

Observations on Mr. Home's Treatment of strictures in the urethra : with an improved method of treating certain cases of those diseases.

Contributors

Whately, Thomas, -1821.

Home, Everard, Sir, bart., 1756-1832. Practical observations on the treatment of strictures in the urethra.

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Publication/Creation

London : Printed for J. Johnson [etc.], 1801.

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OBSERVATIONS
ON
MR. HOME'S TREATMENT
OF
STRICTURES IN THE URETHRA;
WITH
AN IMPROVED METHOD
OF TREATING
CERTAIN CASES OF THOSE DISEASES,
BY
THOMAS WHATELY,
MEMBER OF THE ROYAL COLLEGE OF SURGEONS
IN LONDON.

"I have sometimes found myself under a necessity of controverting the opinions of some gentlemen of deserved eminence: if I have done this with decency and good manners, no apology is necessary. The honor of our art, and the moral characters of its professors suffer, whenever we pay so blind deference to any one, as prevents us from using our own judgments, and from declaring freely the result of our inquiries or experiments."

POTT.

London:

PRINTED FOR J. JOHNSON, ST. PAUL'S CHURCH YARD;
T. CADELL AND W. DAVIES, STRAND; AND
J. CALLOW, CROWN COURT, PRINCE'S STREET, SOHO;
BY W. SMITH, KING STREET, SEVEN DIALS.

[Price Two Shillings and Sixpence.]

1801.

OBSEVATIONS

ON THE

TRIGONOMETRY

OF THE

TRIANGLE

AND

THE

TRIANGLE

AND

THE

TRIANGLE

1701

to
ERASMUS DARWIN, M.D. F. R. S.

DEAR SIR,

THE permission you have given to dedicate this little work to you, is a high gratification; as it affords me an opportunity of publicly expressing that sense of obligation, which I ought ever to feel towards you. From your judicious and friendly council I have derived many permanent benefits: you formed and directed the plan of my preparatory studies, and have often renewed the claims of gratitude, by subsequent proofs of regard.

This address can add nothing to the celebrity of your name: your learned and elegant compositions have made the reputation of your talents known to a far greater circle, than this humble dedication can reach. As far however as it may proceed, it will bear a sincere testimony to those

virtues, which they, whom you honor with your friendship, have the best opportunity of observing; and by which you are an example to them as a man, while you command their reverence in your professional character.

I am,

with much esteem and respect,

DEAR SIR,

your sincere and affectionate friend,

THOMAS WHATELY.

Bedford Row,
March 26, 1801.

ADVERTISEMENT.

IT is not the love of controversy, that has led me to publish the following observations. The practice animadverted upon is recommended by a gentleman, who deservedly stands very high in his profession; and whom, as it is not my wish, so neither is it in my power, to lessen in the estimation of the public. To attack the opinions of a respectable character may appear invidious to others, and be painful to ourselves: but to be more influenced by a reluctance to condemn the practice of an individual, than by a desire to relieve the thousands of wretched beings around us, would be a reprehensible delicacy. What I owe to mankind being obvious, I submit to the public, without further apology, the result of my observations and experience on this interesting subject.

ADVERTISEMENT

CONTENTS.

	PAGE
Observations on Mr. Home's treatment of strictures in the urethra by the caustic	1
The Author's method of treating strictures in the urethra by the caustic	63

ERRATUM.

Page 20, line 11, dele hitherto.

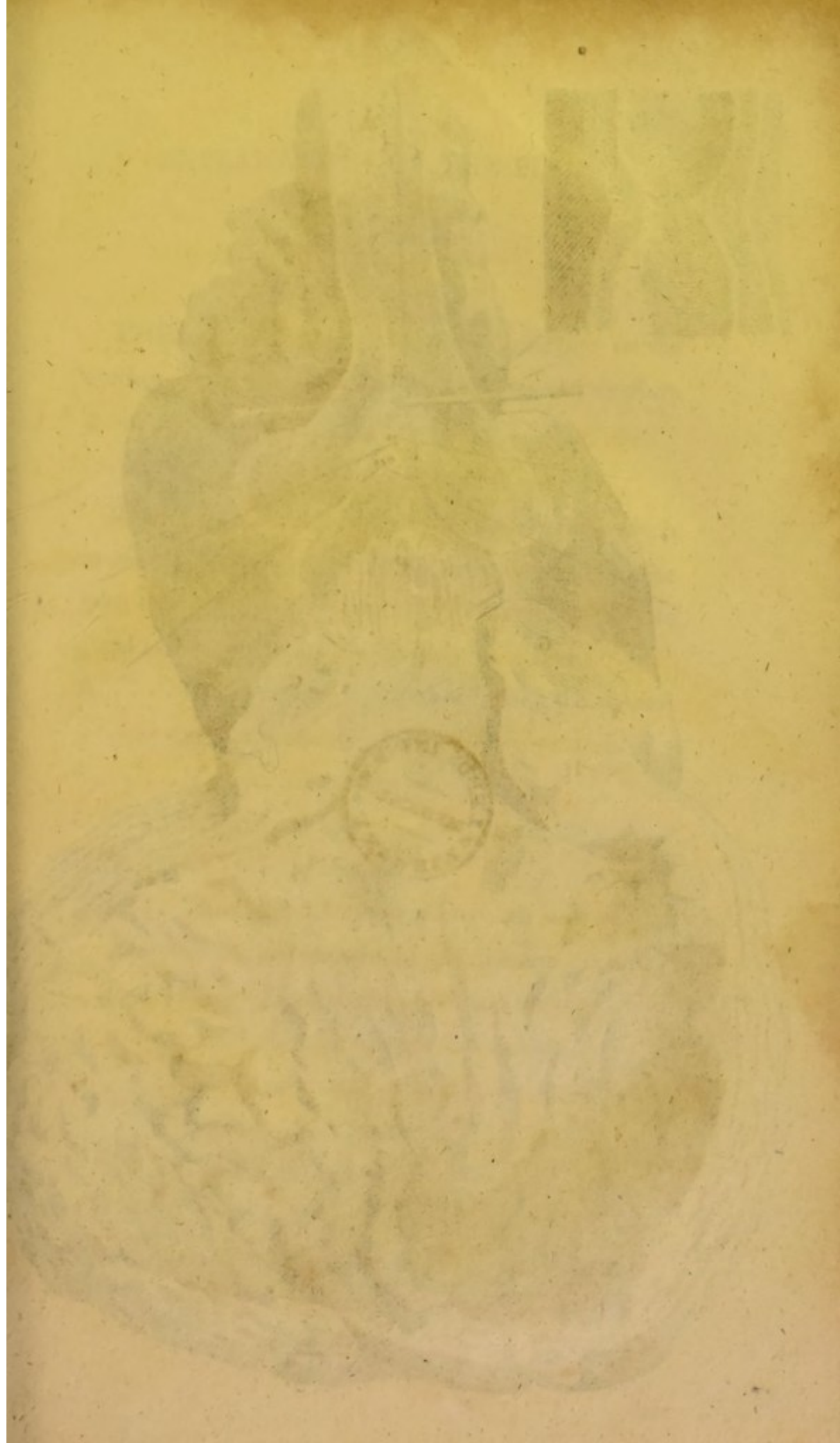


Fig. 1.

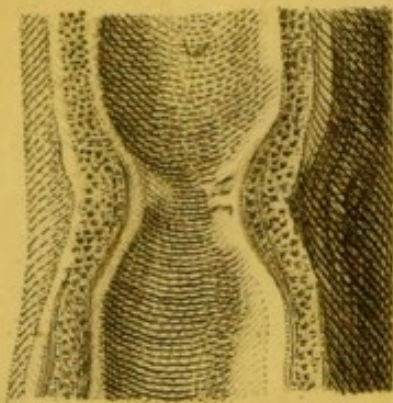
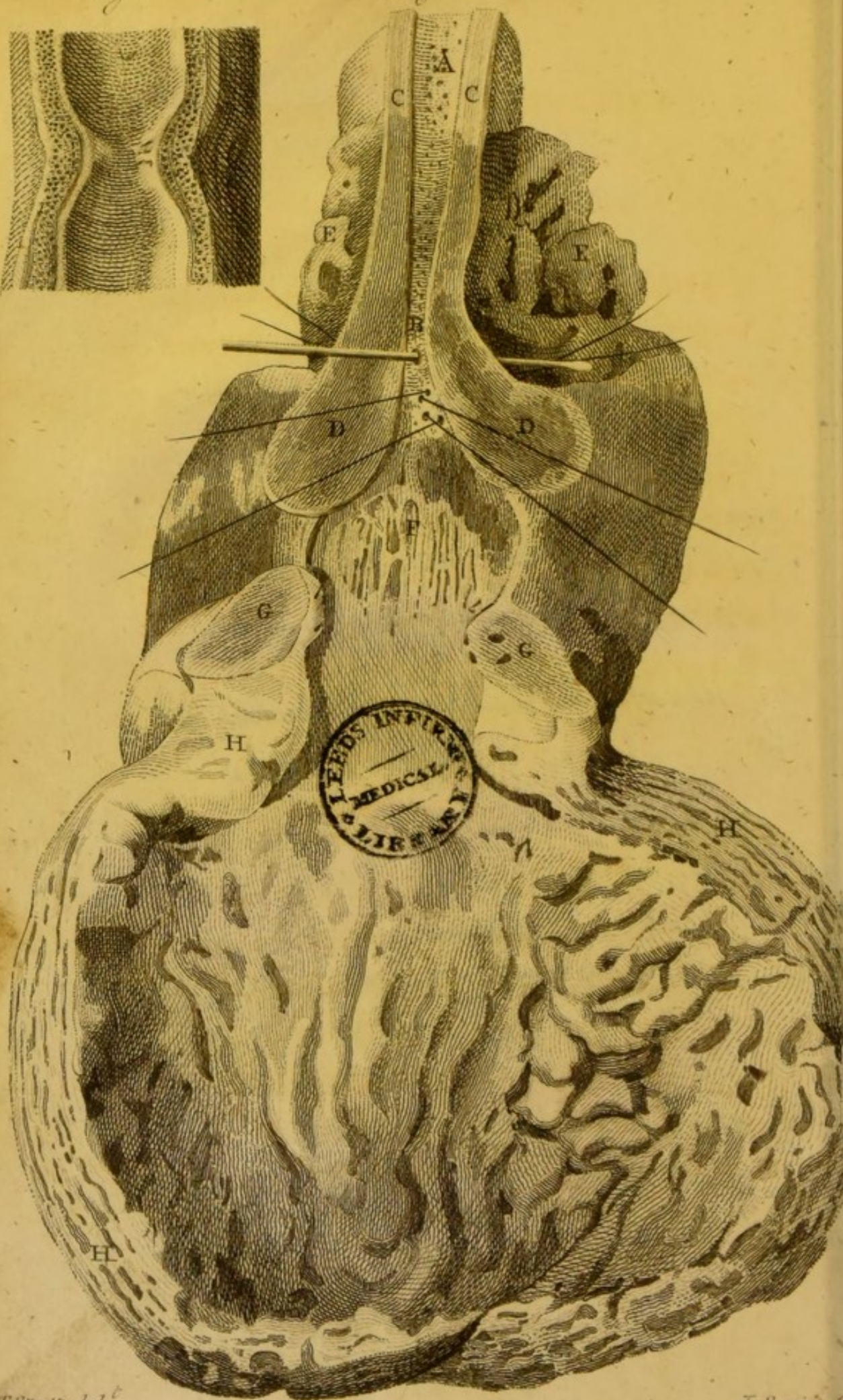


Fig. 2.



EXPLANATION OF THE PLATE.

Fig. I. See page 40.

THE penis slit open, showing a stricture in the urethra about two inches from the glans; the stricture is but slight.

Fig. II. See page 109.

Represents a stricture of the urethra nearly an inch in length. The urethra is slit open in the anterior part, the incision being continued through the prostate gland to the fundus of the bladder.

A. The canal of the urethra having the natural appearance.

B. It's constricted portion.

C.C. . . The corpus spongiosum urethræ slit open.

D.D. . . It's bulbous portion.

E.E. . . . The ulcerated cavities on each side of the urethra, from which five different openings (pointed out by the probe and bristles) were made into the cavity of the urethra.

F. The membranous part of the urethra enlarged.

G.G. . . The prostate gland slit open.

H.H.H. The bladder, having it's coats much thickened, and it's inner surface fasciculated.

EXPLANATION OF THE PLATE.

By the same Author,

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OBSERVATIONS

ON MR. HOME'S TREATMENT

OF STRICTURES IN THE URETHRA

BY THE CAUSTIC.

STRICTURES of the urethra in men are very common, and when neglected, or improperly treated, are productive of many serious consequences. Contractions in other membranous parts of the body sometimes occur, but the urethra is peculiarly predisposed to them. This, in all probability, arises from it's being so frequently the seat of the gonorrhœa. Strictures in this part sometimes indeed take place in persons, who never had this complaint; yet as the greater part of those afflicted with them have, at some period of their life, had a gonorrhœa, we may thence infer, that this disease excites a disposition in the urethra to contract. The seat of the gonorrhœa, however, is not usually the seat of stric-

tures; but a long continued inflammation in one part of the urethra may predispose another part, though not immediately adjoining, to another disease. Besides, it is highly probable, that in many of those, who have strictures, there has formerly been an inflammation in the urethra, occasioned by improper treatment of a gonorrhœa, which has extended further than the usual seat of that disease. And it is likewise probable, as Mr. Hunter observes, that the urethra becomes more liable to be attacked by this disease, from it's having been the seat of inflammation, considered simply as such, than from any peculiar effect produced on it by the venereal poison. It may therefore be fairly inferred, that the same effect would follow, were this part inflamed as frequently, and to as great a degree, by any cause exciting common inflammation, as it is known to be by that, which attends a common gonorrhœa.

Having made these few remarks on the predisposing cause of strictures in the urethra, I proceed to inquire into the present method of treating certain cases of them by the caustic. My observations on this head are meant to excite the atten-

tion of the reader to an improved method of treating the complaint in question. Fearing, however, lest so many publications on the cure of strictures of the urethra by the caustic should mislead the young practitioner, and cause him to overlook what has been done, and what still may be done by a judicious management of the common bougie, I have judged it right, before I enter on the subject of caustic applications, to make a few extracts, respecting the use of this simple instrument, from those excellent surgeons, Mr. Samuel Sharpe, and Mr. Hunter.

