

A brief essay on the peculiar advantages of the flexible metallic bougies in the treatment of strictures in the urethra, and the evacuation of the urinary bladder / [William Smith].

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A

BRIEF ESSAY

ON THE

PECULIAR ADVANTAGES

OF THE

FLEXIBLE METALLIC BOUGIES,

IN THE TREATMENT OF

Strictures in the Urethra,

AND THE

EVACUATION OF THE URINARY BLADDER.

BY W. SMYTH,
THE INVENTOR AND SOLE PROPRIETOR.

———Si quid novisti rectius istis,
Candidus imperti; si non, his utere mecum. HOR.

THE SIXTH EDITION,
ENLARGED AND CORRECTED.

LONDON:

Sold by J. JOHNSON, No. 72, St. Paul's Churchyard; T. BOOSEY, No. 4,
Broad Street, Royal Exchange; J. BELL, No. 148, Oxford Street,
Booksellers; and by W. SMYTH, Apothecary, No. 15,
Tavistock Street, Covent Garden.

1804.

BRIEF ESSAY

ON THE

REGULAR ADVANTAGES

OF THE

FLEXIBLE METALLIC BOWDITCH

IN THE TREATMENT OF

HEMORRHOIDS IN THE BLADDER

AND THE

EVACUATION OF THE URINARY BLADDER



THE SIXTH EDITION

REVISED AND CORRECTED

LONDON

S. GOSNELL, Printer, Little Queen Street, Holborn.

TO
JOHN BIRCH, Esq.
SURGEON
TO
SAINT THOMAS'S HOSPITAL,
AND
SURGEON EXTRAORDINARY
TO THE
PRINCE OF WALES.

SIR,

THE earliest edition of this little book was published in the year 1799, merely as a series of instructions for the use of my *Flexible Metallic Bougies*, then a new invention ; but I held myself bound to the Faculty and the Public, in case my endeavours proved successful, at a future period, to undertake a more enlarged work, for the purpose of farther illustrating the utility and importance of my discovery.

THE time is now arrived, when their well-known excellence justifies the attempt; and although I have not vanity enough to suppose that I can add any thing novel to the present enlarged fund of surgical knowledge; yet, Sir, as you were the *first* who made trial of my bougies in private practice, and gave public testimony of the advantages likely to be derived from them, I am proud of an opportunity to own, that it is to your candour and liberality I am indebted for the favourable reception they have met with from medical men in general, by whose experience your opinion has been confirmed, and the superior efficacy of my bougies established upon a basis that can never be overturned—I mean the APPROBATION of the *wisest*—the *most* learned—and the *ablest* practitioners in surgery.

PERMIT me, therefore, to commit to your protection, the SIXTH EDITION of this essay, that,

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sanctioned

sanctioned by your professional skill, and well-earned reputation, I may brave the censure of *prejudiced and interested* opponents.

I OFFER nothing in excuse for its defects, to those who may be inclined to expose them, but my ardent desire of rendering *these* instruments beneficial to mankind, and my directions more intelligible to those who cannot, from local, or other circumstances, procure surgical assistance.

I am,

SIR,

Your obliged

And very humble servant,

W. SMYTH.

Tavistock Street, Covent Garden,

London, 1804.

INTRODUCTION.

VERY near thirty years of extensive practice in London as an apothecary, &c. have afforded me many opportunities of witnessing the dreadful sufferings of patients labouring under obstructions of the urethra; and it was my own misfortune some time ago to be afflicted with a very severe stricture, attended frequently with retention of urine, for which I could find no relief in the means recommended by my medical friends.

It is said, that “necessity is the mother of invention;” and to this circumstance alone, perhaps, we are indebted for the discovery of my *flexible metallic bougies*, by the use of which I soon obtained relief, and in the course of a few weeks I was rescued from a life of misery, and restored to health and comfort.

THE

THE gentlemen who attended me during the early part of my illness, and had left me in a very deplorable situation, on seeing me again, were much surprised at my speedy recovery, and expressed great satisfaction on viewing the instruments by which it was brought about ; and judging them to be of importance in this branch of surgery, wished me to continue my endeavours to bring them to perfection.

By unwearied perseverance this desirable object was accomplished ; and as they now appeared to every examiner to be far superior to the bougies usually employed in the treatment of strictures in the urethra, some of my friends advised me to confine their use entirely to my own practice, at least until I had reimbursed myself for the expense I had been at in their construction ; but I considered, that if my bougies had any real merit (which seemed to be admitted on all hands), such monopoly would not only be disagreeable to surgical practitioners in general, but might eventually be a loss to the public ; I therefore sent specimens of them to the *Royal College of Physicians,*

sicians, the *Royal College of Surgeons*, all the *medical societies* in London, and some *surgeons* of my acquaintance, for their inspection; in consequence of which I was favoured with the repeated visits of the most curious and scientific of the profession, for the purpose of investigating more minutely the advantages of a discovery, which they considered of the utmost importance to mankind.

HONOURED as I am by their patronage, no exertions on my part shall be wanting to render this pliable metal useful (as it has frequently been found) in other parts of surgery; and to have been the inventor of any thing for the improvement of the healing art, and the relief of suffering humanity, forms no small share of my present gratification.

A

BRIEF ESSAY,

Éc. Éc.

CHAP. I.

OF OBSTRUCTIONS IN THE URETHRA.

PERHAPS there is no curable disease which lies so near the hand of the surgeon, that has given so much trouble, has so often resisted all his efforts, or been so painful to the patient, rendering his life miserable, and too often terminating fatally, as retention of urine, partial or total, arising from obstructions in the urethra.

THESE circumstances may be fairly traced to two sources; a mistaking for a long time the nature of the disease, and the want of proper means to remove the cause whence the complaint originated, when it was clearly ascertained.

ASTRUC *, when treating of habitual strangury (*strictures in the urethra*), mentions four methods of cure; the first by catheterics (*caustics* †); the second, by laying open the urethra in the perinæum; the third, dilatation of the urethra by tents (*plaster bougies*); the fourth, by the help of small leaden rods (*flexible metallic bougies*), which he preferred to either of the others, on account of the ease and expedition with which they performed a cure. Speaking of the first of these methods, he says ‡,

“THE ancients, as they did not acknowledge any other obstacles in the *meatus urinarius*, besides caruncles, callous bodies, and *verrucae*, their whole study was to consume these excrescences, that obstructed the course of the urine, by catheteric medicines, which they introduced by the help of wax candles §, and they healed the ulcers which remained at the basis of these excrescences after they were eaten away, by introducing epu-

* This great man was the first who collected the practice of every author before his time, and gave a correct history of the venereal disease.

† The first application of caustic to strictures in the *urethra* is generally ascribed to ALDERET, professor of medicine at *Salamanca*, about two hundred and sixty years ago; but we find the practice condemned by ANTHONY FERRIUS of *Naples*, who published four books *De Morbo Gallico*, first printed at *Basil*, in the year 1538; so that catheteric medicines must have been in use long before that time.

‡ Vol. i. p. 350.

§ Plaster bougies.

lotics in the same manner. There is an infinite number of contrivances to answer this end, to be found in the works of physicians and surgeons who have wrote upon this subject, and several forms of cathartic or drying ointments and *collyria*, to answer both the before-mentioned intentions: amongst others you may consult *Amatus Lusitanus*, *Centuriâ* 4. *Curatione* 19. *Daniel Sennertus*, *lib. iii. part viii. sectione 1. cap. ix.* *Ambrosius Paræus*, *lib. xix. cap. xvii. &c.*; but there is no end in quoting you relations of this kind, since this method of practice has been long in disuse for many reasons :

“ 1. BECAUSE it is calculated solely for caruncles and *verrucae* which beset the *urethra*, but by no means for other obstacles that may straiten that duct, by which the strangury which succeeds a *gonorrhœa* is most commonly produced, as is now confessed by every one.

“ 2. BECAUSE it is never safe ; for cathartics which have force enough to consume caruncles, will, at the same time, inflame, corrode, and ulcerate the sound parts of the *urethra*. We have known the ancients endeavour to obviate this inconvenience, by an *apparatus* of various kinds of instruments* and remedies; but we have known

* SCULTETUS, in the *Armamentarium Chirurgicum*, gave the figure of an instrument used to apply remedies to obstructions in the *urethra*, about one hundred and fifty years ago. *Tabula* 40. *Fig. 5.*

all their cautions to have been for the most part fruitless, since it is no rarity to find examples amongst them of persons that have been afflicted with inflammation of the *penis*, abscesses of the *perinæum*, nay with a gangrene itself, by the use of this method.

“ 3. LASTLY, because it frequently does mischief, since it increases the strangury, and ulcers which are brought on in the *meatus urinarius*, by the use of catheterics, not being well deterged, grow up into fresh hypersarcoses or caruncles, or form hard, strait cicatrices, which make the urinary duct too narrow.”

FROM the surgical art so frequently failing in the attempt to cure this disease, practitioners ceased to be led by the opinions of their predecessors; they began to think for themselves, and to search for the causes which created these difficulties, and by dissections discovered, that caruncles of so large a size as they had conceived, seldom or never existed in the urethra, or were situated at any considerable distance from the glans; but, if they ever did exist, they were found near to the extremity of the penis, and then extremely small, forming no obstruction of themselves, but were accompanied with either a *stricture*, *callous cicatrices*, or protuberances of the corpus spongiosum urethræ; in which case the caruncles
make

make only a part of the obstruction, and possibly may often not be bigger than the head of a pin *. By anatomical researches this error was not only detected, but the real causes were discovered.

IN some patients the cicatrices of old ulcers †, in different parts of the urethra, occasioned by long-continued inflammation of the parts, have been known to form very complete obstructions.

GONORRHOEA, attended with severe inflammation, is very often a cause of strictures, by thickening the parts affected, and making them become harder than in a state of health ‡.

ASTRINGENT injections are supposed to be another cause; and this is highly probable, if the nature of their action be considered; and to the injudicious application of them to parts already in a state of inflammation, may be ascribed the great prevalence of obstructions in the urethra in the present period. Dr. ROWLEY considers them as the principal cause of strictures in the urethra, and brings the writings of some of the ablest practitioners that this or any other

* Sharp's Critical Inquiry, p. 160.

† Daran on the Disorders of the Urethra, p. 23. Edinburgh Practice of Physic, vol. iv. p. 409.

‡ Home on Strictures, vol. i, p. 33 and 35.

country ever produced, in support of his arguments *.

TUMOURS in the cellular substance surrounding the urethra, or in any of the glands connected with it, sometimes produce complete obstructions in the course of this canal; but the most frequent cause of this disease, yet discovered, is a particular kind of fulness, or enlargement of the corpus spongiosum urethræ. In those who have long laboured under obstructions of this kind, dissections have shewn the cause manifestly to be an enlargement, or thickening of the substance of the urethra itself; and to such a length has it in many instances proceeded, as totally to obstruct the passage of the urine.

SUCH is found to be the variety in this affection, that the stricture, or contraction, in many patients, is confined to a particular spot, and in some it is extended a considerable length along the canal, whilst in others it attacks three or four different parts of the passage, leaving intermediate spaces of it perfectly sound †.

THE causes above enumerated have been discovered by surgeons of the first abilities, who,

* Cogent Reasons, p. 99.

† Critical Inquiry, p. 143. Mr. Hunter says, "he has seen half a dozen in one urethra." Treatise on the Venereal Disease, p. 113.

disdaining to employ their ingenuity in the fabrication of theoretical opinions, have founded their notions on observations of the morbid parts themselves in subjects who have died whilst labouring under this complaint. Arguments built upon such principles are incontrovertible; they furnish us with powerful facts, and shew clearly the different states men may be in who are thus affected, and enable us to account for one man's being subject to this malady for a number of years, and suffering only slight inconvenience; whilst another afflicted with the same complaint drags on a miserable existence, although affected but a short space of time.

