INTRODUCTORY REMARKS

The subject of this Thesis is based on my experience gained in the performance of some 224 stone operations of all kinds at the David Sassoon Hospital Bombay supplemented by careful and repeated observations on the Cadaver.

Details of these cases will be found in the appendix.

The somewhat hybrid title of 'Perineal Litholapaxy' very satisfactorily expresses the nature of the operation. It signifies crushing or evacuating through a perineal incision.

A stone may be crushed and removed through the ordinary lateral lithotomy incision. Such an operation is more or less of a juxtaposition. The operator, finding he cannot introduce a large enough or powerful enough instrument through the incision to crush with, decides to remove the calculus through a lateral perineal incision. Having made this incision he finds his stone too large to deliver through the outlet. It may be a small boy's pelvis or too large to remove without considerable force & bruising. He then introduces a big lithotrite, crushes, removes the coarser fragments with lithotomy or dressing forceps, washes out the finer debris with a stream from his irrigator. The process of reasoning which would induce one to embark forth on such a sequence of operative procedures is not to be recommended. There is very considerable risk of searing & crushing the collapsed bladder wall not to speak of a prolonged convalescence period or possibly persistent subsequent incontinence.

Then again a stone may be crushed & removed through an ordinary median incision. It is the custom with some surgeons to proceed in median lithotomy, to introduce a finger & feel the stone, & to follow this up with the
has been operators & which has stood in the way of its occupying its proper position in operative surgery.
In his earlier operations a small incision was made in the position of or just behind the so-called central point of the penis, a wire probe was introduced & the stone brushed & evacuated in the usual way. Probably because the knife had been slipped further along the groove in the staff than usual, the process of brushing & evacuation was sometimes easy. Difficultly in introducing instruments during the progress of & frequently in the latter stages of the operation, even with a probe left in as a guide, was however not uncommon. It was always met by enlarging the incision downwards or in an inward direction. It must be remembered that, while the cause of the obstruction had been the subject of much speculation among operators, it had never been demonstrated anatomically, nor had the correct explanation been guessed at. The dread that someday, with a partially brushed stone in the bladder, one would find oneself unable to introduce an instrument either through the wound or per urethram was always before one's eyes. This dread was not improved by the statement of one very experienced operator that he had, on more than one occasion, in his efforts to overcome the obstacle, forced his instrument through the delicate tissues of a small boy's pelvis floor into the peritoneal cavity with fatal results. This led to the second stage of development viz one in which one hesitated to perform the operation at all & in which one made one's incision unnecessarily large. The very startlingly good results however invariably obtained both in men & boys led to
the third Stage of development - viz one in which a series of anatomical investigations ultimately revealed the cause of the difficulty & its remedy. The can now make one incision as small as one likes & with a consciousness that one can always complete one operation. Another item that contributed towards the confidence & readiness with which the world now undertakes a perineal lithotomy was the fact that he was one day compelled by a very hard stone to convert a median into a lateral incision with results that encouraged a repetition of the proceeding.

ANATOMICAL STUDY

Landmarks

A needle driven in, perpendicular to the plane of the table, in such a manner as to just graze the top of the pubes marks the Suprapubic point.

A needle driven in, parallel to the plane of the table, in such a manner as to just hit off the bony Subpubic arch marks the Infrapubic point. In the living subject the position of the bony border of the pubes can be made out by firm pressure with the point of the finger. If the Scrotum is base as it usually is in boys & frequently in young men, raise it with the thumb & forefinger, then slowly lower it so as to drop over the penis. The point at which a distinct fold is formed is taken as a landmark & will be spoken of as the Peniceal Scrotal fold. This point can be equally well be

Stated in the following way: - Stand on the right Side of the subject. Place the fingers of the left hand on the pubes & the thumb on the Scrotum half an
one case & towards the anus in the other, then altering the posture to the lithotomy. The subcutaneous tissue was split up, passed the needles & the distance between the top of the incision & the needles will give, roughly, the amount of displacement. This subcutaneous postural displacement may roughly be said to be rather more than half an inch. The precise figures for four subjects taken at random were as follows:

<table>
<thead>
<tr>
<th>Age</th>
<th>Suprapubic point</th>
<th>Infracolic point</th>
<th>Cocegeal point</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>27</td>
<td>11” 16”</td>
<td>11” 16”</td>
<td>12” 16”</td>
<td>Cadaver measured as described</td>
</tr>
<tr>
<td>25</td>
<td>10” 16”</td>
<td>10” 16”</td>
<td>11” 16”</td>
<td>Cadaver measured as described</td>
</tr>
<tr>
<td>8</td>
<td>10” 16”</td>
<td>10” 16”</td>
<td>12” 16”</td>
<td>Living subject measured by pencil points on surface</td>
</tr>
<tr>
<td>9</td>
<td>10” 16”</td>
<td>10” 16”</td>
<td>9” 16”</td>
<td></td>
</tr>
</tbody>
</table>

Note: The cocegeal point is difficult to mark quite accurately in the ordinary supine position even if the subject is turned on its side.

From what has already been said it will have been gathered that the whole circumference of the attachment of the rectum to the rest of the body moves forwards in relation to the subcutaneous bone. This is actually so. The perineal cut is displaced forwards some 10” + The groove between the skin of the clitoris & the penis + The hemorrhoid comes to lie close to or over the upper margin of the pubic bones (lithotomy suprapubic point).

It will be remembered that the bulb of the bladder is marked by passing a short curved sound, with its concavity towards the perineum, down the urethra as far as it will go. If this were done in the ordinary supine position, the point marked, + the posture then altered to the lithotomy, it
will be found that while the supraspinous intrapubic point has travelled forwards a certain distance the projecting point of the form will be less half that distance behind the form itself indicating its original position. To take a specific instance, the intrapubic form in a boy of 8 showed a displacement of $\frac{10}{16}$ in the coccygeal $\frac{10}{16}$ while the distance between the bullar point and the ordinary supraspinous form the lithotomy position amounted to $\frac{4}{16}$. From this fact, and from the fact that the fascia of Colles is continuous with the fascial investment of the scrotum and penis, that the attachment of the scrotum to the rest of the surface moves forwards in relation to the subcutaneous organs, we may safely conclude that the fascia of Colles and all the spongy method is dragged forwards $\frac{10}{16}$ on the stretch but not at anything like the same extent as the subcutaneous tissue.

To recapitulate: The proximal displacement of perineal structures consists of the following changes:

1. The angles which the surface of the perineum forms with the Earth become altered owing to the rotation of the pelvis on a transverse axis. The angle formed by the anterior or true perineal plane $\sigma$ the posterior or coccygeal plane $\omega$ with the horizonatal becomes more obtuse.

2. The perineal fold is put on the stretch laterally.

3. The attachment of the scrotum to the rest of the surface, the whole thickness of the subcutaneous tissue of the perineum with that covering the tip of the coccyx, $\sigma$. The arms are displaced forwards $\frac{10}{16}$.

4. The proximal fold is flattened out.

5. The fascia of Colles and with it the bulb and spongy method are dragged forwards $\frac{10}{16}$ on the stretch.

6. The greater part of the prostatic method, as will be seen
presently, comes to lie parallel with the table.

The clinical significance of the posterior displacement of the perineal structures will be alluded to later on but it may here be pointed out that a sagittal section gapes in the lithotomy position, that the lips of the wound are pressed closely together in the ordinary supine position, that a flat in the floor of the pelvis made parallel with the table becomes very oblique when the patient's legs are stretched out.

The relation of the bladder or urethra to the surface.

A needle driven in at the suprapubic point as nearly as possible perpendicular to the plane of the table enters the summit of the bladder both in the ordinary supine and in the lithotomy position. This was the case in all of four succeeding bodies in each of which the viscus contained a few ounces (probably not more than half an ounce) of urine.

A needle driven in at the infrapubic point as nearly as possible parallel to the plane of the table enters the pubic surface of the bladder both in the ordinary supine and in the lithotomy position.

A needle entered, in the lithotomy position, at the infrapubic point, as nearly as possible at right angles to the perineum, hits off, very accurately, the vesical orifice of the urethra. Thus in the first of four bodies the point had traversed the left edge of the orifice; in the second the pubic edge of the orifice; in the third again the left edge of the orifice; and in the fourth it had entered the orifice itself, perforating the prostatic urethra just to the left of the middle line and a very small fraction of an inch outside the bladder.

In all the above cases the positions of the needles were verified.
by opening the abdomen widely, drawing aside the intestines, & then laying open, in a sagittal direction, the intestinal surface of the bladder.

If, with the body in the lithotomy position, a blunt style be passed in through the vesical orifice of the urethra, as far as it will go, it will be found that the style lies parallel with the table that its point can be made to project the cutaneous surface of the perineum. The spot on the surface so shah be spoken of as the vesico-mental point. A needle driven in at the vesico-mental point, kept as accurately as possible parallel with the table, emerges internally at the vesical orifice of the urethra. With the fingers of one hand into the bladder, place the tip of the middle finger on the vesical orifice of the urethra, & the point of the thumb on the perineum over the vesico-mental point. The vesical orifice feels like a chimple, & the point of the finger & thumb can be distinctly detected by each other, & feel readily opposite each other. From these observations I gather that the prostatic urethra, or, to be more accurate the greater part of it, is, in the lithotomy position, for all practical purposes, horizontal & parallel with the table. If this horizontal urethra be measured, in the adult male, by passing a blunt style in, from the bladder side, as far as it will go, it will be found to be 6- of an inch long. This, as well as being large, does not represent the whole of the prostatic urethra. The vesico-mental point, at the point on the surface which indicates the position of the horizontal urethra, lay, in the body examined (all adults) 1- of an inch behind the bulb or point. Not only is this horizontal urethra very large but it is very
distinctible. Unfortunately, opportunity did not permit of a detailed scientific investigation of the factor size, but the size of the bladder is of importance. The bladder has been met with that would not, as a rule, admit a No. 10 lithotrite (See Case No. 84 in the Appendix) or one in a man that would not admit a Weiss's large A. Instruments that are quite big enough for children and adults respectively, as long as anything that does not absolutely indicate a suprapubic operation. Another relevant point of some importance that can be ascertained on the dead body is the depth of the perineum from the vesicourethral point. Do the spot in the urethra where, in the lithotomy position it adheres to horizontal course. In order to do this, pass a median staff; hold it vertically above, pulling it up or pushing it down, with an ordinary straight bistoury at the vesicourethral point parallel with the table; his off the staff & elevate the handle of the bistoury & run it along the groove for a short distance. Now withdraws your knife & pass a probe in through the incision right up to the vesical orifice of the urethra. The point can be presented from a point beyond
the vesical orifice by a finger inside the bladder. The
Skin Surface can be marked on the probe which is then withdrawn & held over a rule or tape. Measured in this way, the distance between the skin Surface & the vesical orifice of the urethra is found to be \( \frac{10}{8} \). Subtract from this \( \frac{6}{8} \) for the length of the horizontal urethra previously measured & we get \( \frac{4}{8} \) or \( \frac{5}{8} \) as the depth of the perineum from the urethra to the vesicourethral point. When we consider that the heart of the Smallest lithotrite, the largest likely to be used in perineal
litholapaxy, is long enough to more than cover this distance & when we realize that this distance can be considerably reduced by pressing the shank of the instrument firmly against the perineum, we should have no anxiety on the score of the heart of any instrument we may choose to select not being long enough to reach the wound in the urethra.

