fig. 8).

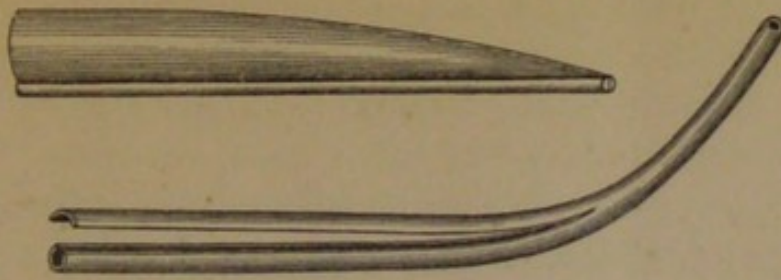


Fig. 6.—Vesicle end of dovetail dilator and of forcer.



Fig. 7.—Diagrammatic vertical section of forcer and two blades. Shows the dovetailing of forcer with lower blade.

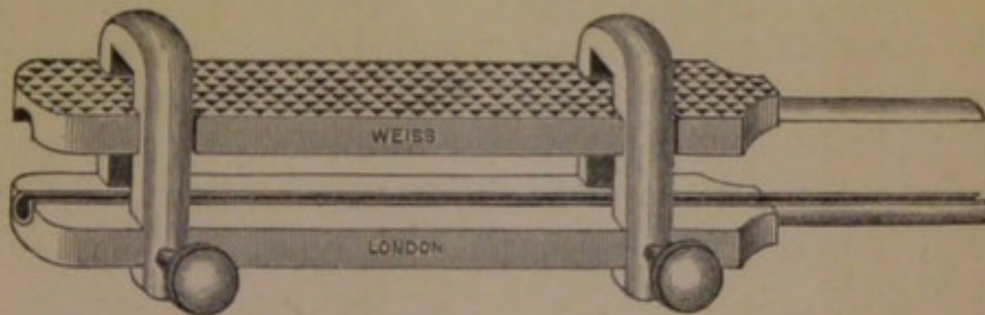


Fig. 8.—Clamped handle of dovetail dilator. The screws are fitted to the right vertical clamp bars, as seen in Fig. 16, copied from Perrève's work. In all his other drawings he represents them in the left vertical bars.

The half-handles are nearly identical with the half-handles of the Perrève instrument (Fig 9). I had them applied to Fig. 8, feeling

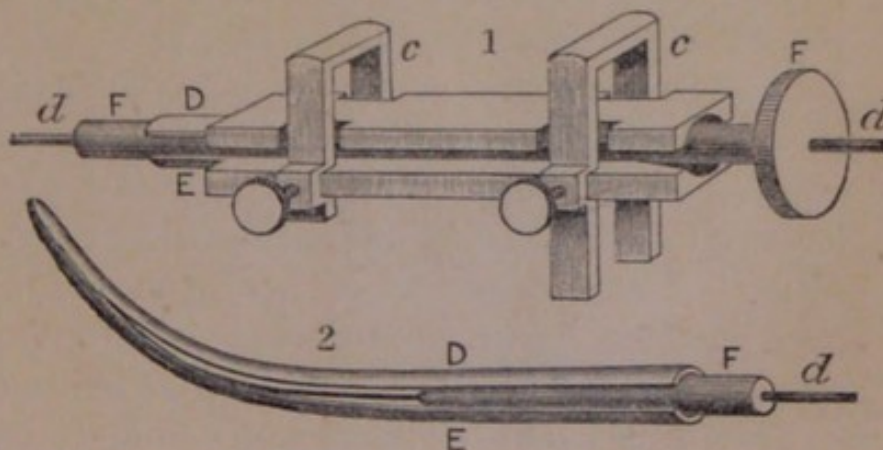


Fig. 9.—1. Handle of Perrève's dilator. *c c*—Clamps. *d d*—Conducting rod. *D E*—Portions of the blades. *F F*—Forcer on rod.

2. Vesicle end of Perrève's Fig. H dilator. *D E*—Blades soldered together at their vesicle ends with *d*, the conducting rod. *F*—The forcer. Perrève used the same description of handle with all the dilators illustrated in his work.—(*Ibid.*)

that, as they are suitable for the working of Perrève's dilator,



they would likewise form a good handle for the dovetail dilator. Further on it will be seen that I have, since the description of Fig. 4 was published, designed a handle better adapted for instantaneous dilatation with the dovetail dilator than the Perrève handle.