Strictures in the urethra appear not to have been treated judiciously, previous to the time of Monsieur Daran. Although the bougie had been used long before his time, it is to him we are indebted for a more extensive and methodical application of it. Mr. Samuel Sharpe, and Mr. Hunter, have since extended and brought to great perfection the use of this instrument, by which a very distressing complaint has been, in many instances, perfectly cured; and in the greater number of other cases, it has been so much alleviated by its occasional use, as to enable the patient to pass through life without

suffering any serious inconveniences from his infirmity. Both Mr. Sharpe and Mr. Hunter (particularly the latter) have given very excellent directions how to use this remedy, and have informed us upon what principles it acts. "It is very remarkable," says Mr. Sharpe, "in regard to many of these strictures, that the symptoms arising from them shall be extenuated by acting against the stricture; that is to say, by introducing a bougie big enough to distend the urethra, the painfulness of the stricture shall cease, and the strangury shall abate, so that a man who is accustomed to make water every hour, shall, by wearing a bougie, retain it three or four hours*." Again—"It is not uncommon to meet with stranguries, suppressions of urine, and even fistulas in perinæo, arising from obstacles in the urinary passage, which yield very soon to the introduction of a common bougie†."

In a subsequent part, the same author observes, "I have met with an example, where the urethra has been entirely stop-

* Critical Inquiry, p. 145.

† Ibid. p. 147.

“ped up, so that no urine has passed out
“of the extremity of the penis for some
“years; and yet by perseverance I have
“opened the passage. It would surprise
“any body not acquainted with these cases,
“to see what monstrous tumors subside,
“and what foul fistulas digest and heal,
“from the mere opening of the urethra,
“and the proper treatment of the obstruc-
“tions*.”

Mr. Hunter, likewise, was so sensible of the great advantage arising from the general use of the bougies now in use, that he informs us, “The bougie, with it’s applica-
“tion, is perhaps one of the greatest im-
“provements in surgery which these last
“thirty or forty years have produced.
“When I compare the practice of the pre-
“sent day with what it was in the year
“1750, it hardly appears to be the same
“disease we are treating†.” Afterwards he observes, “I have known the passing of
“the bougie remove almost immediately a
“swelling of the testicle, which had arisen
“from the stricture‡.” After giving very

* Critical Inquiry, p. 192.

† Treatise on the Venereal Disease, p. 116.

‡ Ibid. p. 122.

excellent directions, on the method of introducing very fine bougies into such strictures as are nearly impervious, or where a difficulty arises from other causes, the same author says, "If the case is such as will readily admit the end of a small bougie to pass, let it be ever so small, the cure is then in our power*." He then adds, "The time that each bougie should remain in the passage must be determined by the feelings of the patient, for it should never give pain, if possible. Going beyond this point is destroying the intention, increasing the very symptoms that are meant to be relieved, and producing irritation, which for a time renders the further application of the bougie improper. While the bougie is passing, if the patient feel very acutely, it should not be left in above five or ten minutes, or not so long if it give great pain; and each time of application should be lengthened so gradually, as to be insensible to the feelings of the mind, and the irritability of the parts. I have known it days, nay, in many patients weeks, before they could

* Treatise on the Venereal Disease, p. 118.

“ allow the bougie to remain in the passage
 “ five or ten minutes, and yet in time they
 “ have been able to bear it for hours, and at
 “ last without any difficulty*.” And in the
 following section he remarks, that “ When
 “ a bougie can readily pass, there is no
 “ necessity for using any other method
 “ to remove the stricture†.” He then pro-
 ceeds with great judgment to the treatment
 by caustic of such strictures, “ as are
 “ either so tight as not to allow the smallest
 “ bougie to pass‡;” or of such, “ as have
 “ not the orifice in the stricture in a line with
 “ the urethra, which will make it uncer-
 “ tain, if not impossible, to pass a bougie§.”
 He likewise recommends the caustic in those
 cases, in which “ there may be no passage
 “ at all, it having been obliterated by
 “ disease, and the urine passed by fistulæ
 “ in perinæo||.”

Mr. Hunter applied the caustic in cases
 of this description at first by means of a
 silver canula: but, on account of many dis-

* Treatise on the Venereal Disease, p. 121.

† Ibid. p. 126.

§ Ibid.

‡ Ibid.

|| Ibid.

advantages attending this mode of using it, we are told by Mr. Home, that, for some years before Mr. Hunter's death, he used it upon an improved plan; viz. by inserting a small piece of lunar caustic into the end of a bougie, in such a manner, that the caustic was surrounded every where laterally by the substance of the bougie; so that in its passage to the stricture, the caustic was scarcely allowed to come into contact with any part of the membrane of the urethra; the point of the bougie always moving in the middle line of the canal.

Mr. Home informs us, that, ever since Mr. Hunter's death, he has continued to make use of the same method of applying the caustic: but it is evident from many parts of his work, that he employs commonly, for this purpose, bougies of a much larger size than those, which were used by Mr. Hunter; and he seems to be desirous, in every case in which he adopts this method of treatment, to pass through the stricture a bougie, thus armed with caustic, as large as the natural size of the canal of the urethra.

Mr. Home has not only employed the caustic in those cases, in which it had been

recommended by Mr. Hunter; but he has likewise used it in old strictures, and such as could not be dilated to more than half the size of the rest of the canal by the common bougie, and which, when dilated, were apt to contract, and require a fresh application of the bougie within two months after it had been left off. Mr. Home therefore informs us, that his observations “will be
“ confined entirely to the treatment of those
“ strictures which admit a small bougie to
“ pass into the bladder*,” and that they
“ are published with a view to extend the
“ use of the caustic to a greater variety of
“ cases, and in some measure upon a different principle, from that on which it was
“ applied to impervious strictures, by the
“ late Mr. Hunter†.”

The subject is of great importance to thousands afflicted with this malady. And as the proposed alteration in the plan of cure is by a remedy of a very violent nature, capable, if not used with great judgment, of producing consequences worse than even the disease for which it is applied,

* Home on Strictures, 2d edit. p. 107.

† Ibid. p. 131.

it demands the most serious investigation. This I shall now enter upon, by first making a few observations, concerning the manner in which strictures usually affect the urethra—the number they commonly consist of in the same person—and the part of the canal in which they are usually situate.

Mr. Hunter remarks, “That the disease
 “ *generally* occupies no great length of the
 “ passage; at least in most of the cases
 “ that I have seen, it extended no further
 “ in breadth, than if the part had been
 “ surrounded with a piece of packthread;
 “ and in many it had a good deal of that
 “ appearance. I have, however, seen the
 “ urethra irregularly contracted for above
 “ an inch in length, owing to it's coats, or
 “ internal membrane, being irregularly
 “ thickened, and forming a winding canal*.”

Respecting the number of strictures usually met with, he adds shortly afterwards, “In
 “ *some few* cases there are more strictures
 “ than one; I have seen half a dozen in
 “ one urethra; some of which were more
 “ contracted than others; and indeed many
 “ urethras that have a stricture, have *small*

* Hunter on the Venereal Disease, p. 113.

“ *tightnesses* in other parts of them; this
“ we learn from successive resistance felt
“ in passing the bougie*.” In a succeeding
section on the application of caustics, this
author further says, “ There are *sometimes*
“ more strictures than one; but it seldom
“ happens that they are all equally bad;
“ *one only* becomes the object of our atten-
“ tion. The smaller ones may, however,
“ be sufficient to hinder the passing the
“ canula to the stricture which is to be
“ destroyed by the caustic. When that is
“ the case, those *small strictures are to*
“ *be dilated with bougies*, as in common,
“ till they are sufficiently large to allow
“ the canula to pass†.”

On the part of the urethra, in which stric-
tures are usually situate, Mr. Hunter ob-
serves, “ 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

* Hunter on the Venereal Disease, p. 113.

† Ibid. p. 130.

“ 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 the
 “ strictures formed there of the worst kind.
 “ They are generally slow in forming, it
 “ being often years from their being per-
 “ ceived, before they become very trouble-
 “ some*.”

Having given these leading ideas of Mr.
 Hunter's opinion on these subjects, I shall
 next transcribe Mr. Home's sentiments on
 the same. “ Concerning the nature of this
 “ disease,” says Mr. Home, “ I shall not be
 “ able to add much to what has been pub-
 “ lished by the late Mr. Hunter†.” The same
 author afterwards adds, “ When this con-
 “ traction” (the stricture) “ is in a small
 “ degree, it appears, upon examination after
 “ death, to be simply a narrowing of the
 “ canal at the part ; but when the contrac-
 “ tion is increased, it becomes a ridge pro-
 “ jecting into the canal: this last is the
 “ appearance of what is understood by a
 “ permanent stricture. The thickness of a
 “ stricture is a subject on which there are

* Hunter on the Venereal Disease, p. 113.

† Home on Strictures, p. 13.

“ many different opinions, and some have
 “ supposed it to be of considerable extent.
 “ It is, however, commonly no more than
 “ the thickness of a single fold or doubling
 “ of the membrane of the urethra. The
 “ ridge which projects into the canal, can
 “ only be a single fold, with the cellular
 “ membrane between the two portions; it
 “ will be thicker as it approaches the side
 “ of the urethra *.”

Concerning the number of strictures, Mr.
 Home remarks, “ That when an original
 “ stricture, at seven inches, has been of long
 “ standing, there is almost always another
 “ formed about an inch further on, in the
 “ anterior part of the urethra, and too
 “ often a third, about three inches from the
 “ external orifice. Whenever strictures are
 “ met with in these situations, there is reason
 “ therefore to consider them as the con-
 “ sequences of one which has been formed
 “ for a longer time near the bladder†.”

Respecting the situation of strictures, this
 author informs us, that “ strictures occur
 “ most frequently just behind the bulb
 “ of the urethra; the distance from the

* Home on Strictures, p. 20.

† Ibid. p. 46.

“ external orifice being six and a half or
 “ seven inches; the situation next in order
 “ of frequency, is about four and a half
 “ inches from the orifice of the glans; they
 “ do occur at three and a half inches, and
 “ sometimes almost close to the external
 “ orifice. In almost all the cases which
 “ have come under my care, there has been
 “ one stricture about seven inches from the
 “ external orifice, whether there have been
 “ others or not*.”

Of the situation of a stricture, Dr. Baillie
 likewise remarks, “ that it may take place
 “ in any part of the canal, but it is most
 “ frequent a little anterior to the membra-
 “ nous part of the urethra. This stricture
 “ consists sometimes of an approximation
 “ simply of the opposite sides of the canal,
 “ so as to form a line of obstruction, and at
 “ other times the canal is narrowed for
 “ some length. There is very commonly
 “ more than one stricture in the same
 “ urethra, it sometimes happens too that the
 “ stricture is more on one side of the canal
 “ than the other, so that the passage there
 “ is crooked†.”

* Home on Strictures, p. 27.

† Morbid Anatomy, p. 228.

In applying the caustic to such strictures as resist a dilatation by the common bougie, Mr. Home believes, that he has discovered an effectual mode of treating them, and adduces a considerable number of cases in support of his opinion. He gives reasons “for preferring this method in many cases
 “to the bougie; both as less painful in
 “the application, and more permanent in
 “it’s effects*.” He observes, that he has not
 “in any case found it attended with disadvantage†;” and remarks, that “Against
 “this practice, however, objections have
 “been formed, and many bad consequences
 “have been attributed to it, which it certainly does not produce; for whatever,
 “*a priori*, might be supposed the effects of
 “so violent an application, to a membrane
 “so sensible and irritable as the urethra;
 “and I will admit that it is very natural
 “to conceive they would be very severe.
 “The result of experience, the only thing
 “to be relied on, evinces the contrary.
 “The pain that is brought on is by no
 “means violent; and neither irritation
 “nor inflammation is found to take

* Home on Strictures, p. 127.

† Ibid. p. 107.

“ place*.” Mr. Home then observes: “ That
 “ cases do occur, in which strictures have
 “ produced so much mischief, and rendered
 “ so great an extent of the canal diseased,
 “ that the use of the caustic has proved
 “ unsuccessful, is certainly true; and several
 “ of these cases have fallen under my own
 “ knowledge. But when it is stated that
 “ none, even of these, were made worse
 “ by it's use; that no bad consequences
 “ attend it; and that no other mode, at
 “ present known, is equally efficacious;
 “ any occasional want of success cannot be
 “ considered as an objection to this mode
 “ of practice†.” The same author in a
 succeeding page relates, that he “ has met
 “ with a number of facts, from which a
 “ general principle appears to be esta-
 “ blished, that the irritable state of a
 “ stricture is kept up, and even increased,
 “ by the use of the bougie, but lessened,
 “ and entirely destroyed by the application
 “ of lunar caustic. I am desirous,” adds
 he, “ to communicate my observations
 “ upon these facts, and to recommend the
 “ use of the caustic, in many cases of

* Home on Strictures, p. 128.

† Ibid, p. 129.

“ irritable stricture, in preference to the
 “ bougie*.”

A judicious application of the lunar caustic to certain strictures of the urethra pervious to the use of the common bougie, is so considerable an improvement in the treatment of these complaints, that the thanks of the profession and the public are certainly due to Mr. Home, for having brought it into practice. But I am clearly of opinion, that it requires much better management, than has been hitherto pointed out; not only to secure the patient from the serious consequences, which may ensue from it's injudicious application, but likewise to obtain all the benefit, which may be derived from it's use. Remedies of this nature were employed for strictures in the urethra, as Mr. Sharpe informs us, for the two last centuries; but he observes, that “At present
 “ the practice 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 the impossibility of directing them,
 “ so as to act through all the diseased

* Home on Strictures, p. 131.

“ 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 escha-
 “ rotick: and lastly, the pain was so ex-
 “ cruciating, and perhaps the application
 “ sometimes so poisonous, that an immediate
 “ mortification of the scrotum, penis, and
 “ bladder were sometimes known to ensue;
 “ upon these accounts the use of escha-
 “ roticks seems to have been entirely
 “ rejected*.”

