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### Dissertation on lithotrity

Christopher Smith Fenner  
*Yale University.*

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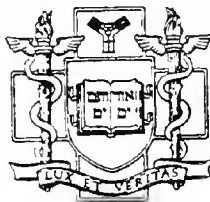


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*Dissertations*  
read by the  
Candidates for Degrees and Licenses,  
at the  
Annual Examination,  
in the  
Medical Institution of Yale College,  
January 17-19.  
1844.

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~~VIII.~~

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Dissertation  
on  
Lithotomy.

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By

Christopher Smith Penner,  
of Scituate, Rhode Island,  
Candidate for the Degree of Doctor in Medicine.

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The march of science is onward; each  
advancing year produces new discoveries, inven-  
tions and improvements, which prove a benefit  
and blessing to mankind, and this particularly  
is the case in that department termed  
surgery. Discoveries and improvements  
are constantly being made by which the  
suffering of humanity are relieved or totally  
removed. Let us for a moment glance  
at the state of surgical science as it stood  
a few years since and compare it with  
its present advanced condition. The fine  
ligatures have taken the place of the  
burning iron for the suppression of hemorrhage.  
Instead of amputation for the cure of aneurism  
or the laceration of the trunk of white of the eye, a  
simple ligature upon the artery above the  
tissue is found to be all sufficient and  
satisfying, formerly an operation of every  
day occurrence is now comparatively rare.  
The more painful and dangerous operation  
of lithotomy, is gradually being superseded by

we will and almost unattended with danger  
Twenty years ago the Geigel, was the only remedy  
for stone in the bladder, an operation attended  
with the most acute pain and placing the  
patient in the most imminent danger of life,  
now the stone is crushed and made to come  
away by peace and ease, and it is upon the im-  
provement in surgery that I propose to address  
you at the present time in the year 1820.  
Hally, ever invented some slender and delicate  
Forceps to seize small stones in the bladder and  
extract them through the urethra, but these  
were not found to answer a good purpose  
and applicable to few cases, such as where the  
stone or stones were not too large to pass through,  
the urethra - They are useful when small  
fragments are lodged in urethra. In 1824 Mr  
Wells a surgical instrument maker at London  
invented an instrument for crushing the stone  
but its construction was weak and in respect  
and soon fell into disuse. About the same time  
M. Civiale of Paris gave lithotomy a new impulse

by the construction of an instrument consisting of  
a canula with three steel branches, which when thrust  
out would grasp the stone and hold it firmly  
to be acted upon by a drill <sup>rotary</sup> motion by a  
bow. This apparatus was found to answer better than  
any of the preceding, <sup>but</sup> was still imperfect, and  
failed in a majority of cases in which it was  
used. Civiale's instrument was greatly improved by  
Barraque & Huntellou. Although rendered exceedingly  
complex, but with Huntellou's improvement it  
could not act upon stones to exceed eighteen  
lines in diameter. Still with this disadvantage it  
was a valuable acquisition to science. In 1832

B. Huntellou constructed an instrument upon an  
entirely different principle from any of the preceding  
and with some slight improvements is the only  
one in use at the present time if we except  
Jaeger's of which I shall speak hereafter.  
Huntellou's instrument as now used consists  
of three pieces, first a steel staff, straight to cross,  
at the end, which is bent so as to form an angle  
of from fifty to sixty degrees and two aneurin, which

in length. Through the anterior portion of the staff  
is a circular groove or channel extending its whole  
length and forming about three parts of a circle  
except at the bent portion, where it is made square  
and somewhat larger - Into this groove slides  
a smaller staff, made to fit accurately, <sup>with portion</sup> with  
to fit the square channel in bent portion of larger staff.  
At the upper extremity of this larger staff is a circular  
plate about one and a half inches in diameter,  
with its edge rough, to be held more firmly  
when the screw is used. Above this plate the  
staff is threaded for several inches, on which I lay  
a nut with three projecting edges to twist it.  
On the smaller staff near the plate is a small  
projection ~~is a small projection~~ against which the  
nut plays to force it down. The above instrument  
can be used either with the screw or hammer  
and is decidedly the most perfect contrivance  
of the kind ever invented. The smaller staff  
being pushed down accurately fits the channel  
in the larger and makes as it were one perfectly  
smooth cylindrical staff. The mode of using it is as

