

Account of an elastic trochar, constructed on a new principle, for tapping the hydrocele, or watery rupture : by which the operation may be performed at any period of the disease, and with less pain than with the common trochar. With a few words in favor of a larger trochar, on a similar construction, for tapping the abdomen / By John Andree.

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A C C O U N T

O F A N

ELASTIC TROCHAR,

Constructed on a NEW PRINCIPLE,

F O R

TAPPING the HYDROCELE,

O R

W A T E R Y R U P T U R E :

By which the Operation may be performed at any Period of the Disease, and with less Pain than with the Common TROCHAR.

With a few Words in favor of

A L A R G E R T R O C H A R,

On a SIMILAR CONSTRUCTION,

For Tapping the A B D O M E N.

By J O H N A N D R E E,

S U R G E O N to the M A G D A L E N H O S P I T A L,

and the F I N S B U R Y D I S P E N S A R Y.

L O N D O N :

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P R E F A C E.

IT is an acknowledged fact, that modern Surgery, particularly the operative part, is greatly superior to that of the ancients.

For this superiority, however, we are in great measure indebted to the various improvements in the structure, and to the judicious retrenchment of the number, of the Surgical Instruments used by our forefathers. Hence it is, that the Surgeon is enabled to perform his operations in less time, and with more apparent dexterity ;

dexterity; and that the Patient reaps the advantages of suffering less pain, and enjoying a better prospect of a speedy and perfect recovery.

In the following pages, an account is given of an improvement of the Trochar; an instrument more frequently used, than almost any other in Surgery, excepting the Lancet and Scalpel.

I have endeavoured, by apposite quotations from some of our best Authors, to shew the necessity of attempting an improvement in this instrument; and I trust, that, if the inconveniencies attending the use of the common Trochar are remedied by the new one, my time will not have been wholly misapplied.

A further motive for submitting a Description of this Instrument to the public eye, was my idea that it was probable that the principle on which it is formed, may be beneficially applied to some useful subject in Mechanics.

Cary-Street,
May, 1781.

J. A.

A further motive for obtaining a
Detection of this instrument to the
public eye was my idea that it was pro-
bable that the principle on which it is
formed may be beneficially applied to
some other subject in mechanics.

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A C C O U N T

O F A N

ELASTIC TROCHAR.

PREVIOUS to the account of this instrument, it may not be improper to relate the circumstances which excited me to attempt an improvement in the Trochar.

On consulting the best Authors on the Hydrocele, ancient as well as modern, instruments essentially different in their form, and consequently various in their operative effects on the parts, engaged my attention.

B

Serjeant

Sarjeant Wiseman, for example, recommends puncturing the Hydrocele with a Lancet, and then introducing a small Canula into the wound.

Le Dran, in his Surgery, advises the Trochar; and adds, that, in order to perform the puncture by this instrument, it is proper the cystis should be full.

Sharpe, in his Treatise on the Operations of Surgery, advises two methods of tapping. The first is, by making a puncture with a Lancet, and afterwards introducing a Probe into the puncture, to secure the exit of the water, by preventing the inner orifice from slipping away from the outer one: the other is, the common mode of tapping with the Trochar, which he recommends when
the

the Tunica Vaginalis is much thickened, and thoroughly full. The former manner of operating he advises for all common cases.

Heister, in his System of Surgery, remarks on this disease, that “the Lancet was formerly in use; but the Trochar is justly now preferred.”

But Mr. Warner, in his Account of the Testicles, their coats and diseases, published in 1779, recommends the puncture by a common Imposthume-lancet; and adds, “You will *seldom* fail of evacuating the contents of the tumor, in a very expeditious and effectual manner, without the assistance of any other instrument.” He concludes the subject, by adding—“After this mode

mode of operating, it sometimes happens, that a general inflammation attacks the parts, attended with symptoms like those which succeed the radical cure of the Hydrocele."