That such effects did sometimes follow
 the use of caustics in those days is certain,
 from the cases recorded of them; but it
 by no means follows, that (to adopt Dr.
 Rowley's words) “ *we are to banish such*
 “ *remedies for ever from practice.*” Every
 powerful and violent remedy, whether
 internal or external, requires to be used
 not only in a proper dose or quantity,
 but at a proper period of the complaint,
 and to be repeated at proper intervals.
 If an escharotic be intended to be applied
 merely to a certain diseased spot of a

* Critical Inquiry, p. 151.

tender and delicate membrane, it ought, if possible, to be confined to such spot. If due attention be not paid to this, it is obvious, that we may do considerable injury by such a remedy; instead of curing a disease, we may destroy life. But are we to discard a useful remedy, merely because the administration of it demands great attention and caution? Were we in general to practice upon this plan, we must relinquish some of the most valuable medicines now in use. Of internal remedies there are none more severe and dangerous, in certain doses, than sublimate, arsenic, opium, foxglove, hemlock, and some others; and yet there are none more manageable, or more efficacious, in proper doses. Of externals, the same may be said of the pure kali, the lunar caustic, and others.

As the disease now under consideration is, in most cases, only a contraction of a single fold of the inner membrane of the urethra, which, when dilated by the common bougie, is known by experience to be very apt to return; I do not hesitate to say, that, if the application of the lunar caustic, to such of those strictures as cannot be sufficiently dilated by the common bougie, be

found to prevent a return of the contraction, it will be advisable, to use it with this intention, in many of those strictures which are readily dilatable by the bougie; provided it can be applied to the strictured part only, and without incurring the risk of bringing on any serious consequences. I wish it to be understood however, that I do not recommend this remedy, in such cases, in preference to the bougie; as it does not ~~clearly~~ clearly appear either, that the urethra is perfectly secured from a return of the contraction, even when enlarged by the caustic to it's natural size; or, that this remedy can be yet applied with as much safety as a common bougie. I have no doubt, that the caustic may be so used, as to remove many of those strictures, of which Mr. Home speaks as incapable of being sufficiently dilated by the bougie. But I am far from being convinced, that this remedy, in the manner it is now used, is so safe as Mr. Home represents; and I doubt, whether it can be applied to the diseased part with so much nicety, or in such exact quantity, as so tender and irritable a membrane requires.

As the seat of a stricture is out of sight, it is almost impossible to say, what are the

precise effects produced by the caustic, in any case in which it is used. These must vary in different cases, according to the age and habit of the patient, and the quantity of caustic employed. If, however, so much of it be used, as to destroy the inner membrane of the urethra, (which is certainly it's common effect) this part cannot be reproduced, without being for some days, at least, in the state of a wound or ulcer. And even in those cases where the membrane is not wholly destroyed, a very thin sloughing of it's surface only being produced, a similar effect, though in a less degree, must take place. The part thus injured must therefore undergo a regular cicatrizing process, before the inner membrane of the urethra can be reproduced, and made as entire as it was previous to the application of the caustic. As we cannot mark the commencement, progress, or termination of these processes, in the application of this caustic to strictures of the urethra, we must observe the action of it on other parts, where we can see it's progress and effect, and reason by analogy.

When the lunar caustic is applied to the sprouting fungous granulations of a wound, or to the foul surface of an ulcer, or any part

devoid of cuticle, or even to parts where the cuticle is extremely thin, it often destroys the surface of these parts at one application, and produces a slough upon them, to a greater or less degree, in proportion to the quantity of caustic applied, the state of the habit, and the age of the patient. Though the caustic will generally thus destroy such surfaces, and thereby frequently remove the cause of irritation, or the obstacles to the cicatrization of the sores, yet for the first few days after it's application, they are frequently rendered more vascular and tender to the touch, and require milder applications afterwards, in order to procure all the ease and benefit, which may be derived from the remedy. For should the caustic be repeated in a day or two after it's first application, or if harsh and stimulating dressings be employed, considerable pain and inflammation, and an unnecessary destruction of parts, will frequently ensue. If, however, the diseased surface, to which the caustic was applied, be not entirely removed at the first application of the caustic; or if it return, and it should be found necessary to repeat the remedy; this may very often be done at the expiration of a week or ten days, with as little pain as at the first application. But

it must be confessed, that in some particular habits, or states of wounds, and particularly where there is a tendency to gangrene, or great irritability; a single application of this remedy will sometimes give uncommon and long continued pain, and produce a slough upon the surface of the sore, the separation of which will require many days: and if, in these cases, the caustic be repeated, either before, or soon after the separation of the slough, the pain on it's reapplication will be extreme, and the consequences probably alarming and dangerous.

Let us next attend to the effects of this caustic, when applied to the membrane of the mouth; which, as Mr. Home observes, is more similar in structure to that of the urethra, than any other part of the body. When a portion of this membrane is destroyed by it, the loss is repaired by a gradual and daily skinning from the edges of the sound part*. The progress of this process is in

* The process, by which a portion of the membrane of the mouth is reproduced, is the same, whether it be destroyed by a caustic, by mercury, or any other cause. When it is destroyed by mercury, any one may have an opportunity of watching the progress of the cicatrization, by discontinuing the mercurial course.

some cases much quicker than in others, according to the age, habit, and other circumstances of the patient; as is the case in the healing of a wound in any other part of the body. This gradual process of skinning invariably takes place in every wound or ulcer in the mouth; and, either when it is completed, or soon afterwards, the new formed membrane is, I believe, generally smooth, uniform, and upon a level with the old one*. As, however, a more minute investigation of this process may be of considerable utility in our present inquiries, I

* Although we may with great propriety compare the process, by which a portion of the membrane of the mouth is formed after it's destruction by a caustic, to that of the formation of a similar portion of the inner membrane of the urethra, when destroyed by the same application; yet there are circumstances, in which the effects of a caustic to these membranes must be dissimilar. For example, the membrane of the mouth is less irritable and tender than that of the urethra; of course the application of a caustic to it must generally give less pain than to the urethra. Further, as the parts beneath the membrane of the mouth are not of so vascular and spongy a texture, as those beneath the membrane of the urethra, a hæmorrhage could not take place to so great a degree by the application of this remedy to it, as to the membrane of the urethra.

will detail to my reader the following experiments made for that purpose.

Exp I. June 23rd, 1800. The end of a common stick of lunar caustic was applied for a minute to the inside of the cheek of a woman aged sixty-two. The portion of the cheek, on which the caustic was made to act, was about the size of a seven shilling piece, and was situate opposite to a chasm in the jaw, occasioned by the extraction of a tooth. This application immediately produced a whitish appearance, but gave no pain.

26th. There is a white and apparently a pretty thick slough upon the part, but it is beginning to separate at the edges. No appearance of inflammation around it.

28th. The slough nearly of the same size as before; but it is more separated at the edges.

30th. About half of the slough is separated; as the separation takes place, a new membrane forms. The remaining part of the slough is ragged, but firmly connected with the cheek. No appearance of inflammation.

July 2nd. A small oblong bit of the slough still remains. The part where the slough

adheres is a little indented, owing to the destruction of the membrane underneath. A new membrane still forms as the slough separates. A slight inflammation around the part.

4th. The slough quite separated; but there are two little ulcers, each about the size of a pin's head.

7th. The ulcers nearly healed.

10th. The ulcers perfectly skinned over; but there are two little cavities, each about the size of a pin's head, at those places where the caustic had penetrated deepest.

Exp. II. June 29th. I applied the lunar caustic to the inside of the cheek of a man aged twenty-seven, as in the preceding instance. It gave him no pain, but left a whitish mark or slough on the spot to which it was applied.

July 1st. About half of the slough is separated; the remaining half is firmly attached to the cheek. The caustic appears to have penetrated rather deeper where the slough remains, than where it has been separated. The membrane all around the slough, to the distance of half an inch, is inflamed, having a crimsonlike appearance, as if injected with fine composition.

3rd. A small slough about the size of a pin's head remains; but there is an ulcer of the size of a small pea, in the part from which the last slough had separated. A slight inflammation only around the ulcer.

6th. The ulcer now about the size of a large pin's head. It is a little cavity of this size in the membrane of the mouth. A slight inflammation around it.

11th. The ulcer is reduced to the size of a very small pin's head. No inflammation around it.

13th. The ulcer perfectly healed; but a little hollow or depression, about the size of a pin's head, remains.

August 7th. A small depression still remains.

Exp. III. June 29th. I applied the lunar caustic to the inside of the cheek of a man aged forty-two, in the same manner as before related. It left on the part the same white mark as in the former experiments, and gave no pain.

July 1st. All the slough is separated, except a small portion about the size of a pin's head; but there is an ulcer on the part, where the slough came away, which is just beginning to cicatrize. No inflammation around the ulcer.

3rd. The slough quite separated. The ulcer less than half the size it was on the last examination. It is now about the size of a very small pea. No inflammation around the ulcer.

6th. The ulcer reduced to the size of a small pin's head; but this spot is rather above the level of the surrounding membrane of the mouth. No inflammation around the ulcer.

9th. The ulcer quite cicatrized, and level with the adjoining part.

Exp. IV. July 27th. I applied, with a moistened probe, *an eighth part of a grain* of powdered lunar caustic to the inside of the under lip of the man aged twenty-seven, who was the subject of a former experiment. It produced an immediate white crust, as large as a seven shilling piece. He experienced no pain from it's application; but after he left me he felt pain for five or six hours, in the part to which the caustic had been applied.

29th. The slough nearly the size of a seven shilling piece. It is thicker in the middle than on the edges. A slight inflammation around the slough.

August 1st. The slough is all separated, except a small portion about the size of a

large pin's head. A new membrane has begun to form from the edges of the ulcer, which is nearly three fourths of the size of the original slough, including the remaining eschar.

3rd. The ulcer is now about the size of a barley corn. In the centre of it there is still a slough about the size of a grain of pearl barley. A little inflammation around the ulcer.

5th. The slough quite separated. The ulcer rather more than half the size it was on the 3rd.

7th. The ulcer quite healed; but a small indentation remains in the part. The new membrane more tender and vascular than the adjoining parts.

Exp. V. August 31st. I applied a *twelfth part* of a grain of powdered lunar caustic to the inside of another part of the under lip of the man last mentioned. It produced a white slough on the membrane of the size of a silver penny. This slough would have been a little larger, had not some saliva flowed over the part, while I was applying the caustic: by this accident, a part of the caustic was washed off, and came away in the form of white strings.

September 2nd. The caustic gave him pain for about an hour after it's application. A circular ulcer about the size of a common white pea is formed, with a slough in the middle of it about half this size. A slight inflammation around the ulcer.

7th. I had not an opportunity of seeing him till this day. No appearance of slough, a small ulcer remains, about the size of two pin's heads.

10th. The ulcer perfectly cicatrized and level.

With a view of ascertaining the real effects of a portion of lunar caustic, when applied to the urethra itself, I made the following experiment.

Exp. VI. October 11th. I applied *a twelfth part of a grain* of lunar caustic to the inner membrane of one side of the urethra of a man, aged forty-six. It produced a whitish appearance, or slough, nearly of the size of a silver penny. The caustic also unavoidably touched the other side of the urethra, and produced the same appearance, nearly to half the extent before related. The application of the caustic gave him very little pain, but about two hours after it had been applied, he was in pain for two hours.

12th. There is a thick white slough on one side of the urethra, of the size of a silver penny, or as far as can be seen. On the other side of the urethra it is about half that size.

13th. The sloughs nearly of the same size and colour as yesterday, a slight inflammation of the glans around the orifice.

14th. The sloughs rather less than yesterday, they appear more ragged.

15th. The sloughs still rather less and looser than yesterday. The inflammation about the orifice nearly gone.

16th. The sloughs entirely separated, but there is a circular ulcer about the size of a small pea, on that side of the urethra to which the caustic was first applied. On the other side there is an ulcer about half that size.

17th. The ulcers rather less than yesterday. Since the last report he has had a slight scalding in making water.

18th. The ulcers rather less than yesterday. Still a little scalding.

20th. An ulcer, about the size of a large pin's head, remains on that side of the urethra, to which the caustic was first ap-

plied; that on the opposite side is quite healed. The scalding gone.

22nd. The ulcer perfectly healed. That part of the inner membrane of the urethra, which had been destroyed by the caustic, is now as smooth as before, and perfectly upon a level with the adjoining membrane; it has however the appearance of a kind of cicatrix, or new formed membrane.

Frequent dissection after the application of caustics to strictures in the urethra would demonstrate, whether the reasoning in this essay be just or not; but opportunities of this kind seldom occur. Mr. Home has related the cases of eight patients, who died at different periods of time after the caustic had been applied to strictures in this part. Of these, three do not appear to have been opened. In four others, which were dissected, no mention whatever is made of the state of the urethra; but an accurate account is given of it in the dissection of the eighth case, of which the following is an extract. "Three strictures were met
" with, one at three and a half, one at five,
" and one at six inches; the caustic was
" applied nine times before the bougie went
" into the bladder, and then with diffi-

“ culty.” The patient afterwards died of peritoneal inflammation, the consequence of an inflammation of the internal membrane of the bladder from exposure to cold. Mr. Home then observes in the dissection, that “ the space where the first stricture had “ been was scarcely discernible, and the “ membrane was nearly in the same state as “ the rest of the canal; it’s connection with “ the surrounding parts having the natural “ appearance. The space where the second “ stricture had been situated had also put “ on the natural appearance, but the membrane had a closer attachment, by means “ of the adhesive inflammation to the surrounding parts. At six inches from the “ external orifice there was an irregularity “ on the lower surface, in the situation of “ the third stricture, the internal membrane “ *having been removed* for the space of a “ quarter of an inch, and a *new membrane* “ formed in it’s place, but there was an “ irregular ridge at the end of that space, “ which had not been destroyed. From “ the dissection in this case, the real state “ of the parts after the use of the caustic “ is ascertained; there is a membrane “ formed similar to the natural lining of the

“ canal, no granulations project beyond the
 “ surface, and no appearance of ulceration
 “ remains. From what takes place after
 “ injuries committed on the inner membrane
 “ of the mouth, I had no doubt of the
 “ membrane of the urethra *being readily*
 “ *renewed* after the effects of the caustic;
 “ but before this case was examined I had
 “ never seen that it was so*.”

No mention is made in this case of the distance of time between the last application of the caustic and the patient's death; but from the manner in which it is related, I conjecture it was not more than a few weeks. It appears to have been long enough for the formation of a *new* membrane, and, from this circumstance, an ulceration must have existed in the urethra, from the time of the application of the caustic till this new membrane was formed.

