

A history of the high operation for the stone, by incision above the pubis : with observations on the advantages attending it : and an account of the various methods of lithotomy, from the earliest periods to the present time / by J.C. Carpue.

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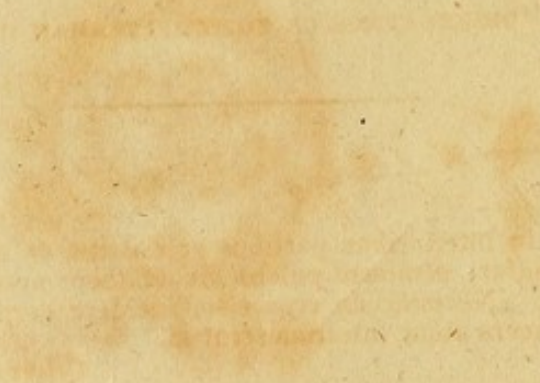
THE UNIVERSITY OF CHICAGO

PHYSICS DEPARTMENT

RESEARCH REPORT

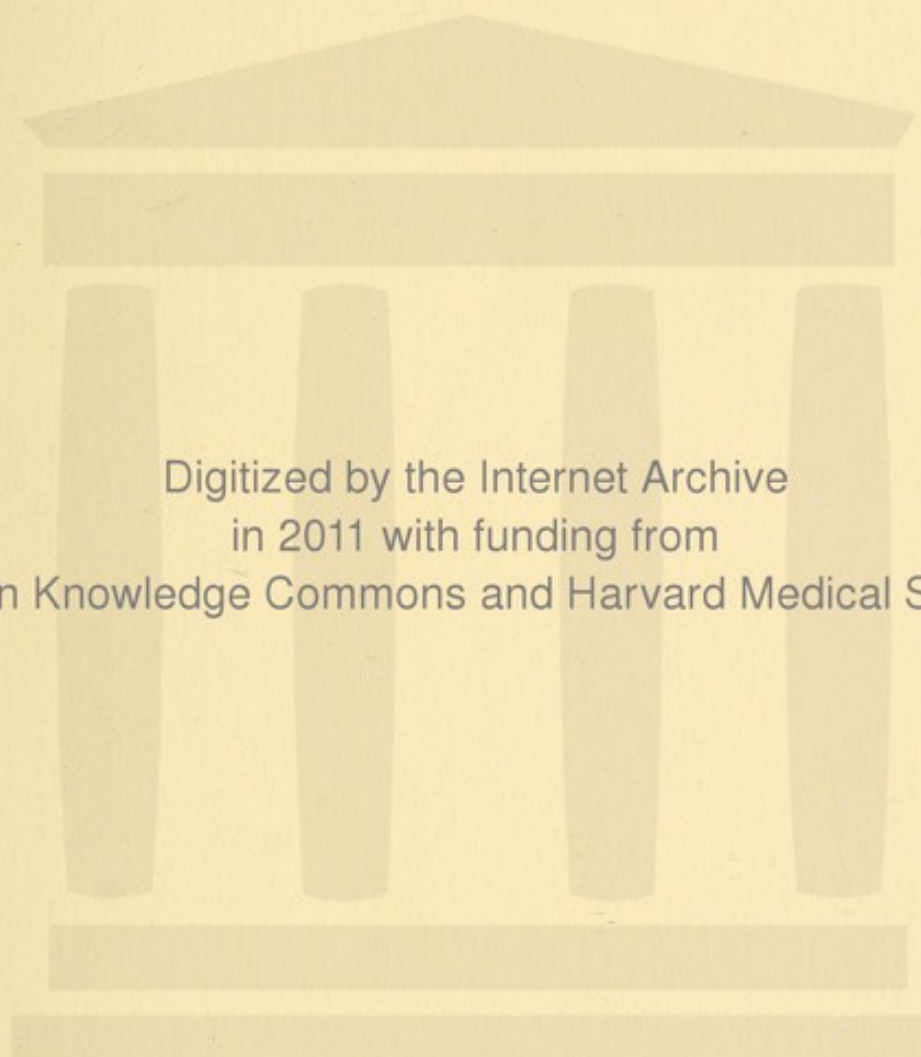
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BY J. J. THOMAS

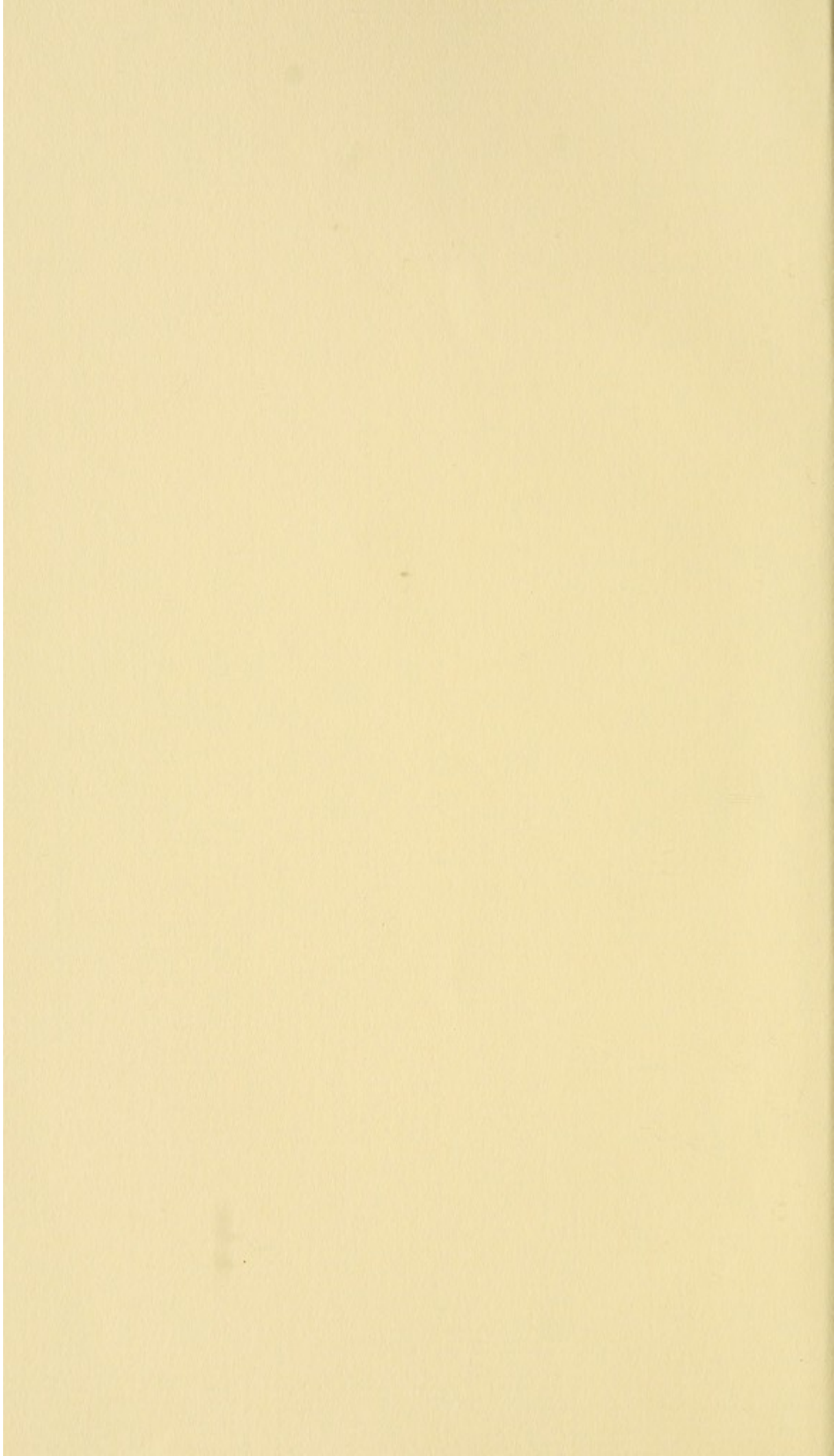


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J. C. Shattuck

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HISTORY
OF THE
HIGH OPERATION FOR THE STONE,
BY
INCISION ABOVE THE PUBIS;
WITH
OBSERVATIONS ON THE ADVANTAGES ATTENDING IT;
AND AN
ACCOUNT
OF THE
VARIOUS METHODS OF LITHOTOMY,
FROM
THE EARLIEST PERIODS TO THE PRESENT TIME.

By J. C. CARPUE, F.R.S.

Member of the Royal College of Surgeons in London, and formerly
Surgeon to the York Hospital, Chelsea.

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TO

HIS ROYAL HIGHNESS

GEORGE PRINCE OF WALES,

REGENT

OF THE

UNITED KINGDOM OF GREAT BRITAIN AND IRELAND,

&c. &c. &c.

SIR,

THE gracious permission which your Royal Highness has given me to lay at your Royal Highness's feet the following work ; and the anxious solicitude your Royal Highness expressed for the success of the first operation performed in this manner since its revival in England ; show the deep

interest your Royal Highness takes in the cause of suffering humanity, and the protection your Royal Highness gives to every attempt that is made for its amelioration.

I have the honour to be,

With profound veneration and respect,

SIR,

Your Royal Highness's

Most faithful and dutiful servant,

JOSEPH CONSTANTINE CARPUE.

*Dean Street, Soho Square,
July, 1819.*

INTRODUCTION.

IN the year 1817, wishing to know the state of surgery at Paris, I made a journey to that city, was much pleased with the cleanliness of its hospitals, their medical arrangements, and highly flattered by the friendly reception I received from the majority of the medical practitioners. The intention of my journey being known, Mr. Morand, of Rue St. Honoré, an eminent apothecary, sent me a note, saying, if I wished to see the operation of lithotomy, a celebrated surgeon, Dr. Souberbielle, would operate early the next morning, at the Hôtel des Invalides, on a gentleman aged sixty-four. Mr. Morand gave me a letter of introduction, addressed to Mr. Rebis, one of the surgeons of that magnificent establishment, who received me with great politeness, and did me the favour to introduce me to Mr. Ivan, surgeon in chief. I had also the pleasure to meet Baron Percy and Dr. Chaussier. The patient, M. de Walville, entered the room with much composure, and ascended the table. Being placed as is usual

in the operation for the stone, Dr. Souberbielle, having introduced a staff, made an incision in the perinæum, and into the membranous part of the urethra; he then introduced a director into the groove of the staff, which he withdrew. He now passed along the director (an instrument that had somewhat the form of a catheter), which was held by an assistant. It is not possible for any one to conceive my astonishment; I could not comprehend for what purpose this was introduced. The director was removed, and the instrument was suffered to remain in the bladder. The ligatures were taken from the feet of the patient, who was placed in a very different position. The operator made an incision in the integuments and fat, three or four inches in length, above the pubis. I now perceived that Dr. Souberbielle was about to perform the High Operation. He proceeded with great coolness, and extracted a large stone, then another, another, and another; he now drew forth a large quantity of small calcareous particles; this rendered the operation tedious, which the patient bore with great courage. Baron Percy said, "Dr. Souberbielle, "I think that you had better inject the bladder;" the doctor answered, "there is no occasion, for "I can feel every part of the bladder, and there "is not a particle of calculus remaining." The operation being finished, the patient was put to bed. We retired into the adjoining apartment, Baron Percy said it was usual for the atten-

dant surgeons, when they approved of an operation, to signify the same: on this he wrote the annexed paper, stating that Dr. Souberbielle had operated with great ability; that the stone consisted of variously sized particles, which, when collected, were about the size of a turkey's egg, and that the professors and doctors present (the surgeons in Paris rank with and have the degree of doctor) were of opinion that the patient was in a state which afforded the greatest hopes of his recovery.

COPY OF BARON PERCY'S REPORT.

“ Hôtel Royal des Invalides.

“ Ce jourd'hui, six Août 1817, entre six et
“ sept heures du matin, a été opéré de la taille,
“ Monsieur De Walville, âgée soixante-quatre,
“ administrateur de l'Hôtel Royal des Invalides, à
“ qui il a été extrait, par M. Souberbielle, une
“ pierre friable, dont les débris lavés et rassem-
“ blés ont été estimés avoir dû être du volume
“ d'un œuf de dinde, et chatonnée dans le bas
“ fond de la vessie; cette opération a été pra-
“ tiqué par le haut appareil; elle a été laborieuse
“ à cause de la nature de la pierre; le malade l'a
“ supportée avec beaucoup de courage, et tous les
“ assistans ont été extrêmement satisfaits de l'ha-
“ bilité, de la prudence et du sang froid de l'opé-
“ rateur; le malade est dans un état qui donne

“ les plus grandes espérances pour son rétablisse-
“ ment, et ont signé les professeurs et docteurs
“ présens.

“ *J. C. Carpue*, chirurgien Anglais; *Percy*,
“ *Chaussier*, *Ivan*, *Pasquier*, *Robillard*,
“ *Brunan*, *Sureau*, *Duroches*, *Rebis*, et
“ *Souberbielle*.”

Baron Percy politely handed this report to me for my signature. I knew not how to act; I did not understand the operation, and, in truth, I was much prejudiced against it, yet it was approved of by Baron Percy, Dr. Chaussier, and other eminent practitioners of the Parisian school; and considering that my signature was merely intended as a compliment, and knowing also, full well, that the quantity of calcareous matter could not have been extracted with the same facility and certainty by the Lateral Operation with which it had been by this, I subscribed my name.