THESE differences in different patients may easily be accounted for, particularly when we consider the nature of the disease, and the part affected. Patients can for themselves form a very just idea respecting their own complaints, and must see the strongest necessity for medical advice at the earliest period possible after the commencement of the disease, and by this means they will escape much of the torture and danger to which they must otherwise be exposed. They cannot, as in many other cases, frame any excuse even to themselves for delay; they cannot have the most distant idea that the complaint will be meliorated, much less disappear, by procrastination; but, on the contrary, that it must, from day to day, grow worse,

worse, or at least greatly increase in obstinacy, and require a much longer time in the use of remedies, than if proper efforts had been sooner made for its reduction.

WISEMAN, DARAN, and many others, have published a variety of cases which furnish us with sufficient proof of the validity of these assertions, by shewing the painful, dangerous, and sometimes fatal consequences which have arisen from neglect alone, by deferring the proper local applications to too late a period, whereby an obstinate disease of the bladder has been brought on, inflammation for instance, and gangrene of different parts; all which, the reader will be convinced from the mere perusal of the cases, might have been prevented.

It appears very obvious, that urethral obstructions will not only occasion troublesome and painful micturition, but have sometimes brought on such morbid sensations, that the cause has been attributed to some affection of the bladder, kidneys, or ureters, insomuch, that incautious practitioners have concluded their patients were labouring under the stone and gravel; hence the real cause of the complaint has been overlooked, and a total suppression of urine has been the consequence, producing effects which gave such general disturbance to the system, as to become irremediable

irremediable and fatal. But this matter will be more fully elucidated by the following case, the whole of which has been taken from the patient's own manuscript, except that part of the history which immediately preceded the time of his dissolution.

The Case of Mr. GEORGE BIGG, Printer, late of Chelsea.

“ IN the year 1782, I perceived for some time a difficulty of making water, which gradually increased, and brought on violent pains at the neck of the bladder, and at length a total suppression of urine (in the summer season), which became so troublesome, that it was necessary to apply for medical assistance. I accordingly sent for Mr. SMYTH, of Tavistock Street, Covent Garden (my apothecary), who prescribed different remedies, but did not remove the complaint. It was then supposed to be a stone in the bladder. He advised me to send for a surgeon: the catheter was then tried in the presence of Mr. SIBLEY (a relation of mine), assistant to Messrs. GRAHAM, WAINSWRIGHT, and MORRIS, apothecaries, of Pall Mall. The catheter could not then be passed through the neck of the bladder. The disorder increased, and grew much worse, and after taking several medicines, the warm bath was ordered. I

bathed for near an hour every other night, for better than two months, in water, in which marshmallows were boiled. This greatly relieved me at that time, though the complaint would frequently return, attended with so strong a suppression of urine, that I have been forced to leave my bed at eleven or twelve o'clock at night, and it has been frequently eleven or twelve o'clock next day before a single drop of urine could pass: at one time I was near twenty-four hours in the most racking torture before I got any relief. In these fits of the complaint, sometimes warm water would relieve the parts, at others, cold; the rim of the belly, at these times, was swelled so tight, that I could bear no clothes on. In this state the complaint continued more or less, accompanied with a kind of gleet, until the spring of the year 1795, when I was suddenly seized with an epileptic fit, which was also attended with a violent fever. Dr. GARTHSHORE, of St. Martin's Lane, attended me, and my life for some time was doubtful. During this illness my faculties were for some time so much impaired, that it was necessary for me to relinquish business, which I did, and live on a stipend allowed me by my friends; afterwards I found no material consequences arising from my complaint, except a few slight returns of the epileptic fits, and the usual attendance of the gleet, though in a much less degree, until the middle of December in the year 1797, whilst I
was

was at Uxbridge, when I had an attack of what I took to be the old complaint, under which I had laboured for so many years; and in January 1798, upon coming to town, I applied to Messrs. BURKE, SMYTH, and WINBOURNE, surgeons, of Jermyn Street, St. James's. The disorder increased with a variety of fresh symptoms, the discharge particularly increased, which was now supposed to arise from an ulcerated urethra, and at the same time there came on an obstinate tumour under the nut. All kinds of emollient poultices and injections were used, and the parts kept constantly clean with warm milk, or goulard, and about the middle of June it was thought necessary (as it was so singular and obstinate a case) to call in additional advice. Accordingly application was made to Messrs. CRUIKSHANK and THOMAS, surgeons, of Leicester Square, who declared it an unknown disorder, and applied various remedies to little purpose, as the tumour still continued obstinate, and at last an ulceration took place through the upper part of the urethra, through which the water passed, instead of keeping its proper course. On the 28th the carrot poultice was applied, after which the foreskin became so much swelled as to render it impossible to be returned over the nut; and not being able any longer to go to town, I sent on the 29th for Mr. WINBOURNE, who has constantly attended me every day since, and has applied lotions of

goulard, various emollient and other poultices, scarified the parts, applied leeches, &c. without any salutary effect.

“THE case still continuing the same, on Wednesday the 19th of September, at a consultation of Messrs. CRUIKSHANK, THOMAS, and WINBOURNE, it was determined that the ung. citrinum should be applied, and Mr. WINBOURNE constantly attended me. The usual application of wet cloths of goulard was incessantly used. I took the bark; and aperient medicines were directed to keep the body cool and the bowels open. At this consultation Mr. CRUIKSHANK pronounced it a cancerous ulcer, without any venereal symptom. The ung. citrinum, with goulard, were constantly applied until the 28th without any effect. The swelling still continuing, and there being reason to apprehend a mortification taking place, and judging that the poultices, with the other remedies, would not be of any further use, an amputation* took place on that day. Mr. CRUIKSHANK performed the operation in company with, and assisted by, Mr. THOMAS and Mr. WINBOURNE. That evening a small artery gave way, and Mr. WINBOURNE came from town and stopped the bleeding. The elastic catheter which had been passed, kept in until the sixth day,

* The amputated part is now in the possession of Mr. THOMAS, and may be seen, with the ulcer upon it.

when it was suddenly forced out in the night, and there has not been a possibility of getting it returned, which occasions the water to impede the cure very much. Mr. CRUIKSHANK has been very constant and attentive in his visits, and Mr. WINBOURNE has constantly attended, and dressed the parts every day."——Thus far the patient's own account, which his declining health prevented him from continuing, as he soon after died.

MR. CRUIKSHANK and Mr. THOMAS were expected to open the body; but as neither of them attended, in consequence (as Mr. THOMAS has since informed me) of their not receiving the message that was sent upon the occasion, it was done by Mr. WINBOURNE and myself.

ON examining the bladder and urethra, parts which were considered to be affected, there were some firm strictures found in the superior part of the urethra, near the bladder, which had so far contracted the passage, that the smallest probe could not be passed through them; the bladder was also greatly thickened in its coats, and its capacity reduced to so small a size, that little or no urine could be contained within it: indeed the patient's urine used perpetually to pass from him by drops until the day of his death.

UPON considering the whole of the circumstances of this case, with the appearances after death, there can be little doubt that the primary cause of his sufferings was strictures in the urethra. These, in the first instance, prevented the free discharge of the urine, which, by continuance in the bladder, had become acrimonious, and irritated the internal coat; this had given rise to the torture the patient had at different times suffered, and was aggravated by the occasional distention of the bladder itself. The strictures still continuing to keep up the irritation, and a constant secretion of humours into its coats, no wonder that they became gradually thickened, and rendered incapable of retaining any large quantity of urine, which was incessantly escaping through the extremely small aperture in the urethra, occasioned by the strictures themselves; and also, from this irritation the penis got into an inflamed state, and probably a mortification might have been the result, if it had not been prevented by excision.

FROM the various local distresses the patient was constantly suffering, it is not astonishing that the whole machine should be sympathetically affected, various parts impaired in their functions, particularly the stomach, and digestive powers; so that the frame, for want of due nourishment, wore away from day to day,
and

and at length the patient fell a sacrifice to debility, terminating in a species of marasmus.

AFTER subduing the virulent gonorrhœa, from which urethral obstructions frequently arise, gleet has succeeded, and the two diseases have remained for a long continuance of time; these have kept the patients in a most unhappy state, producing such debility in the system, that a multiplicity of diseases have been the result, probably hastened, and made more destructive by improper treatment. I am therefore clearly of opinion, and I think it must appear evident to every impartial practitioner, that, had bougies capable of keeping the parts first attacked in a state of proper distention been employed in the preceding case, the whole of the unpleasant consequences might have been prevented.

CHAP. II.

OF BOUGIES IN GENERAL.

SMALL wax candles, it is probable, were the first instruments employed for the cure of obstructions in the urethra, and hence the French term, bougie; but instead of these, and others of a similar nature, generally used since the practice of Mons. DARAN has been followed, some surgeons have preferred such as are made of catgut, catgut covered with elastic gum, silver, lead, whalebone, leather, and plaster armed with caustic.

IF the composition of the plaster bougies be examined, it will appear that the ideas of practitioners led them to make use of such ingredients as they considered of discutient or digestive powers, similar to what they applied to ulcerations, or excrescences which were more external. Indeed at so late a period as the time of Mr. SHARP, such notions were prevalent; “for,” says he, “I shall remark, that though I have a great opinion of the good effects produced by the suppuration, yet I believe also that the bougies operate by distending the *urethra*; and I will go so far as to give it as my judgment, that

that even the cures done by M. DARAN are wrought partly by *distention* and partly by suppuration, though he himself ascribes them to the *suppuration* only *."

DR. NISBET, speaking of the comparative merit of bougies, says, "Modern surgeons, however, have supposed that the materials of their composition are a matter of little importance, and that the whole depends on their form, size, and consistence. Thus, SHARP seems to prefer mercury for their composition; while GOULARD, on the contrary, employs his favourite remedy, lead; and as they are equally successful with these different compositions, we naturally infer that it is more the *mechanical* nature of the bougie than the composition, that gives it effect †." It would be useless to enter into arguments with the intent of refuting the ideas entertained by some, of the detergent and digestive powers in bougies contributing to the cure of urethral affections, as it is now agreed by all sensible practitioners, that it is wholly to their compressive and distending powers that success is to be attributed; it will therefore be of more utility to shew how these instruments become defective, and how that defect may be remedied.

* Critical Inquiry, p. 169.

† Nisbet on the Venereal Disease, p. 148.

EXPERIENCE enables me to judge, that none of the compositions for the formation of bougies of the common kinds, answer all the several purposes for which they are required. The simple diachylon, now called empl. lithargyri, forms the basis of them all; and even the celebrated bougies of Mons. DARAN are nothing else, when divested of the useless ingredients which enter into their composition, and therefore are not always possessed of sufficient strength to bear the force requisite for their introduction; for, instead of passing the stricture, particularly the smaller ones, their points not only bend backwards, sometimes double or treble, and render every effort to pass them futile; but when, after repeated attempts, they are introduced, unless the obstruction be of a very recent and slight nature, they are inadequate to resist the contraction, and the indentation on the bougie, when withdrawn, shews the force or contractile power of the stricture to be greatly superior to any distending force this instrument can exert; and it is generally bent in that part where the stricture has pressed upon it, or comes out with an appearance somewhat like a corkscrew, so as to be unfit for farther use.

THE same objections lie against bougies made of catgut, but their inefficacy does not arise from the same cause; the plaster bougies, on account of their texture, being softened by the warmth of

of the urethra, and the catgut by the absorption of moisture.

BOUGIES made of catgut, and covered with elastic gum, are neither affected by the heat or moisture of the urethra; but their introduction is rendered extremely difficult by their elasticity, and their want of sufficient flexibility to adapt themselves to the course of the urinary canal: besides, they soon get rough, irritate and inflame the passage, especially when in unskilful hands.

THE bougies made of silver are not pliable, and are intended to overcome the stricture by the use of force. A late celebrated practitioner in London was in the habit of employing a large silver probe, with a small bulb at the end of it, for this purpose, with frequent success*; but the severity and danger attending the application of this instrument to a part so far removed from our sight, render this mode very objectionable.

THE bougies made of lead are apt to break, especially if rubbed over with quicksilver, as was formerly the custom, which rendered them brittle, and attended with danger if passed into the bladder, since the smallest portion being left behind, would form a nucleus for the lithic matter in the urine to collect about it, and form a calculus.