Having endeavoured to shew what are the probable effects of lunar caustic, when applied to the inner membrane of the urethra in cases of stricture, by comparing it's known effects, when applied to parts that are open to observation, I shall proceed to point out

* Home on Strictures, p. 193.

the defects which appear in Mr. Home's method of using it, and the consequences which sometimes result from it's being thus applied. After this, I shall with all deference, propose another mode of applying the caustic, which will, I apprehend, preclude every disagreeable effect, that has hitherto attended the use of this powerful remedy.

I begin with observing, that the orifice of the urethra is so small in some cases of stricture, as not to admit the smallest bougie I have ever seen armed with caustic. Of course, the caustic cannot be applied to the stricture, while it is in this state. This contraction may arise, either from a natural conformation of the part; or from it's having been the seat of chancres; or it may have come on gradually, from the long continuance of a stricture in any part of the urethra. If the contraction arise from the first cause, it may often be remedied by dividing the web at the orifice of the urethra; but this must render the part for some time very tender, and in an unfit state to be stretched by a large bougie. A contraction from the second cause may frequently be dilated; though it must be confessed, that, in some of these cases, it is impossible to dilate it, so

far as to admit even the smallest sized armed bougie for the purpose of applying the caustic. Of this I have lately had an instance. In the third case, dilatation is generally practicable, and it will remove the difficulty.

When the caustic is enclosed in the end of a bougie, which is done for it's security, as well as to prevent it's touching the membrane of the urethra in it's passage, there may be great uncertainty with respect to the quantity dissolved in any given time, arising from a difference in the quantity of mucus collected at it's extremity, and likewise in the quantity of moisture that may act upon it's surface in different cases. The experience of every one, who is accustomed to use the lunar caustic, must strengthen this remark. It is well known, that, in applying it to wounds or ulcers, we are sometimes obliged to wipe off the mucus two or three times from the surface of the caustic, before it will act with effect. The caustic bougie may therefore be sometimes clogged with mucus, either in it's passage to the stricture, or in the constricted part; and as no means can be employed for removing this collected mucus, it must render the action of the

caustic uncertain. Mr. Hunter, indeed, recommends a common bougie to be passed down to the stricture, previous to the use of the armed bougie; in order to clear the canal, and to measure exactly the distance of the stricture from the external orifice. By this contrivance, some mucus may adhere to the sides of the bougie, but it cannot readily remove all the mucus, which may be collected near the strictured part. There will indeed be always moisture enough to liquify the caustic, yet the quantity of this must vary in different cases, and that may add a little to the uncertainty of its action. These circumstances, among others, may account for the frequent repetition of the caustic practised by Mr. Home.

Further, in using the caustic enclosed in a bougie, it is often applied only to the anterior part of a stricture, as, in many of the cases in which it is employed, this bougie is too large to pass the contraction. And as the natural action of the urethra propels either a fluid or solid within it towards its external orifice, so the caustic, when liquified and applied to the anterior part of a stricture only, will indeed act first upon it, but the superfluous quantity will return, and act upon

the membrane of the urethra in it's passage*. As a proof of the truth of this remark, I have seen this membrane at the external orifice of the urethra made white, where this mode of applying the caustic had been practised; and doubtless, the whole of the passage between it's orifice and the stricture was in the same state: this effect may indeed be increased by the dissolved state in which the caustic must be on withdrawing the bougie. The surface of the greater part of the urethra being thus irritated by the caustic, the pain and danger attending it's use must be increased. Besides, by thus applying the caustic, it is prevented from acting on the whole of the strictured surface; and this probably is also a cause of it's being repeated so often in many of

* Liquids injected into the urethra are almost invariably urged forwards, merely through the natural action of the urethra. To prove that the same action takes place in order to expel a solid body, let any one pass a full sized bougie to the distance of about three parts of the length of the urethra, and then leave it to itself; he will find that it will very frequently be driven back to a greater or less degree. These facts form a strong objection to the application of a caustic to the anterior part of a stricture only; in order to give this remedy complete effect, it should be passed a little beyond the stricture.

Mr. Home's cases*. For although the strictured membrane is harder and thicker than any other part of the urethra, and although this hardness and thickness may vary in different cases, and thereby require a greater or less quantity of the caustic, yet as the stricture is generally composed of a single fold only of the membrane, and as this caustic readily destroys any surface in other parts of the body destitute of it's cuticle, we may be certain, that it acts in the same manner in the urethra under the same circumstances.

Again, it appears clear to me, that many of the serious consequences produced by the caustic are owing to it's being repeated at too short intervals, and to the violence of forcing through the stricture those large bougies, in which it is generally enclosed. If a caustic be repeated every two or three days, (as generally practised by Mr. Home) with the intention of destroying the membrane forming the strictured part, and thereby forcing a passage through it, without waiting for it's gradual dilatation, it is to be feared

* In Mr. Home's list of cases, there is mention made of fifteen patients, on whom the caustic was applied from forty to a hundred and twelve different times.

that it will sometimes pass through a part of the substance of the corpus spongiosum *. In support of this position, let me refer my reader to the plate which Mr. Hunter has given of a stricture; he will there see, that this effect may be produced, even though the stricture be not in a very advanced state, as the corpus spongiosum is, by the contraction, drawn into a line with that part which was originally the urinal canal. In order to enable such of my readers as are not in possession of Mr. Hunter's treatise, to compare this statement with the plate alluded to, I have copied it in the annexed engraving. (Fig. 1.) Or if this effect be not produced, and the strictured part should only be forced open by the violent action of the bougie, yet by repeating the caustic, upon a surface already destitute of it's membrane, the vessels of the corpus spongiosum

* It is certainly very possible to rupture the inner membrane of the urethra, by forcing a large armed bougie through it's strictured part; and indeed I have seen an instance, where I had no doubt of this effect being produced, by forcing a very large common bougie through a stricture. In this case, a considerable hæmorrhage followed the introduction of the bougie, which continued at intervals for several days, whenever a bougie passed over the ruptured part.

may thereby be much injured. In either of these cases, there is a risk of bringing on a considerable hæmorrhage.

I must observe further, that no attempt to force open a stricture on a sudden, especially if it be one that is narrow, can be made with safety; even though the membrane lining the strictured part be destroyed by the caustic, and the contracting fibres set at liberty. The practice therefore of forcing a large armed bougie through a stricture, is to be reprobated, not only on account of the extreme pain it must occasion, but for a still stronger reason; it must inevitably do considerable injury to the parts, whereby serious consequences may ensue. It is indeed natural to conclude, that a passage which has been many years contracting itself, (which is generally the case here) ought to be brought out of this state into the natural one, by gradual and gentle means only.

Again, passing the armed bougie into the bladder is, I conceive, highly objectionable, though a practice resorted to by that eminent surgeon, to whose works I have so frequently referred. I hope I do not misunderstand him, for indeed, in some of his cases, it is

difficult to say, whether he speak of the common or the armed bougie. In the following quotations, however, he is sufficiently explicit—" But the fourth application (with " the caustic bougie) destroyed the remains " of the obstruction, and this large bougie " went on *to the bladder**." Again, " The " caustic was applied upon a bougie larger " than one which had stopped at the stricture. After remaining there some little " time, this bougie went on to the bladder, " which shewed that a spasm had stopped " the other, and that the caustic removed " the spasm†." The following is another quotation on the subject—" There was " another (stricture) at six inches, which " was also removed by two applications, and " the bougie went into the bladder, but in " doing so gave considerable pain‡." In another place he says, " The caustic was " applied to this four times before it went " into the bladder§." In almost all the cases recorded by Mr. Home, this practice, if I mistake not, seems to be adopted; but it is certainly adding to the pain,

* Home on Strictures, p. 226.

† Ibid. p. 387.

‡ Ibid. p. 415.

§ Ibid. p. 474.

and increasing the risk, to pass the bougie armed with caustic, for about an inch and a half, or two inches, over the most irritable part of the urethra, and over the mouths of the seminal ducts, and those of the prostrate gland, into the bladder; as it cannot be thus passed, without carrying with it more or less of the liquified caustic.

My next objection to Mr. Home's practice is, his applying the caustic to several strictures in the same patient. From the quotations already made from Mr. Hunter, and his opinions, I apprehend, correspond with the experience of every surgeon, who is well acquainted with the nature of strictures, it clearly appears, that, in the greater number of all the cases of stricture that occur, *one only*, as Mr. Hunter expresses it, becomes the object of our attention. That is, the others are generally smaller strictures, and, by Mr. Home's confession, are "the consequences of one which has been formed for a longer time near the bladder." If, therefore, the original stricture be removed, these consequent ones may, in general, be dilated by a common bougie, as Mr. Hunter recommends*. However

* See pages 10 and 11 of this essay.

necessary therefore it may be, to apply the caustic to the original stricture, it cannot be *generally* advisable, to excite the pain, and incur the hazard, of dilating the smaller strictures, by destroying the inner membrane of the urethra by this powerful remedy. I have, therefore, seen with surprise, that Mr. Home has applied the caustic to two or more strictures, in almost all the cases he has related. I can, in some measure, account for this practice, by his using the caustic in a large bougie, which of course would not pass down to the original stricture, unless the secondary ones were previously removed.

Notwithstanding what has been advanced, I do not assert, that there are no cases, in which the caustic ought to be applied to two or more strictures in the same person. I am aware, that this practice may be necessary in some strictures of very long standing. I mean that it is too general; being firmly persuaded, that it is used in cases, which might be relieved by the common bougie.

Agreeable to the plan I proposed, my next business will be to shew, by extracts

from Mr. Home's work, what are the consequences, which sometimes result from his mode of applying the caustic.

Mr. Home informs us, that he prefers his method by caustic, in many cases, to the simple bougie, *as less painful, and more permanent in it's effects; that he has not found it in any case attended with disadvantage, and though objections have been formed, and many bad consequences attributed to it, which it does not produce, that the pain which is brought on is by no means violent; and neither irritation nor inflammation is found to take place. That none even of the worst cases were made worse by it, and that no bad consequences attend it's use even in these cases*.*

It would give me sincere pleasure to find, that these assertions were verified by Mr. Home's practice; let his cases, however, speak for themselves. The first case I shall quote is that of an officer, on whom the caustic was applied for five months.—On the first application it is said, that the pain was sharp, and continued during the rest of

* See the references to these quotations in pages 15 and 16 of this essay.

the day*.

Again: “ In some constitutions
 “ where the patients have resided long in
 “ warm climates, every time the caustic is
 “ applied to a stricture, a regular paroxysm
 “ of fever, called by the patient an ague,
 “ takes place; and this has been so violent,
 “ as to render it impossible to pursue this
 “ mode of practice†.”

Again: “ The stric-
 “ ture gave way attended with a smart pain,
 “ and was followed by a considerable
 “ hæmorrhage, and a great deal of pain.—
 “ The bleeding and pain continued several
 “ days‡.”

Again: “ This (the caustic)
 “ created unpleasant sensations about the
 “ bladder, so that it was necessary to quiet
 “ the parts by spirituous applications, and
 “ to give opiate medicines. On the 11th
 “ the caustic was repeated; there was a
 “ good deal of bloody discharge for some
 “ days; on the 17th the discharge was less
 “ bloody and less in quantity. A fortnight
 “ after, the discharge was nearly gone§.”

Again: “ The parts bled freely, (after
 the application of the caustic) “ and the
 “ pain was very severe; at the next appli-

* Home on Strictures, p. 176.

† Ibid. p. 195.

‡ Ibid. p. 249.

§ Ibid. p. 265.

" cation the bleeding returned again, and
 " some hours after he had a spasm come on
 " after making water, and nearly fainted
 " Next morning in making water the pain
 " was so severe, that in two minutes he
 " fainted away. The caustic was applied
 " several times more, and almost always
 " attended by hæmorrhage, and more or
 " less of the feel of faintness or languor*."
 Again: " When the bougie (the caustic)
 " went through, it brought on a severe
 " paroxysm of fever, with an extremely
 " profuse perspiration. Another stricture
 " required six applications, which gave a
 " good deal of pain; when the stricture was
 " destroyed, another very severe paroxysm
 " of fever came on, and was succeeded by
 " a second equally violent. After another
 " repetition of twenty-two times the bougie
 " went through; this was followed in a
 " few hours by an attack of irritation in
 " the bladder, and a strangury that lasted
 " four hours; these went off, and a violent
 " paroxysm of fever, which was followed
 " by a second, terminated the effects of the
 " irritation†." Again: " While the caustic

* Home on Strictures, p. 325.

† Ibid. p. 341.

“ was applied to the two last strictures, after
“ every application there was a rigor, at-
“ tended with fainting and great depression;
“ this did not happen after the use of the caus-
“ tic was left off*.” Again: “A gentleman
“ who had for many years found an obstruc-
“ tion to his urine, at the age of seventy-
“ six, came to London to apply for relief.
“ At this time his urine passed from him
“ involuntarily, and in consequence of
“ coming a journey of fifty-three miles in
“ an open carriage, and in rainy weather,
“ he caught cold, and immediately on his
“ arrival had a rigor and swelling in the
“ perinæum; this in two days increased to
“ a considerable size, and had an evident
“ fluctuation in it; as the urine had found
“ it's way through into the perinæum, it
“ was immediately let out with the point of
“ a lancet, and the swelling subsided.
“ Upon passing the bougie along the ure-
“ thra, it readily went five inches, and
“ there met with an obstruction; to this the
“ caustic was applied twice, it gave no pain,
“ but rather a warm and pleasant sensation;
“ it was applied three different times, but

* Home on Strictures, p. 385.

“ the abscess in perinæo at his age, and a
 “ long continued state of disease, brought
 “ on symptoms of irritation, of which he
 “ died*.” Upon opening the body, a large
 stone was found in the bladder; and twenty
 more in a cavity formed in the membranous
 part of the urethra. Again: “ Immediately
 “ after the bougie (the caustic) passed
 “ through, the parts bled a good deal. After
 “ going home a distance of two miles, the
 “ bleeding returned, and was very profuse;
 “ it continued four hours, which alarmed
 “ him, and I was sent for. I found him
 “ faint and low, but the bleeding was nearly
 “ stopped. The quantity lost he supposed
 “ to be several pounds.” Much urine was,
 however, mixed with the blood†. Again:
 “ After the second application of the caus-
 “ tic, which was very severe, an hæmorrhage
 “ came on twelve hours after it’s application.
 “ It was very profuse and lasted six hours;
 “ when it stopped, a violent irritation came
 “ upon the bladder, with difficulty in
 “ making water, which only came away in
 “ the quantity of half an ounce at a time.