My anxiety for the welfare of the patient was great; nor could I think of any thing but of this case. Three days from this period Dr. Ivan sent me word that he would be happy to see me at the Invalides, where he would introduce me to M. de Walville, the gentleman operated upon; I gladly embraced the invitation, and had the satisfaction to hear the patient say, “ I eat well, drink well,
“ sleep well, experience little inconvenience or
“ pain, and my surgeon informs me every thing

“ is as well as he can wish.” Two days after this I left Paris ; the patient at that period was in a very good state, and in the end I had the pleasure to be informed, by my friend Mr. Loveday, that he speedily recovered. M. de Walville introduced Mr. Loveday to Dr. Souberbielle, who, knowing from Mr. Loveday my anxiety respecting the success of the High Operation, favoured Mr. Loveday with accounts from time to time of the success of his practice. Dr. Souberbielle had also the liberality to invite Mr. Loveday to two of his operations, one on a man aged fifty, whom I saw when last in Paris in perfect health, working at his trade of a shoemaker ; the other on a gentleman, aged seventy, who also received a perfect cure. I was anxious to see these patients, and Dr. Souberbielle, whom I had only seen on the day which he performed the operation on M. de Walville, sent me an invitation to come to Paris, saying that he would introduce me to a number of patients, on whom he had performed the High Operation subsequent to my departure from that city, and that he would give me every information in his power on the subject. I considered it as a duty I owed to society to accept this kind invitation. On my arrival in Paris Dr. Souberbielle received me with the greatest hospitality, and introduced me to a number of his patients, who were so obliging as to show me their cicatrices. One was a gentleman aged upwards of eighty,

who introduced me to a lady, the Countess —, his daughter, saying, “ Sir, for many years the Countess used to come to condole with her father: she now comes to rejoice with him, as I am now free from pain, after having suffered for a period of upwards of twenty years.” Dr. Souberbielle kindly accompanied me twenty-eight miles from Paris, and introduced me to Dr. —. That gentleman shewed me a cicatrix, saying that he was happy to see me, hoped I should be able to introduce into England an operation from which he had received so much benefit. He said that he was sixty-six years of age, and that he had been a martyr to the stone for a considerable time; that, comparatively speaking, the operation was attended with little pain, that it was soon over, that he was enabled to follow his profession in a very short period of time. He then introduced me to a farmer, seventy years of age, who showed me his cicatrix, and who said that for three years he had not been able to do a day’s work, that he could scarcely walk; but that since his operation he had been perfectly well, free from pain, and now employed himself, as heretofore, in the avocations of his farm. Dr. Souberbielle also introduced me to Madame —, wife of General —, a Maltese lady, aged thirty, who showed me a calculus, extracted by Dr. Souberbielle, which was of a considerable size, and said that the operation was of a very short dura-

tion, that she had been freed from sufferings which none but those who had endured could describe.

Being satisfied with Dr. Souberbielle's success, I desired him to do me the favour to perform the operation of the Haut Appareil on a dead subject, with which request he with the greatest alacrity complied; operating on a male subject, as also on a female. He further shewed me the Lateral Operation with Frère Come's *bistoire cachée*. These operations he performed with the greatest dexterity. I now dissected the subjects operated upon, and still intruded upon Dr. Souberbielle's kindness, desiring that he would attend me the next day, that I might operate in his presence. In the first subject he directed every part of the operation, after which, considering myself well informed, I operated on the second, and was much pleased at receiving the approbation of Dr. Souberbielle; trusting that being well informed on this subject, I should be able to perform scientifically an operation with which I had before been totally unacquainted, and which had not been performed in London for a period of nearly a hundred years.

That the reader may be able to appreciate the advantages of the High Operation, I shall trace the various modes of Lithotomy, from the earliest periods down to the present time.

Hippocrates has not written on the operation of Lithotomy; and in the oath which he administered

to his pupils, he obliged them to swear that they should not operate on persons afflicted with the stone, but leave them to the practitioners of surgery (at this period the practice was exclusively confined to a particular family). Hippocrates in his Aphorism, sect. 6, says, “ if the *bladder*, or the brain, or the heart, or the diaphragm be wounded, it is fatal.” Again, “ if a nerve, or the *bladder*, or a small intestine be wounded, it does not unite.” Again, “ if the *bladder* be wounded, death ensues.” It will be seen that the above remarks have been the occasion of much calamity to succeeding ages. Celsus is the first who has written on the operation of Lithotomy. His operation, which is termed the *Methodus Celsiana*, or cutting on the gripe, is also termed the Apparatus Minor, (so called from the small number of instruments required in the operation). Celsus describes the operation in the following terms.

THE APPARATUS MINOR.

“ You introduce the fore and middle fingers
 “ of the left hand, dipped in oil, up the anus,
 “ and pressing softly with your right hand above
 “ the pubis, endeavour to bring the stone towards
 “ the neck of the bladder ; then an incision is to
 “ be made through the skin down to the neck of
 “ the bladder, of a lunated form, near the anus,
 “ with the horns towards the hip. In the deep
 “ and narrow part of the wound a second incision

“ is to be made into *the neck of the bladder, on the*
 “ *stone.* The stone being now seen, if small, is
 “ to be taken out with the fingers. If the stone
 “ is large, a hook must be passed behind it. The
 “ extremity of the hook should be flattened and
 “ bent into a semicircular form, smooth on the
 “ back and rough within. It should be rather
 “ long; when the hook is fixed behind the stone,
 “ it should be moved from side to side to bring
 “ the stone forward; for if you merely press upon
 “ the stone, it may slip and escape into the
 “ bladder.” To this Celsus adds, “ when the
 “ stone is too large to be extracted without lace-
 “ rating the neck of the bladder, it is to be bro-
 “ ken :” (An operation invented by Ammonius,
 whence he was named Lithotomos, or the cutter of
 stones). Celsus confines the operation to subjects
 between the ages of nine and fourteen. This ope-
 ration was continued from the time of Celsus till
 the commencement of the sixteenth century :
 when Johannes de Romanis, in 1520, invented
 an operation called the Apparatus Major, or Sectio
 Mariana, so called from Sanctus Marianus Barolita-
 nus, who published the first description of it in 1535.

THE APPARATUS MAJOR,

(So called from the number of Instruments used in the Operation).

The operator introduces a staff into the urethra,
 then kneeling on one knee, makes an incision
 with a razor along the perinœum to one side of
 the raphe, and feeling for the groove of the staff
 he makes an incision into the membranous part

of the urethra, and fixing the point of the knife in the groove of the staff, gives it to an assistant to hold, whilst he passes a probe along the knife in the groove of the staff into the cavity of the bladder. When the probe is passed into the bladder, the urine flows out. The staff is now withdrawn. The operator is then to introduce two conductors, called male and female. The conductors are two probes, the female having in it a groove, the male having a probe point corresponding with that groove. The female conductor being passed along the probe, and lodged in the bladder, the probe is to be withdrawn and the male conductor is to be passed along the groove of the female into the bladder. The operator then takes a conductor in each hand, and dilates or tears the prostate gland by diverging the conductors. A dilator is now passed between the conductors. (A dilator is an instrument resembling forceps, whose points, by a sort of double hinge, diverge and open in proportion as the handles are pressed together). The dilator being passed between the conductors into the narrow parts of the wound, the conductors are to be held fast and steady, and the operator is now to act slowly with his dilator, and by regular and successive strokes continues to dilate the wound till he can admit the forceps. Then the dilator is to be withdrawn, the forceps to be passed into the bladder betwixt the conductors, and the stone is to be extracted.

HISTORY
OF THE
LATERAL OPERATION.

THERE is not any author who mentions any thing like the Lateral Operation from the time of Celsus till the year 1556, when Franco published a work on this operation and other branches of surgery. Pierre Franco was born at Turrière, in Provence, in the sixteenth century. He taught anatomy at Friburg and Lausanne, and published his first work, intituled, "Traité contenant une des Parties principales de Chirurgie laquelle les Chirurgiens Herniaires exercent. Lyon 1556," in 12mo. In the year 1561 he published a second edition of this work.

At this period he practised surgery at Orange in Provence. I cannot refrain from noticing the very small portion of justice that has been rendered to Pierre Franco, by those who have written on the operation of lithotomy, in this country, (the majority having passed him over in silence, whilst others have condescended slightly to mention him). The works of Franco are exceedingly scarce; however, there are deposited in the Bri-

tish Museum copies of the first and second editions of his works. Franco was much superior to most of the surgeons of his time. His language is on first sight ambiguous; I trust the cause of the greater part of this ambiguity will be explained. Franco is situated between two sets of medical practitioners, one illiterate and ignorant, the other orthodox, who would pronounce Franco guilty of schism in attempting to break through the axiom of Hippocrates, "that wounds of the bladder are deadly." Franco seems to have been a man of much foresight, which had Galileo possessed, he would not in his old age have been compelled to contradict a truth. Franco certainly sinned against the doctrines of Hippocrates, but he cried peccavi. He not only sinned but sinned boldly, for he says :

" You must cut through the neck of the bladder, but there is not any occasion to make a large opening if you can extract the stone by a small one; yet if you cannot extract the stone by a small opening, 'tis better to enlarge the wound than to tear the bladder in extracting a large calculus." In another part we shall find that he boldly opens the bladder above the pubis, but excuses himself by saying, that it was done at the entreaty of the parents of the child, and declares that he was wrong in so doing, and advises others not to fall into the same error. And when he advises the incision to be made through the neck of the bladder, he makes use of the following expression : " premierement nous monstrerons la me-

“ thode de l’extractiõ de la pierre, laquelle est
“ plus commune & vsitée encores aujourd’huy de
“ la plus part. En apres nous declarerons l’expe-
“ rience : en laquelle moymesme ay esté enseigné
“ estre beaucoup meilleure : comme on verra cy
“ après au plaisir de Dieu.” When I first read this
paragraph, I considered that Franco had been taught
this operation ; but on reflecting on what dange-
rous ground he had trodden, it appeared to me
that he was the inventor. On taking the opinion
of some friends, natives of France, well versed in
ancient French, I found that some were of opinion,
that by the word “ expérience,” was to be under-
stood that by his own experiments he was led to
this mode of practice, whilst others thought he
merely practised that which he had been taught.
I shall endeavour to shew, from the works of
Franco, that he was not only the inventor of the
lateral operation, but that the situation of the
patient, his treatment before and after the opera-
tion, the instruments used, the incisions made,
were the same which are now in use. There can
be no question but that Franco was greatly calum-
niated during his life, and that his operation was
treated with contempt by his contemporaries.
In 1561, Ambrose Paré published his immense
volume on surgery, in which work he makes no
mention of Franco’s operation, but gives an ac-
count of that of Marianus with plates. Franco in
the same year published a second edition of his
work. He also gave Marianus’s operation, no

doubt to illustrate its cruelty. He says no more than “let people of good understanding make the comparison between the different modes of operating.” Thus like Hamlet shewing the portraits, he says, “look on this and now on this.”

Fienus, in his *Tractatus de Sectione Calculi seu Lithotomia*, does not mention Franco’s lateral operation, although he gives an account of the operations of Celsus and Marianus; but in criticising the works of Roussetus, he condemns Franco’s having opened the bladder above the pubis, as militating against the doctrines of Hippocrates, in the following words:—

“Francis Roussetus has risen up in opposition
 “to the manner of operation now in use; in his
 “book concerning the Cæsarian operation, he
 “says, that it seems the operation would be far
 “more safe and easy, if the belly or abdomen
 “were opened at the side under the navel, and
 “the hand being introduced through the aper-
 “ture, the calculus were taken out. But that
 “method does not prevail. For wounds of the
 “bladder are deadly, and cannot be united:
 “and although it may be read of as having been
 “united, nevertheless it is a *rara avis*, and would
 “be too rash—and because no one has followed
 “that method, we do not treat of it.”—*Tractatus*
Thomæ Fieni de Sectione Calculi, seu Lithotomia.

Thus what Franco foresaw eventually happened; he was censured by the orthodox practitioners

after his death, and no doubt during his life ; he was calumniated by the ignorant part of the profession, for the motto to the first edition of his work is, “ Il faut endurer pour durer.”

LATERAL OPERATION OF FRANCO.

HE says that in persons of a full habit, a cathartic should be given two or three days previously to the operation, but not on the day ; and that if the patient is plethoric, he should lose some blood. He desires, first, that a bandage should be tied round one ancle of the patient, then passed round the neck to the other ancle. Then a bandage tied from his wrists round his ancles. He is then to be held by assistants.

The staff being passed into the urethra, an incision is to be made between the fundament and testicles, two or three fingers breadth from the fundament, one or two fingers from the side of the commissure of the perinæum. You must commence the incision with a razor (see plate 2), that cuts on both sides towards the point, and cuts well, being small at the point, for it is necessary that it should cut at the point.

Franco advises the staff to be made of silver in the form of a sound, in which there should be a groove (that the razor may pass with facility), that it be passed by the penis into the bladder, and held by an assistant, but not pressed too much downwards towards the perinæum, but that it be

held a little towards the right, that the razor may be introduced into the groove of the staff, and passed into the bladder so as to divide its neck. Franco says, “ the incision is to be made “ according to the size of the stone, but if the “ stone can be extracted, a small opening is “ preferable ; neither must it be too small, so that “ much violence may not be used in extracting “ the stone ; in fine, it is requisite that a medium “ be observed.”*

You must now withdraw the razor and introduce the gorgeret, which may be seen in the plate 2, the point of the gorgeret is to be introduced into the groove of the staff. The staff must now be brought down, which will allow the gorgeret to enter with greater facility into the bladder. The point of the gorgeret is to be kept in the staff, so that it may not leave the groove till it is in the bladder. Being well assured that the gorgeret is in the bladder, the staff is to be withdrawn, and the forceps are to be passed upon the

* Estant le rasoir à l'endroit de ladite canule, il fault couper le col de la vessie sur la cavité d'icelle. Ce fait, on tramera le dit rasoir par dedans icelle, lequel comme avons dit par cy devant, copperra des deux costez, selon qu'il est figuré. Ayant fait assez bonne ouverture vers la capacité de la vessie, et contre la verge, grande dy-ie selon la pierre. Laçoit que la moindre incision soit la meilleure, pourveu que la pierre y puisse passer et pareillement ne soyt pas trop petite tant qu'il faille que la pierre sorte avec grande violence. Bref il est requis de tenir mediocrité.