The above measurements were taken in the emancipated bodies of young adults. They ought to be less in children (those most frequently the subjects of perineal litholapaxy) than in better nourished & better built adults. The following are some measurements of distances between the points indicated in the sketch:

\[
\begin{align*}
\text{No. 10:} & \quad 18 \frac{3}{32} \\
\text{No. 9:} & \quad 24 \frac{3}{32} \\
\text{No. 7:} & \quad 24 \frac{3}{32} \\
\text{No. 6:} & \quad 18 \frac{3}{32} \\
\text{No. 4\frac{1}{2}:} & \quad 17 \frac{3}{32}
\end{align*}
\]

Some remarks on the Anatomy of Urethral Instrumentation:

Although we are not as yet finished with the urethra it is convenient, at this point, to pause to think what happens when an instrument is passed.

Every surgeon is familiar with the difficulty, sometimes slight, sometimes more persistent, that is frequently experienced in passing an ordinary urethral or lateral lithotomy staff as compared with the great ease with which a bladder sound, with its bulbous point, short neck, & sharp angle, can be got into the bladder and
with the little trick of manipulation one uses to overcome an obstacle when met with. If, when the abdomen and bladder laid open, an attempt be made to pass an ordinary median lithotomy staff, it will be found that the point of the instrument will not pass, for the simple reason that the shape of the instrument and the course of the urethra do not correspond.

Diagram to illustrate passage of a median lithotomy staff of ordinary shape.
The above diagrams are intended to illustrate this. It be seen how the urethra at, on the neighborhood of
the part at which it bends towards the penis is

distorted shows the point. If the instrument is apt to

stick in the floor of the prostate urethra. The ease
or difficulty with which an instrument of this unreasonable
shape can be passed depends to a great extent on
the distensibility, y. May use the depression of the
urethra especially that portion of it that precedes
the bend. If, when a difficulty is first felt, an
attempts be made to push the instrument on, the
floor of the urethra is indented at its point, in the
direction of the bladder below the level of the base of
the prostate, and, should any force be used a
false passage will be formed. If, on the contrary,
the shaft be slightly withdrawn, the curve slightly
dragged up beneath the pubes, or the instrument
then passed on by bringing its handle to the
vertical, the point emerges at the vesical orifice
of the urethra. Gentle downward pressure in the
long axis of the shaft of the instrument now gives
rise to the well-known sensation so well described
when the surgeon remarks that his instrument has
"slipped into the bladder". If, now a view of the
interior of the bladder be again obtained through
the suprapubic incision it will be observed that the
whole of the curved portion of the shaft lies in the
bladder. That the whole length of the urethra from
meatus to vesical orifice is vertical, i.e. it corresponds
in direction with that of the shaft of the instrument.
The sensation felt when the instrument enters the
Bladder is in fact by the rounded angle between the heart & shaft slipping passed the base of the prostate. If now the instrument be dragged vertically upwards as far as it will go the greater portion of the curved part of the shaft disappears back into the urethra & only the point or a comparatively small portion of the head according to the size of the instrument & the size of the subject is visible inside the bladder. The vesical orifice of the urethra will, at the same time be observed to be distorted & dragged upwards towards the pubes.

The writer hopes he has made his points quite clear viz., first that the ordinary median staff (we are not here concerned with lateral instruments or catheters) is an improperly shaped weapon; and secondly that when an instrument is in the bladder, the whole urethra from meatus to vesical orifice is straight & vertical.

First as regards the shape of the instrument. - If the urethra were a rigid tube it would obviously be impossible to pass a rigid instrument. It is its distostility that enables us to reach the bladder at all. No instrument should have a head so long or a curve so large as to put any very considerable strain on this distostility. No instrument should be so constructed as to produce any considerable pressure pressure at & the point marked A in the last diagram & any considerable distortion in the direction B before its point can be made to pass easily along the lumen of the tube. If this is the case, as it usually is, the point of the instrument is pressed against the floor of the urethra sufficiently to cimple or even to imagine
it be the direction can possibly come to correspond with that of the prostatic urethra. If, in addition, the point be sharp, as is especially the case with instruments of small gauge, a wound is rendered possible.

It will be observed that the writer speaks of an instrument with a large or a small curve. What is meant will be rendered intelligible by a glance at the accompanying diagrams. In both the heaps is at right angles to the shaft, but the curve writing these parts has a much bigger radius in the one than the other.

To particularise: The ordinary staff has too big a curve, too long a head, & too sharp a point. The size of the curve should approximately correspond with that of the subpubic curve of the urethra; the length of the head should be such as to allow the point to just enter the vesical orifice of the urethra when the instrument lies easily in the subpubic curve; & last, but not least, the point should be blunt, somewhat, though not precisely, after the fashion of a Lister's bongie. Theargins should stop short of the neck of the head. An ordinary, bladon's sound is an excellent example of a rationally shaped instrument. Dr. W. P. Pateel & Co of Bombay have manufactured for me a medium staff in three sizes (10, 12, & 13). These are figured on the leaf at the bottom of the page. & answer the purpose fairly well but not quite precisely what the writer wanted. The curve should have been still smaller, the head more horizontal as is shown by the dotted line in the sketch. It would have added...
line. It must not however be forgotten that the prostate & neck of the bladder are surrounded by important vessels, notably a plexus of veins, which would, especially in elderly men, bleed freely if wounded. That certain very important portions of the vesical apparatus lie in, or in close relation with, the posterior wall of the prostate. An incision moreover, placed too far back would, when the staff was withdrawn, & the prosthetic urethra had resumed its normal position, give rise to a path into the bladder sufficiently tortuous to produce difficulty in the introduction of instruments.

A plaster cast of the membrano-prosthetic urethra.

The accompanying photographs were taken at rather close quarters & are therefore the record of a somewhat magnified image of a cast of a portion of the bladder, the prostatic, membranous, & a portion of the posterior wall.
Spongy urethra. It will be seen that a mere dissection of the parts, no matter how carefully done, gives one a very poor conception of the shape of the Conus of the urethra. As a matter of fact the writer's surgical friends were as much astonished as he was. The last is of extreme importance as demonstrating the cause of the difficulty in introducing instruments, already casually alluded to, of the dangers of the operation as performed by Keith, Henderson and others! It has taught the writer a method of operating that he considers easy and free from risk. The specimen was the last of a series of experiments many of which failed to give a continuous cast-owing partly to imperfect appliances, partly to the resistance with which bladders set combined with the large capacity of the bladder, and partly to imperfect methods of accident. The manner in which it was
obtained was as follows:—The bladder was dissected away for a short distance from the neighbouring structures on its anterior face. A length of thread was then run round the body of the organ, without penetrating the mucous coat, to form a sort of purse-string suture which was then firmly tied reducing the cavity of the organ accessible from the urethra to small dimensions. The cystotomy was then drawn upwards on the Mons, & its posterior part. This open medically & the Corpus Spongiosum, & with it the urethra, divided. From versely & dissected back for a short distance. The rectum of an ordinary glass syringe, of about 1½ oz. Capacity, filled with thin plaster cream, was then inserted to the hill into the cut end, & pressed by the fingers & thumbs of an assistant. The plaster was then injected, the syringe withdrawn (the assistant still gripping the divided urethra), filled, reinserted & the process repeated until injection became difficult. The urethra was then ligatured & the specimen left till resin day before being dissected out. Only a section of the bladder on the one hand & the bulbous urethra on the other were represented at each end of the specimen. The body was that of an adult male. It will be observed that the cavity of the lower fundus lies behind the vesical orifice of the urethra in such a manner that, in the lithotomy position, one would be forced in saying that the lower fundus dropped below the level of the vesical orifice. The prostatic urethra is large, flattened somewhat from before backwards, Narow at the vesical orifice, from thence
it widens out steadily for \( \frac{6}{\theta} \) when it suddenly narrows down again & takes a sharp turn forwards, (upwards in the lithotomy position), being deeply angled inside the bend, to become continuous with the narrow cylindrical membranous urethra which, in turn, curves forwards & upwards to terminate in the sudden & almost globular expansion of the bulb. The impression made in the cast by the summits of the colliculus seminalis lay at the anterior end of the dilated portion of the prostatic urethra from which the impression of a ridge could be traced forwards for quite \( \frac{1}{2} \) & the extremity reaching reaching in the cast the spot where a fracture has been detected with sealing wax. No ridge could be traced back towards the bladder.

That portion of the prostatic urethra which extends from the vesical orifice to the perineal space of the bend has been spoken of as the "horizontal urethra" because it lies horizontally in the lithotomy position. It would more correctly, for obvious reasons, be termed the "vertical urethra" or the nearly vertical portion of the prostatic urethra. It is very large & triangular in shape flattened from below backwards with its apex at the extremely dilatable vesical orifice & its base at the sharp prostatic bend. The narrow portion of this part of the urethra appears in part to spring from the anterior face of this base.

(See sketch on lower page)

The practical significance of all this is that in order to obtain free access to the "horizontal urethra" it will be necessary to make an incision whose position is indicated by the line...
A.B. in The Sketch.

BLADDER

HORIZONTAL URETHRA

URETHRA CUT ACROSS JUST PASSED SHARP PROSTATIC ANGLE.

Rough Sketch, Natural Size, of

Cecolic face of Cant of prostatic Urethra

Sketch (from a photograph) of the Membrano-prostatic

Urethra - A.B. indicates portion of incision.

An incision anywhere in front of this fascial spot is likely to give rise to difficulty in introducing instruments; And, conversely, if any difficulty is met with, it is almost sure to be due to the incision being placed too far forwards or being too small. The proper procedure is then to enlarge the incision towards the rectum.

If, when difficulty is met, it goes to the incision being placed too far forwards, force be used to push on the bistourie. The narrow cylindrical membranous urethra is apt to be torn across by one's hand, if one instrument is picked up another, possibly a smaller one, one is sure to miss the
proximal end entirely & to find ones way into the tissues of the pelvic floor & possibly further.

This, the writer is convinced, is the correct explanation of the accidents that have happened to Henderson & others. It is also an argument against the proceeding of dilating the opening in the urethra by a female sound. For, quite apart from the fact that enlarging an opening by tearing, when it can safely be done with the knife, is unscientific surgery, such a proceeding is very apt to tear the urethra around right across.

**The Operation of Perineal Litholapaxy**

**The guiding principle of the operation.**

The operation aims at obtaining direct access to the urethral horizontal urethra by an incision in the perineum which opens up the narrow membranous prostatic urethra & is just large enough to admit a lithotrite or a cannulating cannula of sufficient size to deal with the stone comfortably. It leaves the neck of the bladder & greater part of the prostatic urethra untouched.