* Home on Strictures, p. 400.

† Ibid. p. 464.

“ This state of irritation was relieved by an
 “ opiate clyster, and he had several hours
 “ rest. His water was very much tinged
 “ with blood. In the evening the irritation
 “ returned, and was very severe; but by a
 “ clyster of warm water, and an opiate
 “ clyster it abated. On the second morning
 “ the frequency of making bloody water
 “ continued, and he voided at intervals
 “ small clots of blood; this continued
 “ through the day. On the third morning
 “ some more of these came away, after
 “ which the bladder was easy*.” Again:
 “ The first application of the caustic gave
 “ little pain; but upon the second appli-
 “ cation, the pain at the moment was so
 “ severe, as to bring on a cold sweat, and
 “ the soreness when he made water (which
 “ he did immediately after) was excru-
 “ ciating; the second time he made water
 “ he fainted away with the pain. This went
 “ off next day, and he took a long walk;
 “ before his return, the parts bled; he dined
 “ out and drank some wine, the bleeding
 “ increased so as to terrify him, and he lost
 “ about three pints. He was extremely

* Home on Strictures, p. 466.

“ lowered by the loss of blood. He had
 “ formerly lost a great deal of blood from
 “ the use of a common bougie, although
 “ nothing to compare with the present
 “ quantity*.” Again: “ When the caustic
 “ was applied to the stricture at six inches
 “ and three quarters, he had a temporary
 “ spasm, which went off on passing a small
 “ bougie; a second application was made,
 “ after an interval of three days; this was
 “ followed by spasm in a greater degree.
 “ After the third application, which was on
 “ Monday, a spasm came on in the evening,
 “ and the bougie could not pass; he went
 “ into the warm bath on Tuesday forenoon,
 “ and in an hour after the bougie passed,
 “ and the urine flowed. On Tuesday even-
 “ ing at eight o’clock he made some water,
 “ but did not empty the bladder; he passed
 “ a very restless night, the irritations being
 “ very frequent; the bougie could not now
 “ pass, and not a drop of water came. In
 “ the morning I attempted to pass the
 “ bougie without success; it went very
 “ readily down to the stricture at six inches,
 “ but no further. I then applied the caus-

* Home on Strictures, p. 468.

“ tic, and he took, at ten o'clock, thirty
“ drops of the tincture of opium, and had
“ a clyster of warm water, without any
“ benefit; at twelve o'clock an opiate clys-
“ ter was injected, which remained half an
“ hour, and thirty drops of tincture of
“ opium were given by the mouth. At four
“ he took forty drops of tincture of opium,
“ at six used the tepid bath; then went to
• “ bed and sweated profusely. At ten o'clock
• “ he passed a teaspoonful of water, and was
“ easier; a bougie was introduced down to
“ the stricture, and was followed by a table-
“ spoonful of water; this relieved the blad-
“ der. He took camphor, five grains; from
“ this time till four in the morning, he had
“ a straining every seven minutes, and half
“ an ounce of water flowed at each effort;
“ but at four the strangury became com-
“ plete. He now fomented the perinæum
“ with spirits and vinegar for twenty minutes,
“ after which the urine passed in drops. At
“ five, bathed his feet, and passed a bougie
“ down to the stricture, which was followed
“ by a quarter of a pint of urine. He now
“ passed the bougie after every irritation;
“ and brought away about the same quantity
“ of water. At twelve the urine came

“ without the use of the bougie, and con-
 “ tinued to do so through the day. During
 “ the whole of the time there was a complete
 “ strangury, which was twenty-four hours,
 “ it was unattended by fever or violent
 “ agitation, and in the intervals he was
 “ perfectly composed. This attack of spasm
 “ had been brought on each time, by using
 “ too much exercise after the caustic had
 “ been applied*.” Again: “ After sixteen
 “ applications of the caustic, two different
 “ strictures were removed, and he appeared
 “ to be materially relieved. When the
 “ bougie went through the strictures and
 “ passed on to the bladder, it gave a good
 “ deal of uneasiness; this was followed by
 “ pain in the region of the bladder, and
 “ frequent desire to make water. He told
 “ me next day, that he had made water
 “ thirty times in the night. Under these
 “ circumstances I directed him first to take
 “ opening medicines, then camphor and
 “ opium internally, and opiate clysters;
 “ but they afforded no relief, and the
 “ symptoms increased under this treatment.
 “ After this had gone on for four days, I

* Home on Strictures, p. 476.

“ was led to feel the bladder externally,
 “ and found it to be very much distended;
 “ I immediately passed a flexible gum
 “ catheter, which readily went into the
 “ bladder, and drew off three pints of water.
 “ This led to an explanation of the quantity
 “ voided in the day; and the thirty times
 “ he before mentioned to me, were only
 “ efforts that had been ineffectual, which,
 “ from being a foreigner, he had not well
 “ explained, and called it making water.
 “ From this error, the strangury brought on
 “ by the bougie passing over the recently
 “ removed stricture, had been allowed to
 “ continue four days undiscovered, and
 “ brought on a paralysis of the bladder,
 “ attended with inflammation of its internal
 “ membrane*.” Again: “ On the third
 “ application of the caustic, this stricture
 “ was destroyed; but in half an hour he
 “ was seized with a violent shivering, at-
 “ tended with a severe fever. These fits
 “ not only returned on every succeeding
 “ application, but also when he exposed
 “ himself to cold, or underwent any bodily
 “ exertion. He was so much reduced by

* Home on Strictures, p. 480.

“ them, that it was thought expedient to
 “ suspend for a while the process of his
 “ cure. This patient was afterwards desired
 “ to stay in the house at each application
 “ of the caustic, by this precaution he
 “ was relieved from these attacks*.” Again:
 “ This had the caustic applied to it three
 “ times, after which the bougie passed
 “ through it. He was then taken ill with
 “ a severe ague, which he attributed to
 “ having taken cold. Soon after another
 “ application of the caustic, an attack of
 “ ague more severe than the last came on;
 “ when this went off, it was in eight hours
 “ succeeded by a slighter attack, which left
 “ him very weak. After several more ap-
 “ plications of the caustic, which destroyed
 “ another stricture, an attack of ague
 “ more severe than the other was brought
 “ on, which did not terminate as they had
 “ done; it was attended with delirium,
 “ which lasted twenty-four hours, and for
 “ several days the fever in some degree
 “ continued†.” Again: “ This required
 “ seven or eight applications of the caustic,

* Home on Strictures, p. 487.

† Ibid. p. 489.

“ the effects of which brought on severe
 “ attacks of ague: at last it was subdued,
 “ and the full sized bougie went into the
 “ bladder. After the last application of the
 “ caustic, which made the stricture give way,
 “ he was attacked with a rigor, which was
 “ not followed by a complete sweating fit;
 “ next day the cold fit returned, and the
 “ fever was extremely violent, the sweat
 “ uncommonly profuse; and when it went
 “ off, left him in a very languid state; he
 “ was several hours without any perceptible
 “ pulse, although able to speak and take
 “ nourishment; but this gradually went
 “ off*.” It is proper to remark, that this
 patient had a fit of ague the day before the
 first application of the caustic.

I could have wished, to have given these
 extracts more completely, with respect to
 the event of each case; but this would have
 taken up too much room. Let it suffice
 to remark, that most of them terminated
 favourably. I have endeavoured to repre-
 sent the author's meaning, and the effects
 produced by the caustic, in the cases related,
 fairly, and this must be my apology for
 having given such large extracts.

* Home on Strictures, p. 491.

From these, and many other passages which are not quoted, it appears, that a hæmorrhage is a very common effect of this mode of applying the caustic. That a hæmorrhage from this cause is more alarming, than really dangerous, is proved by the cases Mr. Home has given. It must be acknowledged, however, that in some instances, it has produced considerable debility: the effects of this, in certain habits, must be severely felt for some time afterwards. I cannot therefore agree with Mr. Home, in the conclusions he has drawn, respecting this effect of the caustic, as gathered from the following quotation:

“ The use of the caustic in this case did
“ not give the smallest uneasiness, beyond
“ the local pain, which was neither violent
“ nor of long continuance. This was in
“ part attributed to the bleeding, which
“ always relieves when it takes place*.”

The advantages of topical bleeding, in cases of local pain and inflammation, are well known; nor can there be any doubt of it's being often serviceable, in relieving pain, and preventing inflammation, in many cases

* Home on Strictures, p. 326.

of stricture, in which the caustic is applied. In every case, however, in which blood is drawn, either by topical or general means, a judicious practitioner takes all possible care, that the quantity taken away be proportioned to the violence of the disease, and the patient's strength. And as it is impossible in any of the cases, in which the caustic is applied to the urethra, and is succeeded by a hæmorrhage, to follow these rules, (and indeed the instances Mr. Home has produced prove it) I must contend, that a mode of topical bleeding, which risks the exciting a hæmorrhage, that may continue for several hours, and even days, is highly objectionable. If, in the application of the caustic, it be absolutely necessary to draw blood from the neighbourhood of the strictured part, let leeches be applied to the perinæum; and let the evacuation of this vital fluid, as in other cases, be nicely proportioned to the urgency of the symptoms, and the patient's strength. This kind of bleeding, though not so directly from the vessels of the diseased part as that produced by the caustic, is yet near enough, from the numerous anastomoses of the vessels, to produce a quick and salutary effect.

From what has been before advanced, it is evident, that these hæmorrhages are brought on, either by the large caustic bougie bursting the inner membrane of the urethra, and forcing itself into the substance of the corpus spongiosum; or by the caustic being applied so frequently, or in such quantity, as suddenly to destroy this membrane, and thereby expose the vessels of this vascular part.

Before I dismiss my remarks on Mr. Home's dissertation, I must beg leave to observe, that more caution, than he recommends, seems to be necessary, in applying the caustic to strictures, in aged and infirm people; particularly those of this class, who are suspected of having a stone either in the urethra, or in the bladder. Subjects of this kind are not so able to bear violent remedies, as those who are younger, or have no other disease, with which to contend. In all these cases, the caustic should be the last resort; every possible effort should first be made by the common bougie, to dilate the strictures, in order to procure an easy passage for the urine, and to facilitate the examination of the urethra and bladder by proper instruments. If it should be found absolutely necessary, to use

this remedy on such subjects, it should be employed in smaller quantity, and be repeated less frequently, than in young ones. It is evident, that in some of the cases related by Mr. Home, in which stones were lodged in the urethra, the patients suffered by a more frequent repetition of the caustic, than would have been thought proper, had this circumstance been discovered earlier.

Having delivered my sentiments on Mr. Home's method of applying the caustic to strictures in the urethra, and endeavoured to impress my reader with the bad consequences sometimes resulting from it, I shall conclude this part of my subject, with some extracts from Dr. Rowley, which so strongly corroborate the positions I have maintained, that I cannot resist the inclination to relate them. Treating in his late publication of the scirrhus prostate gland, he observes:

“ Caustic bougies have produced in this
 “ case all the evils, that reflecting men
 “ of experience have foreseen. Incurable
 “ ulcers, tortures, mortification, death, have
 “ succeeded their application. A surgeon
 “ passed a caustic bougie up the urethra,
 “ which immediately produced such a violent
 “ bleeding, that a chamber pot was soon

“ filled with blood*. An eminent physician
 “ had nearly lost his life by imprudently
 “ suffering a caustic bougie to be applied
 “ to the prostate. The quantity of blood
 “ lost was immense, and it was with great
 “ difficulty restrained†. An officer, who
 had been some time under the care of
 Dr. Rowley for a complaint near the pros-
 tate gland, “ had been persuaded to have
 “ a caustic bougie applied, as a radical
 “ cure for his complaint; instead of which,
 “ an ulcer was produced in the urethra,
 “ where no such disease was before. A
 “ friend of this gentleman’s lost his life by
 “ the caustic bougie practice, which so
 “ alarmed the officer, that he resisted all
 “ further persuasion to have it introduced‡.”

Dr. Rowley next relates the case of a patient,
 who had been nearly two years under a
 caustic bougie course, and had had the
 caustic applied between one and two hun-
 dred times. Every application of this remedy
 produced the most exquisite pain and misery,
 and at times much blood issued. After this
 process, there issued from the urethra a
 purulent and sanious stinking discharge.

* Cogent Reasons, p. 122.

† Ibid. p. 123.

‡ Ibid. p. 153.

Upon the introduction of a bougie, three obstructions were found in the urethra, the bougie was twisted like a corkscrew and the misery of the unfortunate patient was, as Dr. Rowley observes, beyond description horrid*. Again: "A distinguished noble-
 " man was said to be perfectly cured by the
 " caustic; pus, sanies and different coloured
 " matter is daily voided with the urine, with
 " additional callosities in most parts of the
 " urethra. A servant of the same nobleman
 " lost his life by the caustic. Whilst I am
 " writing this," says Dr. Rowley, "a
 " clergyman is present, who unhappily had
 " the caustic repeatedly applied, in the
 " course of two or three years. The use of
 " caustic has rendered him truly miserable,
 " who was but slightly so before.
 " A gentleman had a caustic lately applied
 " to the urethra; cold shivering followed,
 " and he died in a few hours†."

* Cogent Reasons, p. 154.

† Ibid. p. 174.

THE AUTHOR'S
METHOD OF TREATING
STRICTURES IN THE URETHRA
BY THE CAUSTIC.

BEFORE entering on the particulars of my proposed method, it may not be improper to repeat, that it is essentially necessary, in our present imperfect acquaintance with the caustic, to endeavour to dilate all strictures of the urethra by means of common bougies, before any attempt be made with the caustic, to effect their cure. Mr. Home, indeed, informs us, that this has been done in almost every instance adduced in favour of the caustic. As, however, even in the cases related by him, there are so many instances of serious effects produced by the caustic, it is highly necessary, to enforce this rule: a rule which I fear is not very strictly observed by some practitioners.

Every one, acquainted with the use of bougies, knows their salutary effects in

almost all recent strictures: nor are they less useful in a considerable number of those of longer standing; in many of which, only the smallest bougie can at first be passed. Even in those habits, where the bougie irritates at first, and cannot be kept in the passage for any length of time together, it is surprising to observe what may be done, by persevering cautiously and judiciously in it's use. And although the cure of strictures by bougies is not always certain, yet in many instances the complaint does not return for a number of years, although no other means be employed for it's removal. I have dilated strictures of the worst kind by the common bougie, where the patients have remained well for five, and even ten years. If, therefore, by this easy, safe, and mild method of treatment, relief can occasionally be given to the close of life, without the patients suffering much inconvenience or pain from the disorder, it is certainly more advisable, to pursue this plan of treatment, than to make use of a remedy, which has in some instances produced even fatal consequences.