The soldered vesicle end of the dilator is traversed by a canal (Figs. 4 and 6), continuous with the grooves in the two blades, which, when grasped by a stricture, form a sufficiently perfect passage for the urine, and thereby enable the surgeon to know when the bladder has been entered.

*The Forcer.*—The forcer (Fig. 10) may be made of hollow tubing or of solid metal. The latter is preferable. Its shape may be varied, as seen in Fig. 11. I myself prefer a low and broad forcer, having found the stricture yield at once to its influence, and it is so perfectly secured against any tendency to lateral tilting, by resting upon and partially grasping the lower blade, at each side of the longitudinal slit (Figs. 7 and 11).



Fig. 11.—Vertical sections of forcercs, suitable for the double-bladed dovetail dilator. Flat-sided forcercs should be deeper vertically than broad ones. The two narrow forcercs in the figure are not represented of the proper relative depth.

The flat-sided forcer should have a greater relative vertical depth than the broad one, or it will not produce an amount of dilatation equal to the latter. The groove of the upper blade must be very accurately adapted to, and slightly overlap the upper edge of the flat-sided forcer, as an additional security against lateral tilting. The two sections of narrow forcercs in Fig. 11, have not been drawn deep enough to show the proportion they should bear to the broad ones in same figure.

The forcer is not to rise abruptly to its full diameter. The curve of Fig. 12 will, I have no doubt, appear to many of my



Fig. 10.  
Dovetail  
forcer.

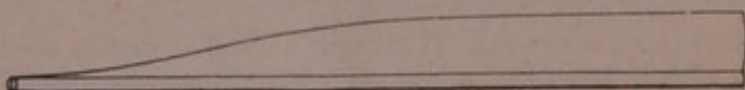


Fig. 12.—Vesical end of dovetail forcer, having a different curve superiorly than seen in Figs. 4, 6, and 10. A forcer of this curve scarcely permits of any appreciable space to be formed between its vesicle end and the blades, when it is gliding between them.



readers better adapted for separating the blades than the curve given to my first forciers (Figs. 6 and 10).

The male dovetail is formed along the lower part of the forcier, and should extend from point to handle (Figs. 10 and 11); and be shaped and sized to correspond to the groove and slit of the lower blade, merely allowing of its gliding with facility when the forcier is being pushed home (Fig. 7).

The number of forciers to be supplied with this dilator, and the one I am about to describe, depends upon the requirements of the surgeon. So many, clearly, are not necessary for instantaneous enlargement to full calibre of canal, as for the slower mode of procedure.

I need scarcely say that the forciers and blades should be highly polished.

It appears to me advisable, before describing the tunnel-handled dilator, that I should draw the reader's attention to the mechanical working of Perrève's handle, when forming part of his instrument.

The handle was designed by Perrève, with the chief object of preventing the rod from wriggling, when it is conducting the forcier between the blades. The tendency to wriggle may, to a great extent, be obviated by the combined influence of the clamps (Fig. 13),

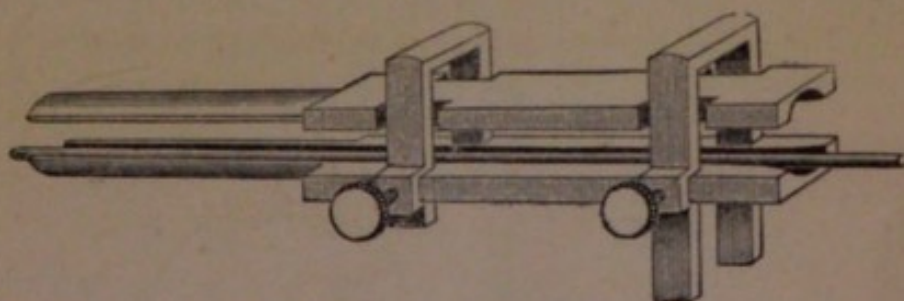


Fig. 13.—Clamped handle of Perrève's dilator, with portion of conducting rod between its two halves. A little of each blade is also seen.

half-handle grooves, and finger-pressure of the surgeon, provided it is sufficiently firm to prevent the forcier and rod from slipping

