

done. Many obstinate cases of *cough* probably have their seat in the larynx, which we are sometimes disposed to refer to the lungs. I lately saw a gentleman, about 50 years of age, who was affected with the most violent cough I ever met with. It occurred with greatest violence in the night time, when it frequently kept him for an hour or two at a time in one continued paroxysm of the most violent convulsive coughing; his features became turgid; he nearly lost his recollection; and there seemed every reason to fear that the paroxysm would terminate either by suffocation or apoplexy. The disease had continued about a fortnight, and the most active remedies, large and repeated blood-letting, blistering, opiates, and antispasmodics, had not made the slightest impression upon it. His pulse and breathing were natural; he had a peculiar hoarseness or huskiness of his voice; and, upon inquiry, he mentioned that the paroxysms were preceded by a particular sense of irritation about the larynx. The application of six leeches to the region of the larynx broke the force of this frightful disease, and a second application of the same remedy completely removed it.

It may be worthy of investigation, whether whooping-cough has any relation to the larynx. Some cases also, which have been considered as consumptive, have afterwards turned out to be connected with disease in that organ; and, upon the whole, there seems to be much room for extensive observation, with the view of introducing precision and accuracy into the pathology of cough.

### XIII.

*Description of an Instrument for destroying Urinary Calculi within the Bladder; with Remarks on the practicability of its employment in the living subject, and the probability of success.*

By Mr JOHN ELDERTON, General Infirmary, Northampton  
(With an Engraving.)

THERE is now before me a model of the instrument I am about to describe, which, as a whole, bears a strong resemblance to a common, full-sized catheter, straight as far as the curve. The annexed representation will convey a pretty accurate idea of its form, both in the front and lateral view.

That part which forms the curve, (a, b, fig. 1.) consists of two blades, (c, c, fig. 2.) placed laterally to each other, and



which, when in contact, present a solid, round form, (c, fig. 1.) about the size of a large bougie. At that extremity of the curve answering to the point of the catheter, (a,) the blades are connected by a joint; one blade being received within the other, and presenting this united and uniform smooth point. At an equal distance, (c, fig. 1.) between the commencement of the curve (b,) and its extremity, (a,) a second joint connects the other half (c, b,) of the same side. This structure is common to both the right and left blade. At the commencement of the curve, (b,) there is another joint, (d,) uniting the two blades, which are here fixed to a hollow metallic tube, made to slide readily within an outer canula, (b, g, fig. 1.) A small steel spring, (f, fig. 2.) placed within the blades, at their extreme point, expands them, and they then present an opening of an ovate shape, (a, c, b, c, fig. 2.) The blades may be regularly and firmly closed, by simply drawing the inner tube within the outer one, while, by pushing down the second tube, the blades may be expanded as before. When thus expanded, they constitute a pair of forceps, (c, c, fig. 2.) well adapted, from their shape, capacity, and strength with which the blades may be closed, to grasp, and hold firmly, a moderately-sized calculus.