Palfyn, in his Anatomie Chirurgicale, says, "La cure palliative consiste à faire une ponction avec la Lancette, ou avec un Troicart, & guérit la maladie aux enfans sans récidive, quand elle est récente, qu'on n'y laisse pas amasser des eaux en trop grande quantité, & que le sujet est, à cela près, d'une bonne constitution."*

* In English: The palliative cure consists in making a puncture with the Lancet or Trochar, and cures the disease in children without a return, when it is recent, when the water has not been suffered to collect in too great quantity, and when the subject is in other respects of a good constitution.

Mr. Pott, in his truly scientific Treatise on the Hydrocele, says, “the Trochar is to be preferred to the Lancet, because, by means of its canula, it secures the exit of the whole fluid, without a possibility of prevention; which the lancet cannot.”

With equal facility the practice of other respectable Authors might be added; but, having given the above faithful extracts from the latest and most approved writers on this disease, I shall rest here, judging they will be forcible enough to prove, that the best mode of operating has not yet been ascertained.

But a few cursory observations on each of these Authors, appear in some measure

sure necessary to the further illustration of the subject.

To take them then in order. First, Wiseman's method has the inconvenience of rendering two instruments necessary, and of being attended with great difficulty, in many instances, of getting the canula into the wound made by the lancet. Besides which, from the histories of cases given in his Treatise on the Hydrocele, it is evident, that this method is more liable, than the puncture by the Trochar, to be followed by a general inflammation of the parts, which, though it may happen to cure the disease radically, must be regarded as an objection to this method, from its being productive of greater violence than is expected by the Patient, or designed by the Surgeon.

Le Dran's

Le Dran's method is, by the common Trochar, and therefore needs no comment here: it may, however, be necessary to attend to his remark, that the cystis must be *full*, in order to admit of the puncture.

Sharpe's puncture by the lancet, and his introduction of the probe instead of the canula, is certainly no improvement on Wiseman's operation; for the canula is clearly preferable to the probe. He leaves unsupported by any kind of reasoning, his recommendation of the puncture by the Trochar, in those cases of the Hydrocele in which the tunica vaginalis is grown thick and tough: nor can I suggest any; for it should rather appear, that the toughness of the tunica vaginalis might render the puncture by
the

the Trochar more liable to wound the testicle, than that by the lancet.

On Heister no comment seems requisite:

Mr. Warner's method is open to the objection, first, of being more likely to produce a general inflammation of the tunica vaginalis, than the puncture by the Trochar; and also, that the wound made by this instrument is larger than is necessary for the mere evacuation of so thin a fluid as the limpid water contained in the Hydrocele.

Palfyn allows the indiscriminate use of the Lancet or Trochar, but adds, (which is much to my purpose) that early tapping, in children, cures the disease without a return.

The

The extract from Mr. Pott's Treatise is so explicit in itself, as to need no comment.

In regard to the advantage proposed by this instrument, viz. that of tapping at an early period of the disease, it promises these two desirable consequences; first, the accommodation of the patient, when the tumor is become inconvenient from its bulk, or irksome from its appearance; and, secondly, the probability of thereby preventing a return of the tumor.

The first object, being that of convenience only, requires no further remark, than that the probable consequence will, I hope, be allowed me, on an impartial

comparifon between my Inftrument and the common Trochar.

With refpect to the probability of preventing a return of the tumor by the early ufe of the Trochar, and its being advifeable in a furgical point of view, I fhall beg leave to give an extract from Mr. Pott's Treatife on the Hydrocele, as coinciding exactly with my ideas.

“ When there is a fufficient quantity of fluid to keep the Tefticle from the inftrument, there can be no reafon for deferring the difcharge ; and the fingle point on which this argument ought to reft, is this : ‘ Whether the abforbent veffels, by which the extravafation fhould be prevented, are more likely to reafume their office, while the vaginal coat

is

is thin, and has suffered but little violence from distension; or after it has been stretched and distended to ten, or perhaps twenty times its natural capacity, and by such distension is (like all other membranes) become thick, hard, and tough.' For my own part, I think the probability so much more on the side of the former, that I should never hesitate a moment about letting out the water, as soon as I found that the puncture could be made securely: and, from what has happened within the small circle of my own experience, I am inclined to believe, that if it was performed more early than it generally is, it might sometimes prevent the return of the disease."