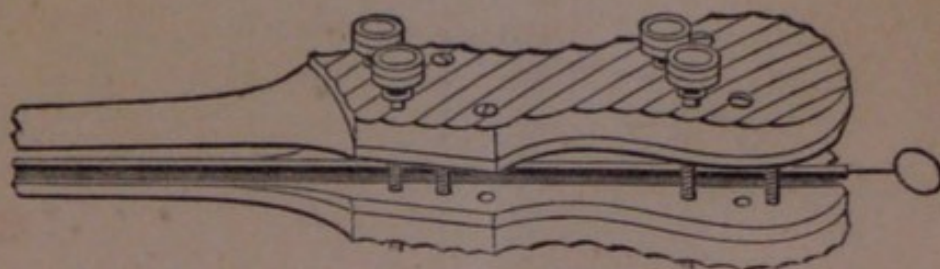


Fig. 14.—Mr. Holt's handle for the Perrève dilator, as represented in the second and last edition of the former's memoir on the immediate treatment of stricture of the urethra. In this handle steady pins are used, instead of Perrève's steady clamps, for maintaining the half-handles in proper relation to each other.



out of the grooves. If the half-handles are not energetically pressed towards each other when the forcer is in the grooves, there will be great risk of the conducting rod buckling, particularly when the forcer is being quickly pushed home. Pressure, however, of the Perrève half-handles and their modifications (Fig. 14), is a

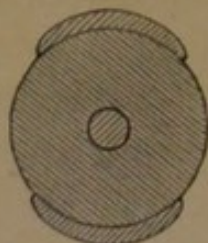


Fig. 15.—Diagrammatic vertical section of conducting rod, forcer, and blades of dilators on the Perrève principle. Shows the risk of the forcer slipping from between the blades, should the conducting rod deviate from its central position. Compare with Fig. 7.