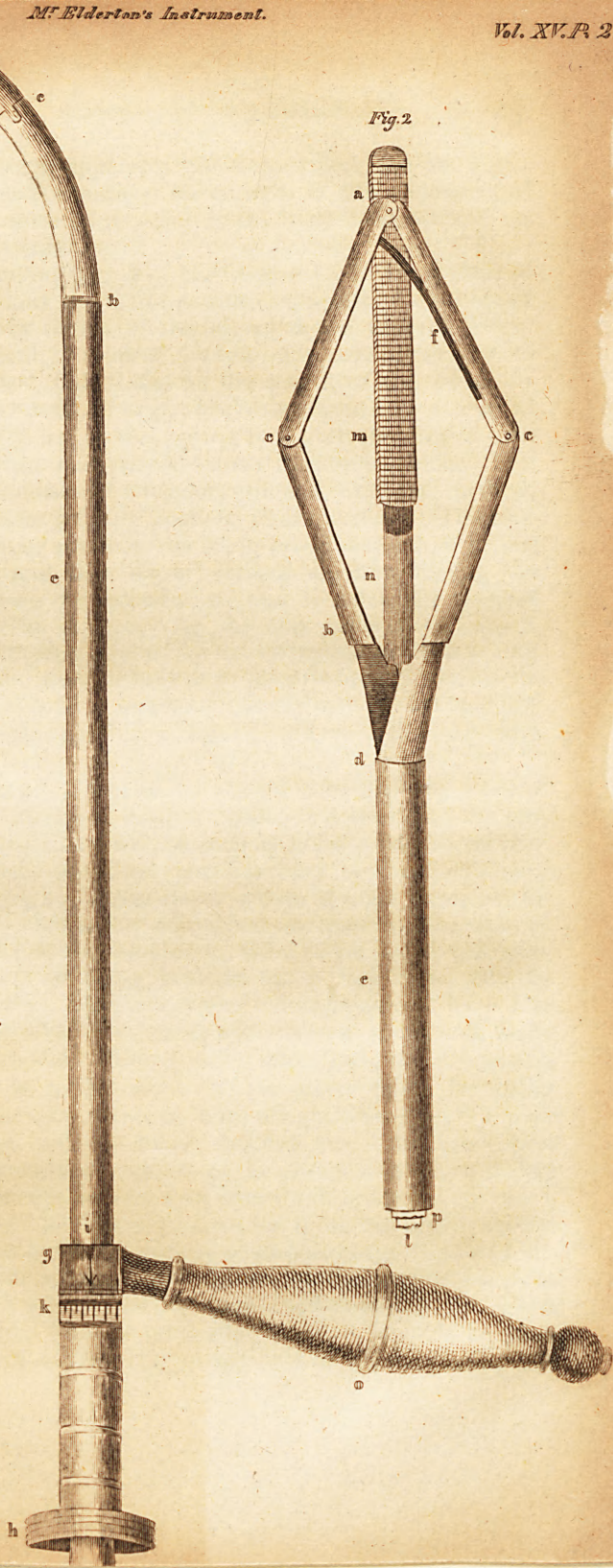
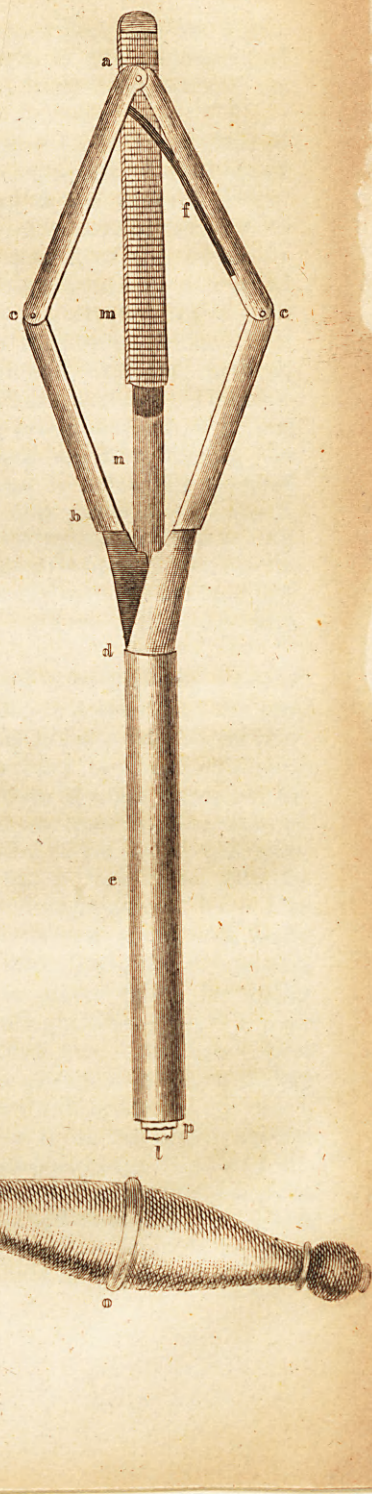
To the top of the tube (g, fig. 1. corresponding to that part of the catheter which is grasped by the hand while introducing it) there is attached a moveable apparatus, having a spiral groove on the inside, made to receive a small stud fixed into the second (inner) tube. By turning the above apparatus backwards or forwards with the finger and thumb, the second tube is made to slide upwards or downwards within the outer canula. When the inner tube slides upwards, the blades are of necessity closed, (fig. 1.) by being partially withdrawn within the outer canula, which thus compresses and confines them. When, on the other hand, the second tube is caused to slide downwards, the blades are necessarily protruded, and, being no longer confined by the outer tube, they are expanded into the ovate shape, (a, c, d, fig. 2.) mentioned above, by means of the spring (f, fig. 2.) formerly described, at their point; so that, with the assistance of a mark on the outer tube, (i, fig. 1.) and an even division by lines (k, fig. 1.) of the circumference of the apparatus, (k,) which turns, the diameter (c, c, fig. 2.) of the expanded blades within the bladder is ascertained, and, consequently, the size of the calculus grasped by them, upon which we have to operate. Thus, then, we have an instrument, shaped like a catheter, perfectly smooth throughout its whole surface, readily passing through a healthy adult urethra into the bladder, where,



*Fig. 3*



*Fig. 2*





by turning the screw-apparatus above described, the curve expands, and forms the forceps, the capacity of the expansion of which will be known by referring to the index-lines marked on the top of the instrument.