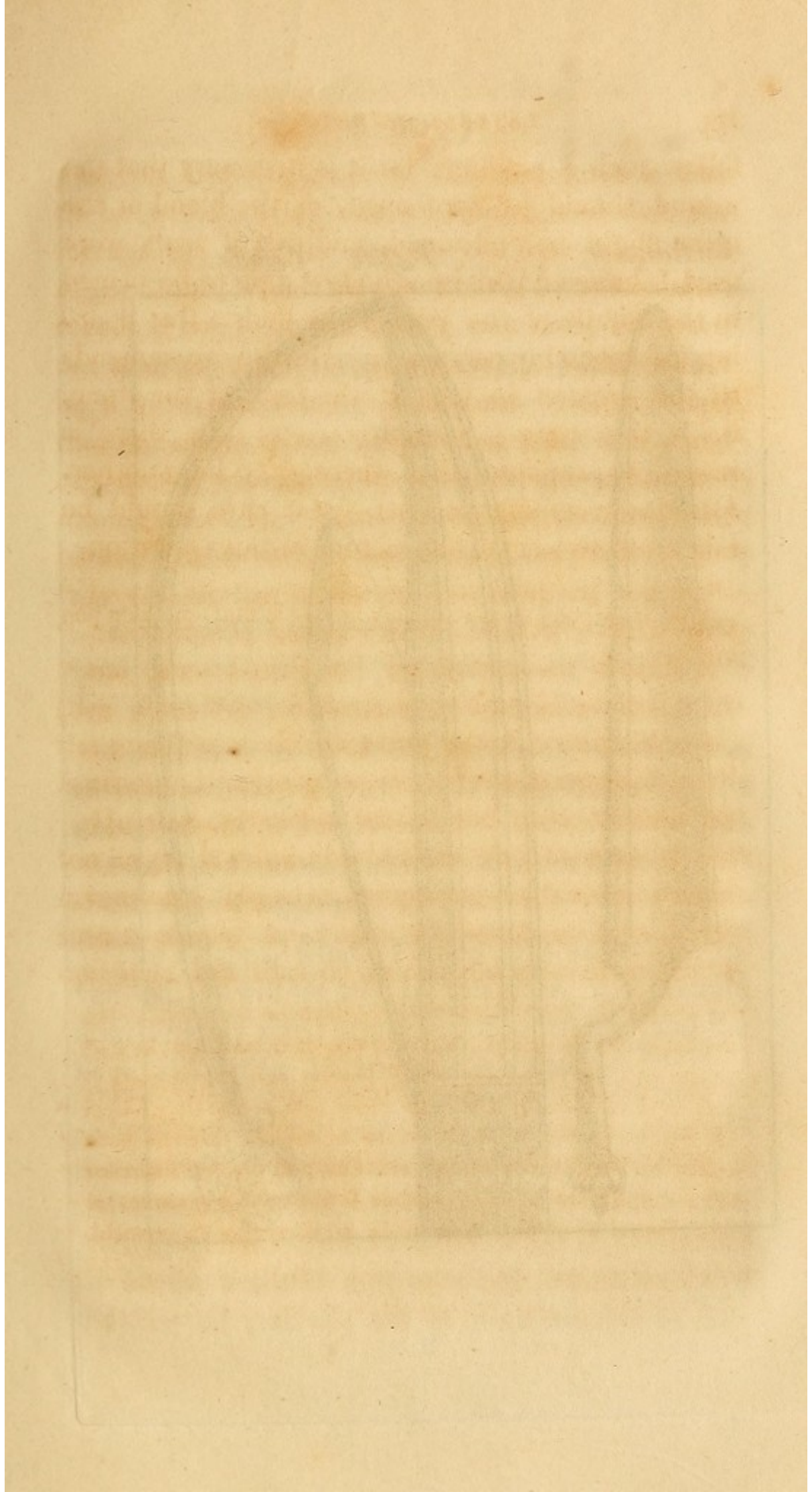
gorgeret into the bladder. The gorgeret is now to be withdrawn. You are to open and shut the forceps till with the forceps you have taken hold of the stone, which may be known by the handles receding one from the other; care must be taken not to draw the forceps out empty, which would be a vexatious thing. The stone being received into the chops of the forceps must be firmly and dextrously withdrawn from the bladder, but not moved *çà et là*. Franco recommends the use of his forceps, saying, "that though they will be enlarged in the cavity of the bladder, the neck not receding the one from the other, the external wound will not be dilated or irritated." (See plate 3.) Franco here complains much of the practice of dilating the wound, which he says, is attended with very serious consequences.*

He then remarks, that if the stone should be too large, it should be broken with forceps of his invention. He says, according to Guido, that a suture should be made where there is a large opening, but that he never did nor ever would

* Ambrose Paré recommends the tearing of the bladder :
 " Puis seront fort serrées entre les doigts de l'opérateur
 " lequel puis après doit entre ses deux conducteurs pousser
 " avec violence dedans la cavité de la vessie, un autre instrument nommé Bec du Cane ; puis l'ouvrir des deux mains
 " le tournant à dextre et à sinistre *çà et là*, avec force, pour
 " dilacerer et aggrandir la playe tant qu'il sera besoin, etc.
 " etc."

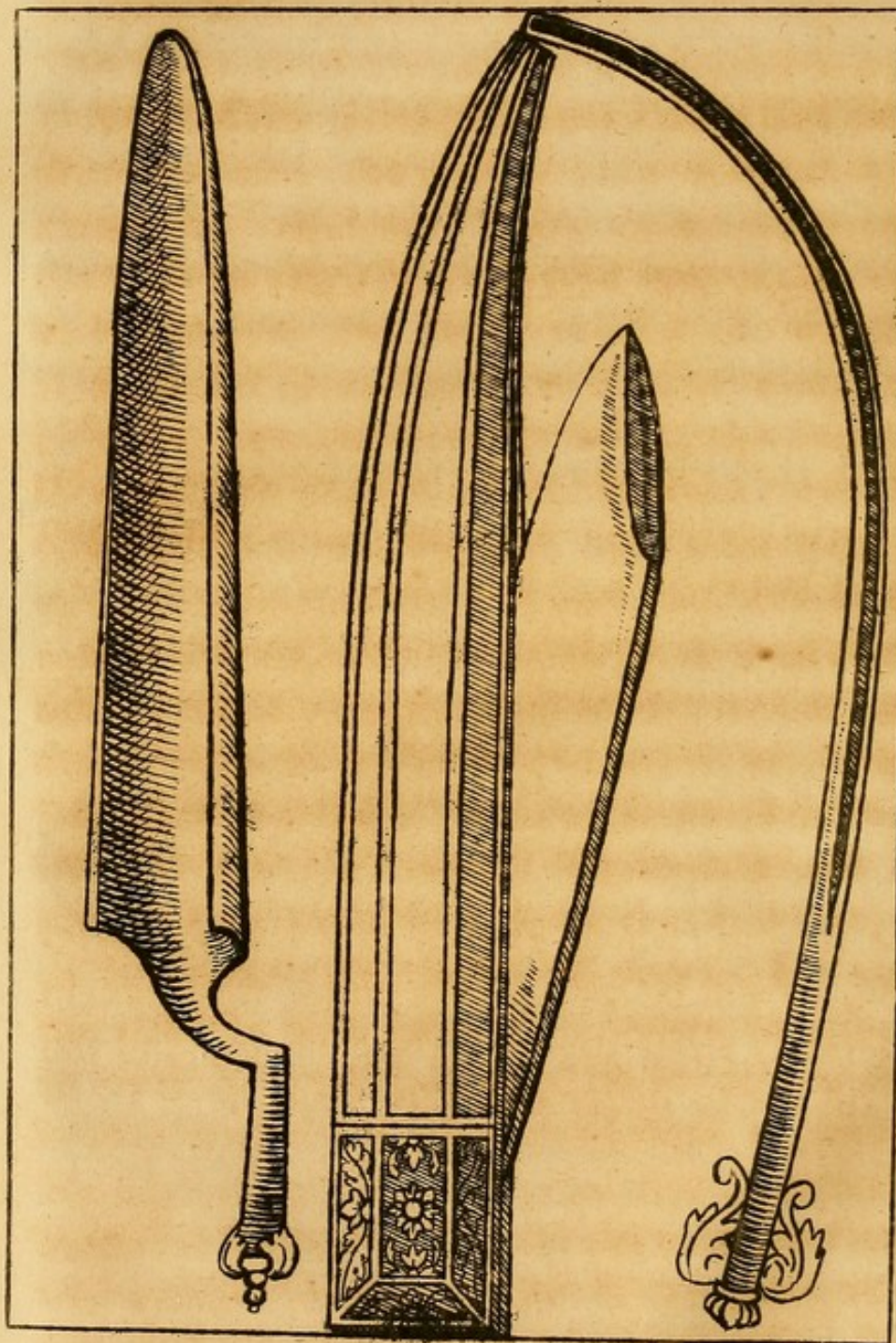
follow such a practice, for it is necessary that the wound should be kept open, or the blood or the urine might be restrained, and that if tents were used,* he would advise a hollow pipe to be placed in the middle of the tent, as he finds a free opening indispensably necessary. He also recommends to the surgeon to look at the form of the stone, for if the stone is smooth on one side, there is reason to suppose that there may be another. He also recommends that great care should be taken not to wound the rectum in this operation.

* Je n'ay point accoutumé d'y mettre tentes, que bien peu souvent.



Gorgeret,

Rasoir, Canule.



INSTRUMENTS USED BY FRANCO

IN THE

LATERAL OPERATION.

THAT these instruments may be well understood, I have subjoined a copy of the plate from Franco's works.

1st. The Razor, which is nothing more or less than an ordinary scalpel, double-edged towards the point.

2d. The Cannula, which is a grooved staff.

3d. The Gorgeret.

The forceps, which Franco says are of his invention, as will be seen by the plate, will contain a moderately sized stone in their chops, and the neck will not be distended. See plate 3.

FRANCO'S OPERATION ON FEMALES.

A conductor is to be passed into the meatus urinarius, and this serves as a director to the knife ; the incision is to be made on the side of the neck of the bladder. The forceps are now to be introduced, and the stone is to be extracted. If the stone cannot be taken hold of with the forceps, the operator is to introduce his finger into the vagina of a woman, and into the rectum of a child, to lift up the bladder, so that the stone may be the more readily received with the forceps.

He observes, that if the stone is small, or the size of a nutmeg, or a little larger, the meatus may be dilated by an instrument of his invention (see plate 3), but he dreads a large incision or a considerable dilatation of the neck of the bladder, as they occasion a most dreadful complaint, an involuntary discharge of urine. He says, if the stone be very large it is better to endeavour to break it by the forceps of his invention, or that it may sometimes be pierced with a perforator. He advises, again and again, not to rupture the muscular fibres which retain the urine, for that it will render the remainder of the patient's life wretched, as the urine will be continually flowing by the wound. He says that if there should be pain or inflammation of the bladder, he will ad-

vise, as in the male, a tepid fluid to be injected into the bladder; this should neither be too cold nor too hot: if too cold it would produce spasm, if too hot hæmorrhage might be produced. He now describes two instruments, which may be used in some peculiar cases, where the stone cannot be extracted with the forceps; the one he calls a *fondamental* of his own invention, the other a *tenailles à quatre* (*un vesical à quatre, duquel le premier inventeur est un mien cousin de nostre art*). He gives an account of a *double bistoire cachée*, which is to be used in the following manner; the operator proceeds as in the common way; he is to introduce this instrument in the groove of the staff into the bladder, the staff is then to be withdrawn, and the bistoire is to be opened by means of a screw, as may be seen by plate 3; this screw regulates the size of the incision; the instrument, on being drawn out of the bladder, cuts its way out. He recommends the use of this instrument when there is a schirrous of the prostate, and where the knife will not cut its way into the bladder; for he remarks, that sometimes the neck of the bladder gives way, or is pushed inwards by the knife: "*le col de la vessie cede et fuit devant la rasoir.*"

We do not hear of the Lateral Operation having been performed at Paris, nor does Ambrose Paré ever give the slightest intimation of such an operation having been performed in his work, print-

ed at Paris in 1561. There can be no question but that the operation was continued in the south, as Franco had been a teacher of anatomy, and had practised thirty years when he published the first edition of his work.

In the year 1663, Raoux, a surgeon from Bas Languedoc, is said to have performed a number of successful operations in lithotomy at Nismes, Bourdeaux, and other parts of France. He arrived in Paris the latter end of this year. In the posthumous works of F. Callot, it is said that he performed Celsus's operation; but it is impossible to know what operation Raoux performed, as this man was calumniated by the Parisian surgeons, particularly by M. Callot, who propagated the most ridiculous tales of him. Raoux probably performed Franco's operation,* as it is reported he was exceedingly successful in the different provinces of France. Whatever the operation might have been, it was in toto condemned by the French surgeons, and Raoux was compelled to leave Paris.

The Lateral Operation was not publicly known in Paris till the year 1697, at which period it was introduced by Frère Jaques.

Jaques Beaulieu was born in the year 1651 at Etendonne, a village in Franche Comté. His parents were poor, however he was taught to read and write. In his sixteenth year he entered into

* Nismes is not more than forty miles from Orange, in which town Franco formerly practised.

a regiment of cavalry, and when twenty-one years of age he obtained his discharge. At this period he entered the service of Pauloni, an itinerant lithotomist. Not being willing to accompany his master to Venice, he commenced practice on his own account. In his fortieth year he resolved to devote his life to works of charity ; he now, according to Dionis, wore the habit of a recolet, except that he wore shoes instead of sandals, and instead of a cowl a hat. His ordinary residence was in an hospital called La Charité at Besançon, erected for the maintenance of aged persons and children. His food was bread and ordinary soups ; he despised money, nor would he accept more than was sufficient to pay for the setting his instruments and mending his shoes.

Frère Jaques having performed a number of successful operations at Besançon, operated on a canon of that city with success. This gentleman advised him to proceed to Paris, and gave him a letter of introduction to a canon of Notre Dame, who presented him to M. De Harlay, first president of the parliament. In the month of August, 1697, M. De Harlay desired the physicians and surgeons of the Hôtel Dieu to investigate the claims of Frère Jaques. M. Méry, surgeon of the Hôtel Dieu, says that on the 7th of December he received an order from the first president to attend, in the Hôtel Dieu, an experiment of cutting a dead body for the stone, the stone to be put in above the pubis.

MR. MERY'S ACCOUNT OF THE DISSECTION.

“ I dissected the parts which had been cut* in
 “ presence of the physicians and surgeons of the
 “ Hôtel Dieu ; by that means, and by comparing
 “ those parts with those of the other side, we
 “ observed that Frère Jaques had cut first about
 “ an inch and a half deep in fat, from thence he
 “ had carried his knife between the musculus
 “ erector and left accelerator, but without
 “ wounding either of them ; and lastly, that he
 “ had cut through the whole of the neck of the
 “ bladder on one side, and about half an inch of
 “ the body of it.”

In consequence of this dissection, Méry, two days after the operation, gave the following report :

“ Frère Jaques' operation appears to me more advantageous for extracting the stone than the operation of Marianus, because the incision being made in the neck and body of the bladder, the stone is extracted by the largest angle formed by the pubis.

“ Thus it can be taken out with more facility, and requires no force.

“ But in the ordinary operation, as the incision is only made in the urethra, we extract the stone

* Frère Jaques' staff was made of steel, solid, round, and without a groove. M. Pascal Baseilhac, in his work “ *De la Taille Latérale de la Périnée,*” contends that the staff had a groove. His bistoury was shaped like a dagger ; his conductor and forceps were like those in common use.

from the neck of the bladder, which has not been divided, and the narrowest part of the angle of the pubis. It is manifest that you cannot withdraw the stone without great exertions and extreme difficulty, if the stone should be of any size; whence we may draw this conclusion, that Frère Jaques' operation for extracting the stone from the bladder is not followed by those vexatious accidents which attend the old operation, because in his manner of operating none of the muscles of the penis are divided.