It must be confessed, however, that there are many strictures of long standing, which,

as has been before observed, can only be dilated to a certain extent; and if the bougie be discontinued, the disease returns in a short time. In these cases, it is certainly allowable, to apply the caustic, provided there be nothing in the patient's habit, to forbid it's use. But after the extracts which have been given, both from Mr. Home's work, and Dr. Rowley's, perhaps it will be concluded, that, unless the application of it be considerably improved, this powerful remedy, notwithstanding it's present celebrity, will soon "*be once more banished from practice.*" So many serious evils appear to have arisen from the present mode, that it is a doubt with me, whether these be balanced by the cures, which have, in some cases, been performed by it. According to our present experience, I would confine the practice of applying this remedy altogether to such strictures of the urethra, as are either utterly impervious, or so contracted, as to be incapable of dilatation by the common bougie: for the urethra, even in it's healthy state, being tender and irritable, and connected with parts of great importance in the system, all violent remedies should be very cautiously applied to it.

One of the objections made to the use of caustics, for removing strictures of the urethra, is the impracticability of confining their action to the constricted part. But, I must confess, I do not perceive the force of this objection; for I think, that they may be almost always applied to such part with great nicety. Wiseman, and other antient surgeons, applied escharotics of different kinds, by means of adhesive plaister at the end of bougies, in order to remove obstructions and excrescences, which they supposed to exist in the urethra; the former likewise used a canula for the purpose of introducing a caustic. This practice, however, in consequence of the danger found to arise from it, was laid aside for near a hundred years; but was revived by Mr. Hunter, who, as remarked at the beginning of the former essay, introduced the lunar caustic to strictures of a certain description, at first through a canula, and afterwards by enclosing it in the end of a common bougie. Very lately, Dr. Sherwin has ingeniously proposed to remedy the inconveniences of the caustic bougie, by applying a certain quantity of the lunar caustic in powder, at the end of a warm whalebone bougie, to which it is to be

fixed by adhesive plaister, or any other viscous substance. This method, however, does not appear sufficiently to secure the sides of the urethra from being injured by the caustic, in it's passage to the stricture; besides, there is danger of the plaister being detached from the whalebone, before it has reached the strictured part.

About two months before I heard of Dr. Sherwin's proposal, I made several essays to discover a substance, that would make the caustic adhere firmly to the bougie, and yet not hinder it's dissolving on the constricted part. The following method will completely answer both these purposes: touch an eighth, or from that to a quarter of an inch, of the end of a bougie of any size, with a small brush dipped in common glue, as used by mechanics; and let the coating of glue be as thin as possible. The glued end must be immediately applied to a given quantity of powdered lunar caustic, put upon a piece of writing paper, this should be done, by alternately putting it's different sides to the caustic, until the whole of it adheres. The bougie in this state must be laid in some dry place to harden, which effect will take place in a few hours. When it is sufficiently

hardened, the glued end must be gently rolled to and fro upon a table, with a bit of smooth wood, about four inches square, till it is perfectly level and smooth. If the bougie be very hard, or the weather cold, this end should be previously warmed a little by a fire. The part thus covered with caustic should then be very lightly rubbed with a bit of bees wax, with the intention of giving it a very thin coating of this substance. After this, let it be kept for use in a glass vessel well closed*.

The advantages attending the caustic bougie prepared in this manner are obvious.

In the first place, the bougie may be of any size; even the smallest size can, by this method, become the vehicle of this powerful remedy; and may be readily passed into, or a little beyond, such strictures as are extremely narrow; or such, as are attended with a considerable contraction of the orifice of the urethra.

* The glue should be made of such a degree of consistence only, as will make the caustic adhere to the bougie and become hard when exposed for a moderate time to a dry air. If it be made too stiff, it will be attended with the inconvenience of requiring a longer time in being dissolved, when applied to the constricted part; on this account too, the coating of wax ought to be as thin as possible.

Secondly. From the protection afforded by the wax coating, no part whatever of the caustic touches the sides of the urethra in it's passage to the stricture.

Thirdly. A determinate quantity of the caustic may be applied with certainty.

Fourthly. The caustic cannot be separated from the bougie.

Fifthly. The caustic may be made to act on the whole surface of the stricture at each application.

Sixthly. Where there are more strictures than one, and it is thought advisable, to attend to one only at the first; the caustic may be directed, and confined in it's action, to any particular stricture, upon which the practitioner may wish it to operate, in preference to the rest.

Seventhly. Fixing the caustic with glue has this additional recommendation; we can attach it with perfect safety to the very extremity of a bougie, and thereby apply it with more certainty to an impervious stricture, than is practicable with the common armed bougie*.

* Where the caustic is applied to the very extremity of a bougie only, it should be upon one of a proper size, with it's point either conical or flattened, as most ap-

When we have determined, to use the caustic bougie thus prepared, the distance of the constricted part from the extremity of the penis should be accurately measured, in order to apply it with certainty to this part only. This may be done with a common bougie. The exact size of the canal at the part should likewise be ascertained by the same instrument. This in general may be readily done. They who are used to pass a bougie of a proper size through a stricture, can always tell when the point of this instru-

proved. In either case, if the larger quantities of caustic be employed, it will be necessary to repeat the processes of glueing, and applying the part to the powdered caustic as soon as the quantity previously applied becomes dry, till the whole of the caustic is taken up. At each time of doing this, the end of the bougie should be made as smooth as possible, while the glue is soft; partly by applying it to the paper on which the caustic is placed, and partly by touching it lightly with a finger. When the whole of the caustic is taken up, and the end thus prepared is hardened, it may be made *perfectly smooth*, previous to it's being waxed, by rolling it very gently with a square bit of wood, and afterwards rubbing it with the finger nail.

It is almost needless to remark, that the wax should be applied with a light hand, and if necessary, from the state of the weather, &c. it should be a little warmed previous to it's application.

ment is about to enter it. When it first touches the stricture, it generally stops; but on pressing the bougie gently on, it evidently feels as if it's point entered a passage, which embraces it on every side. The bougie passes on afterwards more or less freely, according to the size of it's upper part, and the openness of the passage beyond the stricture.

Having ascertained these points, it will be proper to choose a bougie armed with caustic, in the manner already mentioned, of a size rather less than the constricted part. A piece of fine white thread should then be tied round the bougie, at the exact distance of the stricture from the end of the penis, and another thread a quarter of an inch nearer the external end. By the first of these marks it will be known with great accuracy, when the bougie enters the constricted part; and the second will determine how far it is pushed beyond it. This armed bougie (previously oiled) may now be passed down to the stricture, and about the eighth of an inch into it, and continued in this situation from five to ten minutes, now and then alternately moving it forward and backward, about the eighth of an inch each way, in

order to wipe off any mucus, which may have collected upon the caustic, and to assist in wiping off the caustic itself. On withdrawing the bougie, all the caustic will be found to be dissolved; whence we may fairly conclude, that it has been expended entirely on the constricted part.

If the stricture be open enough to admit a bougie of a moderate size, such a bougie, armed with caustic, may very readily be passed into it, or a little beyond it; but, if the stricture admit only a very fine bougie, and cannot be dilated so as to receive one of a larger size, great care should be used in passing a caustic bougie of a small size into the stricture. For if this should not be effected, and it's extremity be bent in endeavouring to push it forward, much effect cannot be expected from the caustic, as it will be dissolved at a part of the canal anterior to the stricture. From what has been said, it is evident, that the success of applying the caustic by this method will depend very much upon the nice manner, in which it is performed.

With respect to the quantity of caustic, which ought to be applied to a stricture, I am convinced, that, on the first trial, it

should in no case exceed one twelfth part of a grain. Let a grain of lunar caustic, very finely powdered, be divided into twelve equal parts; put each of them into a separate piece of writing paper; then apply one of these portions, by means of the blunt end of a moistened probe, to the surface of any ulcer, or to the membrane of the mouth, or the inner membrane of the urethra near it's orifice, by alternately putting the probe to such part and to the caustic, until the latter is consumed; and it will be found, that even this small quantity will produce a slough from the part, nearly equal in extent to a seven shilling piece*. If, therefore, this quantity only be applied to a simple stricture, consisting of a single fold of the inner membrane of the urethra; it must certainly produce a superficial slough from it, and thereby assist in destroying or setting at liberty the contracted fibres. If it be found, that, by two or three applications, this quantity of caustic has no effect in destroying the strictured membrane, and that it gives little or no pain in it's application; it may be cautiously increased, to an eighth,

* See the experiments on this subject, at pages 29 & 30.

a quarter, or even, in some bad cases, to half a grain, at each application. I am persuaded, however, from the size of the eschar, which it will make on the surface of an ulcer, that the latter quantity should not be employed, unless in cases of the most pressing necessity. The smaller quantities will, I have no doubt, generally answer the intended purposes. And even where the strictured part is more hard and callous than usual, a repetition of these quantities must destroy the diseased surface. If the disease readily yield to small quantities of the caustic, it is certainly unnecessary, and imprudent, to use larger, even though the stricture might be thereby destroyed in less time. But if, on the contrary, we do not gain ground in a reasonable time by the smaller quantities, we may proceed to the larger, provided there are no peculiar circumstances, to forbid their use.

In forming an idea of the degree of pain, which a caustic may give on being applied to a stricture, we cannot judge merely from knowing the degree of sensibility of the urethra in it's natural state: there are other circumstances, to be taken into the account. For example; if the passing a bougie along

the urethra give much pain, or if the pain be greatly increased, when it's point touches the strictured part, and especially if the end of the glans be much inflamed; we may conclude, that the whole membrane of the urethra, and particularly that part of it which forms the stricture, is in a state of inflammation; and consequently more likely to give pain on the application of the caustic, than where these parts are in a more indolent and less irritable state. Further, when the secretion or gleet is greater than usual, and accompanied with an irritable state of the urethra; this is another proof, that the vessels of the strictured part in particular are in a state of excitement. The presence of any of these symptoms of irritability should therefore lead us, to proceed with great circumspection in the use of the caustic.

When there are more strictures than one, that require the use of the caustic, it will be the safest and best practice, to apply the caustic to one stricture only at a time.

Having pointed out a mode of applying with certainty a determinate quantity of caustic to a stricture of the urethra; two questions present themselves to our notice: first, how often should the caustic be re-

peated? and secondly, ought we to assist this mode of cure, by the use of the common bougie in the intervals of the application of the caustic, or not?

From what has been before advanced, respecting the time required to heal an ulcer in the mouth, or one near to the orifice of the urethra produced by this caustic, it is unquestionably advisable, not to repeat this application to a stricture too frequently; especially as it appears, that many of the ill consequences, in Mr. Home's method of applying it, have arisen from this practice. It is not possible, however, in all cases, to fix the precise time, which ought to intervene between the repetitions, even when the same quantity of caustic is employed; as this remedy must vary in its effect in different cases, according to the age of the patient, the strength of action in the parts, and other circumstances. When the caustic brings on a sudden and frequent desire to make water, with a straining propensity to void more after the bladder is emptied; which symptoms, (especially where they continue for several days together) generally indicate inflammation in the neck of the bladder, and are also commonly produced by other irritating applica-

tions to the urethra: or when any other symptoms of irritation or inflammation are brought on by the caustic; I am clearly of opinion, that it ought not to be repeated, until they have completely subsided. Besides, as it has been proved, that the application even of a very small portion of caustic will destroy the inner membrane of the urethra, we ought certainly to wait, in almost every instance where it is applied, until this membrane is reproduced, before the caustic is repeated: since, beside the risk already mentioned of producing a hæmorrhage, it must give more pain, and incur greater hazard of exciting inflammation, in being applied to a surface destitute of its membrane, than when it is entire. Although the twelfth part of a grain of lunar caustic will destroy a portion of the inner membrane of the urethra, yet this quantity cannot always be expected to penetrate through this membrane in old strictures, where the part is thickened and indurated: and as the ulcer produced by this quantity of caustic must be very superficial, in comparison of what it would be, were the caustic applied in a much larger quantity; it may be advisable, in some cases, to repeat this quantity of the caustic more

frequently, than when a larger quantity is employed. I do not think, however, that even this small quantity should in any case be used oftener than once a week or ten days, or the larger quantities oftener than once a fortnight; and in aged and infirm subjects, certainly at longer intervals.

Mr. Home has endeavoured to prove, both that the application of the caustic often lessens the irritability of the urethra, and that in most of the cases, in which it is employed, the urethra will not bear dilating with a bougie, either before or after the use of the caustic. That the irritability is in some cases increased by the use of the bougie, previous to the application of the caustic, I am well convinced; but I am satisfied, that this is not generally the case, after the caustic has been applied. If the destroying an irritable stricture remove the cause of irritation, it follows, that the urethra ought to bear the use of a bougie much better after the application of a caustic, than before it. For some days indeed after its application, that part of the urethra, to which the caustic is applied, must often be in a very irritable and tender state, and its vessels in a state of excitement; of course, the applying

bougie to it in this state must be irritating and painful: but as the part advances in cicatrization, or that process by which the membrane of the urethra is renewed, it must lose that sensibility, which was the mere effect of the caustic; so that at the end of a week, or ten days, or in some cases even earlier, the urethra will, I doubt not, generally bear a bougie to be kept for some time within it. I am therefore persuaded, that Mr. Home has often failed of gaining the advantages to be derived from bougies after the application of the caustic, by repeating the latter so frequently, as to prevent the possibility of a fair trial of the bougie. I am of opinion, likewise, further experience will shew us, that the greater number of times a caustic is applied, until a stricture is removed, provided there is a due interval between each application, the better will the urethra bear the bougie; as the constricted surface, the cause of it's irritable state, will be thereby more and more destroyed.

The effects of the caustic in these cases are somewhat analogous to those produced by it on the diseased surface of wounds or ulcers; which is frequently more tender and

irritable, as has been before observed, for the first few days after it's application, but almost always less irritable, and less painful, in about a week afterwards; in general too, it is in a more indolent state at this period, than before the application of the caustic. The knowledge of this last fact tends strongly, to shew the propriety of applying very small quantities of the caustic, at the commencement of the treatment of every stricture by this remedy: for if, by it's destroying a diseased surface, the sensibility be lessened, of which there is no reason to doubt, it follows, that it may not only be repeated, with less danger of giving pain, and exciting irritation, after the first or second application, but that larger quantities may likewise be used, than at first.