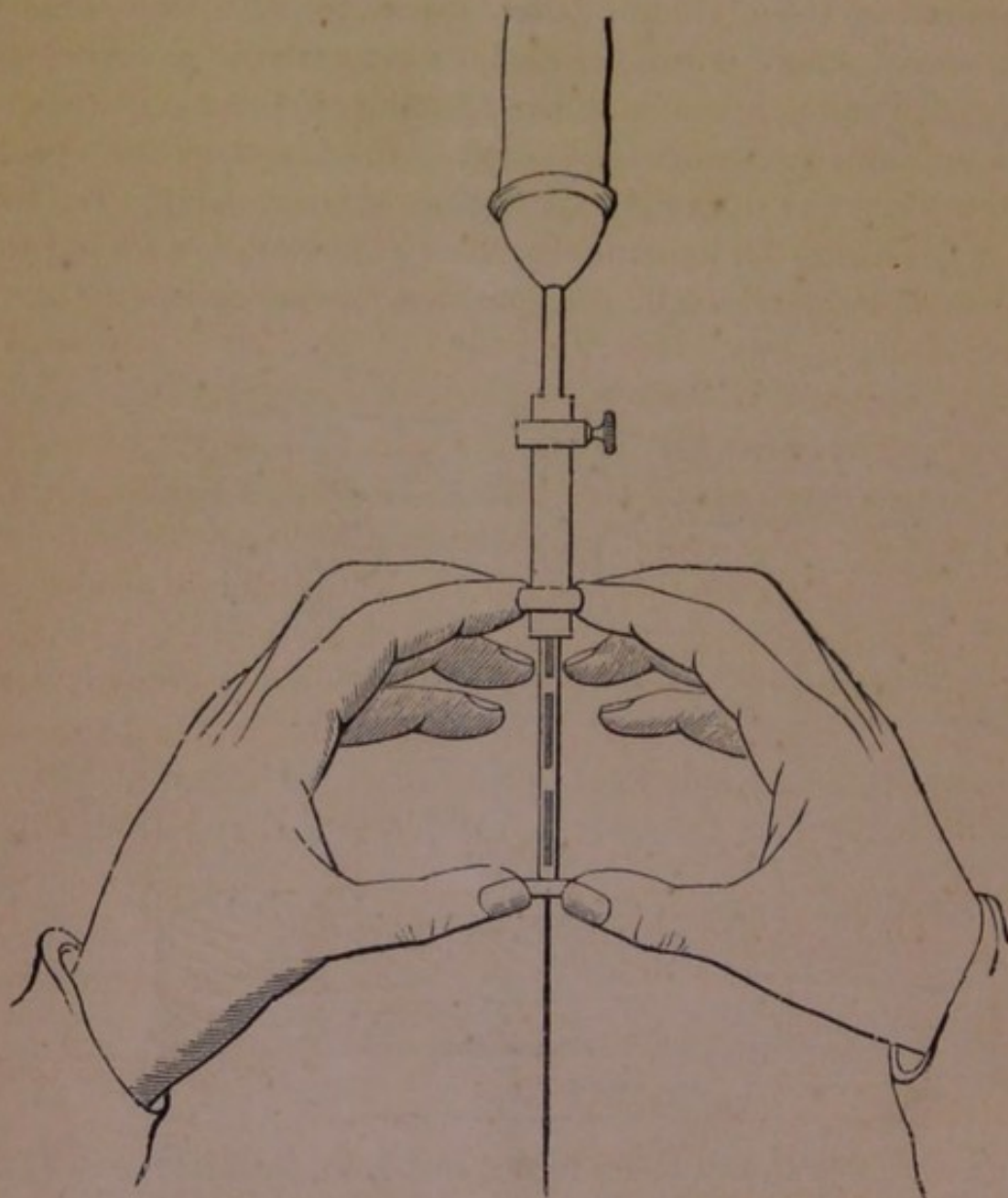


Fig. 16.—Perrève's ordinary mode of using the dilator. Copied from p. 173 of his work.



great obstacle to the rapid gliding of the forcer, and, the greater the stricture resistance, the greater will be the pressure required to maintain the rod and forcer in a central position between the blades.

Fig. 15 will assist those readers, not familiar with dilators constructed on the Perrève principle, in understanding, why the rod is in danger of buckling if allowed to deviate from its central position when the forcer is passing along it. Of course the chances of the rod bending or buckling, are not so great when the forcer is used according to the slow method Perrève so frequently followed (Fig. 16); but, if it is driven home with great rapidity, then, indeed, the half-handles must be steadily pressed towards each other, or the consequences may be most disastrous.

After numerous trials of the Perrève-handled dovetail dilator, I satisfied myself that the forcer is so securely retained in a central position between the blades, from dovetailing with the lower one, that, so far as safety is concerned, firm pressure of the half-handles is altogether unnecessary, and consequently we might get rid of this great hindrance to rapidity in sliding. Indeed, the dovetail dilator may be securely worked, without any pressure of the forcer, when it is passing through the handle. This was a most important point to have ascertained, and enabled me to substitute for the Perrève handle, one which allows the forcer to act against the stricture, almost, if not altogether, instantaneously.

Albeit, pressure of the forcer through the intermedium of the handle is not required; it appeared to me that a handle, in which screw pressure could be applied to the part of the upper blade which plays in it, might be advantageous, by allowing the blades to be pressed together during the passing of the dilator. With this intention I designed a tunnelled handle, which permits of pressure of the handle portion of the upper blade being applied to a nicety

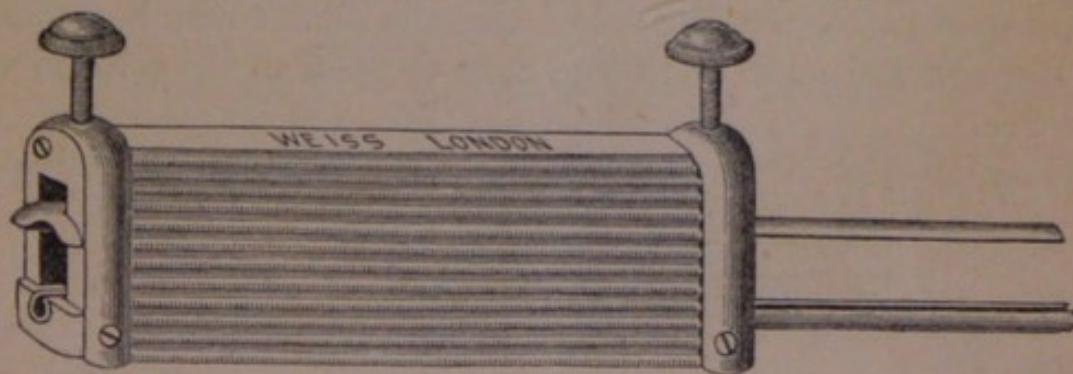


Fig. 17.—Tunnelled handle of double-bladed dovetailed dilator. In this handle the upper blade is prevented going forward with the forcer by being somewhat T shaped posteriorly, whereas in the Perrève handle the same result is obtained by the playing of the clamps in the notches of its upper half.



by means of two screws. This handle (Fig. 17), does not allow of any finger pressure of the forcer by means of the upper blade (Fig. 18), which should be so proportioned to the inside of the tunnel to