* Medical and Physical Journal, vol. iii. p. 291.

BOUGIES made of whalebone, like some of the preceding, are too inflexible; and although they are not so liable to crack and break as some of the former, yet they have a tendency to grow rough, by the separation of some of their small fibres at the point and on the surface, and hence become too irritating.

BOUGIES made of leather swell to such a degree, that if they are suffered to remain any great length of time in the urethra, they cannot be withdrawn without difficulty and danger to the patient. A notable instance of this kind lately took place in the practice of an eminent surgeon in London, who was under the necessity of laying open the urethra, in order to extract the bougie.

With respect to the application of caustic, there appear to be some serious objections against it: 1st, the operation is extremely painful and tedious; 2dly, it brings on inflammation and spasmodic affections of the parts; 3dly, and probably lays the foundation for extending the original cause, or inducing fresh causes of the very complaint it is intended to remove; for if the ulcer produced by the caustic should ever heal, it will leave a contracted cicatrix behind, more difficult of dilatation than the original stricture, and the symptoms of obstruction will soon after return considerably aggravated. If the stricture be of small extent, and
not

not far distant from the glans, it might, perhaps, under certain circumstances, be allowable; but should this disease, arising from the thickening of the *urethra*, extend through a large portion of this canal, how are we to hope for success from such a remedy, and what may not be the consequence of such an attempt? “Numerous instances lately have proved, not only the inefficacy of caustics to remove obstructions of the urethra, but likewise many additional injuries to that canal have occurred, which did not exist before the caustic was applied, and which were the evident effects of escharotics. 1. Violent acute pains. 2. Inflammation of the urethra, prostate, and bladder. 3. Elevation of the destroyed part, eschar, or slough. 4. Hæmorrhage, or profuse bleedings. 5. Deposition of urine in the cellular membrane of the perinæum, scrotum, or penis. 6. Abscess. 7. Ulcers often incurable. 8. Total suppression of urine from thickened membranes. 9. Mortification. 10. The most painful death*.”

MR. SAMUEL SHARP, in his *Critical Inquiry*, published in 1750, p. 150, observes, that “in all times there have been enterprising men who have endeavoured, by *escharotic* applications at the extremity of their *bougies*, to make way through those obstacles which resist the *bougie*, or *leadén probe*; and,

* Rowley's Cogent Reasons, p. 150.

to say the truth, this practice has been avowed by the ablest surgeons of the two last centuries; but at present it is universally condemned, and indeed has been so almost ever since SAVIARD's time*.

“ THE objections to the use of caustics were the difficulty and almost impossibility of directing them, so as to eat through all the diseased parts of the *urethra* without destroying the sound part; the impracticability of preventing the *urethra* from contracting when it healed, as much, if not more than it was at the time of applying the *escharotic*; and, lastly, the pain was so excruciating, and perhaps the application was so poisonous, that an immediate mortification of the *scrotum*, *penis*, and *bladder*, was sometimes known to ensue: upon these accounts the use of *escharotics* seems to have been entirely rejected.”

A LATER writer upon this subject, Mr. BENJAMIN BELL†, says, “ This practice prevailed upwards of one hundred years ago; but, being both *hazardous and uncertain*, it appears soon to have been relinquished. It has lately, however, been revived, or rather an attempt has been made for reviving it by the late Mr. HUNTER, of London, and still more lately by Mr. HOME: but as I consider the practice attended with danger, and

* See his Cases.

† Treatise on the Venereal Disease, vol. i. p. 303, & seq.

not likely often to answer the purpose, I shall briefly state what leads me to form this opinion.

“ THE introduction of caustic into the urethra must prove hazardous from two circumstances: our not being able, even with all the pains we can take, to apply it to the *stricture alone*, without injuring the *contiguous* part of the urethra; and the risk there must always be of some small portion of the caustic breaking off and resting in the passage.

“ ON these accounts it would appear, that, for the removal of strictures in the urethra, the application of caustic is either *unnecessary*, or in a very considerable degree *unsafe*, and at the same time of very uncertain effect. In other parts of the body, we all know how difficult it is to remove even the callous edges of an ulcer with caustic; nay, that *new parts* seem often to form below, before the eschar produced by a previous application of the caustic has come off. I have no hesitation, therefore, in saying, that in similar affections of the urethra, proceeding to the extent which we here suppose them to have done, caustic would be altogether inadequate for the purpose, or that it must be applied in such quantities as to be productive of *much hazard*.” Indeed this method is every day falling into disrepute, and will probably in a short time, from its want of success,

cess, and the disadvantages under which it labours, be buried in oblivion. Mr. HOME relates a case where “ the caustic had been applied, in the course of six years, to different strictures 486 times, before they were sufficiently removed to allow an instrument of a tolerable size to pass into the bladder *.”

MR. HUNTER seems to have been aware of the inconveniencies and danger with which the caustic was attended; for he says †, “ When a bougie can readily pass, there is no necessity for using any other method to remove the stricture; but there are too many cases where a bougie cannot be made to pass, or so seldom that it cannot be depended upon for a cure. This may arise from several causes: 1st, The stricture may be so tight as not to allow the smallest bougie to pass. 2dly, The orifice in the stricture may not be in a line with the urethra, which will make it uncertain, if not impossible, to pass a bougie. 3dly, There may be no passage at all, it having been obliterated by disease, and the urine discharged by fistulæ in perinæo.”

It is also obvious, that he must have been foiled various times in attempting to pass the

* Practical Observations on the Treatment of Strictures in the Urethra, vol. ii. p. 113.

† Treatise on the Venereal Disease, p. 126.

bougie where there was no total suppression of urine, which may be ascribed to his not having been possessed of a proper instrument to overcome the resistance; for if urine can be voided, though in small portions, with great exertions, and a long continuance of endeavours, there is an opening by which a bougie may be passed, if endued with such properties as an instrument calculated for this purpose ought to possess, viz. a sufficient degree of strength and firmness, that it may be introduced with some force; a suppleness and pliability, that it may conform to the motion of the body without breaking; a smoothness of surface, that it may be introduced with ease; and of a size proportioned to the obstruction which it is intended to pass.

AFTER considering the nature and causes of urethral complaints; having clearly demonstrated the defects of the common bougies in difficult cases, and knowing the wish of medical men, as well as others, that some instrument might be discovered, possessing such properties as would more effectually answer their purpose; it is my peculiar happiness to acquaint them, that after a vast variety of experiments, and unwearied labour, I have had the good fortune to find in the mineral kingdom, those materials for the composition of a bougie, which fully answer my wishes; and I am encouraged

couraged to hope that my invention will be found useful to mankind in general, especially as it is allowed by some of the most eminent medical practitioners in the kingdom, to be a great improvement in this branch of the healing art. And it also affords me great satisfaction to be enabled to acquaint the community at large, that I have already brought to perfection two kinds of bougies, formed of this metallic composition, which I flatter myself, in every respect, will be found superior to any that are at present in use.

THE first of these are solid, but, at the same time, they are as flexible as those made of common plaster, and are possessed of strength and firmness enough to overcome any obstruction that ought to yield to pressure. They are also of so smooth a surface, that they may be introduced with ease, and so durable, that one case, containing twelve bougies of different sizes, with a little care*, will last a surgeon in full practice for many years.

THE second are hollow, and of sizes similar to the solid ones, furnished with a stilet, or wire of

* This caution is absolutely necessary to be attended to, as from No. 5 to No. 12, inclusively, are made hollow, and stopped at both ends, for the purpose of giving them lightness and flexibility, and if bruised they cannot be repaired: but are nevertheless to be considered as solid, in opposition to the hollow bougies, or catheters, which are open at both ends.

the same metal, for cases where it is judged proper to let them remain in the bladder; but in strictures requiring greater force than can be exerted with these bougies (as they are considerably softer than the silver catheter), a temporary brass or iron wire will give them sufficient strength for their introduction *.

THESE bougies, both solid and hollow, may be continued in the passage any length of time without danger of breaking, or giving the least pain †; they cannot be affected by the warmth of the parts to which they are applied, nor be acted upon by the stricture, when there is a spasmodic contraction of the urethra; nor by the urine, which is always the case when the plaster bougie, or elastic gum catheter, is used. They may be had of any size or degree of pliability, and when tarnished they may be repolished with a piece of shamoy leather and a little whiting: they are of a conical form, and their action is purely mechanical ‡.

Here

* It rarely happens that a brass or iron wire is wanted upon this occasion; but when it is, care should be taken that it be strong enough to preserve the form of the catheter, but not to create any difficulty in withdrawing it. It ought likewise to be observed, that during the introduction, the wire having no stop to it, should not be pressed upon too much, lest it be forced through the end of the bougie into the urethra.

† This I assert from my own knowledge, having worn one of the larger sizes, in some measure for the sake of the experiment, eight or nine hours at a time without irritation.

‡ Nevertheless, I must contend for a sedative or anodyne quality in the bougie itself, otherwise I shall not be able to ac-

HERE it was my intention to have given a complete anatomical description of the urethra and the

count for its giving immediate relief in the most violent inflammation of the urethra, after the application of the caustic bougie. I shall select one instance from many of a similar nature which have come to my knowledge, because the proof does not rest upon my assertion alone, but is supported by such evidence as I cannot always produce.

A gentleman from the country applied to a surgeon in London for the cure of a stricture in the urethra; the surgeon immediately recommended the use of the caustic bougie for that purpose, and the next morning was fixed for the application of it, after which the patient was in very great pain, and at night it became almost intolerable. He was put into the warm bath, and Mr. JOY, of the New Hummums, whose humanity is conspicuous upon every occasion, seeing him in such agony, ventured to ask him what was the matter. The patient told him the circumstance, and that he had not voided a drop of urine all the day, and that his bladder was ready to burst. I being mentioned to him, was accordingly sent for about two o'clock in the morning. I found the patient in the warm bath, complaining most piteously of what he suffered from the inflammation and swelling of his penis; the most urgent desire to make water, without the ability to pass a single drop. My first object was to give him relief as soon as possible; and as I found the warm bath had no good effect, I desired he might be put to bed immediately. I then attempted to pass a wax bougie, which is the mildest of that class, but he said he could not bear it, as it increased his pain; after which I tried a middle-sized flexible metallic bougie, and he suffered me to pass that down to the stricture without complaining: I begged of him to let it remain there for some time, without any other pressure than its own weight. In a few minutes he said the heat and pain were much less, and upon examination I found that the swelling of the penis was considerably abated also. I now desired he would hold the bougie just where it was for some time, and, after throwing some clothes over him, we entered into familiar conversation, which did not continue long, for he soon after said the bougie had slipped through his fingers, and upon turning down the bed-clothes, we found the spasm which had been brought on by the caustic had yielded to the slight pressure of the bougie, and that it had fallen down to the curve of the urethra, where I desired him to let it remain until he had an inclination to discharge his urine, at which time it might be withdrawn for that purpose. We did not remain long in suspense,

for

the parts connected with it; but to the faculty such description would be unnecessary, and for others it might rather tend to perplex than elucidate the subject. Let it suffice to say, that the urethra is a membranous canal, capable of very considerable distention, running from the urinary bladder along the lower part of the penis, and ending in the glans, the very vascular body that forms its apex; the length of this canal in a relaxed state, from the external orifice to its entrance into the bladder, is between eight and nine inches, its diameter about a quarter of an inch, and its figure, generally speaking, is cylin-

for he very soon afterwards withdrew the bougie, and evacuated nearly three pints of water, to his very great ease and comfort. I introduced the bougie again, desiring him to wear it until he found himself disposed to sleep, and then to withdraw it; I gave him twenty drops of laudanum in a glass of wine and water, and left him to his repose. In the morning I was agreeably surprised to find that he was up, and gone into the coffee-room to breakfast. He then told me he had had a good night, and was now as well as he was before the caustic was applied, and that he had never found any great difficulty in making water before the preceding day; he told me likewise that he had written to his surgeon to forbid his calling; but that did not answer his purpose, for the surgeon, not knowing what had happened, soon came to inquire into the cause of his dismissal, at which he was not well pleased. I met him a few days afterwards by accident, when he told me the stricture was a very slight one, at a very little distance from the orifice of the urethra, and that he had not applied the caustic above a minute, or a minute and a half at most *. I leave this case for the consideration of medical men.

