MEDICAL COLLECTORS ASSOCIATION

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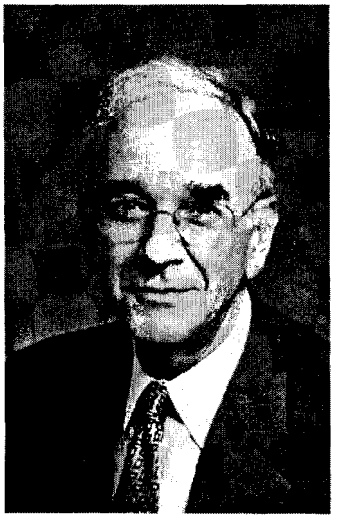
**Newsletter**
**December, 2001**

Although some of you may be receiving this MCA Newsletter in the year 2002, it is officially the final Newsletter for 2001. Although the attendance at our last meeting in Mobile, Alabama was relatively small, it was overall a very successful and enjoyable event. Dr. Sam Eichold has done a remarkable job in creating a small medical history museum which is currently housed in the hospital in Mobile. He has a number of very interesting devices including a sphygmometer which I have been looking for for over 20 years and have been unable to find. During our visit we had a lovely lunch at Dr. Eichold's house and a tour of the future building that will house the Museum. Dr. Eichold has acquired a historic building in downtown Mobile, which will make an ideal site for the Medical Museum. Our thanks to him for his gracious hospitality.

Because of my concern about the small attendance at the MCA meeting, I sent out a survey to all of you this fall. I would like to thank those of you who responded and am gratified at the participation. Enclosed with this Newsletter is a compilation of the responses. Based largely on those responses, I have scheduled the next meeting of the Medical Collectors Association to take place on November 8th and 9th of the year 2002. This appears to be a time of the year that would be reasonably convenient for the majority of members. The majority voted for October but that turned out to be impossible. I hope November will serve as a fair compromise. We are very fortunate that through the efforts of Dr. Erwin Rugendorff and the very generous support of Dr. Rainer Engel that we will be able to hold our meeting at the William Didusch Museum of the American Urological Association. The Museum is situated in Baltimore, Maryland, which presents a wonderfully convenient and interesting site with many local attractions besides the meeting site. You will all receive more detailed information of the program as we come closer to the meeting date. In the meantime, please put this date aside so that hopefully we can achieve a record attendance.



For your interest, I have included a brochure describing the Didusch Museum with this Newsletter. If any of you would like to present a lecture at the meeting, please let me know.

Also enclosed with this Newsletter, you will find your renewal form for the year 2002. Please fill this out and return it to me promptly. Note that this Newsletter is for the year 2001. You will receive two additional Newsletters in the year 2002 and any relevant interim mailings.

I have followed the usual format for the Newsletter with a few minor changes. This time I have included two "Can You Identify" items. One is an item which is held in the Sam Eichold Museum in Mobile. It is a sphygmomanometer which is said to be Oliver's but is somewhat different in form. I am not sure if this is a French version of the English device or a different type that was invented in France. I have no reference material on this and if anyone can identify this item with certainty, the Museum would certainly appreciate it. The other "Can You Identify" device relates to an army medical chest, which I donated recently to the Museum of the Medical History of the Civil War. Pictures the supply pamphlet which was contained in the chest and of the chest and some of its contents are included in the Newsletter. At the time I brought the chest to the museum there was a conference on Civil War Medicine in progress. The various experts who were assembled examined the chest, and everyone agreed that it was an authentic Civil War Hospital Stewards Chest from about of 1863. No one could provide any firm references showing illustrations of this type chest, although several similar chests have been pictured in texts and are in the possession of the museum. If anyone has any supporting literature about this type of medical chest, I would certainly appreciate receiving it.

The patent which I have chosen to include with this Newsletter is Joseph Guild's patent for an improvement in medicine packages.

Vapor therapy at that time was very popular.

The contribution from Bill Helfand this time is the great French Remedy. This cure-all is presented with the dramatic flare that only the French seem to be able to achieve.

All of us who collect medical instruments of course, are interested in sterilization and its impact on instrument design. It never ceases to amaze me that although Lister presented his work in 1867, it was largely ignored through most of the 19th Century. Any review of a collection of surgical instrument catalogues from that period shows clearly that most of these instruments were not susceptible to proper antiseptic techniques. Bob Kravetz has sent me a series of vignettes which he has prepared for The American Journal of Gastroenterology and which he has graciously consented for us to include in this Newsletter. The Carbolic Acid Spray Device of the type invented by Lister is shown in the vignette which is included with this Newsletter.

The article I have chosen to copy for your interest is from Henry Bigelow's book on Lithotrity. The urologic theme honors our forthcoming meeting at the Didusch Museum. Lithotriptors are a great addition to any collection.

There are a number of inserts with this issue. Peter D'Onofrio has asked me once again to announce the upcoming meeting of the Society of Civil War Surgeons. Unfortunately, the deadline for abstracts was December 15th and this Newsletter is being sent out after that time, but the material here should be of interest to many of you especially to those who have a particular interest in Civil War Medicine. I have included a letter from Uwe Breker indicating that his Technical Antiques Auctions is now collaborating with e-Bay to make the auction more readily available to people all over the world. The New York Academy of Medicine has graciously allowed us to enclose copies of their Rare Book Room Newsletter, which always has articles of great interest.

My book on the history of the stethoscope has been published. The order forms are included with the Newsletter and the publisher has graciously consented to a 33% discount for members of the MCA. Please use the code 897AP to activate the discount on your order and mark the form "MCA member".

Also enclosed are several copies of the Newsletter from the National Museum of Health and Medicine of the Armed Forces Institute of Pathology. This Newsletter also has a number of articles which should be of interest to many of you.