**Preparation of the patient.**

The principal nature of the complaint, the Continuum, decides if there will be a chance to operate as a rule of any considerable delay in undertaking an operation. It has, as a matter of fact, been the rule with the writer to operate as soon after admission as circumstances would permit. Should delay for any reason be thought necessary or advisable, it would be as well to place the patient under treatment. This should begin with a mild purgative & followed by rest in bed, a light unremitting diet, a hot hip bath.

Footnote - *'Horizontal' in the lithotomy position only.*
Morning Dressing, & a mixture of Benzoic Acid, Bicarbonate of Potash, resorcylic acid & Urea mixed. This seems to act better than when benzoate of potash is prescribed as such. It is wonderful how a patient's condition will improve on this regime. Some surgeons wash out the bladder with boiled boracic lotion & inject iodoprom for 5 days or two before their lithotomies & lithoclastases. The writer has tried this without any obvious benefit. The procedure moreover only adds to the patient's distress.

The immediate preparation for the operation is conducted on ordinary lines. Special care should be taken to insure the bowels being thoroughly emptied. This is easy enough in adults but in children the matter is usually difficult. Much can be done by a careful persevering nurse but it will be found that, in addition to the usual castor oil & enema, it is useful to have the lower bowel washed out with an irrigating Fogarty tube under an anaesthetic. Just before the patient is brought into the room. Unless this is done one is apt to be annoyed by prolapse of the rectum & escape of faeces as soon as an instrument is introduced into the bladder. The parts are sterilised in the usual way. The lavage is repeated on the table just before the operation.

**Instruments**

The proper shape of a medical staff has already been discussed. The obturator one with a sharp angle short beak & bulbous point. He has often seen an ordinary child's staff to suit his ideas. Whether instrument is used a couple of sphygms likely to suit the patient's method. Should be laid on the table.

An Anarché pencil or scalpel for marking the bulbous point.
A narrow straight bistoury does exceedingly well for the cutting part of the operation. Its point however is apt to chisel in the staff unless the handle is well sharpened. Messrs. Arnott & Sons have made for the writer a narrow boy knife with an obtuse point in the middle of the end of the blade. The left side of the instrument is marked in inches & sixteenths to enable one to note the depth of the wound from the surface.

The blade in this figure is 1/100 of an inch.

Knife for Perineal Litholapaxy manufactured by Arnott & Sons.

for future reference I should it be necessary to enlarge the wound on a chisel for a chisel for the operation. All the operations shown in the appendix were performed without this requirement.

A large blacklead sound. It is probable that this could be dispensed with entirely.

Little wires - These will vary with the operator's taste or do not appear in assortment from those one would place on the table for an ordinary Bigelow except that one is not tied down to the same-present by the capacity of the instrument. A very large instrument, a No. 10, a No. 7,

a very small one say a 5 or 6 are ample for any perineal litholapaxy. It is as well to avoid using very large instruments in children. No. 10 is as large as one should think to use a No. 7 for much the better. This is, by the way, an extremely useful stage if the same syringe be used in the operation with it. The smallest wires are reserved for the latter stages of the operation where fragments just large enough to block the eye of a small cannula have to be dealt with. The writer has had a wide experience with
different makes of lithotrites & does not stand alone in his preference for Weiss's instruments. Whether it is the pitch of the lens, the hardness of the steel, or the shape & set of the jaws, it is difficult to say but calculi seem to be more easily broken up by them. Even after one has had the feeling that one was about to bend one of some other kind.

**Evacuating Canula & an evacuator.** The use of a large canula evacuator will as a rule do more to shorten an operation than a large lithotrite. It should be the rule to use the largest canula the wound & horizontal urethra will easily admit. A complete assortment of from #4 to #8 or #10 upwards should therefore always be at hand. This statement will contrast strangely with what has already been said about large lithotrites. It must be remembered however that these latter are very heavy & that one is liable to unconsciously to use more force with them than is desirable. The same remark does not apply to a canula with which one can, with the utmost gentleness gauge the capacity of one's operation instead.

The canula has never used straight canulae. He can see no reason why they should not be satisfactory.

**A director.** An ordinary director will do but it is unwise and to manipulate. The lenticular, perineal, lithotomy, and director, manufactured by Andrews, Jones is easier to use. It is built on the lines of a Teall's Gargett with a director substituted for the
gorged & the handle set at an acute angle.
From close textured sponges the size of one fist or smaller
to prevent the escape of fluid should the patient strain or
lie control hemorrhage, should the necessity arise, during
the progress of the operation.
The usual accessories of brass, lotion, glass syringes
(½ to 1 oz. capacity) irrigator c. The lotion used both
boric lotion for washing out & disintegrating the bladder.
Mingled water would do just as well.

Assistant
An anesthetist who should be particularly reliable as it is
often necessary to get the patient deeply under especially
during the Sanders' stage of Constricting to avoid reflex vomiting.
Two assistants to hold the patient in the lithotomy position.
The assistant has never had the necessity of using mechanical
means for holding the patient's hips.
The assistant to take charge of the siphon, help with sponge
pressure & assist generally.
The assistant to take charge of sponges, hold hand the
vacuum, hold hand syringes etc.
The operator can help him self to instruments placed on
a glass table to his right.

The Operation
The patient is anaesthetised. The nurse has always used Chloroform.
The bladder is washed out with repeated syringes full of warm
boiled boric lotion through an evacuating cannula. This clears
the bladder of carbonic acid & irritants & degummen, tone.
Repeatedly injecting appears to render the bladder more
tolerant of distention, specially if the process be completed
with an evacuator. This is an important matter, for a tightly
contracted irritable bladder hampers the operation as it does
a Bigelow. An ounce or two of lotion may be left in the bladder at this stage but this is not absolutely essential. The bulbular point is marked. With the patient still lying in a lateral position, pass a short beaked sounds as far as it will go with its concavity towards the perineum; mark the bulbular point with dissecting pencil or still better by a nick with a scalpel to remove the sound. The patient is brought down to the foot of the table with his buttocks projecting well over it. The staff is passed with the limbs held extended or hanging down. It is possible with a well constructed staff to carry out this step in the lithotomy position. The patient's limbs are drawn up into the lithotomy position with the thighs well flexed on the abdomen. The assistant should remember that to allow the thighs to move to any great extent, especially in the direction of retention is apt to hamper the introduction of instruments by making the sound oblique.

Make sure the staff is in the bladder. The surgeon momentarily leaves change of the handle of the staff (i.e. if he has not passed it himself) to Strick. The stone, he then hands the instrument back to his assistant. Since the subjects of these operations are usually brought on the table with a vino to brushing if possible via urethra, the surgeon has already satisfied himself that there is a stone in the bladder that it is impossible, difficult or impossible to perform a Bigelow.

The staff is held as precisely as possible in the midline line in a vertical position neither pulled up nor pressed down but just in that position in which it would lie when it is
felt to "slip into the bladder." Any considerable pressure downwards on the shaft of the instrument or any attempt to drag the curve up under the pubic arch is apt to unnecessarily distort the relation between the urethra and the more superficial perineal structures, so that, when the instrument is withdrawn the wound in the former is apt to pass out of alignment with the wound in the latter. The attitude of the assistant, the manner in which he grasps the staff does not differ from that in ordinary use.

If the rectum is pendulous it is held up by the assistant on the patient's right.

The incision. The surgeon sits facing the patient's perineum. Keeping his eye on the staff, perhaps, slightly holding the shaft of the instrument between thumb and forefingers of the outstretched left arm (without of course interfering with the vertical position of the instrument as by the assistant), he enters a narrow sharp straight bistoury at a point about a quarter of an inch in the adults or somewhat less in children, behind the bulbous point. The edge of the bistoury is towards the table. The long axis of the blade is parallel with the table. The position of the incision is of considerable importance. It must involve the point where a file passed from within the bladder along the prostatic urethra would project the surface of the perineum i.e. the vesicomedical bend.

The staff can be felt by slight pressure with the point of the finger for some distance down the perineum. The lowest point at which it can be felt must not be taken as a guide to the point at which the bistoury should be
Entire.
If the incision is made too far forwards, the membranes

Photograph of perineal lithotomy wound.
Note that in this particular case the wound is in front of the so-called central point of the perineum.
The perineal septal fold is well demonstrated.

Photograph before an operation.
The point of the 'Hynie' indicates the position of the bulbous point.
was entered at the so called mid point of the perineum, a dissection showed that the accelerator urinii or bladder had been wounded just to the left of the middle line. This tendency to do so to the left does not however seem to have influenced very materially the operator's ability to hit off the staff to the considerable certainty.

This point, viz. that of the chances of missing the staff, has been dwelt on at some considerable length not because one is ignorant of any accidents having arisen from this cause but because it is an aspect of the subject which is apt to strike one who has not performed the operation before, which is, quite without sufficient reason, liable to act as a deterrent to one undertaking one's first operation. The procedure is, as a matter of fact no more difficult to perform than the corresponding steps of a lateral lithotomy.

Make sure that the point of the knife is in the groove of the staff. If in doubt a slight lateral movement of the point will settle the question. Apply a case or two one performs this step of the operation with the utmost confidence. Raise the handle of the knife and run the point along the groove in the staff for about half an inch. The wound in the soft parts overlying the urethra is slightly enlarged as the knife is withdrawn.

The grand aim of the operator is to make his incision only just large enough to permit the instrument he wishes to use. The beginner will probably err on the staff side and make his incision too large. No ill effect will follow this procedure, but should he choose to make his wound smaller, he can do so with the consciousness
that it can, with the greatest ease & safety, be enlarged on a director at any future stage of the operation.

An incision made precisely in the way described in an adult male body & followed by a dissection showed that the knot had escaped entirely. That the knife had made a long transverse median wound in the Membrana-preputiæ urethra half an inch long. The wound stopped short of the summit of the Colliculus Seminale but involved the ridge that runs forward from it.

\[\text{Diagram: Bladder, Colliculus, Sinos pessulares, \ldots Jacobs ducts, Incision.}\]

Rough diagram showing position of incision of in Perineal Litholapaxy. Note that the incision gives access to the widest part of the urethra & approaches the ducts of the most-prominent part of the Colliculus with the important structures opening therein. An accident prevented a photograph of an actual specimen being inserted.

A probe is introduced along the groove in the staff into the bladder.

The staff is withdrawn.
In the older operations, where the ureter was placed at the "midpoint of the perineum," and where the precise anatomy of the operation was imperfectly understood, the surgeon was introduced to a female bladder sanded and forcibly dilated the opening by firm pressure in various directions. Such a proceeding is irrational and fraught with danger. The sound may be manipulated in such a way as to dilate the vesical orifice of the urethra. We are not sure that when this is necessary, the probe may be left in as a guide to the bladder. The operator is at all times about getting his instrument along the proper track. But this too is not absolutely necessary.

The surgeon now stands up with his legs shoulder pointing to the patient's right leg facing in a direction at right angles to the table. In this position the remaining steps of the operation are completed.