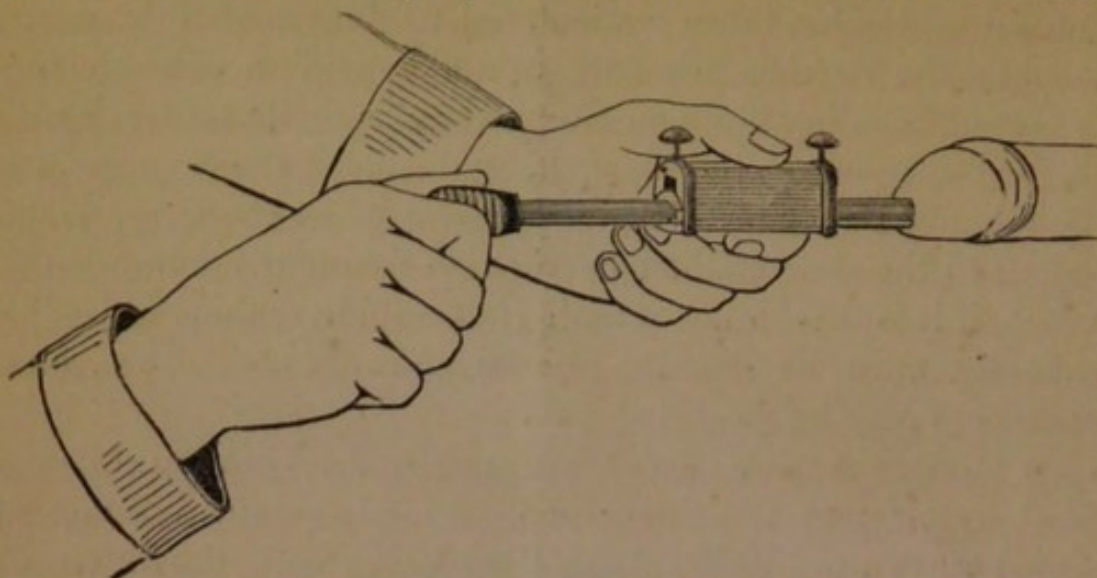


Fig. 18.—Method of using the tunnel-handled double-bladed dilator.

permit of free, but by no means too easy, vertical play (Fig. 19). Being T shaped posteriorly it is prevented going forward with the

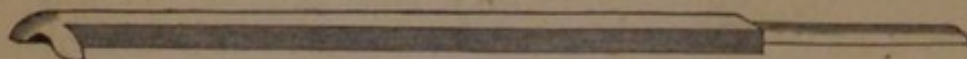


Fig. 19.—Part of upper blade which plays inside handle, with part of blade anterior to handle.

forcer, in consequence of the playing of the arms of the T against the corresponding uprights of the tunnel arch.

The posterior end of the lower blade is soldered in a groove formed for it the whole length of the tunnel.

The tunnelled handle made for me by the Messrs. Weiss, is wrought in steel and silver, the ends and floor of the arch being formed of the first material, the remainder of the latter; but silver is not essential for its construction.

The aperture for the urine to enter the dilator may be made to run through its point as in Fig. 4, or to open on the convexity of the curve.

When the beak of the dilator is bulbed (Fig. 20), its introduction

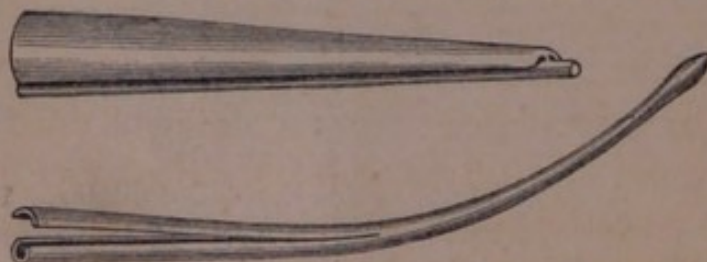


Fig. 20.—Vesical end of forcer, and bulbed end, of double-bladed dovetail dilator. The opening for the urine is not seen in the figure.



is greatly facilitated, particularly when there is more than one stricture. The curve should not be too abrupt; in fact, the dilator ought to be nearly straight.

In my description of the tunnel-handled dilator, in March last, I stated that its bulbed end could be fitted with either a long or short movable gum-elastic guide, by means of a screw arrangement, the bulb being hollowed for the reception of the male screw, attached to the guide. One of Perrève's drawings represents a somewhat similar arrangement. I have since then found, that a modification in the mode of using Desault's guide, catgut being substituted for metal, answers all the purposes of the above more expensive gum-elastic one.