“ In performing his operation, he cuts in truth the body of the prostate, the whole of the neck of the bladder, and a little of its body; these parts being supplied but with small vessels, an hæmorrhage is not so much to be feared as in the ordinary operation. He also remarks, that with regard to his instruments, they are not equal to those in use, for that the sound which he uses, not being cannulated, cannot be so convenient to conduct the point of the bistoire; being round, there must be great difficulty in directing the bistoire into the bladder, whatever may be the steadiness of the brother's hand.”

Mr. Méry's Second Account of the Dissection of the Bodies operated on by Frère Jaques.

Mr. Méry says: “ On the 14th of December I
“ went to the Hôtel Dieu, in consequence of a
“ second order, to see Frère Jaques perform his
“ operation. He cut the body of a child between
“ twelve and fourteen years of age, and likewise

“ of a woman, into the bladder of whom stones
 “ had been put. He cut the boy exactly in the
 “ same manner as he did the man. On dissecting
 “ this body,” Mr. Méry observes, “ the accele-
 “ rator muscle and the beginning of the urethra,
 “ and that part of the body of the bladder which
 “ lies near the back of the os pubis, was so much
 “ torn as to be almost entirely separated from the
 “ rest.” Whatever prejudice Mr. Méry may have
 entertained against the operation of Frère Jaques,
 there can be no doubt of the truth of Mr. Méry’s
 report.

The court was now at Fontainebleau, to which
 place Frère Jaques repaired, and introduced him-
 self to Mr. Duchesne, first physician to the prin-
 ces of the blood. Mr. Duchesne introduced him
 to Mr. Felix, surgeon to the king. Frère Jaques
 performed his operation in the presence of these
 gentlemen, and M. Felix was so pleased with the
 operation that he invited him to his house, where
 he remained during his stay at the town. Frère
 Jaques now returned to Paris, in the year 1698, and
 performed several operations. Before the end of this
 month he made a journey to Versailles, and then
 returned to Paris. While at Versailles he was
 well received by Mr. Fagon (physician to the
 king), Du Verney, and Winslow, who gave him
 regular demonstrations in anatomy. Frère Jaques
 while at Fontainebleau operated on twelve patients;
 of whom two only died, and these were doubtful
 cases. In consequence of this success, it was pro-
 posed that he should operate in the hospitals at

Paris. By an order of the first president, an assembly was convened of the administrators of the Hôtel Dieu, as also Messrs. Méry and Bessière, who had been commissioned by him to inspect the experiments of Frère Jaques on dead bodies. The assembly was held in the archbishop's palace on the 24th day of April. Mr. Méry opposed Frère Jaques being allowed to operate; the majority of the council were in favour of Frère Jaques. He was also allowed to operate at La Charité.

FRERE JAQUES' OPERATION.

The first account of Frère Jaques' operation on a living subject was published in the Philosophical Transactions, March 1699; this is given in a letter sent to Mr. Bessière, surgeon, and transmitted by him to Sir Hans Sloane.

“ The new way of cutting for the Stone, by the Hermit.

“ He maketh use of a steel staff, much bigger and shorter than those which are commonly made use of; it is shorter from the top to the bending of it. It bends more than ours; he hath but two, one for men and another for children. His conductor is more slender and longer than ours; the point whereof, which goes into the bladder, being of the figure of a lozenge, is wide and open in the extremity. His forceps have longer branches

than ours, but the holes of them are shorter and wider, with larger teeth within. The eurethra, with which he draweth the sand or gravel which remains sometimes in the bladder after the stone is out, is shorter than ours; his knife is much longer and more slender than ours.

“ The patient was laid on his back on a table, with a quilt under him, a pillar under his head, in such a manner that the fundament was three or four inches over the edge of the table, the thighs erect, not bent towards the belly, and at a great distance from one another, the legs bent so that the heels do almost touch the buttock, and in this posture he is kept by two strong assistants, without the help of any ligatures, so that the operator is at liberty to move any part he thinketh convenient.

“ He now introduces the catheter or staff into the bladder; very often he holdeth it with his left hand, pressing it close towards the fundament, in order to dilate and extend the membranes of the bladder; then he feeleth with the fingers of his right hand, to find out the staff through the skin; so having felt it, he runneth his incision knife at the bent of the left thigh, upon the fat protuberance below the ischium bone, directly upwards by the rectum to the bladder, which he pierceth by its *neck, and sometimes a little above it.* When he cutteth, the cutting parts of his knife are turned upwards and downwards. Having thus pierced the bladder, which he knoweth by the urine running out, then he turneth his knife and thrusteth

it a little further, in order to open the bladder wide enough that his finger may go in easily; then he withdraweth his knife, and enlargeth the wound in the outward parts, of the length of two or three inches; after which he thrusteth his finger into the bladder, in order to know more precisely the bigness and situation of the stone, and make it loose, but chiefly to dilate the overture of the bladder by tearing its membranes.

“ Then he introduceth his conductor into the bladder, along this finger which is in it.

“ When the conductor is in the bladder, he taketh the staff out and introduceth the forceps by the conductor into it, with which he gets hold of the stone and draweth it out.

“ If he finds any difficulty, either in getting hold of the stone or in drawing it out, he useth all the ways commonly used, raising the left thigh more or less, putting his finger in the fundament, and sometimes the bladder, in order to examine the situation of the stone, and loosen it in case there might be any adhesion with the membranes of the bladder. Having found out and removed the cause of the difficulty, he thrusteth the forceps again into the bladder, and gets hold of the stone and pulls it out.

“ It is to be observed that this second time, nor any other, he useth no conductor, the forceps running in very easily. He never thrusteth his finger or any instrument into the bladder, without steeping them in oil of roses; he never uses any

dilatatorium, or cannula, or tents in the wound, except some small dossils in the lips of the outward wound, to keep them open for a little while. He useth no ointments at all for the wounds, applying only a pledget steeped in oil of roses upon it; for he understands nothing at all of the way of dressing wounds, nor in the diet which the patient is to observe, which things he doth not value. In this way he operates as dexterously as any of our best operators."

THE RESULT OF FRERE JAQUES' OPERATION.

Dr. Martin Lister, F.R.S., physician to the English embassy in the year 1698, gives the following account of Frère Jaques' operation.

"Another popular disease here is the stone, and there are men well practised in the cutting for it. There are also two hospitals where great numbers are cut yearly, as the Hôtel Dieu and La Charité. But that which I shall here most insist upon is the new way practised by Frère Jaques, a monk. About the 20th April, he cut in the Hôtel Dieu ten in less than an hour's time; the third day after all were hearty and without pain but one. He operates both by the grand and little appareil; in both he boldly thrusts in a broad lancet or stiletto into the middle of the muscles of the thigh near the anus, till he joins the catheter or staff, or the stone betwixt his fingers; then he widens the incision of the bladder in proportion to the stone, with a silver oval hoop; if that will not do he thrusts in

his fore fingers and tears it wider, then with the duck's bill he draws it out. I saw him cut a second time in the Hôtel Dieu, and he performed it upon nine persons in three quarters of an hour very dexterously. He seemed to venture at all, and put me, as well as a stouter Englishman than myself, in some disorder with the cruelty of the operation; however I visited them all in their beds, and found them more amazed than in pain. Père Jaques cut also his way, in the other hospital, La Charité, much about the same time, eleven at twice. Here M. Marechal, the best of the surgeons for this operation then in Paris, harangued against it before the governors, who coldly answered they would be determined by the event which way was best. Of those cut in La Charité one died, and being dissected, it was found he had his bladder pierced in four or five places, also the muscular psoas sadly mangled, also the left vesicula seminalis cut. Notwithstanding this, if this method was well executed by a skilful hand, it might be of good use to mankind. This way of cutting for the stone puts me in mind of what I formerly writ, and published in the Philosophical Transactions, about cutting above the os pubis, in the fund of the bladder."*

Whatever might have been the merits or demerits of Frère Jaques' operation, it is certain that

* Mr. Lee, librarian, has been so obliging as to look over all the books and papers of the Royal Society, but cannot find any paper on the High Operation by Dr. Lister.

there existed a considerable degree of prejudice as well as jealousy against him, for we have seen that M. Marechal spoke against this operation. It will also be seen that Mr. Marechal, having learned the operation of Frère Jaques, performed it with success in La Charité, as will appear by the following letter; and that he prevailed on M. Fagon, who was physician to the king, and who had the stone, and was to have been operated on by Frère Jaques, to allow him to perform the operation; and that this gentleman, as may be seen in Sharp's preface to his surgery, printed in the year 1740, had forbidden the operation to be performed at La Charité.

Dr. Lister, in page 235 of his journey to Paris, says, "since my return I had a letter from Mr. Probie, a very learned and industrious young gentleman, who was with me to see the operation. That part relating to this matter I shall here transcribe. Indeed I mightily longed for an account of this matter, the success of which I came away too soon to learn any thing for certain.

Paris, Aug. 2d, 1698.

"Père Jaques' reputation mightily slackens: out of forty-five that he cut at the Hôtel Dieu, but sixteen of them survived; and of nineteen in the Charité, but eleven. He has practised at the hospitals at Lyons, but 'tis said with worse success than at Paris. I am sensible he has got abundance of enemies, which makes me very often question

what I may hear said of him. Dr. Fagon, the king's physician, told Dr. Tournefort, when he went to present his book to him, that he had cut seven at Versailles, and that six of them are alive, and as well as if never cut; the person that died was so distempered that he was not expected to live, and it was thought if he had not been cut he had not lived so long. The surgeons have a great mind to cry down the man, though they practise his method: for Marechal has since cut after Père Jaques' method, only with this difference, that Marechal's catheter was cannulated. La Rue, the second surgeon of the Charity hospital, cut after the old manner, at the same time when Marechal cut Père Jaques' way, but had not so good success as Marechal had: for all that Marechal cut are alive and very well, whereas the other lost one or two of his number; besides, those that lived were not so soon cured, no, not by a month or six weeks." Thus far Mr. Probie.

In 1698 he performed sixty operations, forty-eight at the Hôtel Dieu and eighteen at l'Hôpital de la Charité: twenty-five died; and of twenty-two that were operated on by the surgeons of the hospital, but three died. In consequence of this difference of success, Frère Jaques was not allowed to operate any more in the hospitals.

Frère Jaques, disgusted with the treatment that he had experienced in Paris from the surgeons, travelled over various parts of France, Germany, and Holland, where he operated with a consider-

able degree of success. For an account of the success of these operations, see "*Baseilhac de la Taille Latérale.*" On his arrival at Amsterdam he visited Mr. Rau, who had seen him operate in Paris, and who introduced him to the magistrates of that town. His success was so considerable at Amsterdam, that Frère Jaques was lodged and boarded at the expense of the public treasury. Frère Jaques now went to the Hague and different parts of Holland, during which time Rau propagated the work of Méry, and did all he could to detract from the merit of Frère Jaques' operation. However, the magistrates invited Frère Jaques to return a second time to Amsterdam, which he refused, saying that there was a better operator than himself in the person of Mr. Rau. The magistrates, the better to shew their approbation of his conduct, caused a gold medal to be struck of the value of four hundred livres, on which was the bust of Frère Jaques, and on the reverse the arms of the town, with this motto, "*pro servatis civibus.*" Frère Jaques in his defence, in answer to Méry, states that he had performed more than four thousand five hundred operations for the stone. Whatever may have been Frère Jaques' first operation, it will appear clear from the following publication of Frère Jaques, that at this period he operated with a grooved staff (Frère Jaques always speaks in the third person).

FRERE JAQUES' ACCOUNT OF HIS OPERATION.

“ New Method of cutting for the Stone in the Bladder, by Frère Jaques de Beaulieu, in Franche Comté, of Burgundy, and its Difference from the old.

“ Having placed the patient, he introduces the sound into the bladder, holding it with his left hand; he cuts the neck of the bladder below the muscles, and the arteries of the penis, (without cutting them) between the accelerator and the left erector; then he puts his finger into the bladder by the sphincter, along the sound, to find the stone, which with the forceps he draws out at the largest angle of the pubis.” *It was difficult at first to discover the groove in the sound, but in the year 1701 he adapted the sound to the age of the patient.*

From this period he travelled to various parts of Europe. In 1716 he left Rome for his native country; and finding that his parents were deceased, his nephew alone surviving, he retired to the house of an ancient friend, M. Décars, in the year 1719, where he expired, in the 69th year of his age.*

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* He is said to have performed upwards of six thousand operations in lithotomy.

RAU'S LATERAL OPERATION.*

HEISTER, professor of physic and surgery in the University of Helmstadt, F.R.S. of London, and of the Royal Academy of Paris, says, “ having finished the course of my studies in Germany, and being taken with the fame of the celebrated Dutch professors in physic, I went next to Holland, and there staid about five years, to improve myself chiefly in anatomy and surgery. I there studied under Ruysch and Rau.” Heister says, that when Rau came to that part of his course of operative surgery which treats of Lithotomy, his phrase was, “ that he had nothing to say upon that head, because it was the means by which he subsisted and got his living, and I had rather be silent than propose any thing that might mislead you from the truth: but if you can learn it by seeing me perform it upon living subjects you are welcome, and for the rest you may read Celsus.” Heister’s account of Rau’s operation is as follows: “ that he had been informed by Albinus, both father and son, toge-

* Camper, in his second book, *Demonstrationum Anatomico Pathologicorum*, says, “ that Rau talks of having cured 1,547 patients, but that for his part he doubts very much the truth of his assertion; for that on consulting the list kept in the College of Surgeons at Amsterdam, by order of the magistrate, of those operated on for the stone, he found out of twenty-two four had died, so that he lost two out of eleven.”

“ ther with Ruysch, that he, Rau, being assisted
“ by a chirurgical audacity, and great skill in
“ anatomy, first, like James and the ancients, cut
“ through the perinæum, then through the neck
“ and bladder itself; that he made use of a
“ grooved catheter to cut upon; that instead of a
“ gorgeret he made use of two ensiform conduc-
“ tors, male and female; that he placed his pa-
“ tients after the manner of Frère Jacques, lying
“ on their backs with their hips elevated; that he
“ secured them by ligatures different from the
“ common method, not so terrifying as those in
“ common use, which occasioned great fear in the
“ patients, for that Winslow, in a letter to Mr.
“ Morand, says, that he has known instances of
“ death occasioned by the fright in consequence
“ of these ligatures being used; that instead of
“ these long bandages put about the patient's neck
“ and limbs, Rau only applied two short ligatures,
“ made of flannel, each of which were not above
“ four feet long. The patient being laid on the
“ table, his wrist was fastened by one of the liga-
“ tures by a loop to the leg of the same side,
“ not to the ankle, as is the practice of others,
“ but to the knee, and the same method was ob-
“ served on the left side.” Heister was the first
after Rau who performed the Lateral Operation at
the hospital of Oudenarde; he cut from a lad,
aged about fifteen, a stone which weighed two
ounces: and this operation was performed in
August 1709, and the patient recovered.