follows. The patient being placed upon his back with  
his shoulder slightly elevated the instrument after  
being well oiled is passed to the bladder similar  
to the catheter, care being taken not to injure the  
soft parts, the jaws of the instrument not to be  
separated until all vent, boston is within the cavity  
of the bladder; then by moving its extremity, which  
under the purpose of a sound the situation of the  
foreign body may be accurately ascertained - then by  
throwing back the nut into position, withdrawing  
the smaller staff, its bent portion readily penetrates  
interstices and when sufficiently open the stone  
falls between its jaws - then by means of the nut  
at the other extremity, the jaws are precisely  
approximated and the intervening stone  
broken, or if instead of the screws being used  
a few light stapes with the hammer produce the  
same effect. by repeating this operation fragment  
after <sup>nut</sup> fragment  
may be crushed until each is small enough  
to pass through the urethral canal. Before  
withdrawing the staff its jaws caught  
accurately together otherwise the could not pass

through the urethra. The above operation is equally applicable to large and small stones, thus giving this instrument superior advantages over any other forcible instrument consisting of a Silver cannula through which passes two steel rods (the posterior moveable the anterior firmly attached to the cannula with its inferior extremity fixed similar to the bellows). The posterior rod terminates in a chain the end of which is attached to the extremity of anterior rod. The posterior rod is a little longer than the other with a small ball upon its end that it may be more easily managed. This instrument is introduced similarly to the one above described, the situation of the stone being ascertained, the posterior rod is thrown down causing it to recede from its antagonist, leaving a space into which the stone falls, then by means of a screw at the opposite extremity the chain is brought against the anterior rod crushing the stone. By repeating the operation each fragment may be made to pass through the urethra without pain to the patient.

After the instrument is withdrawn, the fragments will  
detaching small enough to enter the urethral canal  
usually passes away when the patient gradually rises  
urine, and this if feasible should always be done  
while the patient is standing, and then the  
fragments will enter the canal by their own  
gravity and be forced out by the flow  
of urine. A slender pair of forceps, if they will, be  
found useful in extracting such pieces as become  
wedged in the urethra. Having spoken of instrument  
mode of operation &c. we will now proceed to point  
out some of those cases in which Lithotomy is not  
advisable, and where some other means of relief must  
be resorted to, and these contra indications I shall  
speak of under three heads - 1<sup>st</sup> Some impediment to  
the passage of the instrument, 2<sup>nd</sup> excessive irri-  
tability of mucous membrane viz<sup>ing</sup> bladder and urethra,  
3<sup>rd</sup> constitutional symptoms. 1<sup>st</sup> or impediment to the  
passage of the instrument - 2<sup>nd</sup> may occur  
either from stricture or enlargement of prostate,  
both of which are common. In short partial  
strictures or such as may easily be dilated, they

may be treated, in the usual manner, with catheter,  
without altering the instrument. A succession of strictures  
sometimes occur throughout the urethral canal in a  
fine and of an almost wiry hardness, and is  
overcome only by long and continued use of bougie  
cathedræ &c. This state of parts would be an insurmountable  
objection to lithotomy, & a system of urine reduced  
would give rise to the terrible irritation caused  
by the stone and the means taken to remove the  
stricture, inflammation and enlargement of the  
prostate may prevent the introduction of the staff, or  
if it be, not entirely safe & safe passage. The pain  
and irritation caused, is so severe and protracted  
for the patient to endure 2<sup>nd</sup> excessive irritability  
of mucous membrane lining the bladder and urethra  
When this state of parts occur, the slightest  
touch of the instrument produces exquisite  
pain, so severe that the most docile patients  
will revolt, and the Surgeon will be under  
the necessity of rejecting all other means for the  
relief of his patient unless the excessive irritability  
can be relieved, which should always be attempted.