Please send in your membership renewals. Please send in any material that you think would be of interest to the membership. Please come to the next MCA meeting and finally, please have a very healthy and happy New Year.

Sincerely,

M. Donald Blaufox, M.D., Ph.D.

# CAN YOU IDENTIFY THIS?

Submitted By: Sam Eichold Museum
Material: Sphygmomanometer Maker: Spengler Date: 1910
Presumed Use: Blood Pressure Measurment
I think this is a:



From:

Please Return to M. Donald Blaufox, M.D., Ph.D.

# CAN YOU IDENTIFY THIS?

**Submitted By:** M. Donald Blaufox, M.D., Ph.D. **Material: Wood & Tarred Cloth**
**Maker: Unknown** **Date:** 1863

**Description:** Army Medical Chest

**I think this is a:**

From:

Please Return to M. Donald Blaufox, M.D., Ph.D.


# Historical Images of the Drug Market—XXVI

*by William H. Helfand*

WHILE some sources state that the Eau de Melisse des Carmes dates from the fourteenth century, it is more probable that this long-lived product was developed by the inhabitants of a monastery near the Luxembourg Gardens in Paris some 300 years later. Taken as an antispasmodic and for a host of other maladies, it quickly enjoyed great popularity and is still being sold. When the Revolution in 1789 suppressed religious orders and confiscated their property, the dispossessed Parisian Carmelites formed a commercial organization to exploit their chief asset. Rights to the product later passed to one Amedée Boyer, who continued to expand its market overseas. The advertisement for "The Great French Remedy, Boyer's Carmelite Melisse Cordial," appeared in Comstock Brothers 1878 Almanac, where it shared space with other well known proprietaries including Ayer's Sarsaparilla, Perry Davis' Vegetable Pain Killer, and Udolpho Wolfe's Aromatic Schiedam Schnapps. While numerous products over the years have used the name "Melisse de Carmes," each proclaiming to be authentic, it is probable that each agreed only in containing a certain amount of the leaves of Melissa officinalis. We find this herb used more frequently today in fish sauces, stuffing or, because of its piquant taste, as a substitute for lemons.

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## A LOOK BACK

# Antiseptic Technique

Anesthesia was a milestone in preventing pain from surgical procedures, particularly amputations and gastrointestinal surgery. However, many patients succumbed to postoperative infections. Joseph Lister, a Glasgow Royal Infirmary surgeon, introduced antiseptic technique into the operating room. After trying many chemicals, he discovered that carbolic acid used as a spray could disinfect air and as a liquid for wounds. Pictured here is a carbolic acid spray device similar to the one used by Lister.

By insisting upon meticulous disinfection of wounds, instruments, and the operating theater, he greatly contributed to postoperative survival. Lister's work was published in the *Lancet* in 1867, but many surgeons did not accept his theory at that time. He revolutionized the practice of surgery and medicine. Hospitals were turned "from houses of torture and death" to "houses of healing and cure."

*Robert E. Kravetz, M.D.*
*Chairman, Archives Committee*
*American College of Gastroenterology*

# UNITED STATES PATENT OFFICE.

JOSEPH H. GUILD, OF RUPERT, VERMONT.

## IMPROVEMENT IN MEDICINE-PACKAGES.

Specification forming part of Letters Patent No. **216,182**, dated June 3, 1879; application filed March 31, 1879.

*To all whom it may concern:*

Be it known that I, JOSEPH H. GUILD, of Rupert, in the county of Bennington and State of Vermont, have invented certain new and useful Improvements in Medicine-Packages; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

My invention relates to packages for holding medicines; and consists in providing the package or casing with a mouth at the upper end and a removable screw-cap, so as to form an air-tight medicine-package, and protect the contents, during transportation and use, from air or moisture.

It further consists in graduating the screw-cap in size, so that it will hold one dose of the medical preparation to be inclosed in the package, and in providing the package, at its upper end, with an outside cover, having a compartment inside, to hold the preparation for burning, when such is desired, and another compartment for holding a stirrer and other small articles used in connection with the medicine, as hereinafter shown and described.

In the accompanying drawings, Figure 1 is a side elevation, partly in section. Fig. 2 is a plan of the outside cover inverted. Fig. 3 shows, in perspective, the outside cover detached.

A designates the main casing of the package, usually made of sheet metal, and having a mouth at the upper end formed with a thread to receive a screw-cap, *a*, so that the package is air-tight when closed. The said cap *a* is usually made of a size to hold one dose of the medical preparation contained in the package, and is used for measuring it.

B indicates the outside cover, which fits to the sides of the package at the top, as shown in the drawing. About its interior the cover B is provided with a rim or flange, C, depending from the inner side of the top of said cover, so that an inner compartment or vessel for holding a quantity of the preparation is formed, also space or another compartment, D, is left outside of the rim C to receive certain small articles used in connection with the medicine, as a stirrer, *b*, a few matches, *c*, &c.

The package constructed as shown is especially adapted for holding and using medical preparations which are administered by igniting them to create vapors for inhaling. The cap *a*, being removed and held in an inverted position, is filled from the package A, and emptied into the vessel C formed within the cover B. The contents are then ignited by means of a match, *c*, and stirred by using the stirrer *b*, usually formed of a piece of wire.

Having described my invention, I claim—

The case A containing medicine to be used by inhalation, having the stopper-cap *a* of the proper size for measuring the medicine, and the top or cover B of the case provided with the rim C, forming the compartment to hold the medicine while burning, and the compartment D for carrying the matches and stirrer, substantially as and for the purpose specified.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

JOSEPH H. GUILD.

Witnesses:

LYMAN FARRAR,

CORNELIUS M. SHELDON.