If a piece of prepared catgut, of suitable size, and three or four inches longer than the dilator, be passed through the dovetailed canal of the lower blade, until it projects about an inch from the beak, it will form a very useful guide in difficult cases (Fig. 21).

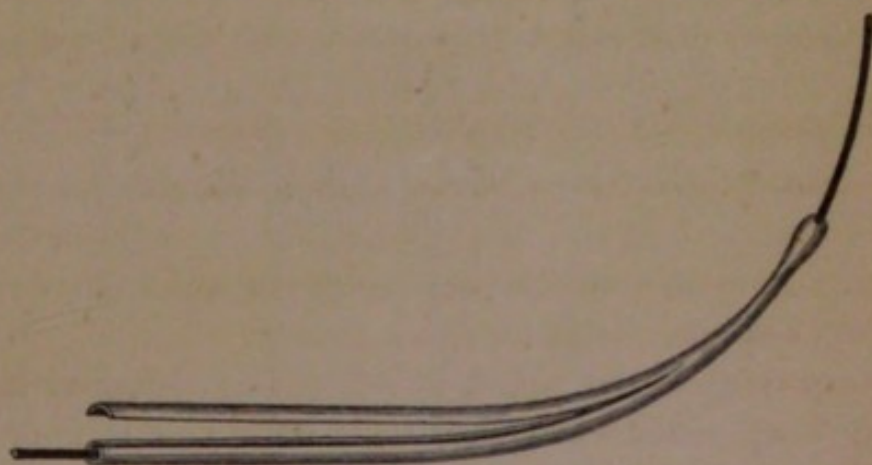


Fig. 21.—Vesical end of dilator with catgut guide projecting from the bulbed point. It may be remembered, that Dr. Hutton was in the habit of sliding the catheter into the bladder over his catgut guide previously introduced into that viscus, whereas, according to the plan suggested in the text, the guide and dilator are both passed together.

It is almost superfluous to observe, that the opening for the urine must be in the point of the dilator, to enable the surgeon to avail himself of such assistance, and that the catgut is to be withdrawn when the bladder has been entered.

Forcers similar in form may be used with both the Perrève-handled and tunnel-handled (Fig. 22) double-bladed dilators, but I prefer the low and broad forcer, also, for the latter dilator.

The Perrève-handled and tunnel-handled dovetailed dilators are both made by the Messrs. Weiss, and are kept in stock by Fannin & Co., the Messrs. Weiss' Dublin agents. The tunnel-handled



instrument, however, is so complete in every respect, it is the one I recommend.

*The Dovetail Urethrotome Conductor and Single-bladed Dilator.*—

A conductor, similar in principle to the lower blade of the double-bladed dovetail dilator, makes an excellent and safe director for the urethrotome, the latter being adapted to the single blade (Fig. 23), by the aid of a male dovetail.

If the urethrotome sheath and conductor are properly fitted to each other, the groove of the latter will pilot the urethrotome to a stricture with precision and safety. The dovetail conductor is, therefore, free from the risk incidental to the use of many of the instruments designed for cutting strictures from before backwards. The conductor made for me by the Messrs. Weiss has a tunnel handle (Fig. 23), and is of small size, being only  $1\frac{1}{2}$ –2, and 3 (Weiss' gauge), from point to handle. But, if the point is made bulbous (Fig. 24), this part will be more than  $1\frac{1}{2}$  of same gauge. The conductor, in the same manner as the double-bladed dilator, can be furnished with either the gum elastic or the catgut guides, for pioneering the blade in difficult coarctations.

There is attached to the lower edge of the urethrotome sheath, a male dovetail, adapted for gliding along the groove of the conductor. It is of sufficient size to prevent it from rising out of the groove (Figs. 25, 26, 27).

The lower edge of the cutting blade is likewise dovetailed (Figs. 25 and 26), so that, when sheathed, its dovetail appears to be continuous with that of the sheath (Fig. 27). By dovetailing the knife with the conductor, it is maintained in a perfectly central position when dividing a stricture.

In the posterior steel arch of the handle of the conductor there is a screw (Figs. 23 and 24), for rendering the sheath immovable as the blade goes forward.

In order to ascertain if the stricture has been completely divided, the knife is to be retracted within its sheath, the handle screw reversed for a few turns, and the sheath is then to be pushed forward, towards the bladder.