by injections of Nitrate of silver in solution made  
of the strength of two to three grains to the ounce  
of water, opium enemata will be found useful  
as also will warm hip baths, and I may here  
mention that the warm hip bath is often  
useful in a healthy condition of parts where  
the patient being exposed for some time to a  
temperature considerably below the natural  
warmth of his body the bladder and urethra  
contract, the urethra frequently so much as to  
scarcely allow the smallest sized instrument to  
pass. Here the warm bath relaxes the parts  
and allows the passage of the largest staff with  
ease; it is indeed surprising to observe the dilatation  
of the urethral canal after the use of the semicupium  
and I may here add that the surgeon ought to  
possess instruments of different sizes to suit different  
sized urethra, and the same urethra at different  
times, for it will often be found that after introducing  
a large instrument, the surgeon in attempting to  
insert the operation subsequently finds himself  
under the necessity of using one of smaller size.

3<sup>rd</sup> Constitutional symptoms - In advanced cases where the patient has become excessively relaxed by long and continued irritation caused by the stone, where the whole system is unstable & accompanied with hectic symptoms, the calculus cannot be broken without greatly increasing the irritation and perhaps extinguishing the last sparks of excitability remaining in the system. In such a state of parts the knife should be used if there is any prospect of the patient being able to sustain it, as then the cause of the disease is at once removed. I do not know as any correct statistical account of lithotomy has been made. A distinguished surgeon of our own country whose experience in lithotomy has been extensive, states <sup>that</sup> the result of his experience, about three cases out of ten require the knife - This with our present knowledge of lithotomy may be considered as nearly correct. Many patients have a great repugnance to

the knife, yet know of no other means of <sup>relief</sup> which their suffering may be alleviated, they are therefore induced to defer the operation

until the urgency of the symptoms, or rather,  
to be cut for stone in operation & often repeated  
whereas did they know of Lithotomy, did they know  
the stone could be broken and passed by secretion  
they would be induced to submit to the operation  
when the first symptoms of calculus appears, when  
it is small and easily crushed. They would then  
be relieved of long and continued suffering and  
avoid one of the most painful and dangerous  
operations the surgeon is ever called upon to  
perform. "Lithotomy is less formidable to the  
patient than lithotomy. It requires little or no  
confinement, and many individuals will  
be induced to submit to it at an early  
age, who would not muster courage to submit  
to lithotomy until their sufferings had  
become excessive, and circumstances arisen  
to render the operation dangerous. There is  
no danger of hemorrhage nor of those ill  
consequences which arise from an incision  
or laceration extending into the cellular tissue  
around the neck of the bladder." Lithotomy.

is far from being a simple operation, one  
that can be performed by every student of surgery.  
Its performance is often difficult and ~~often~~  
most painful hands, highly dangerous. Those  
who are successful in that branch of surgery  
must understand well the healthy anatomy  
of the bladder, its various ~~symptoms~~ and  
pathological changes. In such hands  
lithotomy is <sup>now a day</sup> ~~to~~ performed almost entirely  
in a few years, the cutting operation for stone.  
It must be remembered that lithotomy is not  
in its infancy, that its advocates have  
to contend with the prejudices of igno-  
-rance and self interest; that like all other  
great and brilliant discoveries, meet with  
opposition from those who, through ignorance  
or incapacity, are unable to appreciate  
its merits, from those actuated by pecuniary  
motives, and who think in all cases the "old  
-fashioned way" the best. They will not acknowl-  
-edge its claims to notice, and prefer to do  
by universality of opinion. Its advocates

are yearly increasing, and opposition fast  
melting away under the brilliant results of  
experience

Christopher Smith Fenner  
January 18<sup>th</sup> 1844





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