From the experiments made by Bamber and Cheselden, it will be seen that Rau's method was not understood in London. Rau's success had been very considerable since the time of Frère Jacques' operation in Holland, though previously to this period, he having practised the greater and lesser operation, a number of his patients had died. His success stimulated the surgeons of various parts of Europe, and among others Dr. Bamber and Mr. Cheselden, to abandon the high operation, which prior to that period, according to Douglas, they had practised with great success. Dr. Douglas, in his History of the Lateral Operation printed in the year 1726, says, "that Dr. Bamber made " the first trial of Rau's operation at Bartholomew's Hospital in August 1726, and that he " filled the bladder moderately with water." There is not any record of the cases operated upon by Dr. Bamber at St. Bartholomew's Hospital. Mr. Cheselden began his experiments at St. Thomas's Hospital a few days after Dr. Bamber.

DR. DOUGLAS'S ACCOUNT

OF

MR. CHESELDEN'S FIRST OPERATION.

THE table upon which the patient is placed is highest at that end upon which his buttocks rest,

and by means of a pillow laid under him there and another under his head, when he lies upon his back, his belly is lower than any other part of his body. His buttocks are placed upon the end of the table, and his knees being separate one from another and bent as much as they can be conveniently, his wrists and ancles are tied together, and he is kept in that situation by three assistants; one at each leg and a third at his head, who presses with his two hands upon the patient's shoulders to keep him from retiring back from the operator. The operator thrusts an hollow grooved steel catheter through the urethra into the bladder, and with a syringe mounted with an ox's ureter, injects as much warm water into it as the patient can bear without pain.

When the water is injected and is secured from running out by tying round the penis a narrow slip of flannel, he gives the end of the catheter to an intelligent assistant to hold, whose principal care is to keep it from rising, but not at all to direct the groove to the place where the incision is to be made, for a reason which you shall hear presently. Then the operator having seated himself upon a chair, the height of which is suitable to that on which the patient is laid, takes a pointed knife with a convex edge, and beginning about an inch above the anus on the left side of the raphe, between the accelerator urinæ and the erector penis, he makes an incision downwards by the side of the sphincter ani, and a little

obliquely outwards as it descends, from two and a half to four inches in length, according to the age of the patient or the size and structure of the parts. This first incision he endeavours to make all at one stroke, so as to cut through the skin, fat, and all, or part of the levator ani, which lies in his way. As soon as this is done he thrusts the fore-finger of his left hand into the middle of the wound, in order to press the intestinum rectum to one side, that he may be in less danger of being cut, and taking the crooked knife in his other hand with the edge on the concave side, he thrusts the point of it through the wound close by his finger into the bladder, between the vesicula seminalis and os ischium of the same side; then lowering his hand he continues his second incision upwards till the point of his knife comes out at the upper part of the first. The second incision being finished, he thrusts the fore-finger of his left hand through the wound into the cavity of the bladder, and having felt and secured the stone, he introduces his forceps upon his finger, and he endeavours to lay fast hold of the stone with it. Then he pulls out his finger and taking the forceps with both hands, he extracts the stone with greater or less facility, according to the size thereof or largeness of the wound he has made. During the whole operation the catheter remains in the bladder. All that the assistant has to mind is, as has been already said, to keep it from rising. By this means Mr. Cheselden thinks the bladder

is pressed down sufficiently to admit the entry of the forceps upon his finger, without the use of any director, and it being filled with water there is no occasion to cut upon a groove, neither is there any danger of laying hold of the catheter with the forceps; if due care is taken to manage that rightly after it is in the bladder.

This is Mr. Cheselden's regular method of cutting, and when no accident happens which it was impossible to be aware of before the operation, he has been seldom above a minute (sometimes less), between the beginning of the first incision and the extraction of the stone. There are circumstances, however, in which he finds it necessary to vary some steps of his method. These, as far as I am a witness to or can remember, are as follows: First, when having laid hold of the stone with the forceps, he finds by the force it takes to draw it out, or other signs, that it is very large, rather than expose the patient to the pain and danger of violent dilaceration of the parts, he chooses either with a pair of scissors, if it is the upper part, or his knife if the lower, to enlarge the wound by an additional incision. Secondly, if after the second incision is made, he finds by the fingers which he endeavours to thrust into the bladder, that the catheter has slipt into the wound, which through the straining of the patient and other accidents sometimes happens, then he withdraws his fingers, and instead thereof he thrusts a gorgemet into the groove of the catheter, upon

which he introduces his forceps in the ordinary manner. It is only with a view to this accident, that he prefers a grooved catheter to one entirely round, such as was used by Frère Jacques. Thirdly, when the assistant who holds the catheter, gives him any ground to think that he has laid hold of that with the forceps instead of the stone, which though he believes may rarely happen, is not impossible, he orders it immediately to be pulled out, and then endeavours to lay hold of and extract the stone without that conveniency which the pressing down of the bladder would afford him, if he should be obliged to introduce his forceps more than once. Fourthly, when by the smallness or situation of the stone, he finds this method to be easier or more safe, he thrusts his fingers into the anus, and having thrust the stone towards the orifice of the wound, he pulls it out with the other hand without using any forceps at all. Lastly, when he feels either by his finger or the resistance the stone makes to the force with which he strives to draw it out, that there is any kind of constriction of the ureters or membranes of the bladder about it, he endeavours by thrusting his fingers into the anus or other proper methods, to bring that part near the orifice of the wound, and then with his knife he cuts these membranes which had formed the sphincter, and thus the stone being disengaged is extracted with greater ease.

MR. CHESELDEN'S SECOND OPERATION.

THIS operation I do in the following manner: I tie the patient as for the greater apparatus, but lay him upon a blanket several times doubled upon an horizontal table, three feet high or more, with his head only raised. I first make as long an incision as I well can, beginning near the place where the old operation ends, and cutting down between the musculus accelerator urinæ and erector penis, and by the side of the intestinum rectum. I then feel for the staff, and cut upon it the length of the prostate gland straight to the bladder, holding down the gut all the while with one or two fingers of my left hand. The rest of the operation is the same as in the old way; but in this way there being often cut small vessels, I always tie them with a ligature passed under them by the help of a crooked needle. This is the operation which Cheselden taught Morand.

DR. DOUGLAS'S ACCOUNT OF MR. CHESELDEN'S
THIRD OPERATION.

THE patient is tied as in the greater apparatus; that is, his wrists are gently brought down to the outside of his ancles, and secured there by proper bandages; his knees having first been bent and his heels brought back near his buttocks, then his thighs being separated one from another, he is kept in this posture by two assistants during the

whole time of the operation, they holding the ancles with one hand and his knees with the other. There is one more standing at his shoulders in order to prevent his rising up or retiring from the operator while he makes the incision. Then Mr. Cheselden standing before the patient at the end of the table, takes the catheter, first dipped in oil, and introduces it in the usual manner through the urethra into the bladder, where having searched for and discovered the stone he delivers it to one of his fellow surgeons at his right hand, whom he desires to satisfy himself whether there is a stone or not, and then the assistant holding the handle between the fingers and thumb, inclines it a little towards the patient's right thigh, drawing the convex side close up to the os pubis, near the commissura or joining of the bone, to remove or bear up the urethra as far as may be from the intestinum rectum ; being frequently desired by Mr. Cheselden not to push it down, nor make the grooved side thrust the parts forward outwards towards the perinæum ; for though by so doing the place of the external wound will, in some measure, be ascertained, and the groove of the catheter be more easily found in making the internal one, yet the danger of bringing the urethra nearer the rectum, which in that case is more liable to be cut, does more than counterbalance these seeming advantages. Besides, in this method of operating there can be very little occasion for any such contrivance, were it attended with no

inconvenience, the external wound being very large and deep. The staff being fixed in this situation, and its groove part being turned outward and laterally, Mr. Cheselden sits down on a low chair, and drawing the patient nearer him till his buttocks reach over the edge of the table, his feet being quite off from it, takes his knife which he sometimes arms with a little tow rolled about it to prevent his fingers from slipping, when it becomes wetted with blood, and holds it firm in his right hand, his thumb on the inside of the blade, his fore-finger on the outside opposite to it, his middle finger on the outside of the handle and the extremities of the rest on its upper edge; then distending and keeping steady the skin of the perinæum with the thumb and fore-finger of his left hand, he makes the first or outward incision, through the integuments from above downwards, beginning on the left side of the raphe or seam, between the scrotum and verge of the anus, almost as high up as where the skin of the perinæum begins to dilate, and from the bag that contains the testicles. From thence he continues the wound obliquely outwards as low down as the middle of the margin of the anus, at about half an inch distant from it near the skin, and consequently beyond the great protuberance of the ischium. The first or upper part of the incision is but superficial. After this he plunges his knife much deeper by the side of the rectum, and finishes by drawing his knife obliquely towards himself.

These three motions may always be observed in his external incision, but the last is performed pretty much at random, there being no danger of doing any mischief, and, indeed, I have however often observed, that he is very little solicitous about the precise place and limits of the external wound; for I have sometimes seen him cut the skin much nearer the anus, sometimes at a greater distance from it. Sometimes he begins the incision very high up, at other times lower down, (and all this variety in patients of the same bigness or size); but his intention and principal design is to make the wound as large as he can with safety, always avoiding to wound the vesicular membrane of the scrotum. Having cut the fat pretty deep, especially near the *intestinum rectum*, covered by the sphincter and levator ani, he puts the fore-finger of his left hand into the wound, and keeps it there till the internal incision is quite finished; first, to direct the point of the knife into the groove of his staff, which he now feels with the end of his finger, and likewise to hold down the *intestinum rectum*, by the side of which his knife is to pass, and to prevent its being wounded. This inward incision is made with more caution and more leisure than the former. His knife first enters the groove of the prostatic or straight part of the catheter, through the sides of the bladder, immediately above the prostate, and afterwards the point of it continuing to run in the same groove in a direction downwards and

forwards towards himself, he divides that part of the sphincter of the bladder that lies upon that gland, and then he cuts the outside of one half of it obliquely, according to the direction of the whole length of the urethra that runs within it, and finishes his internal incision by dividing the muscular portion of the urethra on the convex part of the staff.

Dr. Douglas remarks, that when Mr. Cheselden began to practise this method, he cut the same parts the contrary way (see Mr. Cheselden's second method of operation, page 43), but that some time after he observed that, in that manner of cutting, the bulb of the urethra lay too much in the way, the groove of the staff was not so easily found, and the intestinum rectum was in more danger of being wounded. A sufficient opening being made, Mr. Cheselden rises from his chair, his fingers still remaining in the wound, and calling for the gorgeret he puts its beak into the groove of the catheter, and so thrusts it into the cavity of the bladder, where he is often at once sensible of the stone, which thus becomes a direction to him when he uses his forceps. This done he draws out the staff, and holding the gorgeret in his left hand, he introduces the forceps the flat side uppermost, sliding them with great caution along its concave part, nicely observing when they pass the wound into the wide part of the bladder, and then he withdraws the gorgeret and taking hold of the two branches of the forceps with both his

hands, he searches gently for the stone, they being still shut, and having felt it, he opens them and endeavours to get the undermost blade under the stone, that it may fall more conveniently into their chops and so be laid hold of, which being done, he extracts it with both hands, one upon the end of the forceps, the other about the middle, but with a very slow motion to give the parts time to stretch and dilate, which he promotes by turning the forceps gently in all directions, taking all possible care that it may not slip; of which if he perceives any danger, he endeavours to recover it again without pulling his forceps out. If the stone is pretty large and smooth, and lies in that sinus of the bladder on the same side of the wound, he draws it out with the greatest facility imaginable in subjects of all ages. But when he observes that the stone is either very small or does not lie right to the forceps, he immediately pulls them out and introduces his finger into the bladder. He tries to turn it and to disengage it from the folds of the inner membrane, in which it is sometimes entangled; then he thrusts in his gorgeret upon the upper side of his finger, which being drawn out he turns the gorgeret and introduces his forceps and so extracts the stone, but without any manner of hurry or precipitation. To preserve a soft stone from breaking during the time of extracting, he puts one or more of his fingers between the branches of his forceps to prevent any greater pressure upon it than what is

just necessary to hold it together; but if notwithstanding all his care a soft stone happens to break, or where there are more than one in the bladder, he extracts the single stone or fragments, one after another, repeating the introduction of his fingers and of the forceps, either upon that when it can be done, or upon the gorgemet, as often as there is occasion. I have sometimes seen him extract two stones engaged in the chops of the forceps at the same time. One needs not be surprised at the frequent introduction of the forceps and fingers, which is absolutely necessary upon some occasions, for it is never attended with any bad consequence when cautiously managed; that is, when due care is taken not to thrust the forceps so far in as to wound or bruise the bladder or to perforate the same (which is always mortal), in the opposite side. We ought likewise to be very cautious that we do not *pinch the whole substance of the bladder, or some of the plicæ of the inner coat only*, which is very difficult to avoid when some folds of it lie very close to the stone, in which case it may be easily torn off and drawn out together with it. He performs this operation with so much dexterity and quickness, that he seldom exceeds half a minute, unless when he is obliged to take up and tie *the vessels* before the stone is extracted. The first symptom or accident that sometimes happens before the patient is put to bed is a *flux of blood from the divided arteries*. As soon as Mr. Cheselden perceives this, he takes up the vessels with a

crooked needle, and ties them with a ligature made of waxed thread, drying the wound with a soft sponge, wrung out with warm water, that so he may the more readily discover the orifice of the vessels, and see if any more bleed, which are afterwards to be tied separately, one after another. It sometimes happens the flux of blood is so great upon making the external wound as to endanger the patient; he is obliged to tie the vessel before he extracts the stone, but if from the continued hæmorrhage, or flux, when all the external vessels are secured, he apprehends that it must proceed from the division of some of the arterial branches that are ramified on the membrane which covers the prostate gland, he thrusts up a small pledget or two dipped in a styptic liquor, which seldom fails to check it, though the parts affected remain altogether free from compression. The other bad symptoms and accidents that may happen after the patient is carried to his bed, whether from the patients ill habit of body, want of due preparation either in diet or any other cause, are very numerous in all the methods of Lithotomy, as may be seen in authors who treat of that subject; but as none of these are peculiar to Mr. Cheselden's operation, I shall only mention a few of the most remarkable, and chiefly of such in curing of which he has made some new observation or successful experiment. If there should be any tension, swelling, or inflammation, in the abdomen, which has never yet happened to him in any considerable degree, he

thinks it would be very proper to throw up a clyster, and if this does not answer, he would give a gentle purge; but if these symptoms continue to be attended with violent pain, he says, a quieting draught may be given. But what I would chiefly observe here is, that this is the only case in which Mr. Cheselden will not allow of an opiate.