I was farther induced to pursue my idea of an improvement in the Hydro-

cele Trochar, from my own experience in two singular cases. In the first I was foiled in discharging the water from a Hydrocele with the lancet, by the outer orifice slipping away from the inner one; by which awkward circumstance, part of the water remained within, and the operation, of course, was left incomplete.—In the other case, the Hydrocele arose from repeated returns of a Hernia Humoralis, or swelled Testicle, which continuing somewhat enlarged and tender, the Hydrocele became painful from the incumbrance of the water, before a sufficient quantity was collected to admit with safety of the puncture by the common Trochar.

These cases presented me with an evident defect in the general modes of practice :

tice: for my patient's other concerns would not admit of the confinement necessary for a radical cure; nor was the wished-for relief to be safely obtained from the use of the common Trochar, though the pain occasioned by the pressure of the collected fluid, required the assistance of Surgery, both for the patient's ease, and the future safety of the Testicle.

But, to pursue the subject of tapping at a very early stage of the disease, the probable advantages of which have already been mentioned:—The rule of Surgery has ever been, not to tap till there is such a quantity of water, as shall keep the Tunica Vaginalis so tense, or well stretched, as to admit of the puncture by the Trochar, without danger of wounding

wounding the Testicle.—By many Authors, the quantity of water to be collected is fixed at a pint, with less than which we are forbid to tap, for the reasons last recited.* But this difficulty being, I trust, effectually obviated by the improvement, here treated of, in the Trochar, these objections to early tapping must fall to the ground; for the new Trochar may be used with safety, as soon as there is a depth of water equal to the cutting part of the instrument, and a very small portion of the canula.†

Before

* I tapped a Hydrocele, (for the first time of its water being discharged) at the Finsbury Dispensary, April the 9th, 1781, in presence of my ingenious friend Mr. Holt, jun. Surgeon, and Mr. Austin, Apothecary; the contents of which were only six ounces.

† A depth of about half an inch will suffice; which depth three or four ounces of water will afford.

Before this period of the disease, it will rarely be possible to discover it to be a Hydrocele: nor will the puncture ever be found adviseable, or necessary, in any of its earlier stages. Now, if there are cases, in which letting out the water before it is collected in so great a quantity as has been hitherto judged necessary for its safe performance, would alleviate a patient's pain (in however small a degree) and also give him a better chance of escaping the return of this troublesome complaint; these considerations will, I am sure, separately as well as conjointly, be admitted as sufficient reasons for giving a preference to my instrument, if it is allowed to be adequate to the end proposed.

That the use of the new Trochar
will

will be attended with less pain than the common instrument, is a point, I think, not to be questioned, when it is considered that the wound made with the former is, as I have proved by repeated experiments, less* than that made with the common Trochar, and that its canula enters without the least degree of force. The principal advantage to be derived from this last circumstance is, that the use of this Trochar will be perfectly safe in an early state of the disease, of which we have already had occasion to speak more fully. With regard to
the

* By experiments, and by the most exact measurements, I find the orifice made by this instrument to be about two thirds of the size of that made by the common Trochar; and yet the water flows through it freely, in a moderate stream.

the canula of this Instrument passing without any difficulty, it must indeed be allowed to render the puncture made with it safer than that by the common Trochar, as this circumstance entirely secures the testicle against the danger of being injured by its stilet; of which there is confessedly some degree of hazard attending the use of the common Trochar; in those cases at least in which the vaginal coat is become so very tough and thick, as not to be penetrated without much force in using that instrument, which is then apt to plunge deeper into the part than was intended. This, I imagine, is the circumstance alluded to by the late Mr. Sharpe, when he recommends, in such cases, the puncture by Lancet, in preference to that by the Trochar.