* Query. *If the application of a caustic bougie to a slight stricture in the urethra, at a little distance from the external orifice, for one minute, creates so much pain, how much mischief may it do when applied to one near the bladder for two minutes, fifty, sixty, or a hundred times?*

drical:

drical; nevertheless, it has three manifest dilations: the first is in the prostate gland; the second in the bulb; and the third at the beginning of the glans penis*; “but every part of the urethra is not equally subject to strictures, for there appears to be one part which is much more liable to them than the whole of the urethra besides; that is, about the bulbous part. We find them, however, sometimes on this side of the bulb, but very seldom beyond it. I never saw a stricture in that part of the urethra which passes through the prostate gland; and the bulb, besides being the most frequent seat of this disease, has likewise strictures formed there of the worst kind. They are generally slow in forming, it being several years from their being perceived, before they become very troublesome †.”

HERE it will be proper to inform the patient, who is not supposed to be of the medical profession, that the urethra is subject to several other diseases, arising from various causes, differing in their nature, and which require a different mode of treatment. In all complaints of the urinary and seminal parts, prudence will direct him to consult a surgeon, if possible, whose judgment and discrimination may guide him to the best and readiest means to obtain relief; but if he

* Vide Plate I. Fig. 1.

† Hunter on the Venereal Disease, p. 113.

should

should happen to be so circumstanced as to find it inconvenient to do so, these bougies being mostly applicable to *strictures*, the following symptoms, attendant upon that disorder, should be attended to.

WHEN the urethra is affected by stricture, there is generally a little running, and a small quantity of matter will be voided before the urine. There is a frequent desire to make water, which will sometimes come away in a spiral, or double stream, or by drops, with considerable pain and straining; and a small degree of tenderness may commonly be found in that part of the urethra where the stricture is seated; but the best criterion to ascertain the fact, whether a stricture exists within the urethra or not, is the introduction of the bougie *.

TAKE one of the *large* † or *middle* sizes of the solid bougies, and draw it between the finger and

* If a wax bougie of a tolerable size be introduced for this purpose, and it can be worn without pain for a quarter of an hour, or twenty minutes, it will become so soft as to take the impression of the strictures, and shew their exact number and situation; but their yielding upon any other occasion is a disadvantage.

† In the former editions of this little work, I directed the patient to use one of the *smaller* size bougies for this purpose; but I am now convinced by experience, that a *large* or *middle* sized bougie is preferable, that being the least likely to get entangled with the internal membrane of the urethra, or to enter any

and thumb, to feel whether it be perfectly smooth. If that be the case, then take a little sweet oil, and rub it all over, that it may pass the easier. The patient may either stand, or sit in a chair, inclining backwards, or lie in bed with his knees drawn up; which latter position is preferable to any other. Then take hold of the *penis* near the *glans* with one hand, and extend it gently, that the urethra may not be wrinkled, and with the other introduce the small end of the bougie, which should be traced with the finger externally *, in order to keep it in a right line with the urethra, and it will then meet with no impediment but what is occasioned by the disease. When it meets with any resistance, it may be turned round gently with the finger and thumb several times, pressing it a little forwards at the same time, and continue so to do, varying the size of the bougie until it pass through the

any of the excretory ducts of the mucous glands, called *lacunæ* †. Mr. Hunter says, in his Treatise on the Venereal Disease, p. 120, "There are some *lacunæ* near, and also a little way from the *glans penis*, which often stop the bougie, and give at first the idea of a stricture. I have known them taken for such, and when the bougie stops so near to the *glans* this is to be suspected, and therefore we should vary the direction of the point of the bougie, bearing it against the under side of the urethra. When the bougie stops in one of these *lacunæ*, I think that the patient appears to have more pain than from a real stricture."

* The experienced practitioner need not be told, but I mention it for the satisfaction of the patient, that sometimes it may be proper to introduce the fore-finger of his left hand, well oiled, or greased with some unctuous matter, into the rectum, in order to facilitate the passage of the bougie through the stricture.

† *Vide Plate I. Fig. 2.*

obstruction,

obstruction, *which is all that is necessary* *. This bougie should remain some time in the passage, more or less, according to circumstances, and when withdrawn, another of a size larger be introduced, continuing the same operation once or twice a day, and gradually increasing the bougie to the size thought proper; but the larger the bougie, and the longer the urethra is kept distended, the more likely is the cure to be permanent. Sometimes a few drops of blood will follow the use of the bougie, owing to the pressure of its sides against the spongy substance of the urethra, which is generally inflamed and full of blood, and the discharge of which gives wonderful relief. By persevering in this manner daily, for about a month or six weeks, with a *temperate regimen*, the obstruction will be removed, the inflammation abated, the running stopped, and I may venture to affirm, from my own knowledge and experience, confirmed by the observations of the most eminent practitioners, that, in every case of *stricture*, where the *urethra* has not been previously *injured* by the improper use of the *caustic* or other bougies, *these* will always prove successful, as they are capable, sometimes in two or

* The impropriety and danger of forcibly passing the bougie beyond the curve of the urethra †, which in all introductions of this kind will form the point of resistance (although there should be no disease of the part existing), seems now to be allowed by every practitioner.

† Vide Plate I. Fig. I.

three weeks, when applied by *disinterested* and *unprejudiced* persons, of dilating the *urethra* to its natural size, attended with very little pain in the application, and certainly *without* danger to the patient, which cannot with truth be said of the *caustic bougie*, in the hands of the most humane and experienced surgeon.

WHEN it happens that there are two or three strictures in the *urethra* at the same time, situated at a little distance from each other, they are to be treated as if there were but one stricture, by passing the *bougie* through one obstruction to the other, until the *urethra* be sufficiently dilated to admit of a free passage to the urine.

“THE several affections of the urinary and seminal parts in which the *bougies* may be usefully employed, are: 1. The mere contraction of a portion of the *urethra*. 2. Ulcerations of the extremities of the excretory ducts of the *prostate gland*, the *vesiculæ seminales*, and glands of the *urethra*, yielding sometimes a plentiful, sometimes a small gleet. 3. *Callous cicatrices* of former ulcers. 4. A scirrhus or spongy enlargement of the *verumontanum*. 5. A *scirrhus* of the *prostate* or *vesiculæ seminales*. 6. A spongy enlargement of the *corpus spongiosum urethræ* *.”

* Critical Inquiry, p. 132.

WHEN the patient judges himself to be well, it will be advisable to desist gradually, wearing the bougie at first only an hour or two in a day, and then an hour two or three times a week; after which it may be entirely disused. But if any gleet still remain, or any obstruction threaten to return, it will be proper to use the bougie an hour once or twice a week for some time longer. The patient should not walk or sleep with it in the passage, nor wear it at any time longer than he can properly attend to it.

CHAP. III.

OF RETENTION OF URINE.

WE have hitherto treated of the solid bougie, as far as relates to the cure of strictures in the urethra only; we shall now proceed to shew the advantages of the *hollow flexible metallic bougie*, or *catheter*, for the evacuation of the urinary bladder.

RETENTION of urine arises from various causes*, and may be distinguished into three sorts: the first is when we cannot void our urine without great difficulty and straining; this is called *dysury*; the second is when we can only void it by drops; this is called *strangury*: and thirdly, if we can pass none at all, this is called *ischury*, or a total suppression of urine. This may arise, either from an inflammation of the bladder, from *paralysis*, or from a defect of power in the bladder to expel its contents.

“A RETENTION of urine in the bladder,” says Mr. HEY, “when the natural efforts are incapable of affording relief, is, in male subjects, a disease of great urgency and danger. This reten-

* Bibliotheca Anatomica, &c. vol. iii. p. 607, et seq.

tion may arise from a variety of causes, which operate as a mechanical impediment to the flow of urine; such as strictures in the urethra, calculous concretions fixed in any part of that canal, abscesses in the penis, or perinæum, &c.*"; and it is known by the tumor, pain, and tension which the patient feels about the *ossa pubis*; on the contrary, if the *secretion* of urine be suppressed, the *hypogastric* region is sunk in, soft, and free from pain. A retention of urine may be sometimes relieved by medicines, but we are generally obliged to have recourse to instruments.

THE instrument by which this operation is performed is a hollow probe, or tube, called a *catheter*, which serves to extract the urine out of the bladder, and to discover some of its diseases.

THESE tubes have been made of horn, brass, copper, leather, silver, silver flattened, brass wire twisted and covered with plaster, elastic gum, &c. of different sizes, adapted to both sexes. Those which are to be introduced through the *male* urethra, are considerably curved, to accommodate them to the shape of that canal; while the *female* catheter is almost straight, and shorter, because the urethra, or urinary passage of women, is straighter and shorter than that of men.

* Practical Observations in Surgery, p. 374.

THEY must be hollow quite through, and the cavity of the flexible catheters must be provided with a wire, or stilet, to give them strength and keep them clean. They ought not to be pierced at the very extremity which is introduced into the bladder, but on the sides near the end; because in touching the membranes of the bladder, the aperture might be obstructed, and the urine be prevented from entering into the tube; but being perforated on the sides, either by half a dozen round holes, or by a couple of oval slits*, though these parts should touch the bladder, the urine will easily escape. They ought not to be so weak as to be in danger of bending, nor so large as to occasion pain. They should be even and well polished, to enter with the greater ease.

It is not necessary for me to point out the imperfections of some of the catheters now in use; they are well known to every practitioner. I shall therefore only speak of the *silver*, and *elastic gum* catheters, as they are the most esteemed by surgeons who are in the daily habit of using them. “HELMONT † rejects catheters made of silver, or copper, as too stubborn for the tender parts they

* Lateral slits in the silver catheter have been known to cut out such parts of the membranes of the urethra, as have been pressed into them in passing to the bladder; therefore, a certain number of round holes are preferred by modern surgeons.

† Lib. de Lithiasi, cap. iii. No. 34.

are to enter, and therefore devises another, to be made of leather, sewed in the same form; for which invention he much applauds himself, as he thinks little or no pain will attend the use of this last, from its softness. But this," continues HEISTER*, "seems to demonstrate how little that famous gentleman was conversant in surgical operations; for the very advantage which he proposes, viz. the softness of the instrument, renders it useless in the hand of a surgeon, as it will not thereby be able to make its way into the bladder."

ALTHOUGH the common silver catheter can be introduced with facility into the bladder, by every expert surgeon, yet it is too firm and unyielding to be left in the bladder, without exposing the patient to great inconvenience. The catheters made of the elastic gum soon lose their polish, and become brittle, by lying in the bladder and urethra; and thus are rendered useless in future. Besides, both the silver catheter †, and that made of elastic gum ‡, collect the calculous matter of the urine about them in a short time, which not only renders their extraction painful, but exposes the patient to the hazard of having some of this lithic concrete left behind in the bladder, to constitute the nucleus of a stone.

* Institutions of Surgery, vol. ii. p. 94.

† Critical Inquiry, p. 127.

‡ HOME on Strictures, vol. ii. p. 337. Hey's Practical Observations in Surgery, p. 405.

THE superior utility of my flexible metallic catheters, in cases where it may be found necessary to let them remain for some time in the bladder, has been repeatedly experienced by surgeons, as they are neither so hard as the silver, nor so pliable as the gum, and *never* collect any of the calcareous matter of the urine about them *. Mr. CLINE, surgeon to ST. THOMAS'S hospital, in his lectures on surgery, has recommended my catheter with a screw stopper, to be introduced into the bladder, in those cases that require the water frequently to be drawn off. He observes, "the advantages of this catheter are, that it adapts itself so accurately to the urethra, as to retain its situation without the aid of bandage or ligatures; and that the patient can draw off the water himself at all times by unscrewing the stopper."

* In order to ascertain this fact, I put several of these catheters into a considerable quantity of fresh-made urine, where they remained upwards of three months, without attracting any of the calcareous matter of the urine, which fell to the bottom of the containing vessel, and there formed a hard red crust.