The dovetail conductor can be used as a dilator, but is not suited for such rapid action as the double-bladed dilator, when the stricture will only allow a No. 4 bougie to pass it. But if more dilated, say to No. 6 or 7 (Weiss' gauge), the forcer may then be driven quickly home.



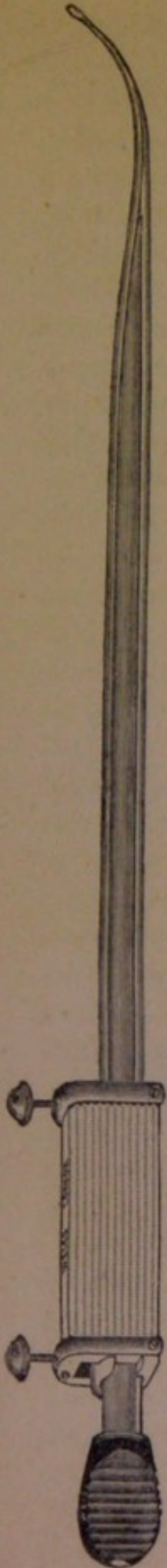


Fig. 22.—Double-bladed tunnel-handled dilator, with forcer between the blades. The forcer is represented a little too long.



Fig. 23.—Tunnel-handled single-bladed dilator and urethrotome conductor.



Fig. 24.—Bulbed tunnel-handled single-bladed dilator and urethrotome conductor.

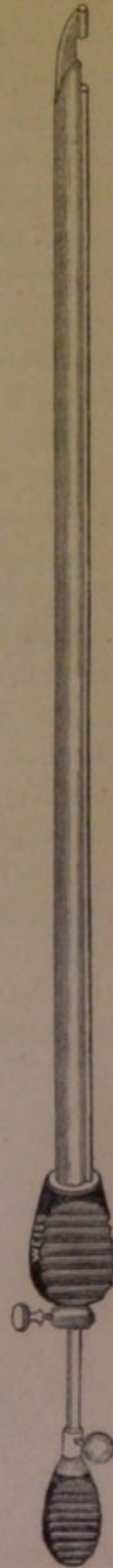


Fig. 25.—Dovetailed urethrotome sheath and blade.



Fig. 26.  
Urethrotome  
protruded.



Fig. 27.  
Urethrotome  
sheathed.



A few weeks ago, having dilated with bougies to No. 6, an obstinate stricture of the anterior part of the urethra of J. S——, a patient in the Adelaide Hospital, who had another stricture at or near the bulb, I rapidly enlarged the former with the single blade and suitable forcer, to No. 13 (Weiss' gauge). I did not operate on the posterior coarctation, fearing that, as the man had a large lumbar abscess, injurious results might follow the forcing of the perineal portion of the urethra. No unpleasant consequences whatever, followed the forcing of the anterior stricture, which might be used as an argument in favour of dilators, particularly as the first use of bougies with this man, some months previously, was immediately followed by most severe symptoms, resembling those of blood-poisoning. The left claviculo-scapular articulation suppurated during the attack.

The posterior stricture yielded with facility to ordinary gum elastic instruments. The man is now in the country, and occasionally passes No. 12 bougie for himself.

Figs. 23 and 24 show the shape of forcer essential for the single blade. Four forciers, at least, should be supplied with it, viz.:—Nos. 4, 7, 10, and 13 (Weiss' gauge). It is most important that their increase in calibre from before backwards should be very gradual (Figs. 23 and 24), that they may enter the stricture and not push it before them.

I by no means wish it to be thought, that I consider the single-bladed dilator calculated to supersede the double-bladed instrument. I designed it at the outset for a urethrotome conductor, when the idea also struck me, that if the forciers are formed as I have mentioned, it could, in careful hands, be used as a slow dilator,