But, to conclude these remarks, I beg leave to add, that the new Trochar appears to me really to deserve the preference over the common Trochar, in every point of view, in which I have here set it forth; not only from the plausibility of the reasons I have advanced in its behalf (which in theory, I presume, will be readily admitted) but more especially because I have experimental knowledge of their justness, from the frequent use I have made of the Instrument, as well in my private practice, as in that in which I am engaged at the Finsbury Dispensary.

AN Instrument on the same construction, of a larger size, will also, I am persuaded, be found preferable to the instrument at present used in performing the radical cure for the Hydrocele by Seton; both because it would pass more easily, and because it might be used at an early period of the disease, which the other cannot, from its size being such as to require a considerable degree of resistance to admit of its use with safety.

On the large Trochar.

A SIMILAR TROCHAR, of a larger size, may also be used for the Ascites, or Dropsy of the Belly, and will be found to have the same advantages over the common one, viz. that it will enter with more ease to the Operator, and less pain to the Patient; and that it may be used with safety in an early state of the disease.

*Early tapping in the Abdominal
Dropsy

* In Sharpe's Operations of Surgery, describing the Trochar for the Dropsy of the Belly, are these words; "Great care should be taken, that the Perforator should exactly fill up the cavity of the Canula; for, unless the extremity of the Canula lies quite close and smooth on the Perforator, the introduction of it
into

Dropfy has been strongly recommended by some of the best Physicians, on this principle, that when the water cannot be taken up by the absorbent vessels, and carried off by the natural outlets, it is likely to injure the bowels greatly, by keeping them constantly macerated in water. The reasonableness of this theory struck me so forcibly, that I could not but entirely acquiesce in it, without the least hesitation.

But, such early tapping has not been hitherto considered as a safe operation; a
confi-

into the Abdomen will be very painful: to make it slip in more easily, the edge of the extremity of the Canula should be thin and sharp: and I would recommend that the Canula be Steel; for the Silver one, being of too soft a metal, becomes jagged, or bruised, at its extremity, with very little use."

considerable quantity of water being judged necessary to yield sufficient resistance to the instrument, to keep it from wounding the viscera. This exception however may certainly be obviated by the use of this Trochar, since, as it may be introduced without force, a very small quantity of water will suffice to keep its point from doing mischief.

But another kind of Dropsy (of which I do not recollect to have met with an instance in any writer on this disease) sometimes occurs, in which early tapping becomes a most desirable object,* in order

* In the Anasarca, or Dropsy of the Cellular Membrane, it is likewise often necessary to procure the discharge of the water by a surgical operation, described

order to relieve the patient from the pain occasioned by the water, before it is accumulated in sufficient quantity to render the use of the common Trochar safe, or warrantable.

The following case will illustrate my meaning, and may warrant my suggestions.

described by Authors under the title of Scarifying, which consists in making simple incisions, of two or three inches in length, and is usually done on the legs. This operation, simple as it is, I have known to be frequently fatal to the Patient, from the wound's first inflaming, and then sphacelating; an instance of which came within my knowledge only two months since. These disagreeable consequences may, however, I think, be avoided, by totally rejecting this operation, and substituting that of making small punctures with the point of a common Lancet, or the Scarifying Instrument; an operation which I have performed often in each way, and seen it frequently done by others; and have always known it procure the discharge of the water, equally well as the other operation, without ever being followed by any alarming symptoms.

gestions.—Mr. F. of Wimpole-Street, Cavendish-Square, was afflicted with a pain at his Stomach, which had been gradually increasing for two years; and when I first visited him, he was troubled with constant sickness, and inclination to vomit after taking the smallest quantity of animal food. This was on the 16th of last September, when I met in consultation with my learned friend Dr. De Valangin, and Mr. Rhue his Apothecary. After hearing the particulars of his case, I was desired to examine the Belly, which he said was much and suddenly increased in size. A degree of undulation was perceptible by the touch. The quantity of fluid, however, was not sufficient to warrant the use of the common Trochar; but the Patient most earnestly desired to be tapped, as the great and hourly increase

of

of pain, from the accumulating water, rendered life otherwise insupportable. In compliance with his request, and by the consent of the Physician and Mr. Rhue, I deviated so far from common practice, as to tap him immediately with the common Imposthume-Lancet, and then introduced the canula of a large Trochar into the puncture; which operation I repeated upon him three several times. He filled remarkably fast; for the second operation was performed on the 4th of October, and I tapped him again on the 15th. The late Dr. Fothergill also visited this Gentleman, and was acquainted with the above circumstances.*