A cannula is now introduced by a few ounces (according to the age of the patient) of solution injected. The method of introducing the cannula is exactly like that of introducing the catheteter. This process will be described presently. The writer has usually employed glass syringes to fill the bladder, but an excellent arrangement is to use an "Evanulator in the following way:-- A cannula is introduced. A filled Evanulator with both taps closed is attached to it. The lip at the top of the Evanulator is filled with solution. The upper tap opened. The lower tap is now slowly and partially opened. The assistant holds by the large silver glass full of solution and slowly runs it into the lip so as to keep the latter full. While the surgeon with his left fingers on the lower tap regulates
the flow so as to prevent the cup getting empty quicker than the assistant can fill. When the cup ceases to
empty itself, the stopes are closed, the cannula with the
 evacuator still attached removed. A tuig may be
 placed on the wound in this is done to prevent the
escape of fluid. The bladder can thus be filled at
a very low pressure and no account need be taken of
the amount run in.

The lithotrite is introduced, the instrument is held wit
with the direction of the sound is slipped along the newly-made path to the bladder as far as it will go. With the thumb pressed steadily against the perineum, the handle of the instrument is made to describe a half circle, around the point of junction of the heart of shaft as a centre, till the handle comes to point upwards as shown in the diagram. The handle is now drawn for a short distance in a direction away from the patient's head, & the instrument...

Diagram to illustrate method of introducing lithotomy 2nd position.

Note, in the 2nd position, that if the point of the instrument is pressed on towards the bladder, so that the shaft comes to press firmly against the perineum, the point slides along a guided by the upper muscular strip of vesical wall.
allowed to glide gently into the bladder.

Diagram illustrating method of introducing instrument - 3rd position. Note that the horizontal urethra is raised from its horizontal position by the point of the instrument so that its elbow glides along the floor of the prostatic urethra depressing it as it proceeds.

Other ways of introducing an instrument, equally free from objection, will probably suggest themselves to anyone practising the operation, but the principle upon which the above method is based is good, since it keeps the point away from the lower angle of the slit in the urethra.

The remaining steps of the operation are precisely that of an orchiary orchilegasy. The instrument is held, manipulated, or maneuvered in precisely the same way.

A word about evacuation: - The urethra has then one
Surgeon at least who possesses to his ease evacuation entirely in his uroscopy. He fills the bladder with solution, closes the orifice in the Canula with his right thumb, places his left hand on the palmar and hypogastric region, compresses the bladder, gives the Canula a rapid shake so as to disturb the fragments lying in the lesser sinuses, then suddenly removes his thumb so as to allow the imprisoned fluid to escape with a rush while the shaking of the Canula and the hypogastric pressure continues. Such a proceeding is especially easy to perform in a perineal uroscopy. It is useful in the earlier stages of evacuation as only the lighter fragments are materially disturbed. There is no very great suction action. The use of the Canula is therefore very much less likely to get blocked with fragments that too big to pass up the channel. When such a fragment does settle on the orifice it is quietly shaken off. The proceeding however cannot be depended on to entirely empty the bladder. It is, so far as the writer knows only used by those who are of opinion that a few fragments left behind are of small moment as they will be passed per rectum within the following twenty-four hours or so. It is safer obst to always use the evacuator and to make sure both a sound in the bladder and finger in the abdomen that the organ is quite clear of debirs.

A pad of anti septic cloth is fixed on the perineum with the patient's knees slightly fastened together before he is sent to bed.
DIFFICULTIES & COMPLICATIONS

Typically in introducing the Stiff & danger of wounding the utracta may be avoided by using an instrument with a small curve, short head, bulbus point, and, especially when using the ordinary instrument, introducing it with the patient's limbs extended or hanging over the end of the table & using the utmost gentleness.

Typically in cutting off the Stiff. This has already been discussed. With moderate care one need have no anxiety on this score.

Typically in introducing the introitus. If difficulty is met with it will most usually be either from the first one tries, or, subsequently, when one changes ones instrument for a larger. The reason of this is that the usual & most serious cause of obstruction is to be found in one having placed ones mission well forward & entirely in the Uterus Membranes utracta or that ones mission in the utracta is too small. The causes of difficulty may be enumerated as follows:

1. The wound becoming oblique owing to the patient's limbs for one reason or another becoming extended. This is not a serious cause of obstruction. The remedy is simple & obvious.

2. The opening in the utracta passes out of alignment - that the perineal wound owing to the relation between the utracta & the more superficial perineal structures being unnecessarily disturbed by pushing the Stiff down or dragging it up under the arch of the pubes during the threading of the mission. Anatomically this points to the latter proceeding
being the more dangerous of the two. No difficulty need be anticipated if the slaty is held as already described.

3. The uterus in the urethra being placed too far forwards. Any attempt to pass a urethral therefore means trying to force it through the narrow membranous urethra. This was, in the writer's opinion, the great fault of all the older operations. The reason why a proceeding, which so often gave such strikingly good results, was contested upon with suspicion and disavowed. The difficulty is more likely to arise if the incisions given are followed out. Since the incision is so placed that it begins in front of it involves the vesico-urethral joint. Should a difficulty be met with from this cause the remedy is to carry the urethral incision backwards in the manner to be described under the next heading.

4. The incision in the urethra being too small. The writer considers that this is another difficulty that, owing to its not being recognized, has contributed to the failure of the operation to attain the popularity it deserves. It might occur to anyone that it is especially apt to trouble those whose effort is to make their wound as small as possible. The object need give rise to no anxiety. The wound should be enlarged downwards (towards the rectum) on a director. The author's perineal trocar and guide is a useful instrument to use for the purpose (Fig. 132).

It is introduced through the wound in the bladder. The handle, pointing upwards, is grasped in the palm of the left hand and held so that the grooved surface of the director presses gently against the upper wall (in the distended position) of the prostatic urethra and wound. The trocar is then run along the groove with its edge towards the rectum of the wound enlarged...
to the desired extent. Care should be taken that the incision is not made too big or that the knife is not run too far forward on the groove so as to wound the floor of the horizontal urethra. It is better to make the section in two or three stages than to risk a large gaping wound. Generally one slight cut is enough. An ordinary director may be used for putting the knife but it is a bit awkward to manipulate.

Haemorrhage. The probable cause of this complication has already been alluded to. It can be completely controlled, without interfering with the progress of the operation, in the following way:— An assistant stands facing the operator and, with his hand and arm well out of the operator's way, he presses a small gauze close-textured sponge firmly into the perineum between the anus and the wound, thereby maintaining pressure towards the pelvic cavity and pelvis. When the operation is completed the haemorrhage will be found to have ceased. (See Case No. 132 and 225 in the Appendix. In Case No. 43, haemorrhage occurred in the afternoon and was easily arrested by pressure with a pad or T bandage).

Sphincter reaction. A small boy aged 3 was operated on in May 1902. Repeated streaming during the operation necessitated the removal being postponed to prevent fluid escaping passed the narrow base of the urethra. Towards the end of the operation it was noticed that the anterior part of the perineum was back of the foreskin was pale & distinctly swollen. These parts subsequently partially sloughed. The patient recovered (Case No. 89).
The following is a tabulated statement showing the mortality and duration of convalescence of all cases shown in the Appendix.

<table>
<thead>
<tr>
<th></th>
<th>Total No. of Operations</th>
<th>Total No. of deaths</th>
<th>Mortality per cent</th>
<th>Average No. of days in Hospital-Recovery only</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lethalpaseis</td>
<td>156</td>
<td>9</td>
<td>5.8</td>
<td>9.5</td>
</tr>
<tr>
<td>Perineal Lethalpaseis</td>
<td>35</td>
<td>5</td>
<td>14.2</td>
<td>16.2</td>
</tr>
<tr>
<td>Lateral Lethalpaseis</td>
<td>14</td>
<td>4</td>
<td>28.5</td>
<td>43.9</td>
</tr>
<tr>
<td>Suprapubic Lethalpaseis</td>
<td>9</td>
<td>4</td>
<td>44.4</td>
<td>33.0</td>
</tr>
</tbody>
</table>

**Mortality**:

Before proceeding to comment on these figures the author would like to draw attention to the fact that a very large proportion of patients come into hospital in the most acute state of illness, having stayed out as long as they could or used every bazaar quack remedy (cheeply operated) they could find. Another item that one always makes it a point of visiting on patients remaining in hospital till one was quite sure they were safe. This has not always been an easy matter, but one yielded to the relatives' desire to remove the patient a day or two after operation once hospital mortality.
Mortality returns could have been considerably reduced. The three kidney cases for instance died 24, 6, and 16 days after operation respectively. Yet another point to remember when looking at the records of stone operations is that parents are reluctant to send their children for the alleviation of pain.

A glance at Col. 3 of the Table shows that perineal litholapaxy is an easy second in point of mortality, being far and away superior to the lateral and suprapubic operations. But these figures, like all figures of the kind, give one a very imperfect idea of the minute risks of the procedure. To start with, the operation deals, if one might so express it, with considerable lesions. Cases in which the capacity of the kidney or the size of the stone or both, or some other condition renders an ordinary litholapaxy impossible or inexpedient. Many of the operations too were undertaken only after persevering efforts at crushing were perirenal had failed. It may therefore honestly be said to have, on the whole, dealt with a more class of Cases than the older perineal established procedure of litholapaxy.

If now we turn to the Causes of death represented in the Table, nearly, we find that three out of the five cases were lost from kidney complications, due to chloroform and the worm poisonings. Facts which speak for themselves. Really to get a very definite idea of the recent mortality, one would have to give the operation first place for a
long succession of cases. The impression left in the

Deaths from Unavoidable Causes -
Variously described as Cardiovascular, Convulsive, and Suppurative or diffuse fibrinoid.
Deaths traceable to the operation or to accident.

<table>
<thead>
<tr>
<th>Dystelecapy</th>
<th>Perineal Litotapy</th>
<th>Lateral Litotapy</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>


Within mind is that, given a reasonable amount of care, the operation should not have a mortality any greater than an ordinary lithotomy. Should go far towards reducing the mortality of lower operations generally. Convalescence. The figures in Col. 4 of the Table on page 43, though open to a certain amount of criticism, gives a fair general idea of the duration of Convalescence, to be again one ratio that Perineal Lithotomy is the easy second. To be precise the periods spent in hospital were 6, 5, 17, 12, 24 (external oblique), 40 (extravasation), 13, 15, 16 (wound made unnecessarily large), 13, 11, 23 (wound made unnecessarily large), 15, 10, 16, 6, 7, 9, 28 (local pyogenic injection), 11, 15, 16, 14, 37 (persistent fistula), 11, 14, 15, 22 (local pyogenic injection), 7 & 26 (local pyogenic injection) days.

And now we come to a most important point in the history of these cases, viz., that in 14 out of 30 recurrences not a drop of urine was escaping from the bladder on the morning following the operation; in 4 more, urine escaped for one day; in another four for 2 days; in one, in which the patient had been left behind for 3 days.
The cases recorded this period will be immediately referred to, but surely this is a great advantage over any other cutting operation known. This advantage is accentuated by the fact that, even when urine did escape from the wound, the patient had all play perfect control. Thus was absolutely no incontinence. The urine was passed and not dribble away.

Of the remaining 2 cases, one had a vesicle of the bladder, three had their wounds made unnecessarily large, and thence from the wounds get infected. Suppurated. But in none of these was there any incontinence. Urine was passed and did not dribble away through the wound.