J. H. GUILD.

Medicine-Package.

No. 216,182. Patented June 3, 1879.

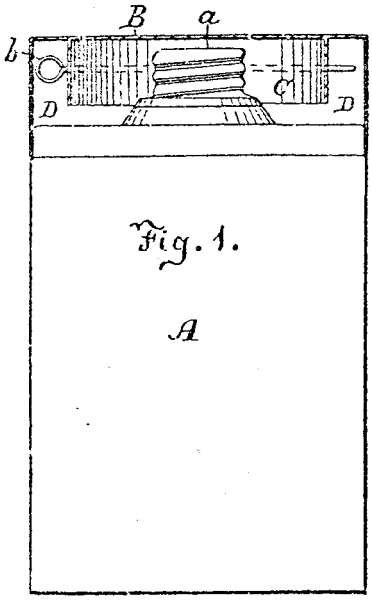



Fig. 1.

A

Fig. 2.

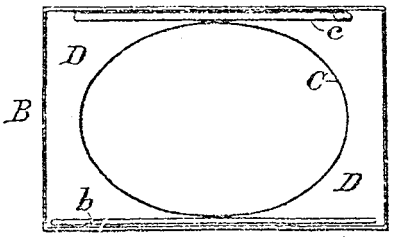
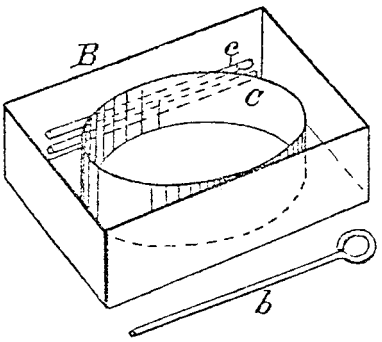



Fig. 3.




Witnesses :

W. Burris

H. A. Daniels

Inventor :

J. H. Guild

By G. B. Towles

Attorney.

# RAPID LITHOTRITY

WITH

# EVACUATION.

BY

HENRY J. BIGELOW, M. D.,

PROFESSOR OF SURGERY IN HARVARD UNIVERSITY; SURGEON OF THE MASSACHUSETTS GENERAL HOSPITAL.

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From the American Journal of the Medical Sciences, Philadelphia, January, 1878. Reprinted in the Massachusetts Medical and Surgical Journal, February 28th, and March 7th, 1878; also from the New York Medical Record, June 8th, 1878, with Additions.

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BOSTON:
A. WILLIAMS AND COMPANY.

NEW YORK:
WM. WOOD AND COMPANY.
1878.

fact, with too little fluid in the bladder the use of a lithotrite in unpractised hands is attended with danger; and in a long sitting an injection which will render the walls moderately tense is the only really safe way of keeping the bladder from between the blades. A careful examination of the action of a lithotrite through an opening in the summit of the bladder, has confirmed me in this opinion, which was that of the older writers on this subject. From time to time the diameter of the collapsing bladder should be estimated by slowly opening the blades of the lithotrite, and water introduced when necessary; but care should be taken to guard against the serious injury to a contracted bladder which might result from injecting the contents of the syringe or aspirating bottle when it is already distended.

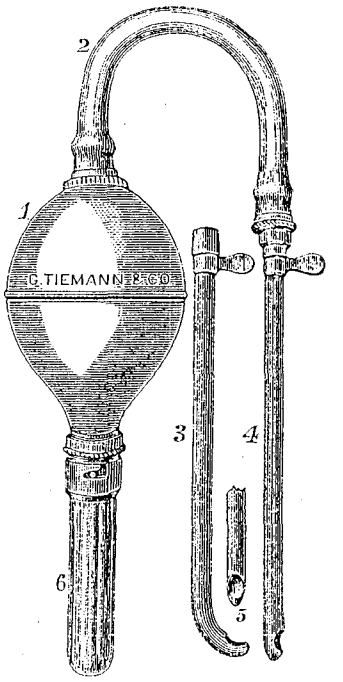
A tape or an elastic band wound lightly once or twice around the penis near the scrotum retards the escape of injected water, and yet allows the movements of the tube or lithotrite.

In order to ascertain the maximum calibre of the urethra before introducing a tube, it should be measured by an instrument which will enter more readily than the tube. Such instruments we have in Van Buren's sounds, which are slightly curved at the end, and a little conical. Being made of solid metal, and nickel-plated, they traverse the urethra with singular facility. Both Otis's sounds, and the conical probe-pointed elastic bougie also answer admirably for this purpose.

Evacuating Instrument. (Figure 1.) — The following points are worthy of consideration in connection with any evacuating apparatus. The ten-ounce elastic bulb or bottle supplied with the usual instrument is inadequate to the exhaustion for which it is designed. It will barely sustain, without collapse, a vertical column of water of the length of a catheter. A thick flask fatigues the hand of the operator. The bulb is also an awkward weight at the top of the catheter. These difficulties are obviated by interposing between the catheter and bulb a piece of rubber tube, varying in length, as the surgeon may prefer, from six inches to two feet, to relieve the bladder from the force of any movement of the apparatus, and, what is more important, to allow the operator to hold the bulb on a level with the water in the bladder, or considerably below it. The exhaust then acts as a siphon, and readily draws off the water. The fragments gravitate to the bottom of the bulb, and are there collected in a glass chamber. (See Figures 1, 4, 5.) To prevent the possible return to the bladder of some single fragment while on its way to this receptacle, the rubber tube, if long, should be provided with a small glass trap containing a wire-gauze or perforated tube, to deliver the current and strain it on its return, but with a short rubber tube (Figs. 1, 4, 5), which is more convenient, this is not essential. One or two smaller bulbs might perhaps be provided for a contracted bladder.