I have the permission of an elderly gentleman in my own neighbourhood (a patient of Mr. Thomas and Mr. Cline) to say that he has worn one of my flexible metallic catheters for fifteen days without removal, and that no appearance of crust was seen upon it when withdrawn; and moreover, that it had taken the shape of the diseased parts, in which form it is now kept by him, but that he has had no occasion to use it, for upwards of eighteen months.

I have likewise the permission of a surgeon in the country to say that a patient of his wore one of my catheters for a month without removal, and that it was as bright, and free from calcareous matter, when withdrawn, as when it was first introduced. Indeed, I saw it myself, for he brought it to town to shew me; but I do not approve of their being suffered to remain longer in the bladder than a week without examination.

THERE

THERE are two methods of introducing the catheter. The surgeon will always choose that which he is most accustomed to practise, and I shall describe that which is the most convenient for the patient, when he is under the necessity of performing the operation himself.

A CCATHETER of a middling size will generally be found the most convenient. It should, in the first instance, be put into the form delineated in Plate II. fig. 1, or nearly so, and well oiled; then take hold of the penis between the fore finger and thumb of the left hand, raising it a little, and with the right hand introduce the catheter, so that the concave part of it may be towards the belly; then move it gently along the urethra, until it reach the root of the penis, when it is to be lowered, so as to pass below the arch of the ossa pubis; but if the instrument should afterwards meet with any obstruction, it ought *not* to be forced forwards, but withdrawn a little, in order to push it gently forwards again, and by depressing and elevating alternately the extremity held in the hand, inclining it a little towards the groin, and applying the fingers of the left hand to guide it externally, it will readily find its way into the bladder. The wire is then to be drawn out, that the urine may flow through the tube.

MRS. HAY observes* that, “ In our attempts to introduce the catheter, we should have regard to

* Practical Observations in Surgery, p. 378.

the curvature of the urethra, its connexion with the contiguous parts, and the manner in which it passes through the prostate gland. If the curve described by the point of the catheter, in an attempt to introduce that instrument, is less than the curve of the urethra, it is evident, that the point of the catheter will be pushed against the posterior part of the urethra, instead of following the course of that canal. The posterior part of the urethra has nothing contiguous to it which can support it; and no considerable degree of force is necessary to push the point of the catheter through that part, between the bladder and the rectum. If this accident is avoided, still the point will be pushed against the inferior surface of the prostate gland, and cannot, in this direction, enter the bladder.

“THE truth of this statement is farther manifest from the assistance which one receives, in the introduction of the catheter (whenever it stops at the prostate gland), by elevating the point of the instrument with a finger introduced within the rectum. This gives a greater curvature to the course of the instrument, and facilitates its entrance into the prostate gland. There is no great danger of pushing the point of the catheter through the anterior coats of the urethra, as they are supported by the ossa pubis, and as the urethra enters and passes through the prostate gland in a direction nearly vertical.

“THE difficulty of performing this operation, arising from the causes above mentioned, shews the impropriety of pushing forwards the point of the catheter before its handle is sufficiently depressed *. If the catheter is pushed on while its handle is in a vertical position, it is evident that the point must move in a horizontal direction. Any force used in this direction greatly endangers the wounding of the urethra. But if the catheter is pushed forwards when the handle is in a horizontal position, the point of the instrument will then ascend in a vertical direction, which is the most proper for its passing through the membranous part of the urethra, and prostate gland, without injury.

“ANOTHER difficulty, which sometimes occurs in the introduction of the catheter, arises from the inflamed and dry state of the urethra. In this case the catheter does not move freely in the urethra, and the proper turns cannot be made with ease and exactness.

“THE previous introduction of a † bougie, well covered with lard, greatly facilitates, in this case, the passage of the catheter. But great caution should be used if the bougie meets with resistance, as even this instrument is capable of penetrating the coats of the urethra, when its point does not take a proper direction.

* See Plate I. fig. 1.

† Plaster is here meant.

“ I HAVE hitherto supposed the surgeon to make use of a silver catheter. If he uses a flexible one, covered with elastic gum, it is of great consequence to have the stilet made of some firm metallic substance, and of a proper thickness. I always make use of brass wire for this purpose. If the stilet is too slender, the catheter will not preserve the same curvature during the operation; and it will be difficult, if not impossible, to make the point of the instrument pass upwards behind the symphysis pubis in a proper direction. If the stilet is too thick, it is withdrawn with difficulty.

“ WHEN the stilet is of a proper thickness, this instrument has one advantage over the silver catheter, which is, that its curvature may be increased while it is in the urethra. This alteration in the shape of the instrument is often of great use when the point approaches the prostate gland. The advantage to be obtained by it first occurred to me on the following occasion.

“ I WAS introducing the elastic gum catheter in a patient whose prostate gland was much enlarged, and upon whom the operation was, on this account, rendered difficult. Finding some obstruction near the neck of the bladder, I determined to withdraw the stilet, that I might see whether the urine would run off through the catheter. When I began to draw out the stilet, holding the
catheter

catheter with my left hand, I rather repressed the instrument, and was agreeably surprised to find, that as I drew out the stilet the catheter passed into the bladder.

“THIS accidental success put me upon considering the effect produced by withdrawing the stilet, and I immediately perceived, that as soon as the stilet is moved the curvature of the catheter is increased. In the operation, therefore, by this motion of the stilet, the point of the catheter must be lifted up, and will thereby be prevented from striking against the inferior surface of the prostate gland, and will be directed into the neck of the bladder. This discovery has been of great use to me in many difficult cases. It will be understood by any one who observes the motion which a flexible catheter makes upon withdrawing the stilet. The effect, however, is lost, if the stilet be too slender; for in that case it is rendered straight by the act of withdrawing it, and consequently it cannot increase the curvature of the catheter*.”

“IT should be well observed,” says HEISTER †, “that the catheter cannot be of service in every

* The effect of withdrawing the stilet in part will be understood by a view of the first figure in the second plate of this work. The quotation and plate are both taken from Mr. HEY's Practical Observations, in order to apply them to my flexible metallic catheters, as they possess, in an eminent degree, all the advantages ascribed by him to the elastic gum catheter.

† Institutions of Surgery, vol. ii. p. 90, et seq.

suppression of urine; for when that excrement is not conveyed into the bladder, through some fault in the kidneys, or ureters, the introduction of this instrument must be evidently to no purpose. The catheter may therefore be used, 1. Whenever the urine cannot be discharged, from some calculus* obstructing the sphincter, or neck of the bladder. 2. When the bladder cannot discharge its contents, from some natural weakness, as is frequent in old people. 3. When the urine has been too long retained through bashfulness, or any other cause, whereby the muscular coat of the bladder is so much distended, as to lose its contractile force, and become

* The free passage of the urine is frequently obstructed by a *calculus* or *stone* in the urethra, an instance of which lately occurred to a gentleman, who came to London to be cured of a supposed stricture. On the recommendation of a friend of his, he came to me, and purchased a flexible metallic bougie of the middle size, which he returned to me the next day, saying, it was so rough that he could not use it again. On examining the bougie, I found it scratched up and down, as if it had been rubbed with a coarse file. I immediately suspected the cause of this appearance, and gave him another bougie of the same size, requesting, at the same time, that he would be particular in observing the state of it before and after the introduction, and to let me know the result.

He called the day following, and shewed me the bougie, scratched exactly in the manner of the former, by which I was convinced that a stone was lodged somewhere in the urethra. I then told him what I thought of his complaint, and advised him to consult a surgeon, as I imagined that bougies alone could not effect his cure. A few days previous to his leaving town, he told me that he had consulted an eminent surgeon, who confirmed my opinion, by the introduction of a steel sound, which rattled against the stone as he passed it along the urethra to the bladder, and as there was no stricture, had advised him to let the stone rest for the present, and occasionally to use a bougie.

too weak to expel its contents. 4. When the urinary passages are obstructed by some thick mucus, concreted blood, matter, or putrid membranes, which may be lodged in the bladder, after a wound, or ulcer in the kidneys, or may stagnate in the neck of the bladder after making bloody urine. However, as the catheter can never be introduced, without giving a good deal of pain and uneasiness to the patient, that ought always to be deferred till more gentle means have been found ineffectual *."

WOMEN are not so subject to strictures in the urethra as men; but retention of urine during pregnancy and after delivery is very common. The delicacy of some females, however, upon this occasion, is such, that they would suffer any pain, even at the risk of their lives, rather than permit the urine to be drawn off for them. In order, therefore, to remedy this evil, I have invented a catheter for their use, by which they may, at any time, relieve themselves with perfect ease and safety, without the assistance of an *accoucheur* †.

THESE bougies and catheters, having passed the ordeal of medical criticism, and on account of their superior smoothness, firmness, and pliability, obtained the approbation of the most celebrated

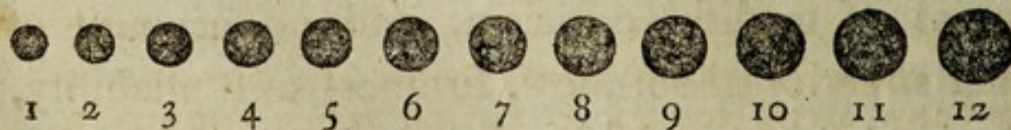
* See Mr. WARE's paper in the Memoirs of the Medical Society of London, vol. ii. p. 336.

† See Plate II. fig. 2. A printed direction is given with this instrument.

practitioners of every denomination; W. SMYTH, Apothecary, of *Tavistock Street, Covent Garden, London*, the inventor and sole proprietor, in order to prevent imposition, has confined their *manufacture* and *sale* entirely to his own house, where they may be had, marked with his name, and numbered according to their size*, at the following prices to the faculty, &c. and a proper allowance made to dealers,—for ready money, viz.

	£.	s.	d.
A case containing twelve bougies of different sizes	1	11	6
A case containing twelve bougies of different sizes, each eight inches long †	-	-	1 11 6
A single bougie of any size or degree of flexibility	0	3	0
A case containing two bougies of different sizes, one within the other	-	-	0 7 0
A case containing three bougies of different sizes, one within the other	-	-	0 10 6
A case containing four bougies of different sizes, one within the other	-	-	0 14 0
A case containing six bougies of different sizes, with a smaller one within each	-	-	2 2 0

* The bougies are ten inches long, and each at the small end about half the circumference of these impressions. The catheters are of the same length, and equal to them in thickness at both ends.



† When strictures are found any where anterior to the bend of the urethra, and no where else, a bougie of seven or eight inches long will generally be found as useful as one of nine or ten, as in that case it will not be necessary to pass the bougie into the bladder. See Plate I. fig. 1. F. G.

A case

	£.	s.	d.
A case containing twelve long bougies and twelve short ones * - -	3	13	6
A case containing twelve bougies and twelve catheters of different sizes - -	4	14	6
A male catheter of any size or degree of flexibility † - - -	0	5	0
A case containing two catheters of different sizes, one within the other - -	0	10	6
A case containing three catheters of different sizes, one within the other - -	0	15	6
A catheter with a screw stopper and guard, intended to lie in the bladder -	0	8	0
A catheter with a guard, intended to lie in the bladder, with a flexible screw tube, meant to convey the urine into a vessel in any part of the bed ‡ - - - - -	0	9	0
A catheter with a guard, intended to lie in the bladder, to which a pig's bladder may be tied to receive the urine - - -	0	8	0
A catheter of any size with a bougie within it	0	8	0
A catheter of any size with two bougies within it - - - -	0	12	0
A female catheter of any size -	0	5	0
A case containing two female catheters, one within the other - - -	0	10	6

* In this case, which is double and flat, the bougies lie in separate divisions, lined with velvet, and the long ones are bent to the curve of the urethra, so that no person can make a mistake.

† Whenever it is found necessary to pass a brass or iron wire into the flexible metallic catheter in order to give it strength, it should be done whilst they are both straight, and the requisite curve given to them afterwards. See Plate II. fig. 1.

‡ This idea was suggested to me by Mr. Astley Cooper.

£. s. d.