E

I judged

* On inspection of the parts, after death, I found this Dropsy was caused by a Schirrus of that part of the
Omentum

I judged it proper to relate this case, in order to support what I have suggested with respect to the preferableness of this kind of Trochar for the Ascites; for, though the method I pursued, succeeded well, yet it was not without some difficulty to myself, and pain to the patient, that I could get the canula into the wound, especially in the last operation; both which inconveniences would have been effectually obviated by the use of the new Instrument.

Omentum which is attached to the Stomach. The water had been first collected between the two laminæ of the Omentum, which it had burst through, and was diffused into the cavity of the Abdomen. This circumstance happened a few days before the first operation; and the Patient was enabled to speak of it with certainty, from having felt it so very plainly.

DESCRIPTION

O F T H E

ELASTIC TROCHAR.

THIS instrument consists of two parts; the one is called the Stilet, or Perforator, the other the Canula.

The whole of the Stilet, excepting its point, is contained within the Canula, which is flat, but somewhat convex on each surface, and has two sharp edges.

The Canula (a tube) is formed of two pieces of well-tempered elastic steel, which are so accurately fitted together at their edges, as to form a complete Canula,
and

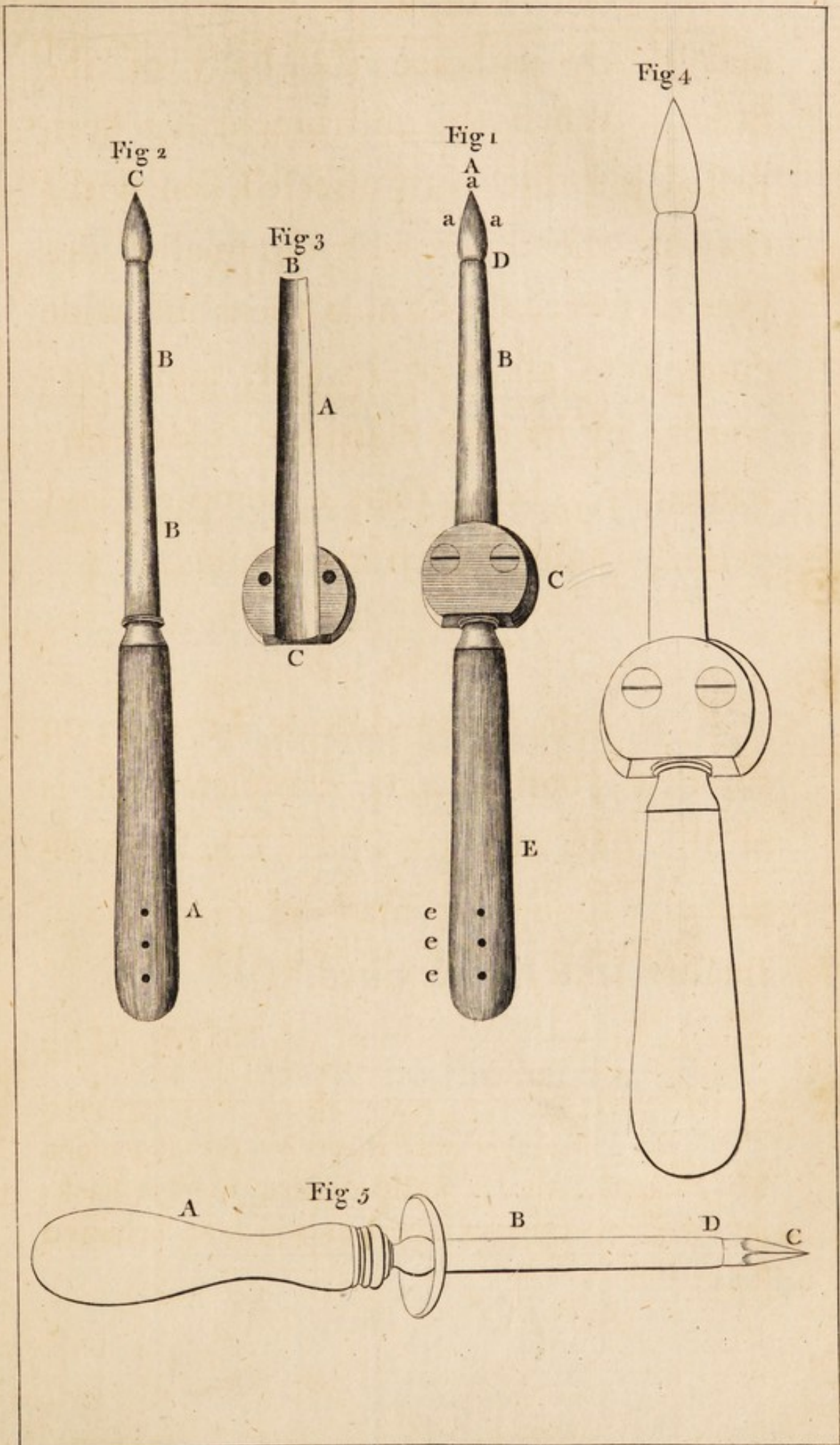
and closely embrace the body of the Stilet. When the instrument has been passed into the part affected, on withdrawing the Stilet with the smallest degree of force, the Canula opens just wide enough to allow of its exit, and afterwards, by its own elasticity, closes immediately ; being then a complete and perfect Canula, open at each end.