Fig. 1.




(Fig 1.) Evacuating Apparatus. 1. Elastic bulb. 2. Curved rubber tube. 3. Curved evacuating tube of silver. 4. Straight evacuating tube, which is preferable to the curved one. 5. Front view of same. 6. Glass receptacle with bayonet joint for debris. (Tiemann & Co., N. Y.)

The successful evacuation of the bladder depends upon several conditions, both in the apparatus and in its use, which for distinctness may be enumerated separately.

(1.) *A large calibre of the evacuating tube.*

(2.) *Its shape.*

(3.) *The shape of its receiving extremity.*

(4.) *Manipulation of the bulb.*

(5.) *Evacuation of the fragments.*

(6.) *Immediate recognition and removal of any obstruction in the tube.*

(1.) *A large calibre of the evacuating tube.* Whether or not we adopt the view of Otis, that the average capacity of the normal urethra is at about 33 of Charrière, there can be no question that it will admit a much larger tube than that commonly attached to either Clover's or the French apparatus. The efficiency of the process of evacuation depends much upon using the largest tube the urethra will admit. This fact has

been stated by Sir Henry Thompson. But he recommends for the glass cylinder or trap which is to admit this tube a "perforation at the end, the size of a No. 14 catheter," = 25 Charrière.[1] This perforation is too small; and the tube which is designed to enter it is further reduced by its collar to the diameter of only 12, = 21 Charrière. In fact, this is the calibre of the evacuating catheters now attached to Clover's instrument, and is of itself fatal to their efficiency. An effective tube has a calibre of 28 to 31 or even 32 Charrière, and the meatus, which is the narrowest part, may, if necessary, be slit to admit it, if the urethra is otherwise capacious. Again, in the instrument, as sometimes constructed by Weiss, a joint is made by inserting an upper tube into a lower one, thus obstructing the calibre by a shoulder. The joints should become larger as the tube approaches the bottle, so that the tube may deliver without difficulty fragments of its own calibre. Whatever be the size of the evacuating tube, the rubber tube, with its metal attachments, should have a calibre of at least seven sixteenths of an inch, = 31 Charrière.

My evacuating tubes are of thin silver, of sizes 27, 28, 29, 30, and 31, filière Charrière, respectively.

(2.) *Shape of the tube.* Works upon lithotrity enumerate and figure a variety of tubes through which fragments are to be aspirated. Many of these are useless. The best tube is a straight one. (Figure 2 a.) That which is curved quite near the extremity is designed to be used with the curve inverted and directed downward, the orifice then looking forward.

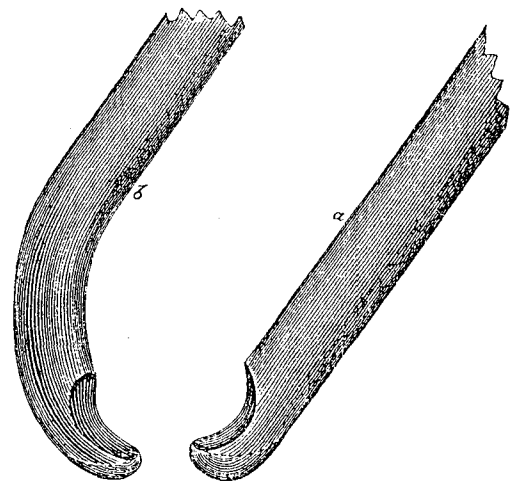
(3.) *Shape of the receiving extremity.* The receiving extremity should depress the bladder when required to do so, and thus invite the fragments, while its orifice remains unobstructed by the mucous membrane. Upon the floor of the bladder, when not indented, a fragment of stone, lying at the distance of half or even quarter of an inch from the tube extremity, may not be attracted by the usual exhaust of the expanding bottle, which requires that the fragment should lie almost in contact with the tube. A very slight obstacle also impedes its entrance; and this fact renders inefficient all tubes like catheters, with orifices along the side or upper wall. Chips will not

[1] Diseases of the Prostate, 4th edition, 1873, page 337.



surmount their edge. Again, the orifice of a tube cut square is at once occluded by drawing in the vesical wall, while the spoon-shaped beak of the French instrument, made like the female blade of a lithotrite, allows fragments to lie too far from the opening in the tube. The best orifice is at the side of the extremity, and is made by bending the tube at a sharp right angle, carefully rounding the elbow, and then cutting off the bent branch close to the straight tube. (Figure 2 a.) The tube is then practically straight, while the orifice, which is slightly oval, delivers its stream laterally. The edge should be thickened and rounded to slide smoothly through the urethra; any rim inside the orifice should be masked by a false floor; but the calibre should be nowhere contracted. If the side walls of this orifice be removed a little, it gives an unguiform extremity to the tube, which is advantageous; and in introducing such a straight tube this tip should be insinuated through the triangular ligament by rotation. If a couple of inches of the end of such a tube be bent, it may be inverted after introduction, and will bury itself in the floor of the bladder, which it depresses, while the orifice looks forward and is unobstructed. (Figure 2 b.) This form is tolerably efficient; although I prefer the straight tube, as less liable to lodge fragments, and more readily cleared by a rod, — as safer, because it involves less risk of injury to the bladder than is incurred by the rotation of a curved extremity, — and especially because it is easy to know exactly where the extremity

FIG. 2.