Remote results:

Unfortunately the losses were slight. None cases in India. The nurse follows them up. All cases were carefully attended before leaving hospital to make sure the bladder was free from sepsis, and all of them had perfect control over the act of micturition.

**Indications**

It is hoped that two points have been made clear viz. that vesical hysterectomy remains next to Bigelow’s operation on the list of Stone operations, that it is far away superior to any other known cutting operation. This being so it follows that whenever possible a case of vesical calculus should be dealt with by excising and evacuation therewith. Thus whenever this is impossible perineal hysterectomy should have precedence over all other cutting operations, the idea of

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Footnote:

a. 10 days. Case No. 34 of the Appendix
b. 15, 10, 10 days. Cases No. 108, 181, 223 of the Appendix
c. 18, 13, 21 days. Cases No. 95, 115, 179 of the Appendix
performing a lateral or a suprapubic should not be
undertaken until one is satisfied that the stone cannot be
crushed or evacuated through the perineum. Beyond this
again there is a group of cases to which perineal lithotomy
is peculiarly applicable, viz., instances where, while it may
probably be possible to complete a Beigelow, it would be
difficult or dangerous or inconvenient to do so. Thus it will
be seen that the indications for the operation are larger
of a relative kind.

Perineal Lithotomy can of course only deal with bulkier
stones. A stone may be ineruptible because of its
size or because of its hardness. Very large stones,
those that cannot be gripped or chipped down to a
size 10 in children or a size 15 in adults, had better be treated by a suprapubic. In all out of the
nine cases that were dealt with by this operation
the stones weighed when dry 490, 1740, 2060, 1080,
956 (a child of 10 yrs. age), 2170, and 1890 grs. respectively.
Very hard stones had better be treated by lateral
lithotomy.

Having thus excluded suprapubic and lateral it remains
for us to point out which of the remaining cases should
be dealt with by Beigelow through a small perineal
incision. A Beigelow may usually be conducted skilfully,
insensibly or impossible in a perineal lithotomy neither
by the following conditions:

1. The stone may be outside the gripe of the lateral
lithotome the vomitoria will admit.

A series of stones picked up at random from a collection
and stripped by vomitors of various ages gave the following
results when weighed. The stones were the largest the
blades would best with when caught in their small
diameter.

<table>
<thead>
<tr>
<th>Lithotrite No.</th>
<th>4 1/2</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>gms</td>
<td>60</td>
<td>180</td>
<td>495</td>
<td>690</td>
<td>1320</td>
</tr>
<tr>
<td>45 gms</td>
<td></td>
<td>87</td>
<td>432</td>
<td>643</td>
<td>945</td>
</tr>
<tr>
<td>45 gms</td>
<td></td>
<td></td>
<td>690</td>
<td></td>
<td>1049</td>
</tr>
</tbody>
</table>

The above figures are absolutely no practical value for the only means of ascertaining that a stone in the
bladder is too large to be crushed by a given lithotrite
is to make repeated efforts to catch it in the final part
channel while the patient is under an anaesthetic.
So too, there is no means of ascertaining the capacity
of the urethra except by passing instruments under
ultrasonic. A glance down the list in the appendix
will show that boys of the same age may have
urethrae of widely different capacities. The same
remarks apply, in a modified degree, to men.

2. The urethra may at times only admit a
small lithotrite, say No. 5, or a comparatively small
cannula. With the former it may be possible to
chip down and finally crush a firm sized stone, but
the fragments will have to be ground very fine
before they will pass through the cannula. Such cases,
due to increase of the risk of leaving fragments behind
of the length of time occupied in the operation, had
best be treated by introducing fine sized instruments
through an incision. The stones actuates... only very small stones be brushed through a small
urethra.

3. The urethra may be the seat of organic
4. When dealing with children one sometimes finds that while the stone is easily within the grip of the largest lithotrite (say a 6 or 8) the urintha will admit it is so compressing hard that one feels one have not stung up any tighter lest one break it or, still worse, bend one instrument. Such cases are best treated by introducing a pair of rigid lithotrite through the perineum. Should one then fail to crush (a rare occurrence) the stone could be converted into a lateral elliptical division if the stone removed.

5. Perineal litholapaxy is a special value in the case of soft chalky stones. Still more so when the bladder, the solid item, refuses to contain more than a very small quantity of fluid. These are extreme cases of peritonitis especially in boys when one usually passes the largest lithotrite the urintha will admit. Soft chalky fragments have a knack of getting caught in
the groove of the female blade at or just above the root of the fenestrum. Here the recess impact of the male blade catches them & squashes them out into a cement-like layer which clings firmly to the sides & bottom of the proct & causes the two parts of the instrument to jam with the blades separated. Any attempt to screw up one of the highly instrumented cases is now almost certain to bend the female part just above the root of the fenestrum. The point about these cases is to keep the bladder well filled to only lightly brush the stone & to evacuate at short intervals. The slightest stiffness in the movement of the blades should be met by at once removing the instrument & cleaning it. Stones of this kind in boys had better be crushed & sandblasted through the perineum because large & porous metal instruments, which can more readily be removed home without getting bent, can be used & because jamming is of less importance when the instrument has been passed through a wound which can be enlarged than through the urethra which cannot. The operation therefore is very much shortened & the use of a large dish uterovaginal & full sized cannulae. The nature of the stone can be diagnosed & its soft crumbly feel when gripped, & by the escape of chalky fluid from urethra.

The above also applies the perineal operation to cases of adults as the capsacious urethra when the instrument shows a tendency to get clogged more than once or twice.
The general condition of a patient may occasionally, during the progress of a litholapaxy, indicate a speedy evacuation of the bladder. This can be done by introducing a large catheter and evacuating a camera through the perineum.

7. The bladder being washed out—the bladder being a large evacuating camera through a small median perineal incision in cases of severe persistent pyelitis following a litholapaxy. In some of these cases fragments have been left behind, in others the bladder is clean, but in all nothing but benefit results from the proceeding.

CONCLUDING REMARKS

The writer claims for the operation:
1. That it is simple and safe.
2. That it has a short convalescent period.
3. That the convalescent period is free from the annoyance of dribbling.
4. That it has a low mortality.
5. That it can reduce the total of 1500 operations generally since it lasts from litholapaxy what is minute for it to deal with with 1000 from other cutting operations with a higher mortality cases than would otherwise be there.
6. The ejaculatory ducts are not wounded.
7. The operation is never followed by incontinence.
APPENDIX

224 Stone operations of all kinds.
<table>
<thead>
<tr>
<th>No.</th>
<th>Name</th>
<th>Age</th>
<th>Operation</th>
<th>Date of Operation</th>
<th>Weight of Stone (g)</th>
<th>Urine clear of blood</th>
<th>Urine clear of Pro and Pus</th>
<th>Urine clear of bowels</th>
<th>Day to Hoop</th>
<th>Result &amp; Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>17</td>
<td>Gorinda Bow</td>
<td>9</td>
<td>Lithotomy</td>
<td>6 Jan.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>20 Jan.</td>
<td>26 Jan. 20</td>
</tr>
<tr>
<td>18</td>
<td>Janpasa Lambiu</td>
<td>22</td>
<td>Litholapasey</td>
<td>20 Jan. 593</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>Shripati Guni</td>
<td>3</td>
<td>Perineal Litholap</td>
<td>20 Feb. 100</td>
<td>22 Feb.</td>
<td>8 Mar.</td>
<td></td>
<td></td>
<td>22 Feb.</td>
<td>9 Mar. 17</td>
</tr>
</tbody>
</table>

**Result & Remarks**

- **Cured.** A small hard stone that might have been crushed with a blow lithotrite through a small median incision. Urine passed partially per urethrum for the first time on Jan 16th and entirely on Jan 20th.

- **Died.** Received pain in the right side, became acutely during the night. Sudden into a coma-like condition. Died 2 days after operation. Suppression of urine.

- **Died.** Shripati admitted a No. 6 lithotrite. The child appeared to be doing quite well; was found dead in bed at 4:15 AM on the 24th. No accounts could be given. Sudden death. No post-mortem could be obtained.

- **Cured.** Temp rose to 100° on evening following operation.

- **Cured.** Shripati only admitted a No. 7, which was too small to break with. Urine passed both by the woman and by the patient on day following operation. Parental consent necessitated detention for 17 days.

- **Cured.** Pain on 8th and 9th April.

- **Cured.** Evening rise of temp. 101° on day 9. No two days after operation.
<table>
<thead>
<tr>
<th>No.</th>
<th>Name</th>
<th>Age</th>
<th>Operation</th>
<th>Date of Operation</th>
<th>Wt. of Stone</th>
<th>Urine clear of Blood</th>
<th>Urine clear of Pus and Foul</th>
<th>Urine on Settling of Slight</th>
<th>Days in Hoop</th>
<th>Result &amp; Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>42</td>
<td>Thad Dhondi</td>
<td>15</td>
<td>Latinal Lithotomy</td>
<td>7 June 215</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td>3 July</td>
<td>16 July</td>
<td>39</td>
</tr>
<tr>
<td>43</td>
<td>Dharma Raghjju</td>
<td>55</td>
<td>Perineal Lithotap</td>
<td>11 June 140 11 June 24 June 13 June 22 June 13</td>
<td>10</td>
<td>&quot;</td>
<td>&quot;</td>
<td>16</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>44</td>
<td>Nam Naitha</td>
<td>14</td>
<td>Latinal Lithotap</td>
<td>11 June 115</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td>22 June 24 June 13</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td>45</td>
<td>Fakir Rahimn</td>
<td>3</td>
<td>Lithotapasy</td>
<td>15 June 51 19 June &quot;</td>
<td>19</td>
<td>&quot;</td>
<td>&quot;</td>
<td>19 June 14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>46</td>
<td>Shankar Bhima</td>
<td>3</td>
<td>Lithotapasy</td>
<td>2 July 40 3 July 3 July &quot;</td>
<td>3 July</td>
<td>&quot;</td>
<td>&quot;</td>
<td>3 July 1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Cured - Urine passed per Rectum through the wound on the 27th June. The wound had completely healed on the 16th July, but the boy had developed entero for which he was transferred to the general ward before the mission. He was discharged from the hospital on July 24th. He was cured.

Cured - Stone outside the Urethra of the largest Lithotome. The patient was admitted on 6th July. His haemorrhage was controlled and finally arrested during this period by means of a sponge. Patient was discharged on 15th July. Urine passed through the wound when the patient passed stool for 24 hours after operation. Wound completely healed on the 8th day. Persistent pyelitis necessitated detention for 15 days. Fever rose to 101, 102, 103 on 11th 12th 13th.

Cured - A very small stone - Taken away by his relatives against advice on June 24th. His wound healed.

Cured - The patient was well after the operation, but the stones remained on taking him out. Urine not collected during his illness was washed with a No. 5 Lithotome. 
Cured.