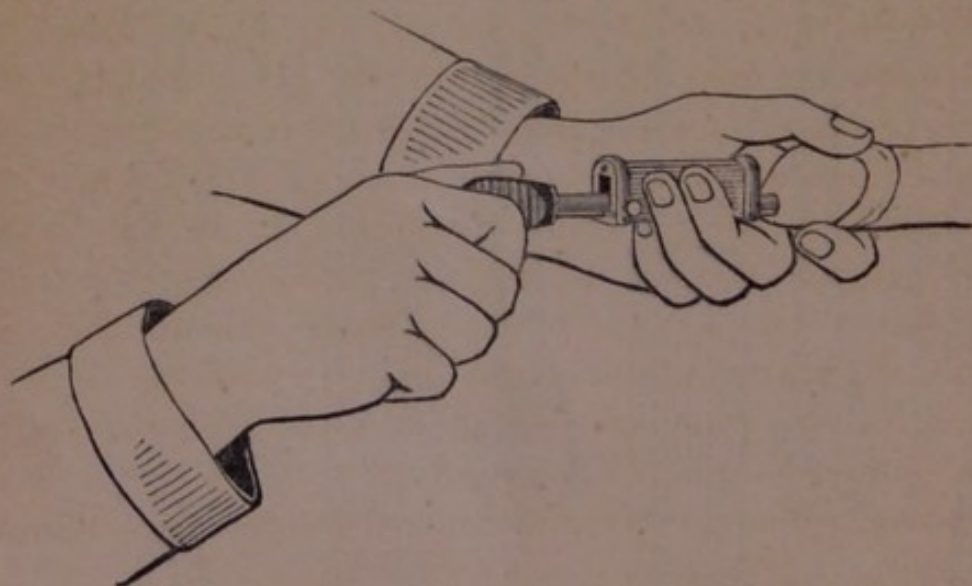


Fig. 28.—Method of using the single-bladed dilator.



provided care is taken to hold firmly both the glans penis and handle (Fig. 28), while the forcer is entering and dilating the stricture. For, should the glans be not fixed and kept well forward, the stricture will most probably recede before the wedge and not be penetrated.

The case of J. S.— proves that it may be used for rapid dilatation.

The urethrotome and single-bladed dilator<sup>a</sup> are likewise kept in stock by the Messrs. Fannin.

[ After this paper had been sent to press, I received the following note, with case, from my friend Dr. Cruise, whose observations I value most highly, knowing that he is eminently qualified for appreciating the mechanism of the dilator ]:—

“ 3, MERRION-SQUARE, WEST,  
“ *July 11th, 1868.*

“ MY DEAR MR. RICHARDSON,—I send you a brief note of the case of stricture which I dilated some time ago, with your instrument.

“ The case is no ways special, but being an old, hard, tight contraction, fully tested your dilator.

“ I have no hesitation in stating that, in my opinion, your instrument is superior to any other hitherto devised for forcing strictures—superior to Perrève's original dilator, and to Holt's modification thereof. Its action is perfectly smooth, *its safety absolute*, and—thanks to the novel handle—it is most convenient in use.

“ The case is as follows:—

“ R. W——, aged thirty-two, entered the Mater Misericordiæ Hospital, under my care, March 13th, 1868. His principal suffering at the time of admission arose from an abscess in the scrotum, which had formed close to a fistulous orifice through which nearly all the urine habitually passed. Since the formation of the fistula, a sequel of perineal abscess, dating two years back, scarcely any urine had passed through the penis. The original stricture was of eight years' duration, and followed a severe gonorrhœa.

“ I immediately opened the scrotal abscess, kept the patient in bed for a couple of days, and poulticed, &c.

“ On exploring the urethra, I discovered a tight contraction, about

<sup>a</sup> All the engravings by the Messrs. William and A. Oldham, of Dublin.



four inches from the glans. With some difficulty, I got in No. 2 wax bougie, and, after a few days, succeeded with No. 3. As the stricture was hard and gristly, I determined to burst it, and, accordingly, introduced your dilator, March 24th, 1868. Having done so, I passed in the largest sized forcer, with the greatest ease, and then withdrew the instrument. I directed for the patient a warm hip bath, some quinine with opium, and abstained from introducing any instrument for two days. At the end of this time I passed, *with facility*, a No. 10 gum elastic catheter. The patient never manifested an untoward symptom.

“From the time when I dilated the stricture the perineal fistula commenced to close, and soon contracted to a mere pinhole. I detained the patient in hospital for two months after the operation, in order to watch his progress. At the end of that time the fistula gave no trouble, and No. 10 catheter was passed with the most perfect freedom.

“Should you wish to publish this case, I need hardly say you are quite welcome to do so. Meanwhile, I remain,

“Dear Mr. Richardson,

“Faithfully yours,

“F. R. CRUISE.

“B. Wills Richardson, Esq.,

“North Frederick-street, Dublin.”

[Messrs. O'Neill and Thompson, of Henry-street, Dublin, recently forwarded to me for approval, some specimens of the dilators and urethrotome, which, they state, were made on their premises. These instruments are excellently shaped, well constructed, and highly finished.]