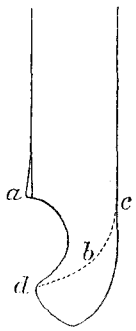



(FIG. 2.) Evacuating tubes, with unguiform extremity. *a*. Straight tube. *b*. Curved tube. The dotted lines show the false floor of the extremity. The tubes are here of a diameter 31 Charrière. The straight tube is preferable.

lies. An effective instrument may be made of a straight tube cut square at the end, if a disk convex outwardly, to repel the bladder, be attached to it, at the distance of a diameter from the orifice. This was the original of the straight tube already described. When such an instrument is introduced, the interval can be filled by a rod. Indeed, the orifice of a tube should be contrived with a view to its introduction. The French tube already spoken of, shaped like the female blade of a lithotrite, would be efficient, if it were made large enough, — as it is not, — and if the shoe were bent to make a precipitously inclined plane for the fragments. It would then offer a prolongation of the ungniform tip; but, thus sharply bent, it would be less easy to introduce. Whatever be added to the extremity of the tube, in order to facilitate its introduction or to repel the bladder, should not prevent the orifice from lying, if required, in the floor of the bladder at the apex of a steep inverted tunnel.[1]

(4.) *Manipulation of the bulb.* When the capacities of the bladder and urethra have been ascertained, the evacuating tube is introduced and the bladder completely emptied. A few ounces of water are next injected, that the fragments may still be floated after aspiration, and the apparatus, previously filled with water, is attached to the silver tube. To fill the bulb and at the same time expel the air, it should be held upright and several times compressed while the curved elastic is immersed in water, the latter being then kept uppermost until attached to the evacuating tube. Air in the bladder disadvantageously distends it without floating the fragments. The large bulb, together with its tubes, contains about ten ounces. If compressed with one hand until the sides meet, only about five ounces are displaced. If half compressed and then worked

FIG. 3.




[1] Too large an orifice impairs the suction and admits fragments that become wedged higher up. If the straight tube (Fig. 3) be closed by an extremity symmetrically round or ovoid, to facilitate its introduction, the hole *a d* in its side should have a length but little greater than the diameter *a c* of the tube. The curve of the inside floor *b* is a quarter circle described upon *a* as a centre. The tube is then proved by a close-fitting ball rolled through it from above. At *a* the edge is a little thickened on the outside, and at *d* rounded, to protect the urethra.



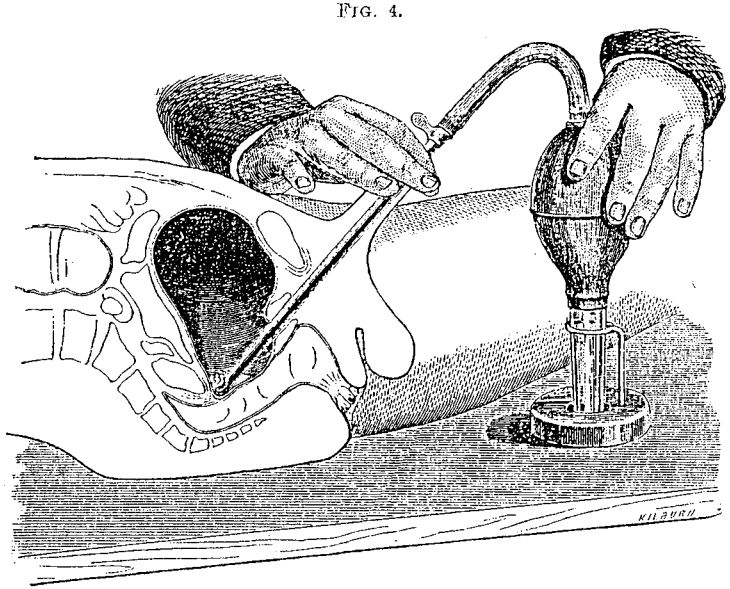
with a shorter movement, about two ounces are moved back and forth; so that, provided the tube itself be handled carefully and skilfully, the bladder is not greatly disturbed. At the beginning of the process the short movement is effective. The object of more water is to prolong suction when fragments are passing freely, — also occasionally to stir up the debris, — and especially to relieve obstruction in the tube, when it occurs. The best position for the surgeon is at the right hand of the patient, resting his left wrist on the pubes to steady the tube, while the bulb is supported in a stand on the table between the thighs. (Fig. 4.) Or, (Fig. 5,) the surgeon, sitting between the supported feet of the patient, compresses the bulb with the right hand, using the left alternately to hold the glass trap and to adjust the silver tube. In the latter position the hand is apt, when fatigued, to bear heavily on the evacuating tube, so that it is better then to use the bulb as a handle to direct the silver tube, the interposed elastic saving the bladder needless fatigue.

(5.) *Evacuation of the fragments.* Evacuation of the fragments is quite an entertaining art, requiring as much skill to accomplish the result in the shortest time as crushing them. Dexterity in the process will hardly be acquired without practice outside the bladder.[1] If the bulb be compressed and immediately allowed to expand, while the tube is held just above the debris, the fragments should fall in a shower into the trap. The operation may be divided into a first and a last half. During the first half, while the fragments are numerous, the secret is to separate and float them by the injection, so that they may enter the tube as they fall, in single file, without obstructing it. This is accomplished by keeping the orifice of

[1] The bladder may be imitated by the lower two-thirds of an ox-bladder (carbolized for cleanliness) suspended inside a vessel having a mouth of four or five inches diameter, to which it is tied. The vessel should be previously nearly filled with water. To show the different and more efficient action of circular currents in the closed bladder, let the ox-bladder be tied to the evacuating tube, and held before a bright light. With a tin funnel secured to the summit of a human bladder (*in situ*) to aid in replacing the fragments, the process of evacuation can be rapidly repeated. Calculi may be imitated by coal of varying hardness, or by a bit of old grindstone; a lighter and tough material for crushing, and liable to impact, is the cheap compressed meerschaum.

the tube away from the floor, aspirating them quickly while on the wing, just above the comminuted mass. In the latter part of the process, and after the smaller debris has been removed, the tube may be made to indent the floor so as to gather instead of separating the fragments; and as a final measure the tube should be raised towards a perpendicular in order to carry the orifice nearer the prostate. Some of the chips are apt to collect behind the tube orifice. The tube thus raised

FIG. 4.