63. Namá Bhukí 8 Litholapaxy 22 Sept. 23 Sept. 26 Sept. 26 Sept. 4
Cured. No pain or rise of Temp. after operation.

64. Sagadhi Shyapathi 26 Suprapubic 1 Oct. 17 Oct. 4
Died. Weak exacerbated in great distress before operation.


66. Raghis Genú 46 Suprapubic 5 Oct. 2060 lbs
Cured? Patient looks much older than his stated age. The disease is said to be of 4 years duration. He had been having a rigor & rise of Temp. each evening for some time before operation. Bladder inflated with chroniform gut & proximal space drained. Urine leaked through the wound on the 2nd day after operation. Sutures Subsequent tothis discharge, & some urine was passed per urethra on the 6th, 7th & 10th days after operation. Then again on
    Cured. Great Venereal disease, Aetial postaps, Tuberculois of Spleen, a rise of temp. before operation. Crushed with a No 7 in 53 minutes. Operation for paraphymosis on Dec: 3.02. Temperature obvious malarial, yield to Quinine.

72. Kisitá Anáji 3 litholapaxy 1 Dec: 2 Dec: 9 Dec: 8

73. W. A. Baluráni 50 litholapaxy 8 Dec: 9 Dec: 20 Dec: 12
    Cured. Great Venereal disease with mental postaps before operation. Temp. rose to 100° on evening of day of operation.

74. G. L. L. 20 litholapaxy 10 Dec: 12 Dec: 15 Dec: 5
    Cured. No. 8. was the largest lithostone, the patient was admitted. Price of temp. to 101° on evening of day of operation.
<table>
<thead>
<tr>
<th>No.</th>
<th>Name</th>
<th>Age</th>
<th>Operation</th>
<th>Date of Operation</th>
<th>WL of Stones</th>
<th>Urine clear of blood</th>
<th>Urine ceased to flow for wound</th>
<th>Date of discharge</th>
<th>Days in Hosp.</th>
<th>Result &amp; Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>85</td>
<td>András Rappá</td>
<td>13</td>
<td>Lithotripsy</td>
<td>21 May 1923</td>
<td>240</td>
<td></td>
<td></td>
<td>1 June 23</td>
<td>11</td>
<td>Washed out. On the morning of the 17th, 44 hours after the operation, the patient was reported to be &quot;sorous&quot;. From that time on he gradually sank into a coma. Concluded to died 72 hours after the operation.</td>
</tr>
<tr>
<td>86</td>
<td>Sándor Bálájí</td>
<td>35</td>
<td>Lithotripsy</td>
<td>23 May 1956</td>
<td>350</td>
<td></td>
<td></td>
<td>31 May 1956</td>
<td>8</td>
<td>Cured. Malaria fever before operation treated with quinine. Utterly admitted a 12 kg. diastolic. The rise of temperature, obviously Malaria, on the day following the operation.</td>
</tr>
<tr>
<td>88</td>
<td>Ágúst Górnadó</td>
<td>60</td>
<td>Lithotripsy</td>
<td>2 June 1911</td>
<td>61</td>
<td>61</td>
<td></td>
<td>18 June 1911</td>
<td>15</td>
<td>Cured. Scrètare Wuthmen hince the perinastr op. Cured. Enlarged spleen. Temp. rose to 104° on the evening of the day of operation. Subsequently normal. Pain for 10 days after operation. Complains of pain in the left loin more and on deep pressure on the kidney on the 17th May - left hospital. Next day free of all bladder symptoms.</td>
</tr>
<tr>
<td>89</td>
<td>István Sopkóhó</td>
<td>8</td>
<td>Lithotripsy</td>
<td>16 June 1923</td>
<td>103</td>
<td>103</td>
<td></td>
<td>25 June 1923</td>
<td>9</td>
<td>Cured. Wuthmen a 127 diastole - Pain till June 24th. Was having rise of temp. before operation.</td>
</tr>
<tr>
<td>No.</td>
<td>Name</td>
<td>Age</td>
<td>Operation</td>
<td>Date of Operation</td>
<td>Wt. of Stones (g.)</td>
<td>Urine clear of blood</td>
<td>Urine clear of Pus and Fiss.</td>
<td>Urine ceased to flow for wcl.</td>
<td>Date of discharge</td>
<td>Days in Hosp.</td>
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<tr>
<td>90</td>
<td>Hemi Bhi...</td>
<td>60</td>
<td>Litholapaxy</td>
<td>22 June 91</td>
<td></td>
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<tr>
<td>91</td>
<td>Nana P...</td>
<td></td>
<td>Litholapaxy</td>
<td>30 June 84</td>
<td>5 July 84</td>
<td>8 July 84</td>
<td>15 July 84</td>
<td>25 July 84</td>
<td></td>
<td></td>
</tr>
<tr>
<td>92</td>
<td>Sadhu Ann...</td>
<td></td>
<td>Litholapaxy</td>
<td>5 July 97</td>
<td>9 July 97</td>
<td>15 July 97</td>
<td>15 July 97</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>No.</td>
<td>NAME</td>
<td>Age</td>
<td>Operation</td>
<td>Date of Operation</td>
<td>Wt. of Blood</td>
<td>Urine Color of Urine</td>
<td>Urine caused to flow for wt.</td>
<td>Date of Discharge</td>
<td>Days in Hosp.</td>
<td>Result &amp; Remarks</td>
</tr>
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</tr>
<tr>
<td>103</td>
<td>Kálú Gopal</td>
<td>30</td>
<td>Lithotripsy</td>
<td>27 Aug. 698</td>
<td>28 Aug.</td>
<td>5 Sept.</td>
<td>5 Sept.</td>
<td>9</td>
<td></td>
<td>Patient was taken home by his relatives in a semicomatose condition with a dry, brown tongue.</td>
</tr>
<tr>
<td>104</td>
<td>Náná Geni</td>
<td>5</td>
<td>Lithotripsy</td>
<td>28 Aug.</td>
<td>29 Aug.</td>
<td>5 Sept.</td>
<td>5 Sept.</td>
<td>8</td>
<td></td>
<td>Cured - Temp: 100.6 on evening of 5th day, 9.4 on morning of 6th day. Operation: Great vesical distension, rectal prolapse, pain in both loins.</td>
</tr>
<tr>
<td>105</td>
<td>Júladánm Sákú</td>
<td>30</td>
<td>Lithotripsy</td>
<td>4 Sept. 962</td>
<td></td>
<td></td>
<td>5 Sept.</td>
<td>8</td>
<td></td>
<td>Died, coma 4½ days after operation. Great vesical distension, rectal prolapse, pain in both loins. Fever rose 1½ hours before operation. Persistence of pain in rectum led to bladder being washed out through a small urethral meatus on the 7th Sept. Apparently due to food residuals. No payments were made. Convalet.</td>
</tr>
<tr>
<td>106</td>
<td>Šákú Dágo</td>
<td>4</td>
<td>Lithotripsy</td>
<td>5 Sept. 962</td>
<td></td>
<td></td>
<td>5 Sept.</td>
<td>12</td>
<td></td>
<td>Cured. Urinath admitted a 4½. Great vesical distension, rectal prolapse, fever rose 1½ hours before operation. All symptoms disappeared after operation.</td>
</tr>
<tr>
<td>No.</td>
<td>NAME</td>
<td>Age</td>
<td>Operation</td>
<td>Date of Operation</td>
<td>Wt. of Stones (grams)</td>
<td>Urine clear of blood</td>
<td>Urine clear of Pus and Phlegm</td>
<td>Urine ceased to flow for well.</td>
<td>Date of discharge</td>
<td>Days in Hosp.</td>
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<tr>
<td>109</td>
<td>Bhānu Chandra</td>
<td>5</td>
<td>Lithotripsy</td>
<td>15 Sept 1882</td>
<td>18 Sept 19 Sept</td>
<td></td>
<td></td>
<td></td>
<td>19 Sept 1882</td>
<td>4</td>
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<tr>
<td>111</td>
<td>Tukārām Babāji</td>
<td>25</td>
<td>Lithotripsy</td>
<td>7 Nov</td>
<td>11 Nov</td>
<td></td>
<td></td>
<td></td>
<td>11 Nov 1882</td>
<td>4</td>
</tr>
<tr>
<td>112</td>
<td>Pānādī Tukārām</td>
<td>9</td>
<td>Percutaneous Lithotripsy</td>
<td>4 Nov</td>
<td>5 Nov</td>
<td>11 Nov</td>
<td>11 Nov</td>
<td></td>
<td></td>
<td>11 Nov 1882</td>
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<tr>
<td>113</td>
<td>Subhā Malhānī</td>
<td>25</td>
<td>Lithotripsy</td>
<td>25 Nov 1882</td>
<td>27 Nov 1882</td>
<td></td>
<td></td>
<td></td>
<td>27 Nov 1882</td>
<td>11</td>
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<tr>
<td>114</td>
<td>Raghū Gānōji</td>
<td>65</td>
<td>Lithotripsy</td>
<td>29 Nov 1882</td>
<td>4 Dec 7 Dec</td>
<td></td>
<td></td>
<td></td>
<td>7 Dec 1882</td>
<td>8</td>
</tr>
<tr>
<td>115</td>
<td>Rangā Gopāl</td>
<td>4</td>
<td>Percutaneous Lithotripsy</td>
<td>2 Dec</td>
<td>3 Dec</td>
<td>27 Dec</td>
<td>18 Dec</td>
<td>28 Dec 1882</td>
<td></td>
<td>26</td>
</tr>
<tr>
<td>No.</td>
<td>NAME</td>
<td>Age</td>
<td>Operation</td>
<td>Date of Operation</td>
<td>Wt. of Stone (gr)</td>
<td>Urine colour of blood</td>
<td>Urine colour of Pus and Fats</td>
<td>Urine ceased to flow for wd.</td>
<td>Date of dis charge</td>
<td>Days to Ha.</td>
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<tr>
<td>116</td>
<td>Sādhu Hanumanta</td>
<td>35</td>
<td>Lithrolapaxy</td>
<td>10 Dec. 419</td>
<td>12 Dec. 21</td>
<td></td>
<td></td>
<td></td>
<td>22 Dec. 12</td>
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<tr>
<td>117</td>
<td>Māruṭa Rāma</td>
<td>6</td>
<td>Lithrolapasy</td>
<td>13 Dec. 81</td>
<td>13 Dec. 17</td>
<td></td>
<td></td>
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<td>17 Dec. 4</td>
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<tr>
<td>118</td>
<td>Sādhu Māhādev</td>
<td>4</td>
<td>Lateral Lether</td>
<td>18 Dec.</td>
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<tr>
<td>No.</td>
<td>NAME</td>
<td>Age</td>
<td>Operation</td>
<td>Date of Operation (Ap.)</td>
<td>Wt. of Stone (gr.)</td>
<td>Urine clear of blood</td>
<td>Urine clear of Pas &amp; Poo.</td>
<td>Urine ceased to flow for vol.</td>
<td>Date of discharge (Ap.)</td>
<td>Days in Hosp.</td>
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<tr>
<td>132</td>
<td>Rameshchandra</td>
<td>6</td>
<td>Pennical lithotomy</td>
<td>8</td>
<td>137</td>
<td>10 Apr.</td>
<td>21 Apr.</td>
<td>21 Apr.</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td>No.</td>
<td>Name</td>
<td>Operation</td>
<td>Date of Operation</td>
<td>Weight</td>
<td>Urine clear of blood</td>
<td>Urine clear of pus and Fibrin</td>
<td>Urine ceased to flow for</td>
<td>Date of discharge</td>
<td>Days in</td>
<td>Result &amp; Remarks</td>
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</tr>
<tr>
<td>146</td>
<td>Pahú Thákhí</td>
<td>lithotripsy</td>
<td>21 May</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Cured - Records best</td>
</tr>
<tr>
<td>147</td>
<td>Adhírá Bhúmai</td>
<td>lithotripsy</td>
<td>24 May 31 26 May 30 May</td>
<td>8 July</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Cured - Great Vesical distension with renal paralysis but no rise of temp. During the four days he was under observation before an operation was undertaken. The stone was crushed with a No. 7 Lithotripter. Pain at the end of the penis Impinging pain in the perineum for 3 days after menstruation for 13 days after operation. On the morning following the day on which the stone was crushed there was blood in the urine. That same afternoon the temp rose to 101.0 subsequently remains up as shown in the chart. The little patient complained of hematuria pain on the 6th day.</td>
</tr>
</tbody>
</table>