OPERATION WITH THE CUTTING GORGET.

In the year 1740, Mr. Sharp says, that Mr. Serjeant Hawkins seems to have fallen upon a most ingenious contrivance, by making his gorgeret cut on the right side, so that when it is introduced into the staff, and pushed into the bladder, it necessarily makes an incision on the left side of the urethra and prostate gland, and thus avoids the danger of wounding the rectum; and as the internal incision is to be made in the same manner as when you propose to open the prostate with the knife, the extraction of the stone will be accomplished with the same ease. From the time of Hawkins till the present day, the cutting gorget is most generally used, though the form and construction have been varied by a variety of surgeons.

The Lateral Operation had not been performed in France from the time of Mareschal, the old method of lithotomy being fully established at the Parisian hospitals. Mr. Morand, seeing with regret the number of deaths occasioned by the grand appareil, gives the following account of the operations performed for a period of five years

at La Charité, during which time he was surgeon in chief:

Authentic List of the Patients operated on at l'Hôpital de la Charité.

1731	operated...14	cured...6	dead...8
1732	11	7	4
1733	16	8	8
1734	17	9	8
1735	13	9	4
	—	—	—
In five years.....	71	39	32

Hearing of the success of Mr. Cheselden, he made a proposal to the Académie Royale de Sciences to make a journey to London, that he might himself see the operation. "My proposition," says he, "was accepted, and my expenses defrayed by the Academy. The operations that I saw performed were in the spring of 1729, in St. Thomas's hospital, The questions that I put to the patient, and the conference that I had with Mr. Cheselden himself, threw a light on the subject with which simple meditation could never have furnished me, and made me determine to undertake an operation which I had heretofore considered as more difficult than *le grand appareil*, and which in the end appeared to me much more easy. From the time of Morand to the present the Lateral Operation has been usually performed in France." It must be observed, that the operation which M. Morand learned of Cheselden, was Cheselden's Second Operation, which in truth was the

operation of Franco, or of Frère Jaques ; and that Cheselden's First Operation was a misconception of Rau's Operation, and that his Third Operation was of his own invention.

In the year 1748, Frère Côme invented the lithotome cachée. This instrument consists of a handle and blade part ; the latter is curved slightly ; it is about the thickness of a quill, excavated for the reception of a concealed bistouri or knife of its own length. By means of a lever and spring, the knife can be made to pass out of the sheath, and the breadth of the wound is regulated by means of a spring and cleft in the handle, which is marked 7, 9, 11, 13, 15 ; thus, if you turn to No. 6, the incision will be of a certain size, 7 of a larger size, and so progressively. Thus an incision can be made through the prostate gland and bladder of six different breadths.

The first part of the operation with the lithotome cachée is the same as the Lateral Operation, with the gorget or knife ; but when the wound is made in the urethra, instead of introducing either of these instruments, the lithotome cachée is introduced into the bladder on the groove of the staff ; the staff is now withdrawn : the surgeon is to feel for the stone ; he then presses the lever with his thumb, and by this means disengages the blade from its sheath ; the operator now draws the instrument from the bladder, by means of which the bladder, prostate, and part of the urethra are divided ; the forceps are introduced, and the stone extracted.

OPERATIONS

OF

FRANCO, FRERE JAQUES, THE LATERAL OPERATION OF CHESELDEN,

THE OPERATION AS IT IS NOW PERFORMED,

AND

FRERE COME'S OPERATION.

FRANCO'S OPERATION.

INSTRUMENTS USED.

A staff with a groove.—A clasped scalpel, called a razor (see plate 2), which cuts at the point and on both sides.—A blunt gorgeret (see plate 2).

OPERATION.

The staff is to be introduced into the urethra, and given to an assistant, and must be pushed towards the perinæum. An incision is to be made between the testicle and fundament; the razor is then to be introduced into the groove of the staff. This being done, you must slide the said razor into the groove, cutting the neck of the bladder upon the cavity of this. You must now take out the razor and take the gorgeret, and with the point find out the groove of the staff. To do this the staff must be lowered, in order that it may slide upwards into the groove. Then the gorgeret must be passed, following always its point in the groove, till the gorgeret comes out of the cleft of the groove. The gorgeret being then in the bladder, being well assured that it is there, you must draw out the staff, the gorgeret remaining in the bladder; after which you will take the forceps, and pass them in upon the gorgeret as far as the body of the bladder. When in, you will take the gorgeret out, and close the forceps when the stone is in them.

Franco observes, that the incision must be made according to the size of the stone. Wound to be kept open.

FRERE JAQUES' OPERATION.

INSTRUMENTS USED.

In his first operation, as described by Méry, a sound, *i. e.* a staff without a groove; in his second a grooved staff.—A scalpel.—A gorgeret, somewhat of the appearance of a myrtle-leaf.—A knife that cuts at the point on both sides.

OPERATION.

The catheter or staff is introduced into the bladder with his left hand, pressing it close towards the fundament with the fingers of his right hand, he feels for the staff. Having felt it, he makes an incision into the membranous part of the urethra, and carries his knife into the groove of the staff, and cuts through the prostate into the bladder. He now introduces his fingers to feel for the stone; then he introduces his conductor

into the bladder. When the conductor is in the bladder he introduces the forceps on the conductor, and then withdraws the stone.

Not any tents are to be used. Whatever may have been Frère Jaques' first method of operation, there can be no question but that he used a grooved staff in his subsequent operation.

CHESELDEN'S SECOND OPERATION.

MR. CHESELDEN introduces the staff into the urethra, which is held by an assistant; he makes an incision through the integuments, from above downwards, from the left side of the raphe towards the tuberosity of the ischium; he then cuts down, between the accelerator urinæ and erector penis, and by the side of the intestinum rectum; he then feels for the staff, and cuts upon it the length of the prostate gland straight on to the bladder, holding down the gut all the while with one or two fingers of his left hand; he now places the beak of the gorgeret into the groove of the staff, and thrusts it into the cavity of the bladder; he draws out the staff, and holding the gorgeret in his left hand, he introduces the forceps; he withdraws the gorgeret with both his hands, he searches gently for the stone.

LATERAL OPERATION, AS PERFORMED WITH THE CUTTING GORGET, BY THE LONDON SURGEONS.

INSTRUMENTS USED.

A grooved staff.—A scalpel.—A gorget.

OPERATION.

The patient's hands are to be bound to his feet; the staff is then to be introduced, and to be held by an assistant. An incision is now to be made, from the raphe to between the tuberosity of the ischium and the anus; you must now feel for the groove of the staff; an incision must be made through the membraneous part of the urethra, into the groove; you introduce the beak of the gorget into the groove of the staff, after which you take the staff from the assistant. The gorget is then to be introduced, cutting through the prostate and the neck of the bladder, being careful that the beak of the gorget is kept in the groove of the staff; the staff is now to be withdrawn, and the forceps passed upon the gorget, and the stone is to be extracted. If the stone is too large, it is to be pierced by a borer, and then broken with forceps. Some operators use the forceps without boring the stone. If the stone cannot be broken, it is to be left in the bladder.

FRERE COME'S OPERATION WITH THE BISTOIRE CACHEE.

The incision is made, as in the lateral operation, through the integuments, &c. &c.

Having cut on the groove of the staff into the membraneous part of the urethra, you introduce the bistouri cachée into the groove of the staff, and pass it into the bladder; you then open the blade of the bistouri cachée and draw this instrument out of the bladder. The incision is regulated by a graduated scale on the handle. The forceps are now to be introduced.

ON THE

HIGH OPERATION.

THE High Operation has not been performed in London since the time of Cheselden ; in truth, it has become obsolete. It is mentioned in lectures as an operation not warrantable. An eminent practitioner, not long since, giving his opinion upon some ridiculous and exploded parts of ancient practice, said, " Gentlemen, it is as absurd to talk of this as of the High Operation for the Stone." Neither in C. Bell's nor S. Cooper's Surgery is the operation mentioned ; nor is it described nor commented on in John Bell's History of Lithotomy, in 4to. Indeed, so little is this operation thought of, that I recollect, when a pupil, a bougie having been passed into the urethra of a man (from not having been secured, as is the common practice), slipped into the bladder. To extract this, the Lateral Operation was performed ; the bougie, when extracted, was covered with calcareous matter. I also full well recollect, that the scrotum sloughed,

and the testicles hung supported by the tunica vaginalis, &c. ; granulations formed, and the patient recovered. I have also seen a bullet extracted from the bladder by the Lateral Operation, which might have been extracted in a tenth part of the time by the High Operation.

If we consider Franco's account of his invention of what is called the operation *en deux temps*, we see, that from great experience, he (Franco) was progressively led from one mode of operation to another. The stone cannot be extracted (although the Lateral Operation has been performed) without risking the life of the patient. Franco, foreseeing the strength of the patient will not bear the continued irritation of endeavouring to extract the stone, places him in bed, uses tepid applications, till the irritation, and consequent inflammation, have subsided. This experiment succeeds ; he finds that he can extract the stone, and that his patient recovers.

He says, that he has had many successful cases, and claims this as an invention, and gives an account of it in his thirty-third chapter. He is now called to a child of two years old, from whom he endeavours to extract the stone. The stone is unfortunately found to be of the size of a hen's egg ; the child is in great pain ; he cannot break the stone, and he (no doubt being a good anatomist, having been a teacher), knows of no other way than by the extraction of the stone above the pubis. He mentions this to the parents, who,

with the feelings of every parent, choosing rather to see their child dead than suffer in so terrible a manner, do what he wants them to do, intreat him to make any effort to deliver their child from such excruciating torments. He operates, and succeeds ; but, knowing what will be said by the ignorant as well as the scientific part of his brethren, lays the blame (for full well he knows blame must fall somewhere) on his own weakness, and excuses himself by saying he did the operation in compliance with the intreaties of the child's parents. In my mind, there can be no doubt but that Franco was perfectly satisfied with his operation ; and the proof is, that he gives an account of it in the first and second editions of his works. He might have published his works without this case ; but no, he thinks he has done right, and he records the fact, thinking that there are persons who may appreciate the value of the operation ; and Franco is correct in his prognostic, for we shall see in the following pages that men highly eminent in their profession have succeeded in a great variety of cases, in extracting the stone by an incision above the pubis.

OPERATION EN DEUX TEMPS.

In this operation the incision is made at one period, and the extraction of the stone at a subsequent one.

Franco's thirty-third chapter is thus entitled :—
“ Autre façon de tirer la pierre plus propre que les

autres, d'autant qu'elle est sans grand péril et douleur, inventée par l'auteur."

This is usually called the operation *en deux temps*, or at twice. Franco finds, from experience, that there are cases where the patient has suffered much from the violence of the operation, and where it would be extremely hazardous to proceed, inasmuch as he says he has known patients die on the table from exhaustion. I remember a case where the operator was three quarters of an hour in extracting the stone; the child complained of being sleepy, and in five minutes from being taken from the table he was dead.

Mr. ——— informed me that he attended an operation at a London hospital, where an hour and a half elapsed before the stone could be extracted; the child died.

Franco says, that in cases of this kind the operator should desist; the patient should be placed in bed, and then, with his usual caution, he says, (not daring totally to decry the use of *tents*), "you may employ them if you chuse, but I do not use them."

After a few days, when the fever has abated, he has often found the stone so situated, that he could extract it by the usual means. If it is not seen at the mouth of the wound, he advises the surgeon to pass his finger into the rectum, and to press the abdomen; having by these means brought the stone to the neck of the bladder, he advises that it be extracted with forceps. If the

stone is so large that it cannot be extracted by the neck of the bladder without cutting the body, (which thing is much to be dreaded, for that inflammation and often death ensue, and that the wound will not unite), or if the stone is too large to be extracted, he advises it to be broken with strong forceps of his own invention; and that if the patient has not strength to bear the irritation, it is better to wait for a day or two; and that in several cases he has succeeded by this plan.* He then gives the following

“ HISTOIRE.

“ Je recit eray ce que une fois m'est advenu, voulant tirer une pierre   un enfant de deux ans ou environ; auquel ayant trouv  la pierre de la grosseur d'un œuf de poule, ou peu-pres, je fey tout ce que je peu pour la mener bas; et voyant que je ne pouvoy rien avancer par tous mes efforts, avec ce que le patient  toit merveilleusement torment , et aussi les parens desirans qu'il mourust plustost que de vivre en tel travail; joint aussi, que je ne vouloye pas qu'il me fut reproch  de ne l'avoir peu tirer, (qui estoit   moy grand fo-

* Some ambiguity may perhaps appear in this place, but I trust that the reader will see that a sufficient opening has already been made according to the size of the stone; for at the commencement of this chapter he says, “ Having made the incision in the same manner, neither larger nor smaller than we have directed in the preceding chapter: “ *Ayant fait assez bonne ouverture, vers la capacit  de la vessie, et contre la verge; GRANDE, DY JE, SELON LA PIERRE.*”

lie), je delibéray avec importunité du père, mère, et amis, de couper le dit enfant par dessus l'os pubis, d'autant que le pierre ne voulut descendre bas, et fut coppé sur le penil, un peu à costé, et sur la pierre ; car je levoys icelle avec mes doigts, qui estoient au fondement, et d'autre costé en la tenant subiette avec les mains d'un serviteur, qui comprimoit le petit-ventre au dessus de la pierre, dont elle fut tirée hors par ce moyen, et puis après le patient fut guarý (nonobstant qu'il en fut bien malade), et la playe consolidée. Combien que je ne conseille à homme d'ainsi faire ; ains plustost user du moyen par nous inventé, duquel nous venons de parler, qui est convenant, plustost que de laisser les patiens en désespoir, comme ceste maladie porte."

HIGH OPERATION FOR THE STONE.

(Translation.)

" I will relate a case which once happened to me, when about to extract a stone from a child of two years old, or thereabout ; in which, having found the stone of the size of a hen's egg, or nearly so, I used my utmost endeavours to bring it down ; but finding myself utterly unable to effect this, the patient being in the most excruciating anguish ; and the parents rather wishing its dissolution, than that it should live in such misery ; added to this, that I was unwilling to

be reproached with not being able to extract the stone (which I own was great folly on my part) I resolved, in compliance with the entreaties of the father, mother, and friends, to cut the said child above the os pubis, since the stone would not fall down; and it was cut above the pubis, a little on one side upon the stone, for I lifted it up with my fingers which were in the anus, and on the other side, holding it down by the assistance of a servant, who pressed the belly upon the stone, by which means the stone was extracted, and a little after the patient was cured (notwithstanding he had been very ill) and the wound healed. However, I do not advise any man to do the like."