A case containing three female catheters, one within the other	-	-	-	o	15	6
A female catheter with a screw stopper and guard, intended to lie in the bladder				o	8	o
A case containing a female catheter with a guard, intended to be used by the patient herself. See Plate II. fig. 2.	-			o	10	6
A flexible tube for the introduction of the caustic bougie*	-	-	-	o	5	o
A flexible tube for the introduction of the plaster bougie	-	-	-	o	3	o
A flexible tube for the introduction of the plaster bougie with a stilet	-			o	5	o
A case containing twelve flexible tubes, with a bougie within each	-	-		2	14	o
A single flexible tube of any size, with a metallic bougie within it	-	-		o	5	o
A flexible tube of any size for fistulous ulcers in the urethra	-	-	-	o	3	o

* Mr. JOHN HOWARD, in his "Supplement to Practical Observations on the Natural History and Cure of Lues Venerea," page 26, having mentioned this tube or canula, I think it incumbent on me to give some description of it here, for the better information of those who may be disposed to make use of such an instrument for the defence of the urethra.—It is a cylinder of about eight inches long, and may be had of any size, furnished with a stilet in the manner of a catheter, fitted exactly to the extremity of the tube, and is so rounded off as to form a blunt end, which may be passed up to the stricture with great ease; the stilet may then be withdrawn, leaving the canula behind, through which the caustic bougie may be introduced, armed in any way the operator thinks best.

As this tube will be elongated by moving backwards and forwards, the wire belonging to it will require sometimes to be drawn between the fingers and thumb, to keep it of a proper length.

A flexible

	£.	s.	d.
A flexible tube of any size for fistulous ulcers in the urethra, with a stilet -	0	5	0
A bougie of any size, with a catheter within it	0	8	0
A catheter of any size, with a bougie within it	0	8	0
A tube of any size for the elastic gum bottle	0	3	0
A syringe, with a flexible tube for throwing oil, &c. into the bladder, from 5s. to	0	10	6
A flexible tube of any size for throwing oil, &c. into the rectum*, from 3s. to -	0	5	0
A syringe with a flexible tube for throwing oil, &c. into the rectum, from 5s. to - -	0	10	6
A flexible bougie of any size for the rectum	0	5	0
A flexible metallic bougie for the œsophagus	0	10	6
A flexible metallic tube and funnel for conveying food into the stomach - -	0	10	6
A case containing a trocar for puncturing the bladder above the pubis, and a catheter, with a screw stopper, to be left in the canula †	0	15	0
A case containing a flexible metallic probe for gun-shot wounds ‡ - -	0	10	6

* The peculiar advantages of this tube are, that it is longer than any of the *box* or *ivory* pipes usually made use of, and may be bent to the curve of the rectum without breaking.

† When a total suppression of urine has taken place, arising from a disease of the *urethra* or *prostate gland*, rendering the puncture of the bladder above the *ossa pubis* necessary, the advantages of this instrument are such as to obviate the objections made by Mr. SHARP, in his *Critical Enquiry*, (p. 125, &c.) against the silver canula of the common trocar. For, as my flexible metal does not attract the lithic matter of the urine in any length of time, and the catheter being introduced into the canula after the piercer is withdrawn, the urine may be conveniently drawn off at any time by the patient, and the blunt end of it is not likely to penetrate the *bladder* or *rectum*, as the sharp edge of the silver canula has done.

‡ This probe is eighteen inches long, and so flexible that it will readily follow the course of a ball.

	£.	s.	d.
A case containing a flexible metallic probe for gun-shot wounds, with a concealed needle -	0	15	0
A paper case, according to its size, empty, from 1s. to - - - - -	0	2	0
A tin case, according to its size, empty, from 1s. to - - - - -	0	2	6
A tin case, japanned, according to its size, empty, from 1s. to - - - - -	0	2	6
A case with separate divisions, empty, lined with velvet, which may be furnished with bougies and catheters according to the judg- ment of the purchaser - - - - -	0	15	0
A deal packing case for country orders, accord- ing to its size, from 1s. to - - - - -	0	2	6

GENTLEMEN in the country are requested to give their orders in the words of the preceding list of prices; and, when dispatch is necessary, to send them direct to the proprietor himself, as they will then be executed without delay, and prevent the mistakes and disappointment sometimes occasioned by their passing through different hands; and those who have not a correspondent in *London* to refer to for payment, are respectfully informed, that if a bank note be enclosed, the difference shall be returned to them with the bougies.—Surgeons in the army, navy, hospitals, &c. may complete their sets of bougies or catheters, by only sending for the particular numbers that are wanted.

MR. SMYTH is sorry to be under the necessity of informing patients, that when he applies the bougie or catheter for them, or answers letters of consultation (which must be post paid), he expects a gratuity adequate to his time and trouble.

FOR the accommodation of the faculty, &c. Mr. SMYTH keeps an assortment of all kinds of bougies and catheters by him.

AT home in the *Morning* from ten to twelve ;
—and in the *Afternoon* from four to six o'clock.

CHAP. IV.

OF TESTIMONIALS.

EXTRACT of a Letter from JOHN BIRCH, Esq.
Surgeon to St. Thomas's Hospital, and Surgeon
Extraordinary to the PRINCE OF WALES,
to the Inventor and Proprietor of the Flexible
Metallic Bougies.

“ I HAVE made use of the flexible metallic
“ bougies you favoured me with, on several
“ occasions, and am so well pleased with the
“ invention, that I have no hesitation in saying
“ I think they will be highly useful in many
“ cases of stricture. No single remedy is appli-
“ cable to all occasions, and by the *present*
“ *fashionable experimental practice*, there will, I
“ apprehend, be many cases to which no relief
“ can be given.

“ I WISH you all the success your ingenuity
“ deserves, and recommend you to be cautious
“ in what manner you advertise them, lest a
“ valuable discovery should meet the contempt
“ of empirical impositions.”

Spring Gardens, London, 1799.

EXTRACT

EXTRACT from the Medical and Physical
Journal, Vol. II. p. 85.

“ GOOD BOUGIES and CATHETERS have long
“ been a desideratum, in the treatment of stric-
“ tures in the urethra, and for evacuating the
“ urinary bladder.

“ W. SMYTH, of Tavistock Street, Covent
“ Garden, has lately discovered a metallic com-
“ position, which unites the flexible property
“ of lead to the white lustre of silver. From
“ this excellent composition, Mr. SMYTH manu-
“ factures his *metallic bougies, solid and hollow,*
“ *as well as his flexible metallic catheters, for*
“ *males and females.* He recommends them with
“ a degree of modesty deserving much praise,
“ *for the cure of strictures only*; while he very
“ properly remarks, that a *temperate regimen*
“ ought to be observed during their use.”

EXTRACT of a Letter from ANTH. CARLISLE, Esq.
Surgeon to the Westminster Hospital, to the
Editors of the Medical and Physical Journal,
on the Use of Bougies, Vol. III. p. 291.

“ THE bougies made of plaster, spread on
“ linen, and rolled up, have not the absorbing
“ property of the two former (leather and
“ catgut), and the wax, &c. soon becomes so
“ soft by the heat of the body as to render them
“ incapable

“incapable of a due degree of resistance. Mr.
 “SMYTH, Chemist, &c. of Tavistock Street,
 “Covent Garden, has lately contrived a com-
 “pound metal, out of which he makes bougies
 “of all forms and sizes; the degree of flexibility
 “of the metal, and the polish it bears, are ad-
 “mirable qualities for the manufacture of bou-
 “gies. Where mechanical force is preferred,
 “or the dilatation of a stricture by a conical
 “bougie, or where the passage is so narrow as
 “not to admit any other substance from the
 “comparative want of resistance, these metallic
 “bougies are, in my estimation, decidedly the
 “best. They are also well adapted for ex-
 “amining the passage to ascertain the seat, &c.
 “of stricture. For clearing the canal previ-
 “ously to the introduction of a caustic bougie,
 “and for dilating the opening after a certain
 “degree of ulceration has been excited by caustic,
 “these instruments will be found preferable to
 “most others.”

Soho Square, London, 1800.

EXTRACT from the Medical and Chirurgical
 Review, Vol. VII. p. 96.

“WE mentioned in a cursory way, a short
 “time ago, the invention of flexible metallic
 “bougies and catheters, by Mr. SMYTH, Apo-
 “thecary, of Tavistock Street. Having since
 “had

“ had an opportunity of examining them, and
 “ of witnessing their application, we are enabled
 “ to speak more decidedly of their merits.
 “ They appear to be equally flexible with the
 “ common plaster bougie, without the incon-
 “ venience of being readily broken, or yielding
 “ too much, from the heat of the parts to which
 “ they are applied. At the same time, they
 “ possess sufficient firmness for any degree of
 “ force, which it can be proper to make use of,
 “ in overcoming an obstruction mechanically;
 “ and they are readily susceptible of a very high
 “ polish. When these properties are considered,
 “ together with their durability, as with moderate
 “ care they may last for many years, we have no
 “ doubt they will be considered as an important
 “ and valuable discovery.”

EXTRACT of a Letter from WILLIAM CHAM-
 BERLAINE, Esq. Surgeon (formerly of Ja-
 maica), to the Inventor and Proprietor of the
 Flexible Metallic Bougies.

“ I HAVE great pleasure in stating to you
 “ that I have found your flexible metallic bougies
 “ answer my purpose in several cases of stric-
 “ ture, where a common bougie was of no avail.
 “ I shall beg leave to mention one case in par-
 “ ticular, as I enjoyed much gratification from
 “ the success attending a single application.”

HERE Mr. C. relates a case of stricture, attended with suppression of urine, where he could not pass a common bougie into the bladder, but introduced with ease, a flexible metallic bougie bent into the shape of a catheter, which in a few minutes produced the desired effect. Dr. MARSHALL, who was called in upon the occasion, expressed much satisfaction at his rejection of the caustic bougie (which had been recommended by a young practitioner as the only means of relief), and the adoption of one not attended with danger, and but little or no pain in the application. He then concludes with saying, “ I
 “ would recommend it to you, for the sake of
 “ humanity, to use your best endeavours to make
 “ the FLEXIBLE METALLIC BOUGIES known in the
 “ WEST INDIES, where *urethral obstructions* are
 “ very common among the NEGROES. The un-
 “ fitness of the common bougies (from their be-
 “ ing softened by the heat of the climate), and
 “ the *durability* of the FLEXIBLE METALLIC BOU-
 “ GIES (which may be used a thousand times
 “ without being injured), would make them a
 “ valuable acquisition to gentlemen of the me-
 “ dical profession, and particularly on the plant-
 “ ations.”

Aylesbury Street, Clerkenwell, 1800.

EXTRACT of a Letter from JOHN MORGAN, Esq.
 one of the Surgeons to the Ipswich Public
 Dispensary, to the Inventor and Proprietor of
 the Flexible Metallic Bougies.

“ I AM much obliged to you for the cor-
 “ rectness with which you executed the orders
 “ from the Ipswich Public Dispensary, and the
 “ Suffolk Society of Surgeons. Your flexible
 “ metallic bougies were much commended,
 “ and I wish you all the success your invention
 “ deserves.”

Ipswich, 1801.

EXTRACT from Mr. WILKINSON's Treatise on
 Gonorrhœa, p. 143.

“ MR. SMYTH, a Practitioner, in Tavistock
 “ Street, has revived, with considerable im-
 “ provement, the metallic sounds and catheter ;
 “ these are very flexible, and easily accom-
 “ modate themselves to the curvature of the
 “ urethra. In cases where the resistance shall
 “ be so great as to render the introduction of a
 “ cat-gut bougie extremely difficult, these may
 “ with advantage be employed.”

Soho Square, London, 1801.

EXTRACT of a Letter addressed to ANTH. CARLISLE, Esq. Surgeon to the Westminster Hospital; from CHARLES ASSEY, Esq. Surgeon on the Honourable East India Company's Establishment.

“ THE demand which has been made for
 “ SMYTH'S metallic bougies is astonishing!—
 “ they are more especially valuable in this
 “ country, where perhaps one man in six who
 “ has been any time in it becomes affected with
 “ strictures, and the wax bougies are good for
 “ nothing.”

Cawnpore, 1801.