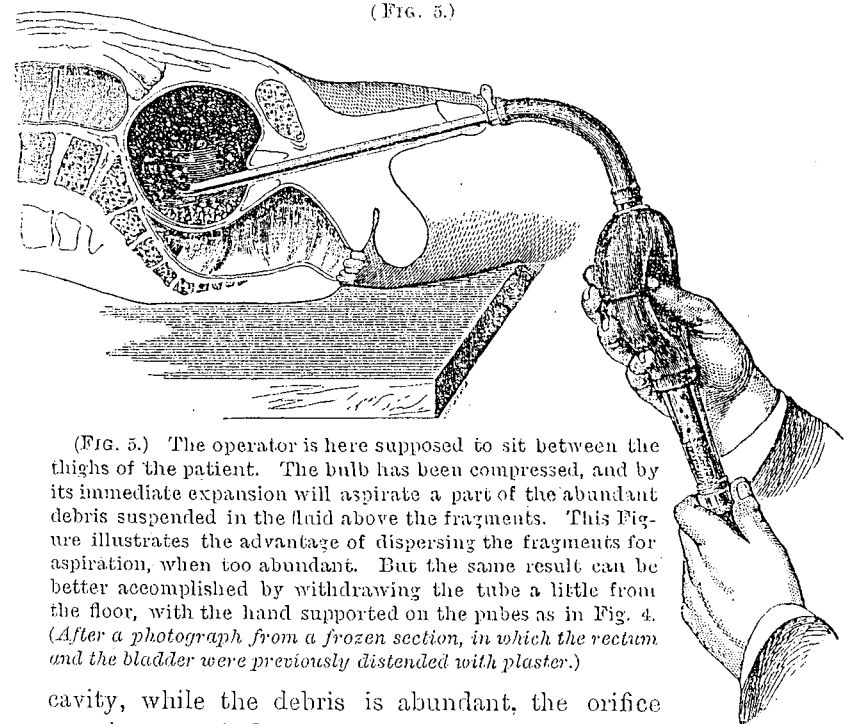
(FIG. 5.) The trap is here placed in a stand upon the table. The remaining fragments are few, and the capacious bladder is depressed to assemble them. The operator stands on the patient's left, and supports his right hand firmly upon the pubes. This position is, on the whole, the most advantageous.

lies behind these chips. An advantage of the inverted curved tube is that it keeps the prostatic region clear; but the orifice of the straight tube may be occasionally turned forward with the same result. A very slight movement of the tube sometimes makes much difference in the rapidity of the evacuation, so that when it is on the floor of the bladder, or quite near it, and steadied by the hand upon the pubes or the thigh, if any one expansion of the bulb proves more successful than another, the precise position then occupied by the tube should



be carefully maintained. On the other hand, when the tube is choked at each expansion, if it be withdrawn or tilted up a quarter or even an eighth of an inch, it may happen that a shower of debris at once appears in the trap. Higher in the

(FIG. 5.)



(FIG. 5.) The operator is here supposed to sit between the thighs of the patient. The bulb has been compressed, and by its immediate expansion will aspirate a part of the abundant debris suspended in the fluid above the fragments. This Figure illustrates the advantage of dispersing the fragments for aspiration, when too abundant. But the same result can be better accomplished by withdrawing the tube a little from the floor, with the hand supported on the pubes as in Fig. 4. (*After a photograph from a frozen section, in which the rectum and the bladder were previously distended with plaster.*)

cavity, while the debris is abundant, the orifice may be turned downward or partly sideways, so as to project horizontal currents around the bladder, the fragments being aspirated as they whirl. During the earlier part of the operation there should be no interval between the compression and the expansion of the bulb, the object being to catch the fragments while suspended. If there be any pause, it should be after the expansion, to give them time to settle into the glass trap. Later, when the fragments are too few instead of too many, a second or more may be allowed before aspirating, to gather them into the depression in the floor of the bladder,—especially as even a teaspoonful of water lightly injected on the floor shoots the debris to every part of the cavity. This artificial depression, which is made by very slight

force, plays an important part both in gathering the fragments for crushing, and, at the end of the process, for evacuation. In placing the tube at the different stages of the process, there is opportunity for a little tact, as in discovering fragments with a lithotrite.

(6.) *Immediate recognition and removal of obstruction in the tube.* It has been said that when the trap is held upright, as in its stand, fragments should appear in rapid succession; so that, if a short interval elapses without the fall of debris, it may be presumed that there is obstruction. This happens not only when the bulb will not expand, when the dimple disappears reluctantly and when compression is difficult, but also when the current passes so freely that an impediment would hardly be suspected.

Obstruction occurs in several ways.

(1.) In the elastic tube, which may be accidentally bent at an angle or compressed. This should be looked at first. A bit is sometimes lodged by the injected current at the end of the elastic, and can be displaced by pinching it.

(2.) In the bladder, the most common obstruction is at the orifice of the evacuating tube. A little practice will enable the operator to distinguish the encouraging rattle of debris passing this tube to appear at once in the trap (if upright) from the valvular click of fragments too large to enter it. This click is quite constant at the end of the process, after the smaller chips have been sifted off. If the orifice be choked, an effort should be made to expel the fragments in the ordinary way: first raising the tube into clear water above the debris, and then compressing the bulb with a short and forcible jerk. A half dozen such efforts rarely fail; but the rod may be introduced, if necessary.