We hear no more of the High Operation (which is not mentioned by Ambrose Paré), till the year 1581, twenty years after the second edition of Franco, when Francis Rousset, doctor of the faculty of medicine of Montpellier, and physician to the King, printed at Paris, in 1581, in 8vo, "Traité Nouveau de l'Hysterolomotokie, ou Enfantement Césarien, qui est extraction de l'enfant par incision latérale du ventre et de la matrice de la femme grosse ne pouvant autrement accoucher; et ce sans préjudicier à la vie de l'un et de l'autre, ni empêcher la fécondité naturelle par après." This work was translated into Latin by the author, under the title *De Partu Cæsareo*. It is in this work that Rousset recommends the High Operation, an operation which he had never practised on a living

subject, but which he believed practicable, because he knew that a part of the bladder is not covered by peritonæum. He describes Franco's operation, and, of its success, he says, "I cannot forbear very much wondering why he should endeavour to discourage others from attempting the like. Does that good man envy mankind the happiness of the invention?"

Although he did not perform the operation on a living subject, he gives an account of three or four dissections, among which is one of a certain Breton, who was troubled with the stone and died of a dysentery: "We introduced a syringe with hot water through the pudendum. We cut between the two pyramidal muscles; the knife was passed downwards towards the inside of the os pubis. We made an incision into the bladder, as long as the breadth of three fingers; (the catheter being put into the penis, and the fingers into the rectum,) we thrust through the wound a stone as big as a hen's egg. On opening the body we found that the intestines and peritonæum were entire."

He also gives an account of an experiment that he made on a man and woman who had been just hanged. He thrust walnuts into their bladders, and passed his fingers into the anus of the man, and into the vagina of the woman, and thrust the extraneous substance out of the bladder without wounding the peritonæum. He made other

experiments on dead persons, but did not wound the peritonæum in any of these cases.

ROUSSET'S OPERATION. FIRST METHOD.

The bladder was to be filled with a sufficient quantity of liquor to distend it above the pubis, by means of the catheter, so that an incision might be made between the pubis and the peritonæum. When the bladder was sufficiently distended, a ligature was made on the penis, or an assistant held the penis to retain the liquor so injected. *A Second Method* was to introduce a catheter with a groove on its convex side; the bladder was then distended, and the groove served as a conductor. *The Third Method* was, where the water could not be easily injected into the bladder, or where it occasioned much pain, to tie the penis two days before the operation, in order that the urine might accumulate in the bladder and distend it. The bladder being distended, the patient was to be placed upon a table, or on a bed, upon his back, so that the intestines might recede from the bladder. An incision is now to be made through the integument and fat, from the pubis towards the umbilicus, between the recti muscles down to the bladder. When this is discovered, he introduces the point of a bistoury obliquely, not perpendicularly nor too high, but towards the neck of the bladder; it is necessary that this opening should be very small, that the water may not escape; a probe-pointed bistoury is then to be introduced,

the incision is then to be enlarged from the bottom to the top. If the cannulated catheter is used, this serves as a conductor to the bistouri. The bladder being evacuated, the operator introduces a finger into the anus if it is a man, and into the vagina if it is a female, to elevate the stone towards the pubis, and extracts it with the two fingers of his other hand, or with the forceps. If any fragments of the stone or sand remain in the bladder, they are to be taken out with a scoop, or with curved forceps. The operation being finished, a silver catheter is introduced into the penis, by means of which the urine, pus, blood, or sanies, may be discharged. It will not be necessary to use ligatures if the patient remains quiet upon his back; if the thighs are brought carefully together the lips of the wound will unite.

Rousset also says, he had not heard of Franco's operation when he wrote his treatise, and that in his own mind wounds in the membranous part of the bladder could be made without endangering the life of the patient. To substantiate this opinion, he quotes Paræus and Francis Rassius. The first account is of a citizen of Orleans, who, on the 10th of February, A.D. 1560, was wounded in the belly, with a broad dagger, a little below the navel. His urine, for nineteen days and nights, issued through the wound alone, and by no other way. Florentius Philippus, a skilful surgeon, having thrust a silver catheter through the urethra,

easily brought off the urine, and very quickly cured the wound.

Another case he relates, is that mentioned by John Centiman, a German physician, in his eleventh history of Human Stones, of one Conrad, in 1558, a trooper in the expedition of Philip King of Spain, against Henry II, King of France, who was wounded by his fellow soldier with a bullet, which recoiled against his pouch, made of plate steel, and full of powder and ball, near the abdomen, within a hand's breadth of the navel, entering into his body wounded the viscera, and remained there. The bullet, with a quantity of calcareous matter, was extracted, and the urine passed through the wound for twelve weeks. He also remarks, that in a variety of dissections that he and other anatomists had made on the dead bodies of persons who had some years before been operated upon for the stone, and where stones of large dimensions had been extracted, which must have torn a considerable portion of the membranous part of the bladder, the bladders were perfectly cicatrized.

THE members of l'Ecole de Médecine, seeing with regret the number of patients who died after the operation for extracting the stone at the Hôtel-Dieu, were anxious that trial should be made of Franco's method, and to that effect made a proposition to the parliament, in 1635. In conse-

quence of this proposition, Mons. Lamoignon desired Mons. Callot to make experiments in Lithotomy at the Hôtel-Dieu, and to give in his report. Mr. Callot gave his decided veto against Franco's method, preferring the greater apparatus.

The late Mons. Tolet, Lithotomist to the King of France, says, that the late Mr. Jonnot told him, that Mr. Bonnet, a surgeon of the Hôtel-Dieu at Paris, had often performed the high operation. Mr. Petit, also a surgeon of the Hôtel-Dieu, told Mr. Tolet, that he had seen Mr. Bonnet perform this operation on a young girl. Dionis says, that Mr. Bonnet frequently, and with good success, performed this operation at the Hôtel-Dieu at Paris, and that Petit had seen him perform this operation. However, this surgeon did not at any time publish an account of it.* John Greenfield, M. D. member of the College of Physicians, London, in his work, entitled a Complete Treatise of the Stone and Gravel, printed at London in the year 1710, which work is preserved in the British Museum, says, having given an account of Franco's operation :

F 2

* Mr. Douglas says, he doubts the truth of Bonnet's and Greenfield's operation; first, because they are mentioned in so slight a manner; secondly, because one of the oldest surgeons in Paris, who was very intimate with Mr. Petit, assured a friend of his, that he had never mentioned these operations of Bonnet's; thirdly, because one of the oldest Lithotomists in London told him that he never had heard of Greenfield's operation.

“ Una hirundo non facit ver.

“ Yet I once had a patient in Long Lane, Moorfields, upon whom I was obliged to perform this high operation, and very successfully extracted the stone, by making an incision near the groin, the patient soon recovering; which shews that wounds in the fibrous parts of the bladder are not always mortal.”

MR. PROBY'S OPERATION.

Mr. Proby, in the year 1700, was the first who performed an operation above the pubis, to extract a bodkin from the bladder of a girl, as will be seen by the annexed case in the Philosophical Transactions.

*From the Philosophical Transactions, Vol. XXII,
1700.*

Dorcas Blake, a full-bodied sanguine maid, about twenty years old, whilst in her father's house, in Fishamble-street, Dublin, was much troubled with an hoarseness last winter, for which she was desirous to take a vomit; but her friends not consenting to it, she endeavoured to provoke one, by thrusting her finger into her throat on the fifth of January 1694, which not answering her desires, she drew an ivory bodkin of four inches long out of her hair, and thrust the small end forward into

her throat, upon which she heaved so often as put her out of breath, and obliged her to stand upright to draw some air, which she did without taking the bodkin out of her throat, and at that instant it slipt out of her fingers and passed into her stomach. The accident put her into some fright, but that soon went off again, because she found no immediate inconvenience. However, the reflections she made thereon kept her awake that night. The next day, which was Sunday, the sixth of January, 1694, about noon, she felt a sharp pricking pain in the right side of her belly, lower than the navel. However, she got out of bed and walked a little about: towards evening she felt the pain nearer her right groin than before, which hindered her from walking, and obliged her to betake herself again to her bed, where she lay restless all that night by reason of the excessive pain. On Monday, in the afternoon, one Mrs. McGuennis, a midwife, dwelling at the Lamb, in Fishamble-street, searched her, and said she felt the end of the bodkin, but thought it was in a gut. The next day, one Mrs. Taylor, another midwife, living next door to the Bunch of Keys, in St. Bride's-street, searched her also, who said she felt the bodkin: but the poor woman being unsatisfied with the midwife's account, sent for me to her that night. In searching her by the anus I could not find it, but putting my finger into the vagina uteri I felt the bodkin; and be-

cause she complained of a difficulty in voiding her urine, I made use of my catheter and felt it, as I conceive, in the bladder; but immediately trying a second time I could not find it, which made me dubious for some time what to do. Within a fortnight after, in the presence of Doctor John Madden, the very worthy president of the King and Queen's Royal College of Physicians in Ireland, and Doctor Thomas Molyneux, a Fellow of that Society, I did convey a catheter into her bladder, where the bodkin at that time was very plainly to be felt. She then had, as well as all the time, such an excessive pricking pain at voiding her urine, that she was often constrained to hold it much longer than she would, which made her earnest that the bodkin should be brought away at any rate; whereupon I resolved to endeavour to extract it after the same manner as I do stones from women; and accordingly (her body being duly prepared for the operation) about ten days after, the afore-named physicians being present, I did attempt the extraction; having introduced my forceps into the neck of the bladder, I very readily took hold of the bodkin, but could not move it, I then passed my finger through the dilatation into the bladder, and tried to bring the whole bodkin into the bladder, but could not; nor could I turn it one way or another, but round like a spindle. I often seized it with my forceps, but found it impossible to remove it by reason of

the position, which was the smaller end resting upon the inside of the Ischium (as I imagine), which probably occasioned the halting. Finding all my attempts to be fruitless, I despaired ever to effect it this way, which made me desist from farther trial for some time: but now the weather being more favourable, and her pains increasing, notwithstanding that she was frequently informed of the danger of the operation by the physicians and me, yet by her daily importunity I was prevailed upon to attempt the extracting of it in the manner of the higher operation for the stone, which was as follows: Dr. Madden, Dr. Molyneux, and Dr. Smith, fellows of the aforesaid college, being present, having placed her in a convenient posture, I put my finger into the vagina uteri and felt the bodkin lying close to it on the outside, whilst I held my finger there I pressed with my left hand above the os pubis, where I felt the head or thickest end of the bodkin. I then removed my right hand, and desired Doctor Smith to put his finger into the vagina, as I had done before, and press hard against the bodkin, which he did, and held it very firm and steady, whilst I made an incision about an inch and a half in length on the outside of the right musculus rectus, till I came to the bladder. I then passed my forefinger and thumb into the wound, and got hold of the head of the bodkin (the substance of the bladder only being between), upon which, with a small crooked bistouri, I cut the bladder, and, by gently pressing

my finger and thumb, the bodkin slipt out of the bladder between them, by which I very easily extracted it. I dressed the wound and put her into bed, and in less than a month, by God's great blessing, she was perfectly cured, and as free from any inconvenience occasioned by swallowing the bodkin as ever she was in her life.

The bodkin was cut out of her bladder that day nine weeks that she swallowed it. There was but half of the bodkin in the bladder, which was incrustrated with a gravelly calculous matter, at the blunt end of the bodkin from A to B, the half of which was in the bladder with its crust: from B to C the part which was out of the bladder in the pelvis, the point resting upon the Ischium. See plate 3.

HIGH OPERATION.

John Douglas, an excellent anatomist and surgeon, from a thorough knowledge of the anatomy of the parts, and knowing from experience that wounds of the bladder are not mortal, had the courage, (in spite of the abuse which he foresaw would be poured forth against him), to perform the first operation in lithotomy above the pubis since the time of Franco.*

* In the British Museum is an abusive pamphlet, entitled, Sawney the Scotchman.

John Douglas, F.R.S. was lithotomist to the Westminster Hospital. He published his *Lithotomia Douglassiana* in 1720, which was translated into French, in 8vo. entitled *Nouvelle Opération de la Taille*, par Jean Douglas. It was also translated into German by John Timius, and published at Bremen, 1729. Douglas also published a *Treatise on the effects of Bark in cases of Mortification*; and in 1732 his *Remarks on a late pompous Work by William Cheselden*, 1735, and on the *State of Midwifery in London*, 1736; a *Dissertation on the Venereal Disease*, 1737.

In 1719, John Douglas published *Lithotomia Douglassiana*, or an Account of a new Method of making the High Operation, in order to extract the Stone out of the Bladder; which is much easier to the patient, much sooner done by the operator, and the cure much more certain, than after any of the other methods now in use; by which also several of the most dismal consequences of the common operation are entirely prevented; such as incontinency of urine, impotency, fistulas, &c. Invented and successfully performed by John Douglas, surgeon.

In 1723, he published an edition (in quarto) of the *Lithotomia Douglassiana*. In this edition, in section 9, after having given long extracts from the works of Franco, he remarks, "From what has been said, I think it very evident that Rossetus wanted an opportunity, and that none of our

cutters (notwithstanding the inimitable expression and arguments of Rossetus) ever thought it feasible, until I began it, in 1719, upon the following considerations, viz.

“ 1. Because of De Franco’s success, though on a very young and weak patient, that had a very large stone.

“ 2dly. Because I found innumerable instances, in authentic authors and army surgeons, of accidental wounds of the bladder being perfectly cured.”

Of this he gives instances from Parœus, Gasco, Bausinius, Stalparl vander Wiel, and Claudius Aymand. The first is the case of a wound inflicted by a broad-sword, the urine flowing through the wound for nineteen days. The second is the case of a person gored by a bull in the lower part of the belly, the horn penetrating into the cavity of the bladder. The third is a wound inflicted at the Hague by a broad-sword, a little above the os pubis, which penetrated into the cavity of the bladder. The fourth is that of a shot through the bladder by a bullet. “ From which cases,” he says, “ I concluded that if wounds made by such uncouth instruments had been cured, artificial wounds, made with proper instruments, with the necessary preparations and precautions, would succeed with much less trouble and more certainty.

“ 3dly. Because I was persuaded, from the structure of the parts, that there would be less

danger of death after it ; that it would not occasion impotency and incontinency of urine.