The only remaining part of the instrument to be spoken of is the *rasp* for filing down the calculus supposed to be secured in the bladder, by means of the forceps shown above. There will be no difficulty in understanding this part of the instrument. To a steel rod, (l, fig. 3.) the length of the whole instrument, is screwed a rasp, (m,) supported on a curved spring, (n.) The use of this spring is to keep the rasp in constant contact with, and pressure upon the stone; which, how much soever diminished by friction, will still, from this method, have the rasp acting firmly upon its under surface. The elasticity of the spring admits of its being brought into a right line with the rod, and thus allows, without any impediment, the rasp to pass down the second tube, and to come out between the blades of the forceps, (fig. 2.) and *beneath* the stone, to which it is directly applied by the spring on which it is supported. All that need be said as to the principle of the instrument's operation is, that we retain it firmly with the left hand, by means of a metallic handle, (o, fig. 1.) and work the rasp with the right.

I will farther add, that as the second tube will only allow of a rasp to pass inferior to its own diameter, it is evident the section made on the stone will be such as to leave two lateral portions untouched; but these portions may be also filed down, by merely having two other rasps, whose springs shoot out laterally, so as to expose the untouched surfaces to the action of the instrument; at the same time, these rasps, being well tempered, will admit of being brought into a right line, like the central rasp before described. For convenience, I have also had the rod on which the spring with the rasp is screwed, made small enough to slide within a tube, into which, by means of a similar apparatus to that affixed to the outer tube, the spring may be more readily caused to form a right line, than if it were pushed through with the hand; besides, this contrivance presents the advantage of regulating the distance to which it may be desirable for the rasp to act within the bladder.

REMARKS.—The first objection likely to be urged against this instrument is the complexity of its structure; but this complexity is rather apparent than real;—for the mechanical principle on which its different parts act is sufficiently simple. From a model, or even from an intelligible diagram, it could be made by an artist of moderate skill in any part of the kingdom; and



when once made of good steel, it is not apt to become out of order, or to want repair. The whole apparatus may be comprised within the length and thickness of a large-sized catheter. Its large size, instead of operating as an objection, will facilitate its introduction, as its point will not catch the folds or lacunæ of the urethra, which a small instrument would be apt to do.

The difficulty of seizing the stone with these forceps may be started as another objection to the instrument; but this difficulty will not occur, I apprehend, to an operator of moderate dexterity. The instrument should never be used except when the bladder is pretty considerably distended with urine. The patient should be placed in the recumbent posture, and the instrument used as a sound to ascertain the situation of the stone; which, under these circumstances, will be generally found in the posterior part of the bladder, nigh the fundus. Having felt it with the instrument, the blades are to be expanded by the spiral screw at the top of the instrument, and when we have laid hold of the stone, it is to be firmly secured, by turning the screw in the opposite direction. The diameter of the body grasped by the blades may be ascertained by the index before mentioned.

The stone being thus laid hold of, the operator is now to introduce the rasp along the cavity of the second tube; but before beginning to work it to and fro, for the purpose of grinding down the stone, it will be prudent to take the precaution of bringing the concave part of the instrument close up under the arch of the pubes; it should be retained steadily in that situation, (in the same manner as the staff in the common operation of lithotomy,) in order to prevent all risk of hurting the posterior part of the bladder by the successive strokes of the rasp.

It will scarcely be objected that the teeth of the file are likely to be clogged up, and made inefficient by the dust of the calculus; in as much as the body of urine in the bladder will at each stroke wash the filings away. But if this were not found to be the case, the rasp might be made with little holes, like a nutmeg-grater, by which means the dust will pass through.

Upon the whole, I conceive the ultimate operation of the instrument will be, to reduce the calculus to such a state of comminution, that the sand, and even the minute portions that remain after the successive applications of the file, may be voided through the urethra along with the urine.

I am willing to flatter myself, that such members of the profession, as may have the opportunity, will give this instrument a fair trial.

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