(3.) It sometimes happens that nothing appears in the trap, although the current passes quite freely, and the click of the abundant debris is still felt. A scale or angular chip is then wedged inside the evacuating tube, which admits water, but excludes fragments. This is worth remembering. The rod removes it.

(4.) If a fragment rattles back and forth in the evacuating tube without reaching the trap, there is obstruction high up. (See 1.)



(5.) The only other source of obstruction, and not an uncommon one, is by the wall of the bladder, when drawn against the tube with a dull thud, or a rapid succession of jerks, not unlike the bite of a fish. The tube orifice may be moved to another part of the bladder, where aspiration is more free. Perhaps the orifice has been accidentally turned sideways; it then readily engages the floor. Or the walls of the bladder are a little slack, and more water may be advantageously introduced to distend them.[1]

After a dozen or more aspirations it may be found that all the fragments which can pass the tube have done so, and that many of them have its full diameter. By the usual method of crushing, the lithotrite would now again be introduced, and again be followed by the tube.

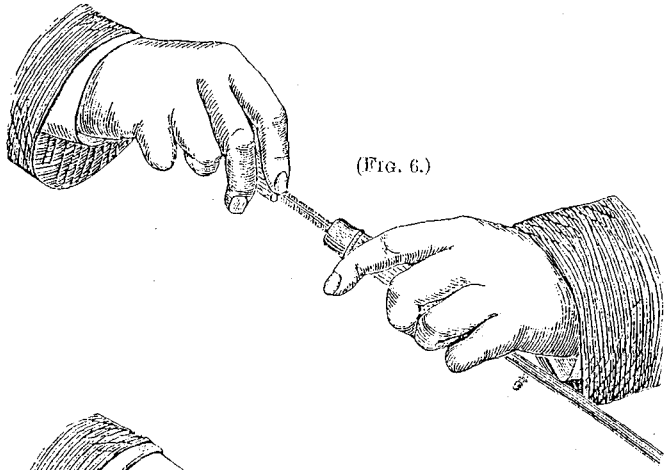
LITHOTRITE. (Fig. 8.) — It would be plainly desirable, if it were easy, to crush the whole stone before attempting to evacuate it; but this has hitherto been rarely possible. The lithotrite becomes so choked with impacted debris that the convex surface of the mass less readily receives other fragments. A clean lithotrite always works to best advantage; and the operator frequently withdraws the loaded instrument to evacuate it, sometimes with injury to the neck of the bladder. It would be obviously better, if the instrument could be emptied at will in the bladder, especially if we distinctly recognize that what can be withdrawn in a lithotrite would come through a tube, and that the province of the lithotrite should be to pulverize, or indeed merely to comminute, and not to evacuate.

Although all lithotrites are made a little loose for the purpose of working out the debris, and although I have had one constructed with an especial device for this motion, I do not find it easy to clear the female blade by a lateral movement of the male blade, chiefly because the impaction is so firm that the dense mass, instead of yielding, twists the female blade from side to side. Nor does an instrument like that of Reliquet fulfill the indications. It discharges itself, indeed, as does the

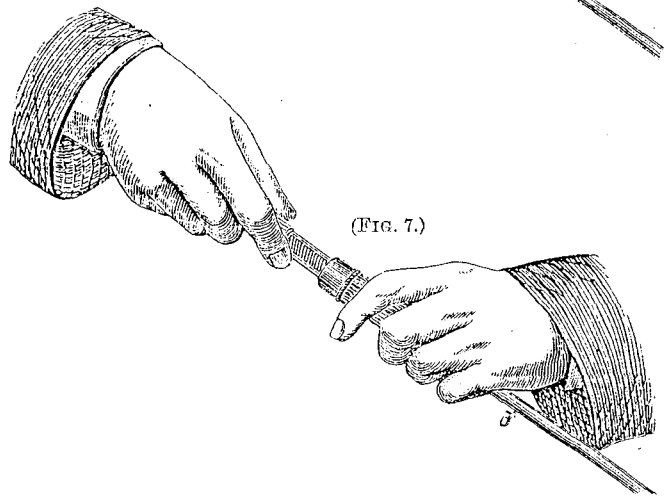
[1] The process of evacuation has been improved by repeated experiment since this paper was first published; that here described shortens materially the time occupied in drawing off the debris.

old fenestrated "*brise-pierre*"; but, as in the *brise-pierre*, its high sides are an obstacle to the approach of fragments. The male blade also of Reliquet's instrument is that of the lithoclast, and we need only close the blades between the thumb and finger to be satisfied of their scissor-like action upon the bladder.

The instrument about to be described keeps its blades clear, and secures certain other desirable ends pertaining to the injection of water, the lock, handle, etc.



(Fig. 6.)



(Fig. 7.)

(Figs. 6 and 7.) Position of the hands in holding and locking this lithotrite. Fig. 6. Lithotrite unlocked. Fig. 7. Lithotrite locked by a quarter rotation of the right wrist.

*Lock.* The general acceptance of the cylindrical handle of



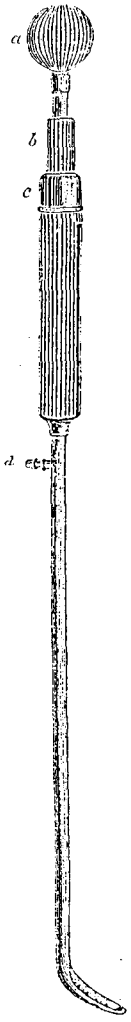
Thompson's instrument testifies to its convenience as a hold for the left hand. But it is always a little awkward to disengage the thumb of this hand, or indeed of either hand, in order to close the lock of a lithotrite at the critical moment of grasping the stone. This objection I have obviated in closing the lock by rotation of the right wrist, without displacement of the fingers of either hand. (Figures 6 and 7.)