![Graphical chart showing temperature and other medical indicators over time.](attach://chart.png)

The persistant temp. of the sudden reappearance of blood in the urine on the 7th day (the urine being remarkably clean during the three preceding days) led to a suspicion that a fragment had been left behind. The bladder was therefore searched under chloroform & washed out with Iodo-lye lotion through a Camula, partly with a syringe & partly with an aspirator, but no fragments were detected. This took place on the 10th day. The persistence of symptoms led to a second exploration & wash out on the 17th day. This time through a small median perineal incision also with negative result. On the day following this it was thought that there was some pullms in the region of the Sept.
<table>
<thead>
<tr>
<th>No.</th>
<th>Name</th>
<th>Age</th>
<th>Operation</th>
<th>Date of Operation</th>
<th>Wt. of Stom.</th>
<th>Urine cl. of blood</th>
<th>Urine cl. of Pas and Pass.</th>
<th>Urine cattle to flow for well.</th>
<th>Date of discharge</th>
<th>Day in Hosp.</th>
<th>Result &amp; Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>154</td>
<td>Malhar Sakharam</td>
<td>5</td>
<td>Litholapaxy</td>
<td>1 July 1862</td>
<td>2 July 1862</td>
<td></td>
<td></td>
<td>7</td>
<td>8 July 1862</td>
<td>7</td>
<td>Cured. Uratha admitted a no. 7 determinate. Died 22 hours after the operation. The patient came to hospital in acute vesical crisis with haemorrhagic rectal prolapse and blood in the stools. He was kept under treatment (Per. top. balas. Bhangi Aas, Pot. Bierck, Deposeumus, &amp; Urea Urici) for 10 days before operation. The patient partially recovers commencing after operation then rapidly sank into a comatose state &amp; died 22 hours later. No post-mortem obtained.</td>
</tr>
<tr>
<td>155</td>
<td>Saji Gogajee</td>
<td>50</td>
<td>Litholapaxy</td>
<td>9 July 1908</td>
<td>9 July 1908</td>
<td></td>
<td></td>
<td>7</td>
<td>13 July 1908</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>156</td>
<td>Babu Bulaa</td>
<td>6</td>
<td>Perineal Fist.</td>
<td>13 July 1879</td>
<td>14 July 1879</td>
<td>20 July 1879</td>
<td></td>
<td>20 July 1879</td>
<td>16</td>
<td></td>
<td>Cured. Uratha admits a no. 7 which for constancy clanged. Swaronous with a large evacuation through the perineum. Pain for 5 days.</td>
</tr>
<tr>
<td>158</td>
<td>Ramchandra Monit</td>
<td>3</td>
<td>Perineal Fist.</td>
<td>2 Aug 1902</td>
<td>320</td>
<td></td>
<td></td>
<td>4 Aug 1902</td>
<td>34</td>
<td>-</td>
<td>Died 34 days after operation. Uratha admitted a 4½ which 1800 too small to brush with. The day following the operation the patient had a rise of temp. to 101°. After this he had regular rises of temp. to varying between 99 &amp; 101.8° with morning intermissions, occasional attacks of vomiting &amp; prostration. He passed faeces on 3 ½ day. Dead 25th. Urine not collected.</td>
</tr>
</tbody>
</table>

Diagnosis: Subacute Suppurative Nephritis
<table>
<thead>
<tr>
<th>No.</th>
<th>Name</th>
<th>Age</th>
<th>Operation</th>
<th>Date of Operation</th>
<th>Wt. of Stones</th>
<th>Urine</th>
<th>Urine clear of stones</th>
<th>Urine clear of blood</th>
<th>Urine cease to flow</th>
<th>Days in Hosp.</th>
<th>Result &amp; Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>159</td>
<td>Anārādhā Balka</td>
<td>3</td>
<td>Litholapaxy</td>
<td>4 Day: 23</td>
<td>6 Day: 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>17</td>
<td>Cured. Crushed with a 4½ - Pain for 6 days.</td>
</tr>
<tr>
<td>160</td>
<td>Savitā Khomāni</td>
<td>4½</td>
<td>Litholapaxy</td>
<td>18 Day: 12.0</td>
<td>19 Day: 23</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5</td>
<td>Cured.</td>
</tr>
<tr>
<td>162</td>
<td>Mūrīnī Khomāni</td>
<td>3</td>
<td>Perineal lithotapaxy</td>
<td>25 Aug: 76</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>10</td>
<td>Cured. Crushed with a 4½ - Pain for 5 days.</td>
</tr>
</tbody>
</table>
| 163 | Aṣyān Vadāju | 28  | Litholapaxy | 28 Aug: 18        |       |       |                       |                     |                   |               | Cured. Brought to the as an out-patient. Patient was taken straight to his house. Operation blood-ly, g.
| 166 | Rāghū Bhagā | 3   | Litholapaxy | 7 Sept: 30        |                          |       |                       |                     |                   | 4             | Cured. Crushed with a NO.7. Stone not collected. |
| 168 | Bhaṇa Sukhrān | 7   | Perineal Lithotapaxy | 28 Sept: 42 |       |       |                       |                     |                   |               | Died 6 days after operation (Oct: 4). Urethra admitted a NO.7. Urethra. The patient was in great distress before the operation. It was found that the stone was not as much beyond the capacity of a NO.7. Urethra as it was. The patient was advised to hold the stone and manipulate perineum, but the stone was so large that it resisted the Maste of a NO.7. Urethra. The patient was discharged with a large stone. |

Graph: Suppurative Nephritis
<table>
<thead>
<tr>
<th>No.</th>
<th>NAME</th>
<th>Age</th>
<th>Operation</th>
<th>Date of Operation</th>
<th>Wt. of Stones</th>
<th>Urine clear of blood</th>
<th>Urine clear of Pus and Fiss.</th>
<th>Urine ceased to flow for wkt.</th>
<th>Date of discharge</th>
<th>Days in Hospt.</th>
<th>RESULT &amp; REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>170</td>
<td>Rámá Mígá</td>
<td>8</td>
<td>Litrolapary</td>
<td>8 Oct. 106 11 Oct. 15 Oct. 16 Oct.</td>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>172</td>
<td>Nomá Mathání</td>
<td>4</td>
<td>Litrolapary</td>
<td>14 Oct. 100 15 Oct. 21 Oct. 22 Oct.</td>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>8</td>
<td></td>
</tr>
</tbody>
</table>

Evacuation through the largest size cannula. Although a perineal incision thereon shortened the procedure. After the threat of the operation had passed away the temperature rose only remained persistently above normal. He vomited from time to time developed chamoosa & gradually sank & died on the 6th day. Passed urine both by the urethra & wound till death.

Cured. Great vesical distension & prolapse of rectum before operation. Urethra wound not done-it anything larger than a 4½ inch, which was too small to obstruct with. Passed through perineum with a No. 7 swab & with a No. 10 cysto-bougie with no appearance of a wound & no bladder symptoms. Temp. rose to 102 & 99.4 on the evening of the 8th & 10th Oct.


Cured. Pain for 3 days - Rise of temp. to 101. on evening of the day following the operation.