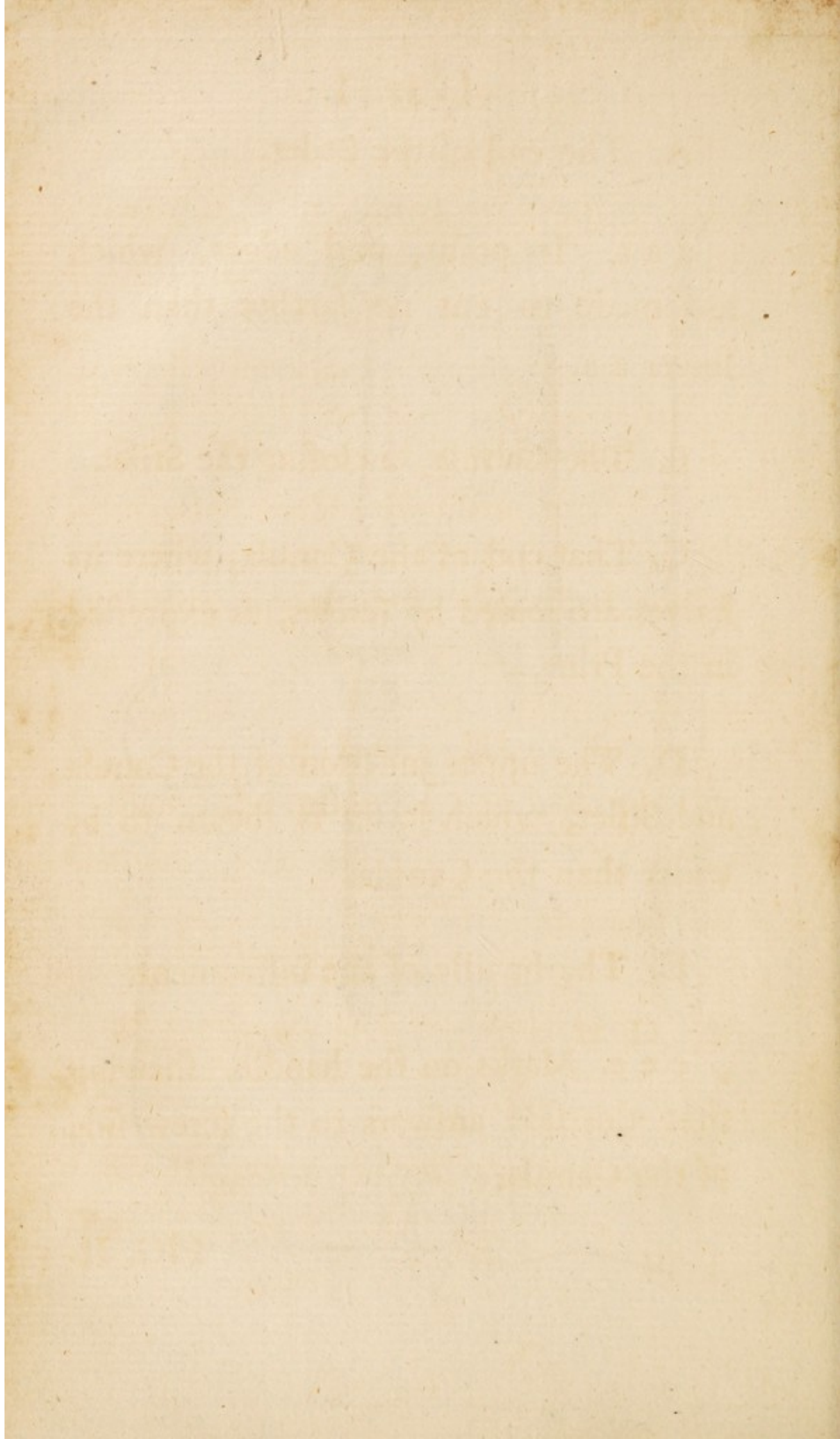
F I G. I.