From the above statements I would infer, that, in the treatment of every stricture by the caustic, we ought to endeavour, after each application, to dilate by the common bougie, in the manner in which it is employed in ordinary cases. If, on one application of the caustic, the stricture cannot afterwards be opened nearly to the natural size of the canal, it should be reapplied, and after this a fresh attempt to dilate should

be made by the bougie. Thus we may proceed, alternately using the armed and the common bougie, till the stricture is completely dilated ; but we ought never to repeat the caustic, as long as the stricture keeps yielding to the common bougie.

Upon the whole then, it appears obvious to me, that, if the lunar caustic be used, under certain exceptions, to such strictures only, as cannot be sufficiently dilated by the common bougie ; and if the application be made directly to the constricted part itself, in a small quantity at first, and not repeated too frequently, while the common bougie is employed in the intervals ; we shall find it perfectly safe, and, at the same time, of such superior efficacy, that it will be scarcely possible to calculate the good, which may arise from it's use in bad cases.

As a great number of strictures may be cured by the common bougie, I have been unwilling to apply the caustic to any, but such as cannot be sufficiently dilated by this instrument. This, of course, has limited my experience with the armed bougie ; but the following cases I hope, will be sufficient, to exemplify the doctrine laid down in the preceding pages.

Case I. A man, aged forty-six, had a severe gonorrhœa in the year 1770; for the cure of which he used no injections. The gleet (as he called it) continued for two years, and then ceased. About twelve years afterwards, he perceived the first symptoms of a stricture in the urethra; which in the course of two years increased so much, that it was with difficulty he could make water. At this time he applied to me. By an examination with a bougie, I found a stricture near the bulb; but so much contracted, as not to suffer the finest bougie I could procure, to go through it. However, I passed one as far as the strictured part, and retained it in that situation for some hours every day. At the end of a fortnight, the stricture dilated so much, as to admit a fine bougie to pass through. By persevering in this method, and gradually increasing the size of the bougie, the passage was in a few weeks brought nearly to its natural width. The patient remained well about seven years. At the end of eight years he returned to me for the cure of his stricture; which was again so contracted, as not to suffer one of the finest bougies to pass through it; but by following the same

method as before for six days, a bougie went through, and soon afterwards I succeeded in producing a sufficient dilatation of the stricture. After this he remained well for about five years; but was under the necessity of again applying in the year 1797 for relief. He had been advised to use bougies at the first return of the stricture, but this he had altogether neglected; and the passage was nearly closed. I was not able now to pass one of the finest bougies, till he had worn one daily for three weeks, with the point against the strictured part; after this, he wore one of these bougies passed through the stricture for some hours every day: but before much progress was made in the dilatation, he was seized with violent shiverings, succeeded by hot fits, and profuse sweats. The cold fits lasted from twenty minutes to half an hour, and came on at very irregular periods. Sometimes he would have three or four of them in a day; at other times they would attack him in the night. Now and then he would be entirely free from these fits for a week together. After every sweating fit, he voided with his urine thick ropy mucus, mixed with pus, in quantity seldom less than a quarter of a pint; and

sometimes, during the night, it would exceed half a pint. In defiance of various remedies, and the occasional use of the bougie, these shiverings continued for four months, and then left him; but he was often so ill, as not to be able to bear the regular use of the bougie. This unavoidable interruption of it's use prevented a dilatation of the stricture. Being much reduced by this illness, he went into St. Bartholomew's Hospital. He was admitted in February, 1798, and was put under the care of Mr. Long. For three weeks previous to this time, he had had only one of his shivering fits. Bougies of different sizes were passed daily to the stricture, for five weeks; but none of them went beyond it. After this period, the caustic bougie, though contrary to Mr. Long's advice, was employed and persisted in, nearly for seven months; sometimes every day, sometimes every other day, and at other times only once or twice a week. It frequently gave him great pain; and six or eight different times he lost about a teacupful of blood. When a common bougie was passed down to the stricture, during the use of the caustic, some blood would frequently issue from the urethra. Whenever this happened,

the application of the caustic was postponed. The caustic was applied sixty-two different times in the period abovementioned, but no progress whatever being made at the end of this time, in the dilatation or destruction of the stricture, the patient was dismissed from the hospital. After this, the caustic bougie was again applied to the stricture several times by two surgeons, but with no better effect than before. In fact, it never passed the stricture in any of the trials which were made with it. Nor during the period he remained in the hospital, had any one been able to pass even the finest bougie through it. In this situation he applied to me a fourth time, in August 1799. The stricture was now as before, too narrow to admit even the finest bougie to go through it. I therefore passed one as far as the strictured part, and retained it in that situation for some hours every day, during a space of three weeks; after this, it went through the stricture. But the complaint was become so obstinate, that I could not succeed as formerly in dilating the stricture: after repeated trials, I was only able to pass a middle sized bougie through it. This determined me, to attempt the destruction of it

by the common caustic bougie; and I applied it for this purpose three or four times, but without effect, being unable to pass it through the stricture. Discouraged by the pain which the caustic gave him, and by the unsuccessful application of it by the gentlemen who had used it before me, I resolved not to use this kind of caustic bougie any more. It occurred to me at the same time, that the caustic might fail of destroying the stricture from it's coming into contact with it's anterior part *only*; and that a cure might still be obtained, could the caustic be carried a little beyond the stricture, by a bougie slender enough to pass it.

This case induced me to make the experiments before recited*, and which led to the adoption of the method recommended in this essay. By this contrivance, the caustic was passed upon a small bougie into and a little beyond the stricture; and by repeating it a few times, at different intervals, with the intermediate use of the common bougie, I was able, in about a month's time, to pass a middle sized bougie into the bladder: but by an examination with the soft bougie, I perceived

* See page 67.

that the urethra was very much diseased in it's membranous and bulbous part, for nearly the space of two inches; as this bougie, when withdrawn, was full of indentations, and other proofs of the injured state of the urethra. By the method here recommended, I was enabled to direct the caustic to any part, or to the whole of the diseased surface. In the space of two months, a large bougie passed into the bladder. The passage, however, was evidently tortuous; nor did the bougie pass freely over the prostate gland, which by examination from the rectum was found to be larger, and harder, than natural. After this, I continued the use of the common bougie for some time; but upon leaving it off the passage soon became narrower. I then applied the caustic at intervals again, and again succeeded in dilating the strictured parts, and in passing large sized bougies into the bladder. Finding, however, by returns of the stricture, that there was but little prospect of making a perfect cure by the caustic, I discontinued it altogether, after having used it about twenty different times. The patient then used the common bougie for some months, but, being seized with a severe peripneumony in the summer of 1800,

was obliged to discontinue it for some weeks. In this interval, the stricture returned, but with less distressing circumstances than formerly; for on the first trial, I passed a middle sized bougie into the bladder. After this, he wore these instruments daily for some time, by which the urethra was again more opened; but I found it impossible, to dilate it to it's natural size. Believing this to be one of the unfortunate cases, which cannot be perfectly cured by any remedy, I have discontinued the bougie for some months: the patient, however, is so much better, that one larger than the middle size can be passed into the bladder; but the canal continues to be tortuous, and is, I apprehend, very much diseased; yet he makes water pretty freely, and does not pass it more than once or twice in the night. He is now able to follow his employment, (though not so well as usual) which he has not done before for more than three years.

Case II. I have the permission of a gentleman, aged forty-eight, to insert the following history of his case. In the year 1785, he applied to me for the cure of a stricture in the urethra, through which a bougie of

a middling size could be passed. I advised him to wear these instruments, in order to effect a cure of his complaint; but this he neglected, after he had worn them for a few days. Finding about twelve months afterwards, that his urine came away by drops only, attended with straining and pain, he applied to me again. The stricture was now so much increased, that, after a trial of several weeks, I could not pass one of the finest bougies through it. There was, however, little doubt, that by further perseverance the stricture would have been overcome; but being obliged to go into the country, he entirely discontinued the use of the bougie.

Two years afterwards he had recourse to Lallier's bougies, and used them about a fortnight; but was not able to pass one of them through the stricture. In about two years more he applied to another surgeon, who attempted in vain to pass a bougie. From this time till March, 1799, he had no advice; and during this long period, he constantly passed his urine with great difficulty, and frequently with much pain. He now again applied to me. After a daily trial for near a month, I was able to pass one of the finest bougies through the stric-

ture into the bladder. This success led me to expect, that I should be able to dilate the stricture, by persevering in the use of the bougie; but although one was worn for several hours every day, and the use of them was continued in this manner for more than a month, little or no progress was made in the dilatation: he made water indeed somewhat better; but the passage refused admittance to a bougie only one size larger, than that which was first introduced.

Being convinced, that this was a proper case for the caustic, I proposed the use of it to him, and procured one of the smallest bougies, armed according to Mr. Home's plan; but it could not be passed into the orifice of the urethra, even though considerable force was used. The contraction of this part had been occasioned by very deep chancres, formed about eight years before all around the orifice; and as it was not confined merely to the lips, but was continued into the substance of the glans, it was impossible to remedy it, either by a caustic, or the knife. I therefore attempted to dilate the orifice by the use of simple bougies, hoping by this method to be able to introduce the armed one; but after a trial of six weeks,

in which he suffered considerable pain, I was not able to make any progress in the dilatation. My patient at this period having heard some unfavourable reports of the caustic, determined not to submit to it's introduction; he therefore discontinued the plan he was upon, and left his case once more to nature. He continued, however, to make water a little better than usual for several months, after which he relapsed into as bad a state as before.

In April 1800, he again applied to me. Once more I attempted to dilate the stricture by the common bougie; and passed, though with much difficulty, a very fine one through it. But although he persevered for some time in the use of this instrument, for several hours daily, yet no progress whatever was made in the dilatation of the stricture. Having already in one case applied a caustic bougie, made on the plan recommended in this essay, he consented to it's introduction. I accordingly applied to the stricture a twelfth part of a grain of caustic. It gave him no pain, but was attended with a slight sensation of heat. He experienced no other inconvenience from it, than a frequent and sudden desire to make water, which con-

tinued for a week. In this interval, I passed a common bougie into the bladder two or three times; as the point of it went over the strictured part, it gave him considerable pain; a sensation which he had not before experienced on passing a bougie. As soon as the frequent desire to make water had subsided, his urine came away with a fuller stream, than it had done for some years; and now I was able to pass a larger bougie through the stricture. This was used every day, and kept in the passage two or three hours at a time. In a few days the stricture was so much dilated, as to admit a bougie still a little larger. Finding, however, that I could make no further progress with the bougie, I again applied a twelfth part of a grain of the caustic. It gave no pain, and in three or four days after he could bear a bougie to be kept in the passage for two or three hours daily; neither did the caustic bring on the frequent desire to make water he had before experienced; but the urethra did not appear to be more open than before the last application of the caustic.

His engagements now prevented his attending for some time to the further cure of his complaint, and he omitted altogether

the use of his bougie for five weeks, in which time the stricture had contracted so much, that for some days I could not pass a bougie even of the smallest size; and when I did, it was with the utmost difficulty. I now applied the eighth part of a grain of the caustic; but the point of the bougie stopped at the stricture, and could not be passed through it, by which it was a little bent. The caustic dissolved in the urethra, but neither occasioned pain, nor produced any irritation; the patient however received no benefit from it. In about a fortnight after, I applied the fourth part of a grain of the caustic upon a bougie of the finest size, taking particular care, that the point of the bougie should pass the stricture; and to enable me to do this with more certainty, I first passed a common bougie of the same size as that armed with caustic. This quantity gave him no pain or uneasiness of any kind. Two days after it's application, he made water better than he had done *for fifteen years* before.

Upon introducing a bougie, I could now readily pass one into the bladder, of at least three sizes larger than could have been done previous to the last application of the caus-

tic. In passing this bougie, I had an indistinct sensation of touching something rough: suspecting that there was a stone, I introduced a common probe to the strictured part, and turning it's point in different directions, felt very distinctly a stone, which for four days I tried in vain by various methods to extract; and from the contracted state of the orifice, it was impossible to introduce instruments proper for the purpose. From feeling the part externally, as well as from examining by the probe, I was persuaded, that the stone was very small. I was afraid of dilating the stricture, by passing a bougie through it into the bladder, lest the stone should be pushed into it*. I

* The stricture was at the exact distance of four inches and three quarters from the external orifice; from which circumstance, the stone, which lay behind the stricture, was within reach of a common probe. On a nice examination of the urethra by a soft bougie, there was found another stricture at three inches and a half, and a third at three inches from the orifice; but neither of these proved any obstruction to the passage of the small bougie to the first mentioned stricture; nor did they require the application of the caustic, as they readily yielded to dilatation by the common bougie. I made a very attentive examination of the urethra both by the common and the soft bougie, but there was not the least vestige of a stricture beyond the one first mentioned.

ventured, however, on the sixth day, from the last mentioned application of the caustic,

I have given the distance of the strictures from the external orifice by measurement, in this and other cases, merely to express that distance in these particular cases. Mr. Home, without doubt, does the same in his cases. He, however, in my opinion, uses the language of measurement with too much precision, respecting those strictures, which are situate a little anterior to the membranous part of the urethra. That the membranous or bulbous parts of the urethra are invariably situate in the same part, in all subjects; and that in adults, the distance from these parts to the neck of the bladder is nearly the same, (a little allowance being made for difference of stature) no one can deny: but the same rule cannot be so exactly followed, with respect to the distance of these parts from the extremity of the penis, the projecting part of which is well known to be frequently of a different length not only in different people, but likewise in the same person, at different times, from circumstances of fear, cold, or other causes. The distance therefore of a stricture in the membranous or bulbous part from the external orifice, might have been expressed as more variable than is done by Mr. Home. In the greater number of cases, a stricture a little anterior to the membranous part may be six and a half or seven inches from the external orifice; or, as Mr. Home subsequently expresses himself, "in almost all the cases which have come under his care, there has been one stricture about seven inches from it."— Yet, for the reasons already assigned, I am convinced, we shall sometimes be deceived with respect to the situation of a stricture, if we do not make more allow-

to pass a bougie as large as the stricture and the orifice of the urethra would admit, to about half an inch beyond the stone; and directed him to wear it as long he was able. He wore it five hours, and upon taking it out, he made water freely, by which the stone was instantly carried forward as far as the orifice of the urethra, in which situation it remained two hours, and was then with some difficulty extracted. The stone was perfectly smooth, and weighed one grain. It may not be improper to observe, that the patient made water nearly as well before the stone was extracted, as afterwards; which proves that the stone had formed itself a bed on one side of the urethra. And as a bougie could be passed through the stricture, after the application of the caustic, and before the extraction of the stone, nearly as large as when it was extracted, the difficulty of passing the bougie, previous to the application of the caustic, could not arise from the stone, but from the stricture.

ance than Mr. Home has done, for the difference in the length of the projecting part of the penis, in different persons.