Cured - Coughed with a No. 6. Pain for 3 days. Rise of temp. to 100. on evening of operation.
<table>
<thead>
<tr>
<th>No.</th>
<th>NAME</th>
<th>Age</th>
<th>Operation</th>
<th>Date of Operation</th>
<th>Wt. of Stone gr.</th>
<th>Urine clear of blood</th>
<th>Urine clear of Pus and Floc.</th>
<th>Urine ceased to flow for wks.</th>
<th>Date of discharge</th>
<th>Days in Hoos.</th>
<th>Result &amp; Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>173</td>
<td>Hāshinám Hāri</td>
<td>5</td>
<td>Perineal lithot.</td>
<td>1 Nov.</td>
<td>70</td>
<td></td>
<td></td>
<td></td>
<td>8 Nov.</td>
<td>3 Nov.</td>
<td>Cured. Great vesical divi &amp; vesal prolapse before operation. Wound admitted a 1½ which was too small to brush with. Slight leakage from wound on day following operation. Cured.</td>
</tr>
<tr>
<td>174</td>
<td>Jāná Limnái</td>
<td>80</td>
<td>Lithot. lap.</td>
<td>3 Nov.</td>
<td>90</td>
<td></td>
<td></td>
<td></td>
<td>5 Nov.</td>
<td>12 Nov.</td>
<td>Died 5 days 15 hours 45 min: after the operation. Great vesical divi &amp; vesal prolapse before operation. A bladder closely clinging to a very large stone. &amp; refused to retain any lotion. After persevering efforts to bring down the stone with large syph. Wound had failed to do more than chip. A suprapubic was performed. Proximal Cellular space drained. The patient developed an extremely rapid, feeble pulse &amp; a dry, thrown tonic after the operation. The wound discharged. The gradually sank &amp; died early in the morning on the 16th Nov. The operation was a very perilous one owing to the preliminary attempts at lithotomy. Cured - Ernest 1 wks. 6 days.</td>
</tr>
<tr>
<td>175</td>
<td>Bālā Krishmái</td>
<td>40</td>
<td>Suprapubic lith.</td>
<td>10 Nov.</td>
<td>2170</td>
<td></td>
<td></td>
<td></td>
<td>21 Nov.</td>
<td>11 Nov.</td>
<td>Died</td>
</tr>
<tr>
<td>No.</td>
<td>Name</td>
<td>Age</td>
<td>Operation</td>
<td>Date of Operation</td>
<td>Weight</td>
<td>Urine, clear of blood</td>
<td>Urine, clear of pus and phlegm</td>
<td>Urine caused to flow for week</td>
<td>Date of discharge</td>
<td>Result &amp; Remarks</td>
<td></td>
</tr>
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<td></td>
</tr>
<tr>
<td>180</td>
<td>Rāghu Khandu</td>
<td>12</td>
<td>Rectal siphon</td>
<td>1 Mar: 380</td>
<td>5 Mar: 14</td>
<td>Mar: 7</td>
<td>Mar: 15</td>
<td>Mar: 11</td>
<td>Cured. Great Vescical diastasis with prolapse of the rectum. Patient was kept under treatment for five days before operation. Dr. Thacker admitted a No. 6 tube which attempted to stop the streaming of the urine to resemble to respectable proportions. This procedure proved to prevent the operation to an undignified extent, perineal rectal laparotomy was performed. Urine passed per rectum &amp; normal for 2 days by the patient had perfect control all through. Complaints of pain &amp; stiffness in the hypogastric on the 7th Mar: Cured. Great Vescical diastasis &amp; rectal prolapse before operation. Combed with a No. 6. Hypogastric pain &amp; stiffness on Wk. 9. 4th Mar: Cured. Great Vescical diastasis, rectal prolapse, right inguinal hernia &amp; Rectal ophclem. Hypogastric pain &amp; Tenderness on the day following the operation. Pain till date of discharge. The patient kept hospital with Skyler perineal pain during straining &amp; retention, a chronic deposit of pus &amp; phosphates in the urine but no rectal prolapse, No diarrhea, &amp; sleeping himself pretty well. Cured. Prolapse of rectum - Combed with a No. 6. Cured. Night not to be on this list as it was done by Anthony.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No.</td>
<td>NAME</td>
<td>Age</td>
<td>Operation</td>
<td>Date of Operation</td>
<td>Wt. of Horse</td>
<td>Urine clear of blood</td>
<td>Urine ceased to flow for</td>
<td>Date of discharge</td>
<td>Days in Hosp.</td>
<td>RESULT &amp; REMARKS</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>190</td>
<td>Bāla Mahādī</td>
<td>30</td>
<td>Litholapaxy</td>
<td>27 July</td>
<td>620</td>
<td></td>
<td>9</td>
<td>9 Days</td>
<td>9 Days</td>
<td>Cured. Operation gave immediate relief. Treated with quinine.</td>
<td></td>
</tr>
<tr>
<td>191</td>
<td>Khāndān Rāgīnī</td>
<td>50</td>
<td>Litholapaxy</td>
<td>1 Day</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Died at 1 P.M. of Shock. A very weak old man with a large prostate &amp; a very big stone. Stated much older than stated age. No post-mortem.</td>
<td></td>
</tr>
<tr>
<td>192</td>
<td>Rāgīnī Pandī</td>
<td>30</td>
<td>Litholapaxy</td>
<td>3 Days</td>
<td>140</td>
<td></td>
<td>10 Days</td>
<td>10 Days</td>
<td>7 Days</td>
<td>Cured. Bladder was not a blind. Any thing bigger than a No. 7 Litholapaxy though this was No. 7. No stone.</td>
<td></td>
</tr>
<tr>
<td>193</td>
<td>Mahādī Bābdī</td>
<td>25</td>
<td>Litholapaxy</td>
<td>3 Days</td>
<td>520</td>
<td></td>
<td>11 Days</td>
<td>11 Days</td>
<td>8 Days</td>
<td>Cured. From treated with quinine.</td>
<td></td>
</tr>
<tr>
<td>194</td>
<td>Shripātī Pandī</td>
<td>18</td>
<td>Litholapaxy</td>
<td>5 Days</td>
<td>950</td>
<td></td>
<td>23 Days</td>
<td>23 Days</td>
<td>10 Days</td>
<td>Cured. Regret of limb. To 104° on morning of day of Operation &amp; was to 100° 6 on evening of 715 Days.</td>
<td></td>
</tr>
<tr>
<td>No.</td>
<td>Name</td>
<td>Age</td>
<td>Operation</td>
<td>Date of Operation</td>
<td>WT of Stone (gms)</td>
<td>Urine color of blood</td>
<td>Urine clear of Pur and Tum.</td>
<td>Urine ceased to flow for wk.</td>
<td>Date of Discharges</td>
<td>Days in Hosp.</td>
<td>Result &amp; Remarks</td>
</tr>
<tr>
<td>-----</td>
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</tr>
<tr>
<td>196</td>
<td>Narayan Muni</td>
<td>14</td>
<td>Lateral Lithot.</td>
<td>9.Duy. 180</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7 Nov. 90</td>
<td></td>
<td>Cured. Pat had a persistent rectovesical fistula. The fistulae gradually closed up after the operation.</td>
</tr>
<tr>
<td>197</td>
<td>Bikhari Bhawani</td>
<td>24</td>
<td>Lateral Lithot.</td>
<td>10 11 12 13 14</td>
<td>210</td>
<td>*</td>
<td>*</td>
<td></td>
<td>23 13 10</td>
<td></td>
<td>Cured. Pain for one day.</td>
</tr>
<tr>
<td>198</td>
<td>Tukaram Vithal</td>
<td>58</td>
<td>Lateral Lithot.</td>
<td>14 405</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>31 17</td>
<td></td>
<td>Cured? Left pyramidal hernia. The stone was chipped several times with difficulty with a steel, then while attempting to crush with a full grip. The female blade snapped off short at the juncture of jaw and shaft. One imagines that the it was...</td>
</tr>
<tr>
<td>No.</td>
<td>NAME</td>
<td>Age</td>
<td>Operation</td>
<td>Date of Operation</td>
<td>Wt. of Stones</td>
<td>Urine clear of blood</td>
<td>Urine clear of Phos and Biles</td>
<td>Urine passed in bowel</td>
<td>Date of discharge</td>
<td>Days in Hosp.</td>
<td>RESULT &amp; REMARKS</td>
</tr>
<tr>
<td>-----</td>
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</tbody>
</table>

Nephritis?

Died 16 days after operation. Patient was in poor condition. Was kept under treatment for a fortnight before the operation. No lithotrite between 10th and 19th. A giant was available, hence the late Perineal Lithotrap.

Wound was kept open throughout. No improvement after the operation. Operation cannot be blamed. Very patient. Staunna developed on the day following the operation. It continued till death. No retention pain. Patient passed urine through wound for 3 days after operation. Perineal pain during operation. Tissue metritis for 8 days (Till Sept 2). Urine passed with perfect control both from urethra and wound for 3 days. Then per urethra for 6 days. Till Sept 2. When a good flow of urine came through the wound while straining at stool. The tissues around the wound then got into a strangled condition. Urine passed through the urethra entirely at will. Mostly involuntarily. The patient started to die on the 16th day.

Lithotrite (a No. 27) got constantly closed with debris hence towards the end of the operation a perineal
204 Bārjī Gomīji 20 Lithotripsy 28 Aug. 357 30 Aug. 8 Sept. ... 9 Sept. 10

205 Wadgoī Naqū 21 Lithotomy 2 Sept. 108 24 Jan. 144

Curet. Admitted into hospital moribund. Wore catheter apparently in the last stage of syphilis. (Brasted up to the on his face & lying on his feet). He had a fistula with the intestine with permanent fistula & a stone in the bladder. A longish was passed through the fistula into the bladder. The bladder was done upon & opened behind the fistula. The mission was then continued downwards & to the left as in

lateral lithotomy, the lateral opening, done in the direction of the wound on an inclined plane & the stone removed with lithotomy forceps. A couple of weeks later an external lithotomy was performed. The fistula closed. The patient rapidly put on flesh left hospital for such all fistulae normally healed. Case lost. Details from memory.
<table>
<thead>
<tr>
<th>No.</th>
<th>NAME</th>
<th>Age</th>
<th>Operation</th>
<th>Date of Operation</th>
<th>Wt. of Stone</th>
<th>Urine clear of Blood</th>
<th>Urine clear of Pain</th>
<th>Date ceased to flow for wt.</th>
<th>Date of discharge</th>
<th>Days in Hosp.</th>
</tr>
</thead>
<tbody>
<tr>
<td>212</td>
<td>Keri Bhondiwa</td>
<td>5</td>
<td>Lithotomy</td>
<td>7 Nov</td>
<td>23</td>
<td></td>
<td></td>
<td>8 Nov</td>
<td>11 Nov</td>
<td>4</td>
</tr>
<tr>
<td>213</td>
<td>Ramthai Bapu</td>
<td>5</td>
<td>Pneumal lithot</td>
<td>10 Nov</td>
<td>370</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>214</td>
<td>Ladi Ragi</td>
<td>30</td>
<td>Lateral lithot</td>
<td>11 Nov</td>
<td>248</td>
<td></td>
<td></td>
<td>3 Dec</td>
<td>8 Dec</td>
<td>27</td>
</tr>
<tr>
<td>215</td>
<td>Manaji Vithoba</td>
<td>5</td>
<td>Pneumal Lithot</td>
<td>11 Nov</td>
<td>240, 12 Nov</td>
<td>24 Nov, 14 Nov, 26</td>
<td>25 Nov</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note:**
- 212: Cured. Pneumal protrus. Brushed with a No.7. Pan in for two days. Died Nov. 12.05. The third appears to be doing perfectly well except for slight rhinoplasty. It was present on the still-pЪt. The Nov. 11.5. Nov. Same went, he became somnolent, and the following day, Bhanwa. Cured. A very hard stone that admitted a No. 6 force a No. 9 Lithotome; hence, the lateral operation.
- 213: No rise of temp. Dyshia like shown on chart.
- 214: No rise of temp. Dyshia like shown on chart.
- 215: Cured. Great Vincel distro of neck protrus by operation. A hard stone that refused to yield to a No. 7. The latter the Wettawa would admit. Brushed with a No. 10 through the perimenter. Urine panel: Diurnal, yellow, the Wettawa not enough per Wettawa for 2 days. Always with perfect control.
<table>
<thead>
<tr>
<th>No.</th>
<th>Name</th>
<th>Age</th>
<th>Operation</th>
<th>Date of Operation</th>
<th>Wt. of Stones (gms)</th>
<th>Urine clear of blood</th>
<th>Urine clear of Duo and Floss</th>
<th>Urine ceased to flow for well.</th>
<th>Date of discharge</th>
<th>Days in Hosp.</th>
<th>RESULT &amp; REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>216</td>
<td>Ramotion Montri</td>
<td>10</td>
<td>Lithotomy</td>
<td>12 Nov 39</td>
<td>14 Nov 15</td>
<td>02 Dec</td>
<td>24 Dec 42</td>
<td></td>
<td>24 Dec</td>
<td>42</td>
<td>Cured Palp was relief. Swelled &amp; in</td>
</tr>
<tr>
<td>No.</td>
<td>NAME</td>
<td>Age</td>
<td>Operation</td>
<td>Date of Operation</td>
<td>Wt. of Stones</td>
<td>Urine of Blood</td>
<td>Urine of Feces and Phos.</td>
<td>Urine escaped to flow for</td>
<td>Date of discharge</td>
<td>Days in Hospital</td>
<td>RESULT &amp; REMARKS</td>
</tr>
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</tr>
<tr>
<td>219</td>
<td>Gomindi Rama</td>
<td>60</td>
<td>Lithotapayy</td>
<td>29 Nov.</td>
<td>940 30 Nn.</td>
<td>*</td>
<td>4 Dec. 6</td>
<td>*</td>
<td></td>
<td></td>
<td>Cured. Pain on 30th Nov. Temperature rises with quinine. Patient left hospital with pus &amp; phosphatid in his urine but with all subjective symptoms gone.</td>
</tr>
</tbody>
</table>