EXTRACT from MOTHERBY'S Medical Dictionary,
 Fifth Edition, p. 164.

“ MR. SMYTH, Apothecary, of Tavistock
 “ Street, has discovered a metallic composition,
 “ of which he forms *bougies* which are allowed
 “ to possess properties that these instruments
 “ have long wanted, in order to make them
 “ complete and efficacious in practice. *Bougies*
 “ formed of this metallic substance, are flexible,
 “ have a highly polished surface, of a silver hue,
 “ and possess a sufficient degree of firmness for
 “ any force requisite for the passing them in
 “ cures of the urethra. Indeed the short time
 “ which they have been employed, has con-
 “ vinced practitioners that they exceed any
 “ *bougies*

“ *bougies* which have yet been invented, and
 “ are capable of succeeding in all cases where the
 “ use of such an instrument becomes necessary.
 “ They are made either solid or hollow, and
 “ answer extremely well as catheters, as they
 “ not only pass into the bladder with ease,
 “ but may also be suffered to continue there
 “ for any convenient space of time, and hence
 “ become productive of most essential benefit.
 “ Catheters (female) are also made of the same
 “ composition.”

EXTRACT of a Letter from JOHN KING, Esq.
 Surgeon of the Pneumatic Institution, to the
 Inventor and Proprietor of the Flexible Metallic
 Bougies.

“ MR. BOWLES, an eminent Surgeon and
 “ Public Teacher of Anatomy in this town,
 “ makes use of your bougies, and speaks highly
 “ of them. I could mention several more gen-
 “ tlemen who are of the same opinion, were it
 “ necessary.”

“ It appears to me that the *tendency to recoil*
 “ in the elastic and plaster bougies, which has
 “ been mentioned as a proof of their superiority,
 “ is the very circumstance which constitutes their
 “ inferiority; and that the flexible metallic in-
 “ struments owe their utility to the steady guid-
 “ ance

“ and they receive from the operator’s hand, on
 “ the outside of the urethra.

“ I HAVE had several opportunities of making
 “ your instruments known to surgeons who had
 “ not seen them before. They were struck
 “ with the ingenuity of the invention, and the
 “ neatness of the execution. Those of my ac-
 “ quaintance who have fairly tried them, agree
 “ in declaring them to be of the greatest utility.”

Downy Square, Bristol, 1802.

EXTRACT of a Letter from JOHN PEARSON, Esq.
 F. R. S. Sen. Surgeon of the Lock Hospital,
 &c. &c. to the Inventor and Proprietor of the
 Flexible Metallic Bougies and Catheters.

“ I HAVE employed your flexible metallic
 “ bougies in a great variety of cases, both in
 “ public and in private practice, and I give my
 “ testimony to their utility without the least he-
 “ sitation. They do not, and cannot supersede
 “ the common plaster bougie, on all occasions ;
 “ nevertheless, they are often very useful where
 “ the common bougie is either insufficient or
 “ improper. I consider your bougies as a va-
 “ luable addition to the means we already pos-
 “ sess, and I have no doubt that as they become
 “ more known, they will be more generally
 “ employed in the treatment of strictures of the
 “ urethra.

“ YOUR

“ Your flexible metallic catheter is a valuable
 “ and important addition to the instruments of
 “ surgery. The flexible silver catheter is at all
 “ times a dangerous instrument; and those ca-
 “ theters which are made of the *CAOUTCHOUC*,
 “ or *elastic gum*, lose their polish and become
 “ brittle when they have lain long in the blad-
 “ der. The superiority of your catheter over
 “ every other kind of catheter, or hollow bou-
 “ gie, will be most strongly impressed upon the
 “ minds of those who have had the greatest op-
 “ portunities of employing them.”

Golden Square, London, 1803.

EXTRACT of a Letter from H. L. THOMAS, Esq.
 Teacher of Anatomy and Surgery, to the In-
 ventor and Proprietor of the Flexible Metallic
 Bougies and Catheters.

“ I CANNOT withhold my testimony in favour
 “ of your flexible metallic bougies, as I have in
 “ several instances experienced their superiority
 “ to every other hitherto invented. I have found
 “ them particularly useful in overcoming ob-
 “ structions in those cases, where, from the long
 “ continuance of the disease, the internal coat of
 “ the urethra has become *cartilaginous* in its
 “ structure, with consequent irregularities in the
 “ course of the canal.—I also consider the ca-
 “ theters made of the same materials exceedingly
 “ useful

“ useful and convenient in most of those cases
 “ which require a canula to be kept constantly
 “ in the bladder*.

“ THE advantages I have in the course of my
 “ practice derived from your valuable discovery,
 “ though highly gratifying to myself, will fall
 “ far short of those which I anticipate must
 “ accrue to my professional brethren practising
 “ in our EASTERN and WESTERN colonies, where
 “ those diseases are so prevalent, and where the
 “ wax bougies, and other means usually resorted
 “ to, have in almost every case been found
 “ inadequate in affording even a temporary re-
 “ lief.”

Leicester Square, London, 1804.

EXTRACT of a Letter from JOHN HOWARD, Esq.
 one of the Surgeons to the Middlesex Hospital,
 to the Inventor and Proprietor of the Flexible
 Metallic Bougies and Catheters.

“ I HAVE observed in my practice, that the
 “ two properties of smoothness and ductility
 “ which your flexible metallic bougies and ca-
 “ theters possess, are great advantages;—by the
 “ former, the passage of the instrument is fa-
 “ cilitated into the bladder, and by the latter
 “ a surgeon is enabled to give them any curve

* See pages 27, 40, 61, 63.

“ he pleases. You have experienced their good
 “ effects in your own person, and in proper
 “ hands I believe them capable of being highly
 “ useful to others.”

Argyle Street, 1804.

EXTRACT of a Letter from G. YOUNG, Esq.
 Surgeon, to the Inventor and Proprietor of the
 Flexible Metallic Bougies.

“ I HAVE in several instances derived con-
 “ siderable advantage from the use of your flex-
 “ ible metallic bougies in the treatment of stric-
 “ tures in the urethra, especially in those cases
 “ which required the application of very small
 “ bougies. I have lately had a case under my
 “ care in which I could not introduce the
 “ smallest catgut or plaster bougie; even your
 “ No. 1 was too large to pass; and I conceived
 “ I had no resource but in the caustic, when it
 “ occurred to me to try some smaller made of
 “ your flexible metal. Those which you sent
 “ me of different sizes under No. 1, passed rea-
 “ dily through the stricture, and, after increasing
 “ the size of the bougie gradually, in a short
 “ time I was able to pass your No. 12 into the
 “ bladder with ease*.

“ IN

* This patient is a medical gentleman retired from business,
 and his case goes to confirm what Mr. HUNTER asserts in his
 Treatise on the Venereal Disease, p. 126, that “when a bougie
 “ can readily pass, there is no necessity for using any other
 “ method

“ IN irritable passages, where other bougies
 “ give great pain, I have found yours pass with
 “ comparative ease; nor does the urethra ever
 “ cling to them, which often happens to the
 “ common bougies, and render both their intro-
 “ duction and removal difficult.”

Bucklersbury, London, 1804.

EXTRACT of a Letter from J. HEAVISIDE, Esq.
 F. R. S. and *Surgeon Extraordinary* to the
 KING, to the Inventor and Proprietor of the
 Flexible Metallic Bougies and Catheters.

“ As you are pleased to desire my opinion
 “ on your metallic bougies and catheters, I rea-
 “ dily comply with your request, having tried
 “ both, and experienced, as far as I am capable
 “ of judging, merit in each.—I have therefore
 “ not any hesitation in so far giving them my
 “ approbation.”

George Street, Hanover Square, 1804.

“ method to remove the stricture.” He has been afflicted by
 this disease upwards of sixteen years, and has had in that time
 the best advice that surgery could afford him. His complaint
 was removed in the course of a few weeks, and he was so much
 delighted with the means, that he said his cure could not be
 complete until he was acquainted with the inventor of the
 flexible metallic bougies; he accordingly favoured me with a
 visit for that purpose, in company with Mr. Y. and has given
 me permission to mention his name and residence to any person
 wishing to be farther informed of his case.

EXTRACT of a Letter from JONATHAN WATHEN,
Esq. Surgeon, to the Inventor and Proprietor
of the *Flexible Metallic Bougies and Catheters*.

“ IT is with satisfaction I can inform you,
“ the metallic catheter I gave to a relation of
“ mine, liable to frequent suppressions of urine
“ from a stone in the bladder, which could not
“ be extracted, was, after being bent to the cur-
“ vature of his urethra, easily and successfully
“ introduced by himself, generally twice and
“ sometimes thrice in the day, for many months
“ prior to his decease. His life was certainly
“ prolonged thereby ; for, on examining the part
“ after death, it appeared the stone had formed an
“ elongated sacculus at the fundus of the bladder,
“ through the aperture into which, when at all
“ repleted, the former as well as the latter was
“ filled by the urine, and had distended it so
“ much, and rendered the posterior portion of
“ the sac so thin, that the stone was just ready
“ to fall into the pelvis, and which must have
“ happened long before, if the urine had not so
“ frequently been drawn off.”

Cork Street, 1804.

“ SIR, *London Hospital, April 17th, 1804.*

“ THE house committee of governors of
“ this institution direct me to return their best
“ thanks for your liberal present of flexible me-

“ tallic bougies and catheters, by Sir WILLIAM
 “ BLIZARD, senior surgeon, for the use of this
 “ hospital.—I have the honour to be, Sir,

“ Your obedient servant,

“ JOHN JONES,

W. Smyth, Esq.

“ Secretary.”

EXTRACT of a Letter from Sir CHARLES Blicke,
 one of the Surgeons to St. Bartholomew's
 Hospital, to the Inventor and Proprietor of
 the Flexible Metallic Bougies and Catheters.

“ I THANK you, together with my col-
 “ leagues, Sir JAMES EARLE and Mr. LONG,
 “ for your handsome present of catheters and
 “ bougies, which I shall take the first oppor-
 “ tunity to make a proper trial of.”

Billeter Square, 3d July 1804.

“ *Westminster Hospital, Weekly Board,*
Wednesday, 4th July 1804.

“ Present,

“ HENRY BATES, Esq. in the Chair.

“ MR. CARLISLE laid before this Board a
 “ letter received from Mr. SMYTH to the Sur-
 “ geons of the Hospital, requesting the favour
 “ of

“ of them to accept (for the use of the Hospital)
 “ the flexible metallic bougies and catheters
 “ which accompanied his note.

“ ORDERED,

“ THAT thanks be returned for the same.

“ MARK DANIEL,

“ Secretary.”

“ *Lock Hospital, July 12th, 1804.*

“ MR. SMYTH, of Tavistock Street, having
 “ presented to the committee two cases of flex-
 “ ible metallic bougies and catheters for the use
 “ of the charity,

“ RESOLVED,

“ THAT the thanks of the committee be
 “ given to Mr. SMYTH for his kind present to
 “ this Hospital, and that a copy of this resolution
 “ be sent to him by the Secretary.

“ By order of the Board,

“ N. MEREDITH,

“ Secretary.”

“ *St. Thomas's Hospital, July 15th, 1804.*

“ THE surgeons of St. Thomas's Hospital
 “ desire Mr. SMYTH to accept their thanks for
 “ his present of flexible metallic bougies and ca-
 “ theters, which have been held in esteem by them
 “ from their first introduction into practice.”

MR.

MR. SMYTH gratefully acknowledges the receipt of many other letters from surgeons of high rank in their profession ; but as they go only to prove facts that have been already stated, and their insertion would increase the size of this little work far beyond what was at first intended, he hopes that no one will think himself slighted by the omission of his favour. Should any new cases be communicated to him in future, by which the utility of his flexible metallic bougies and catheters may be farther established, he shall consider it his indispensable duty to lay them before the public.