After the stone came away, the stricture was dilated still more by wearing a bougie for some hours daily; and in a few days the urethra was much wider at this part, than at it's orifice; which I once more attempted gradually to dilate, but it gave him so much pain, and the lips became so much inflamed, that I was under the necessity of desisting from any further attempt of this kind. Indeed I believe it is not practicable by any art whatever, to make it much wider than it now is. As, however, he continues to make water extremely well, it is not perhaps of much moment, whether the orifice of the urethra be further dilated or not.

Case III. A man aged sixty-two, about sixteen years ago had a stricture in the urethra, for which he applied to Mess. Wathen and Ware, and received a cure. He remained perfectly well for eleven years; after which the stream of his urine began to lessen, and other symptoms of a return of the stricture appeared. He applied to me in April 1800. At this time his water came away sometimes in a very fine stream, at other times by drops only, attended with much straining. He passed it frequently in

the day time, and generally eight or nine times in the night; and sometimes he was not able to part with more than a table-spoonful at a time. During the five years which this relapse had subsisted, he had used no other means of relief than the taking a few medicines. At the first trial, I passed a very fine bougie through a stricture five inches and a half from the extremity of the penis*; and by perseverance in the use of this instrument for three or four hours every day, I was enabled to use one of a larger size; till in the course of a fortnight, a bougie, about two small sizes larger than the one first introduced, could be passed. But from this period I could not proceed to the use of larger, the stricture refusing to yield any further to them, although they were used daily for about three weeks longer.

Knowing from the small size of the bougie now used, that the disease would soon return, I applied to the stricture the twelfth part of a grain of lunar caustic, in the manner already described, taking care to

* By an attentive examination with a soft bougie, no other stricture was found in the urethra, but this at five inches and a half.

pass the bougie on which it was used quite into the strictured part. The patient experienced no pain whatever from this application, nor did he even feel much sensation of heat. The same day on which the caustic was applied, he made water with a much larger stream, than he had done for *five years before*. Two days afterwards, I readily passed a bougie about one half larger than those, which had been before used. Some days after this, the bougies were again daily worn for a few hours; and such was the rapidity with which the stricture was now dilated, that in eleven days from the application of the caustic, I passed a very large and full sized bougie into the bladder*, and advised such

* The following circumstance proves, that the stricture was totally destroyed by this single application of the caustic. Having passed one day a large bougie into the bladder, as I was preparing the thread in order to fasten it round the penis, before I could make the loop ready for a knot, the bougie slipped within the orifice of the urethra. I immediately endeavoured to take hold of the end of it, but in vain, as it passed in a moment three or four inches farther within; and had I not prevented it's going farther, by pressing on the perinæum with my fingers, it probably would have gone into the bladder in a very short time. I extracted this bougie with some difficulty with a pair of fine forceps.

to be worn for more than two months, in order to prevent a relapse. The caustic was not repeated, and he is now perfectly well.

Case IV. A man, aged thirty-eight, applied to me in December 1800, and gave the following history of his case.—About fourteen years before the date abovementioned, he contracted a virulent gonorrhœa, for which he used various remedies both internally and topically. After having continued this course for several months, he was told, that he was cured: but a yellow purulent discharge, unattended with pain, remained. This continued four years, at the expiration of which time, slight symptoms of a stricture in the urethra appeared. These, as well as the gleet, increased; and in about two years more, a suppression of urine took place. To empty the bladder, he was obliged to introduce a bougie, for about half a minute, to the extent of six inches within the urethra. This method of reliev-

The muscular action of the urethra in this case appears to have been inverted, and though this accident is a rare circumstance, yet it shews the expediency of not leaving a bougie for a moment in the urethra, without having a thread fastened to it.

ing himself he occasionally practised for eighteen months; sometimes as often as two or three times a day; at other times, but once a week, and in a few instances only, once a month. The suppression of urine then left him. About six months after this period, he applied to a surgeon, who gave him mercury internally, by which the gleet was nearly removed, and he was in all respects better. The symptoms of a stricture, however, returned in about two years afterwards; and the suppression of urine accompanying them, he was obliged to have recourse again to the former method of using the bougie. From this time, till he applied to me, (a period of twelve months) a day seldom elapsed, in which he was not under the necessity of introducing a bougie; sometimes indeed he was obliged to use one two or three times in a day, or a night. So necessary were they to him, that he always carried one in his pocket; being in his walks frequently compelled to retire to a corner of the street to use it. The stream of urine during this period gradually lessened; and it was voided more frequently, more tediously, and with more straining every succeeding

month. The difficulty of passing the bougie into the stricture likewise became greater.

On the morning that he applied to me, he was in great distress, not having been able to pass a bougie through the stricture, though he had bent and broken three in the attempt. He had not voided a drop of water for more than twelve hours. There was a considerable tension and fulness in the region of the bladder; and his pain was extremely great. On the first trial, I passed a very fine bougie into the bladder; but I was certain from the sense of feeling in this operation, that the constricted part was very narrow. On withdrawing the bougie, his urine came away by drops, and now and then in a thread-like stream. In the course of half an hour, he voided a considerable quantity of water, and was much relieved. From this time, I attempted to dilate the urethra by the use of bougies. He wore them for several hours every day. Very little progress, however, was made in the dilatation: at the end of six weeks I could not pass a bougie more than two small sizes larger than that first introduced, nor did it appear, that I had made any advancement

whatever in the dilatation during the last fortnight.

Judging this to be a very proper case for the caustic, I determined to apply it; but previous to it's introduction, I examined the state of the urethra by a soft bougie, and perceived from deep indentations made in it, that there were three considerable strictures; one at seven inches, another at six, and a third at four inches and a half, from the external orifice. The common bougie was likewise made use of with a view of exploring the passage. This passed with so much difficulty through the middle stricture, that I judged it best to apply the caustic to this stricture, before I made any attempt on the others.

Jan. 24, 1801. I applied the twelfth part of a grain of lunar caustic to this stricture. It produced no pain whatever, but merely a slight sensation of heat in the part. On the same day on which the caustic was applied, the patient's water came away without the use of a bougie, and in a larger stream than it had done for many months before. A few days afterwards, I passed a bougie of a size larger than that, which I introduced before the caustic was applied.

At the expiration of a week, the patient began to wear a common bougie daily, by which, in the course of a fortnight, a little farther dilatation was produced. The stricture, however, widened so slowly, that I thought it best to reapply the caustic.

Feb. 18th. I applied to the same stricture the twelfth part of a grain of the caustic; but having glued it upon a bougie a little too large, it seemed not to pass fairly into the stricture; for on withdrawing the bougie, I found it a little bent. The caustic however was dissolved. The patient felt no pain from it's application, and on the same and following days he made water somewhat better than before. As I did not consider, that the caustic on this trial had it's full effect, I judged it better to apply it again at the expiration of a week, before I attempted a further dilatation by the common bougie. And as the stricture at seven inches from the external orifice was very narrow, I concluded upon applying it the next time to that, instead of the stricture at six inches.

Feb. 25th. I applied the eighth part of a grain of the caustic, to the stricture at seven inches distant from the orifice: it gave him no pain. Two days afterwards, he made

water better than he had done for some months before.

March 1st. I passed a bougie of a size larger than was admissible previous to this application of the caustic.

March 3rd. I passed a white bougie in order to ascertain the state of the strictures. It had not a vestige of an indenture upon it.

9th. Since the last application of the caustic, the patient has passed his urine, without having occasion, excepting one day, to use a bougie for that purpose: a thing of which he was for the most part incapable for the last twelve months. His urine passes in a very good stream; he is, however, now using the bougie daily, in order to procure a further dilatation of the strictures.

16th. He is in every respect better. By using a bougie daily, the stream of urine is now larger than it has been for seven years. Since the last report, he has had no occasion to introduce the bougie in order to pass his urine.

The following case and dissection are related with a view of giving a history of

the progress of a strictured urethra, and exhibiting the morbid state of the parts.

Case V. In July 1800, a man, aged fifty-four, applied to me for the cure of a difficulty in making water, arising nearly to a total suppression. He voided it only by drops, and that with great straining. The efforts to part with it came on about every half hour night and day, attended with excruciating pain. He had also a constant dribbling of urine, by which his linen was always wet. These symptoms were attended with a hard, painful, and circumscribed swelling, on the left side of that part of the urethra, which is covered by the scrotum. This swelling was about three inches long, and of the size of a large finger. Upon pressing the tumor, a thin purulent discharge issued from the penis. He had a sallow countenance, a constant thirst, and scarcely any appetite. He had been afflicted with a stricture in the urethra upwards of twelve years. This complaint had been removed more than once by wearing bougies; but for the last two years before I saw him, he had altogether neglected to use them; and became in consequence gradually worse. Upon in-

roducing a bougie into the urethra, there was found to be a stricture a little anterior to the bulb, through which I was not able to pass one of the finest bougies. One was, however, passed every day for a fortnight as far as the strictured part, and retained in that situation as long as the patient could bear it. Even from this mode of using the bougie, he received considerable benefit, as the dribbling of urine entirely left him, and he parted with it with greater ease. At the end of a fortnight, I succeeded in passing a fine bougie into the bladder. From this time, by wearing one daily, the stricture gave way a little, but so slowly, that at the end of a month, I was not able to increase the bougie above one size. He made water however a little better from this small dilatation, but the swelling by the side of the urethra did not diminish; neither his appetite nor his strength returned; nor did he sleep much better than before. From these circumstances, I judged it not safe, to apply the caustic to the stricture, and determined to persevere in the use of the bougie. He declined however in health, and the swelling by the side of the urethra rather increased, and became more tender. At

this period of his complaint, which was about two months from the time I first saw him, he became so weak as not to be able to come to me; and was visited by two surgeons, who advised him to continue the use of the bougie, which he did about a fortnight longer, during which time the stricture was a little more dilated. The swelling by the side of the urethra now increased, became more painful, and at length burst into the cellular texture of the left side of the scrotum. Two days afterwards, the scrotum was much enlarged and inflamed, particularly on the left side, and evidently contained a fluid, which would soon have burst through the skin. The swelling had also extended itself to the penis, and occasioned a phymosis, which prevented his passing the bougie. Under these circumstances, I judged it best, to make an opening into the left side of the scrotum; and on so doing, a quantity of pus mixed with urine was discharged. He soon became easier, and the swelling, both of the penis and the scrotum, was in a few days considerably reduced; the scrotum however soon became sloughy, and sphacelated. He took bark, wine, opium, &c. but his appetite never improved. The

sphacelus increased slowly. In about a fortnight after the operation, he refused to take the bark: on discontinuing this medicine, the sphacelus spread rapidly, and carried him off in a few days.

Upon opening the body, the coats of the bladder were found more than half an inch thick, and it's inner surface much fasciculated. (Fig. 2.) It's internal membrane was every where inflamed. There was a contraction in the urethra nearly an inch in length, situate partly in the bulbous portion of the urethra, and partly anterior to it. The middle part of the stricture, for about half it's length, was almost uniformly contracted, but it gradually widened from this part to each of it's extremities*. Behind the stricture, there was a hole through the inner membrane, large

* It is probable, that the use of the bougie had occasioned a little alteration in the usual appearance of the strictured part of the urethra: but as the greater part of the strictured portion *was uniformly* contracted, without a vestige of any stricture formed by a single fold of it's inner membrane, it is probable, that the case here related was rather peculiar. It certainly differed from the generality of cases of stricture; those which have been examined by dissection have not commonly this appearance.

enough to admit a probe. This hole opened into a ragged but circumscribed cavity on the left side of the urethra, nearly three inches long, and two inches broad. There were also four smaller holes, a little lower down in the same part of the urethra; two of them opened into the cavity already mentioned, and the other two, into a smaller cavity of the same kind on the opposite side of the urethra. From all these apertures it was, that the matter and urine in the tumor issued into the urethra. The cavities communicated with each other by a hole, large enough to admit a goose quill, which passed under this part of the corpus spongiosum, and separated it totally from it's connection with the corpora cavernosa. All the part of the urethra adjoining to this hole, to the extent of two inches, was nearly separated from it's connection with the corpora cavernosa and the adjoining parts. The abscess had extended likewise to the left crus penis, and laid it bare. The inner membrane of all the contracted part of the urethra was harder and firmer, than it is found when in it's natural state; as was also the substance of the corpus spongiosum adjoining. All the contracted portion of the inner mem-

brane was found, as might be expected, perfectly inelastic, when I attempted to stretch it, either in it's longitudinal or transverse direction; but the sound part of the urethra might be stretched to a certain extent either way. On the surface of the contracted portion, there were two or three whitish membranous lines in longitudinal direction, and one or two in a transverse direction; these were a little elevated from the surface of the urethra. The membranous part of the urethra was much enlarged; the right vesicula seminalis was likewise enlarged, and much thicker and harder than in it's natural state; in short, it was nearly scirrhus.

The openings into the urethra appear to have been made by an adjoining abscess, which burst into it, instead of making it's way through the outward integuments. This case, therefore, differs from the generality of cases of fistulæ in perinæo, arising from stricture; the opening through the urethra in these being made by ulceration from the distention of the urine, which begins first on it's inner membrane, and, as Mr. Hunter observes, "is always on that side next to the external surface." When the opening in these cases is made through the urethra,

the urine and pus soon make their way into the loose cellular substance of these parts, and particularly into that of the scrotum; from not being confined to a circumscribed cavity by the adhesive inflammation. In the present case, there was a circumscribed swelling by the side of the urethra, communicating with it's cavity, at least six months before it burst into the cellular membrane of the scrotum, and produced the tumefaction and sphacelus of this part; which circumstance strongly indicates, that the abscess was first formed on the outside of the urethra.

THE END.