*Wheel.* In a protracted sitting the wheel is an inconvenient handle, its chief merit being that it affords so insecure a grasp that the operator is supposed to be unable, with its prescribed radius, to break the blades. But in a larger instrument these blades are stronger, and a ball may be substituted for the wheel. (Figure 8 a.)

*Injecting tube.* If the sitting be protracted, as proposed, the water dribbles away, and the collapsing bladder, especially if trabeculated, is liable to serious damage from the lithotrite. To meet this difficulty, my lithotrite contains a tube or groove between the blades for the injection of water without removal. (Figure 8 d.) I formerly injected water by means of a short flat tube introduced into the urethra from time to time by the side of the lithotrite: a valuable resource in a long operation.

*Blades.* The blades of this lithotrite consist of a shoe or female blade, the sides of which are so low that a fragment readily falls or slides upon it; while the male blade, or stamp, offers a series of alternate triangular notches by whose inclined planes the detritus escapes laterally, after being crushed against the floor and rim of the shoe. At the heel of the shoe, where most of the stone is usually comminuted, and where the impact is there-

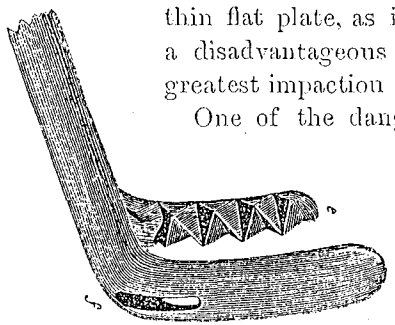
Fig. 8.




(Fig. 8.) Lithotrite by Collin & Cie., from a working model. *a*. Ball which turns the screw. *b*. Revolving cylinder-handle attached to the screw-guard, which also revolves. This guard consists of two square or T-shaped rods, which slide through notches in the cap of the lock. By their revolution the cylinder-handle turns the cap and operates upon the lock. *c*. Cap of the lock, which by its revolution wedges up the screws. *d*. Injecting pipe communicating with the blades. (*This pipe is now omitted as too small for effectual use.*)

fore greatest, the floor is high and discharges itself laterally, while its customary slot (Figure 9 f) is made to work effectively. It may be unnecessary to say that the female blade of the common lithotrite, when drawn from a thin flat plate, as in the French instrument, has a disadvantageous cavity at the heel, where the greatest impaction occurs by gravitation.

(Fig. 9.)



(Fig. 9.) e. Male blade, presenting on alternate sides triangular notches. The small portion of debris not discharged laterally by these notches is driven through the slot in the female blade. f. Slot in the female blade.

One of the dangers of lithotrity, which has been already emphasized, is the liability of the bladder to be nipped in the instrument. In view of the character of many of the instruments sold, we might expect to hear more of this accident, although indeed it is a quiet one. It cannot be too carefully provided against, not only by skill in the operator, but also in the construction of the instrument itself, and especially during a protracted operation, while water is escaping and the bladder collapsing. With this object, the shoe is here wider and longer than is usual, to repel the vesical walls. (Fig. 9 f.)

It can hardly be doubted that in practice dexterous operators secure most stones and fragments as they gravitate into the female blade while it depresses the floor of the bladder, perhaps a little to one side or the other, where the stone is felt. A simple and efficient manœuvre, especially for a small fragment, is that of opening the blades of the lithotrite widely in the vertical position, then slowly turning them to one side and closing them along the floor of the bladder. If, in attempting this, the instrument be opened after it is turned, the male blade displaces the fragment without securing it; and it is of course understood, that, in opening the lithotrite, the blade in contact with the bladder, commonly the female blade, is stationary. The inverted lithotrite works efficiently in a depression, if the bladder be kept out of harm's way by a special device; but with the common lithotrite it is essential to turn the blades up before crushing, and move them, in order to be sure they are free. Indeed, whatever be the position of the lithotrite, it is important always to give it a little rotation before screwing down, to see if it is free from the mucous membrane. This habit also keeps the operator informed whether he has room, or needs more water in the bladder. In the exceptional case of a stone behind the prostate, it may be necessary to invert the lithotrite and seek it. Fragments, however, are readily washed from this region within reach of the evacuating tube by occasionally turning the orifice and directing the stream from the tube upon them.



While many years ago I had not infrequently prolonged lithotrity to ten or fifteen minutes, and longer, it is only within two years that I have aimed at the evacuation of a considerable stone during a single sitting; and although experience will perhaps be necessary to determine precisely what cases are unfavorable to such an operation, there can now be no question that it is practicable to remove at once a far greater quantity of debris than has hitherto been considered possible. The conditions most favorable to lithotrity are obviously most favorable to this modification of it, — a stone neither very large nor hard, and especially a large urethra, promising its best results. But if the preceding views are correct, the future of lithotrity lies in the direction of a fast-working lithotrite, which, while it effectually protects the bladder, is more powerful than the usual instrument, and better proportioned to the work it is to do, — a rapid comminution of the stone, — its immediate and complete evacuation by means of a large tube with an efficient orifice, while the fragments are at will scattered or gathered, for aspiration, — and the ready recognition and removal of any obstruction which delays the process. *It will be no longer essential to pulverize the stone, but only to comminute it;* and if, in so doing, the lithotrite can be kept free from impaction, the process will be more rapid and efficient.

During the last year I removed by lithotomy two soft stones, weighing 1272 and 1230 grains, from two male adults, aged forty and twenty-four respectively, who recovered after various risks. I now cannot but think that with a tolerably sound bladder, a urethra of good size, a large lithotrite, and a large tube, the operation could have been performed with less risk by the method of lithotrity now described.