N. B. *The present publication has been delayed for some time, waiting for the testimonials of some public institutions and private individuals. These having been unavoidably postponed, they will appear in the next edition.*

SINCE the publication of the preceding pages
I have been favoured with the following
letters :

“ *Middlesex Hospital, August 28th, 1804.*

“ SIR,

“ WE beg you will accept our united
“ thanks for your obliging present of flexible
“ metallic bougies and catheters for the use of
“ this Charity : we shall take every opportunity
“ of making use of them, and should any thing
“ present itself to prove their particular utility,
“ we shall be happy in bearing testimony
“ thereto.

“ We remain, Sir,

“ Your obedient humble Servants,

“ S. HOWARD,

“ HENRY WITHAM,

“ JOHN JOBERNS.”

“ *Mr. Smyth, Tavistock Street,*

“ *Covent Garden.*”

“ AT a Board of Curators of the Museum of
“ the *Royal College of Surgeons* in London,
“ holden on the 29th Day of September
“ 1804 :

“ THE Secretary laid before the Board two
“ cases of flexible metallic bougies, with a
“ printed Essay respecting them, as presents to
“ the College, from Mr. SMYTH, of Tavistock

“ Street :

“ Street; and a letter from Mr. SMYTH, addressed to the Master, Governors, and Court of Assistants.

“ RESOLVED,

“ THAT the Secretary, in the name of the Board, acknowledge the receipt of such present, with the usual thanks of the Board for Donations.

“ Extracted from the minutes,

“ OKEY BALFOUR, Secretary.” *es*

THE following case is somewhat similar to that related by Mr. YOUNG, page 65 of this Essay.

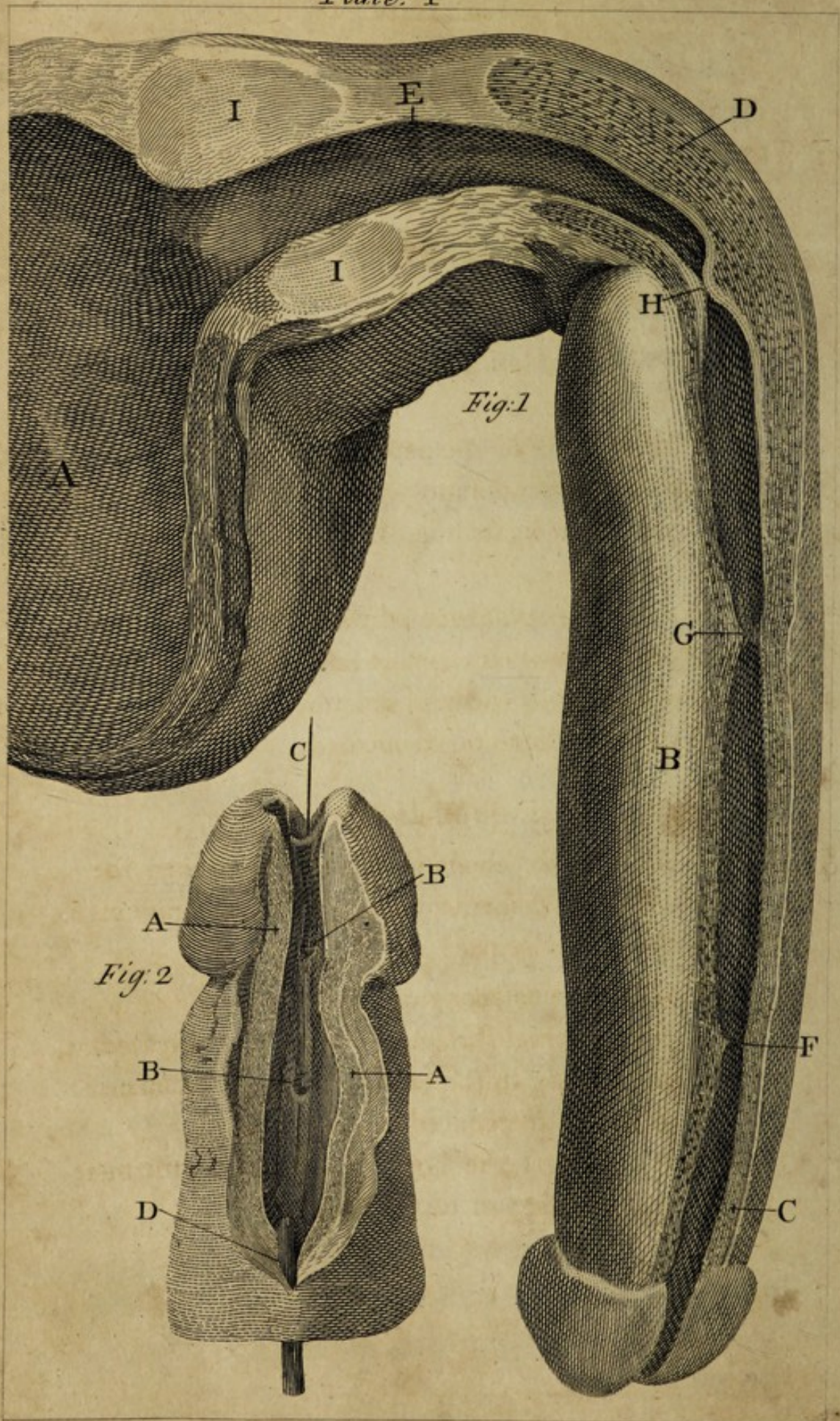
AN officer of rank in the army had been afflicted with strictures in the urethra upwards of *twenty-three* years. When he applied to me, I found it impossible to introduce the *smallest* bougie of my set; I was therefore obliged to retire two or three sizes before I could get one to enter the first stricture; nevertheless, before three weeks were at an end, I could pass the *largest* with the greatest facility into the bladder. The bougie has been passed several times since, at different periods, with equal success.

I am at liberty to mention this gentleman's name and residence to any inquirer.

W. S.



Plate. 1



Explanation of the Plates.

PLATE I.

THESE figures are taken from Mr. HUNTER's Treatise on the Venereal Disease, with some variation, in order to adapt them to this little essay.

FIGURE I.

- A. THE bladder cut open, shewing its coats a little thickened.
- B. THE body of the penis.
- C. THE corpus spongiosum urethræ, cut open through its whole length, exposing the urethra.
- D. THE same substance where it forms the bulb.
- E. THE membranous portion of the urethra.
- F. G. H. DESIGNED to shew strictures.
- I. I. THE prostate gland divided.

FIGURE II.

THE penis slit open for about three inches, to shew the lacunæ, which become occasionally an obstruction to the bougie. See page 32.

- A. A. THE corpus spongiosum urethræ.
- B. B. THE internal surface of the canal of the urethra, pointing to the orifice of two of the lacunæ.
- C. A bristle introduced into a lacuna.
- D. The end of the bougie introduced into the remaining part of the urethra.

PLATE II.

FIGURE I.

THIS figure is taken from Mr. HEY's Practical Observations in Surgery. The dotted lines shew the effect which is produced in an elastic gum catheter by withdrawing the stilet, if it be sufficiently firm. See pages 27, 44, 45.

- A. THE body of the catheter,
- B. THE stilet.

FIGURE II.

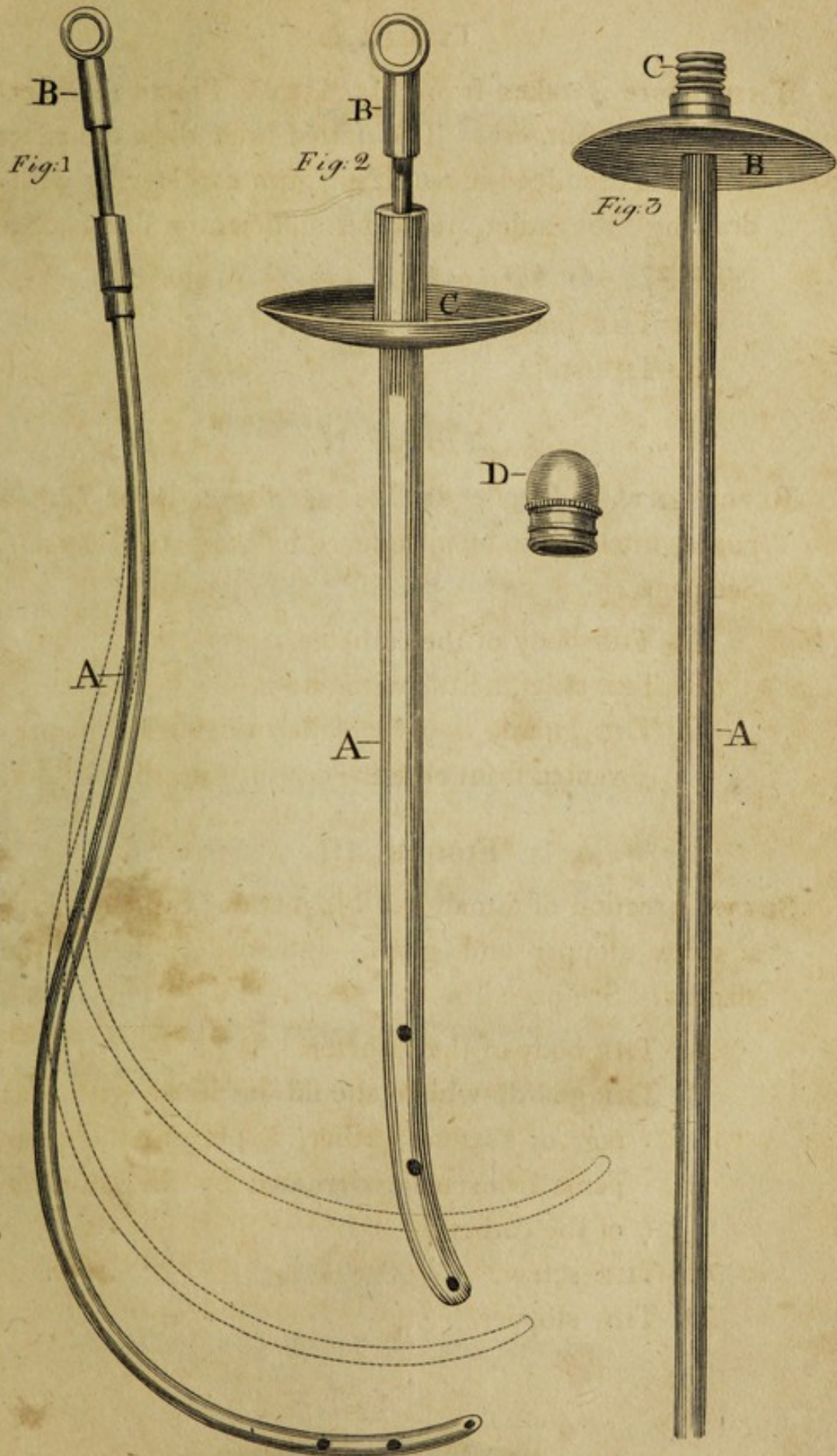
REPRESENTS a female flexible metallic catheter with a guard, intended to be introduced by the patient *herself*. See page 47.

- A. THE body of the catheter,
- B. THE stilet, a little withdrawn.
- C. THE guard, by which the catheter will be prevented from entering too far into the bladder,

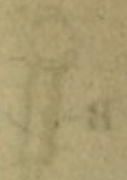
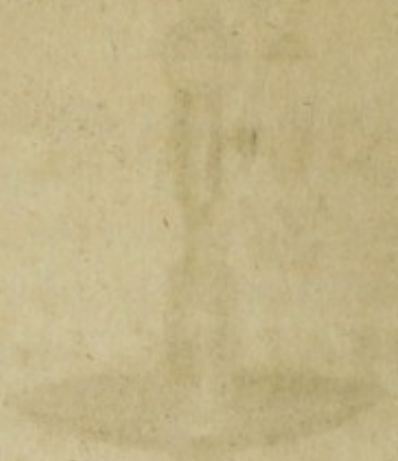
FIGURE III.

SHEWS a section of a male flexible metallic catheter, with a screw stopper and guard, intended to lie in the bladder. See page 40.

- A. THE body of the catheter.
- B. THE guard, which should be lined with soft rag, or shamoy leather, to prevent the glans penis from being irritated by the shoulder of the catheter.
- C. THE screw.
- D. THE stopper.



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