Represents the Hydrocele Trochar, on the new construction, complete : it is of the size of that which I have made use of, though it may be made on a smaller scale, if required.*

A. The

* This instrument was made by the ingenious Mr. Savigny, who is justly entitled to my thanks for the very particular attention which he bestowed on its construction.





A. The end of the Stilet.

a a a. Its point, and edges, which are made to cut no farther than the lower a a.

B. The Canula, inclofing the Stilet.

C. That end of the Canula, where its halves are joined by fcrews, as expreffed in the Print.

D. The upper junction of the Canula and Stilet, which latter is fhewn to be wider than the Canula.

E. The handle of the instrument.

e e e. Marks on the handle, fhewing that this fide answers to the fcrew fide of the Canula.

FIG. II.

F I G. II.

Represents the Stilet, complete, out
the Canula.

A. Its handle.

B B. That part of it which in Fig. I.
is included within the Canula.

C. Its upper end, described under
Fig. I.

F I G. III.

Shews the inside of one half of the
Canula.

A. Its middle part.

B. Its upper end, as seen at D. in
Fig. I.

C. Its other extremity, seen at the
same letter in Fig. I.

From

From B to C. represents its inside, grooved so as to form the half of a tube.

F I G. IV.

Is the outline of the large Trochar, of the proper dimensions for tapping the Abdomen, in the Ascites, or common Dropsy of the Belly. There are no references to this figure, as it is in every respect, size only excepted, the same as Fig. I.

A larger size is necessary for discharging the contents of the Gelatinous Dropsy. They may be made of any dimensions, and brought nearer to a circular form, when designed for that kind of Dropsy.

FIG.

F I G. V.

Is the outline of the common Hydrocele Trochar.

A. Its handle.

B. The Canula, which is a small cylinder, formed of one piece of silver.

C. The end of the Stilet, which is of steel, is pointed, and has three cutting edges, as expressed in the print.

D. The anterior junction of the Canula and Stilet, where the Canula is seen to be larger than the Stilet ; whence it is evident, that when the Stilet is introduced as far as to this extremity of the Canula, a second degree of force is requisite to pass it into the smaller wound
made

made by the Stilet. This latter circumstance, which has ever been an acknowledged imperfection in the Trochar, is effectually remedied by the improvements proposed, as I trust will appear on a comparison of this part of the instrument with the corresponding part of the new one, marked also D. at Fig. I.

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