“ 4thly. Because, upon weighing and considering all the objections that have been made against it by the dead and living, I had found them to be very ill-grounded, and most of them perfectly imaginary.

5thly. Because I was firmly persuaded by the experiments that I had made upon dead bodies, that I had surmounted the main and only difficulty that ever appeared to me in it ; *viz.* the method of performing it with certainty and safety : so, by these motives, I was encouraged to attempt this way, in order to relieve mankind from the most terrible of all chirurgical operations, and by Divine Providence succeeded according to my wish.”

DOUGLAS'S OPERATION.

“ The patient is to be placed flat on his back, with a thick pillow under his head. His wrists and ancles are to be fastened together with straps.

“ Water is to be passed into the bladder by means of a catheter and a syringe. The water is to be passed slowly into the bladder until you perceive it is raised so far above the os pubis, that there is room enough to make a sufficient incision into the bladder, then the catheter is to be withdrawn, the assistant is to grasp the penis, so that not any of the water shall escape.

“ If the bladder is filled too full it gives great pain, and relaxes its fibres so much, that they will

with great difficulty, if ever, recover their natural tone.

“ If it is not filled enough, it will be impossible to make a sufficient incision into it, and consequently to extract the stone without contusing and lacerating the parts. The medium between these two extremities must be found out by the sagacity of the operator.

“ Cut at leisure, with a steady hand, exactly in the middle, from near the upper part of the tumour of the bladder, or lower, according to the computed bigness of the stone, down to the os pubis. Continue the incision till you have got so low, that you can distinctly feel the fluctuation of the liquor in the bladder with your fingers, which will happen before you are quite through the muscles; then wipe off the blood with the sponge, wrung out of warm water; then take the second knife, and place its back in the middle of the os pubis; then run its point down towards the collum vesicæ, until you get into the cavity of the bladder (which is discovered by the issuing out of the water), then holding your knife in a perpendicular line, run it along very quickly towards the fund of the bladder, as far as is necessary.

“ N. B. If the wound of the bladder is made too large, then you are in danger of penetrating into the cavity of the abdomen. If it is made too small, then you cannot extract the stone but with great difficulty, it being hardly possible to enlarge the wound afterwards with safety.

“ 3. In extracting the stone, the wound being made, pass your fore and middle finger of your left hand into the bladder, to examine the figure and bigness of the stone ; then, if small, pass the fore and middle fingers of the right hand into the anus, and raise it upwards towards the wound, then you can easily catch hold of it with your fingers that are in the wound, and draw it out ; but if it is large, after having discovered its figure by your fingers, introduce the forceps between them into the bladder, then turn the stone into the forceps, with the small end foremost, and take fast hold of it, then draw out your fingers, and afterwards the stone, with leisure and caution. If it breaks, or there is more than one, take them out with your fingers, as before.

“ *History of my first Operation.*

“ On the 23d of December, 1719, I made this operation, the first time, upon a boy between sixteen and seventeen years of age, and in five weeks time he was perfectly cured.”

“ *History of my second Operation.*

“ I made the second operation May the 12th, 1720, on a boy of eight years of age, and in six weeks time he was perfectly cured.”

“ *History of my third Operation.*

“ My third patient was but three years old, and was cut in August 1720, but died of convulsions about fifteen hours after the operation.”

“ *History of my fourth Operation.*

“ The fourth operation was made the 23d of

March 1720-1, upon a boy between fourteen and fifteen years of age, and in four weeks time he was perfectly cured.

“ In this patient I made a small wound in the peritonæum, through which I saw the intestines present themselves, but I pushed them back with my fingers, and stitched the skin, and we had no farther inconveniency from it; the boy at this very time serves Dr. Stewart in Pall Mall.”

Douglas says, he showed the three patients before the Royal Society, soon after their recovery.

He then shows the advantages of this operation over the others, and answers the objections raised against this method; he now, after giving a long quotation from Rossetus, says, if he had known of his method it would have saved him infinite pains and labour, in setting forth the theory of his operation.

CHESELDEN'S ACCOUNT.

WILLIAM CHESELDEN was born at Somerby, in the county of Leicester, 1688. He studied anatomy under Cooper; was appointed surgeon to St. Thomas's Hospital, and lithotomist to the Westminster Hospital in 1719, member of the Royal Society in 1721, membre de l'Académie de Chirurgie, and took his seat in 1732, and was appointed surgeon to Chelsea Hospital in the year 1734. In January 1752, he had a paralytic stroke; and on the 12th of April in the same year died of

apoplexy, aged sixty-four years. He taught anatomy in his twenty-second year; in 1711, gave a catalogue of all the different parts of anatomy, which was published in quarto; published a treatise on the high operation in 1723, and an anonymous work, printed in the year , called "Lithotomus Castratus." In 1713, he published a work in octavo, entitled "The Anatomy of the Human Body." In 1733, a work on Osteology.

Mr. Cheselden, in the year 1723, published "A Treatise on the High Operation for the Stone," illustrated with seventeen copper-plates. This work is in 12mo., dedicated to Dr. Mead.

CHESELDEN'S OPERATION.

"The patient is placed on a bed, his head on a pillow, his legs off the table, his thighs raised, his back a little hollow, so as to relax the abdominal muscles; then a ligature is passed loose above each knee, and fastened to the outside of the table, an assistant on each side holding his hands, and having passed the catheter, and the assistant grasping the penis gently with his hand, to prevent a reflux of the water, Mr. Cheselden injects as much warm barley water as will fill the bladder to its utmost natural distension, more being of little or no use to the operation, but very painful, if not dangerous, to the patient. Into a man full grown may be injected nearly twelve ounces, and into a boy nine years old about

eight, allowance being made for the size of the stone, which being difficult to do exactly, the proper quantity for every patient may be more certainly known from the swelling of the abdomen just above the os pubis, if the integuments are thin, by the patient growing uneasy from the extension of the bladder, and from the resistance which the operator feels to the injection; and that we may better judge with what quantity of water we distend the bladder, the urine should be discharged before the injection is made; and because an immediate connection of the syringe and the catheter, without the intervention of a flexible tube, would make the catheter too liable to be moved from the bladder, and give great uneasiness; I therefore join them together by an oxes ureter, which effectually prevents that inconvenience. The bladder being filled, and the catheter drawn out, the assistant must continue to hold the penis until the incision is made into the bladder. The first incision may be made with a round-edged knife, through the skin and membranô adiposa, between the musculi recti and pyramidales, even to the bladder, near the os pubis; for in that part it may be done safely, the bladder there not lying close to the integuments. This first incision in a man may be about four inches long, one end of it extending almost to the skin of the penis. Then introducing a strait-edged knife, with the back lying upon the foremost or middle finger of the

left hand, to direct it, the incision may be securely finished upwards, and the bladder laid bare from the os pubis, near three inches long. Then passing a crooked knife into the bladder, near the urachus, until the point is near the centre of the bladder, so that bringing it out it may cut under the os pubis; and immediately, while the water is flowing out, a finger should be introduced into the bladder, with which the forceps (which may be very thin) will be directed to take hold of the stone, which if large should not be extracted hastily, because that increases the resistance. The wound may be dressed with any digestive medicine, upon which may be left a soft compress, kept on with an easy bandage. The wounds for some time were fomented at each dressing, which was at first every six hours, except they were asleep; and as long as the urine came through the wound, the parts above were constantly anointed, and to preserve them from being excoriated by the urine, which happened to my first patient."

Mr. Cheselden says :

" I have cut only nine patients this way; and that this treatise may be the more useful, I will here relate the history of each patient.

" James Shorter, of Oxfordshire, aged seven, and John Deval, of Shorn, near Gravesend, in Kent, aged fourteen, were cut May 5th, 1722. They were both easy soon after the operations, and had no complaint until two hours after, when the bandage, which was flannel, growing wet, be-

came too straight; but that being loosened they were easy, and went to sleep presently after, and continued asleep between three and four hours without any opiate, when a quantity of urine coming through their wounds, it gave them some uneasiness, and made me think it necessary to dress them. They took an opiate at night, and slept well; next morning they complained of a little soreness, which fomentations and embrocations soon eased. Thus they continued five or six days, in which time their wounds were perfectly digested, and in about three weeks all John Deval's urine came the right way, which gave him some uneasiness for a day or two, after which his wound cicatrised apace, and in seven weeks was perfectly cured. But James Shorter being the first patient I cut the high way, the operation was a little longer than any of the rest, which happened from my making the wound too small, and endeavouring to take out the stone with my fingers. From this smallness of the external wound, the urine was confined, and made a large abscess between the bladder and the integuments; which I did not at first perceive, and hoping that it might contract, I took care to press the matter out often, nevertheless it increased, even to the discharging near a pint of matter and urine at one dressing; upon which I dilated the wound with a gentian tent, which was taken out to let the matter discharge itself, once in two hours; whereby I procured in six hours time a fair opening, which

perfectly cured all this impostumation in a few days time. If the amendment had not been so sudden, I intended to have used a hollow tent.

“ This abscess happening near three weeks after the operation, just when all the urine began to come the right way, it protracted the cure about a month longer than otherwise I should have expected. However, I think this accident can be no objection against the operation, since it is what is not very liable to happen to any operator who is apprised of it, or if it should, I think the remedy both easy and certain.

“ Richard Smith, of London, aged eleven, Joseph Reynolds, twelve, William White, nine, both living in Southwark, were cut May the twenty-second, 1722. Joseph Reynolds never complained during the operation, and they were all easy soon after. In these three there was nothing remarkable during the whole cure; the urine in Reynolds and White came all the right way in about three weeks; but in Smith (who was of a weak constitution) in a month, and it was two months before he was perfectly cured: but the other two much sooner.

“ John Clark, of Braintree, in Essex, aged eighteen, was cut July the twelfth, 1722. He had a very hectic constitution, which occasioned me to delay cutting him for some time, to try if physic would do him any service; but he continuing very ill, and earnestly desiring to be cut, being never free from fits of the stone; and we hoping

that his continual pain had been the only cause of his hectic fever, in compassion to his entreaties I cut him, though not without *strong apprehensions of an unsuccessful case*. In the infancy of this operation, he had two stones in his bladder, the largest broke, being very soft and taken hold of by the forceps the wrong way (which made me in the following operations, feel with my fingers whether the forceps had hold of the stone the best way, before I extracted it). But I easily extracted all the bits without any force or tearing the parts, using my fingers instead of the forceps, to take out the lesser stone and the smaller pieces: he was uneasy at first, but in about three or four hours he fell asleep, and slept the greatest part of that afternoon; but when he waked, he complained his belly was sore: then his first roller was taken off, and being fomented and fresh dressed he was much relieved, and rested well the first night, and from that time was very easy, and his wound digested very well; but for fear any little bits of stone should have remained in his bladder, when he wanted to make water, I directed him to turn himself upon his belly, which he could do with a great deal of ease; then taking off the dressings, the urine came out the first time full of small sands, the second time less, and afterwards scarce any: in ten days he was well enough to walk about his room, but his hectic fever continuing upon him, and he thinking himself out of danger, on the fifteenth day, when no-

body observed him, he went to a pump soon after getting out of bed, and washed his hands and face in cold water, and drank near a pint of it, which immediately disordered him and threw him into a diarrhœa, which we could never stop; he languished for ten days and then died, the twenty-fifth day after the operation. He was opened in the presence of the physicians and surgeons of the hospital; there was nothing amiss in relation to the wound, nor any gravel in the bladder, but in the right kidney about four ounces of matter, and ten distinct stones, which weighed four drams, besides one very large one in the ureter of the same kidney near the bladder, which stopped up the passage. This was a sufficient cause for his hectick fever; and I think it no small credit to this operation, that he lived so long, which in the opinion of Dr. Cotesworth, who attended him, was longer than he could have lived if he had not been cut, and notwithstanding his ill-habit of body, the wound *digested* and *incarned* very well, till the diarrhœa came upon him by the accident before-mentioned.

“ Stephen Jennings, of Southwark, aged nineteen, and Henry More, of Gloucestershire, aged eleven, were cut August the fourteenth, 1722.

“ These operations, though the stones were very large (one weighing three oz. and a qr.) were very quick and easy. These boys scarce complained during the operation, and both went to sleep soon after, and continued asleep four or five hours, after which they were dressed,

and declared themselves perfectly easy. The greatest part of the next day they played at cards, as I afterwards learned, and complained of nothing but hunger. They slept well every night without opiates, he only who had the largest stone taking one the first night. The third day More was taken with a pain in his head and back, with a reaching to vomit, and his urine, instead of coming through his wound passed through his penis; it was expected he would have had the small-pox, but a rash coming out the next day freed him from these symptoms. They both continued very well, their urine coming through their wounds for about three weeks, at which time it all begun to pass the right way, which gave them some uneasiness for a day or two, soon after which their wounds healed, and they are both perfectly well.

“ Harris Weston, a child of four years old, cut October the tenth, 1722, out of the hospital; he never had any bad symptom, and was cured in about five weeks.

“ In all these cases some of the urine came through the penis from the beginning, and from the time the wounds were digested, it came daily less through their wounds, till all came the right way.

“ Joseph Reynolds, who was cut May the twenty-second, 1722, and discharged cured in the beginning of July, was about the middle of October following taken ill of a fever with violent vomitings, of which he died in a few days, having

enjoyed perfect health from the time of his cure to this illness. I opened him, and found his kidneys and bladder free from any disorder, and the wound in the bladder united with a firm smooth cicatrix, the outside of the wound being joined to the wound made through the integuments; it was perfectly empty of water, which shows this connection of the bladder to the integuments was not inconvenient on that account; and not only this patient, but all others have been able to contain as much urine in their bladders at once, as persons that have not been cut. Before I opened this boy, I thought no one could be cut twice this way, which I am now satisfied may be done."

PYE'S OPERATION.

Mr. Pye, a surgeon of Bristol, in 1724, published some observations on the several methods of lithotomy, in which work he quotes Fienus, and recapitulates what that writer says of the stone. (See the quotation from Fienus, page 14.)

Mr. Pye, in this work, endeavours to prove that the old operation, usually termed Marianus's operation, is superior to the high operation.

He says, that in September 1722, through the interest of Robert Gray, Esq. he was introduced to the acquaintance of Mr. Dobbins and Mr. Bamber, who did him the favour to let him see this new way of operating. He then gives the following cases.

“ Soon after this, a young lad was put under my care ; he was about seven years of age, *hectical, and subject to a cough* ; after the injection I divided the integuments, and as cautiously as possible laid the bladder bare, then about an inch above the os pubis, with a sharp-pointed knife, made a puncture ; when the injection appeared, I immediately passed in a lenticulated knife, and cut down to the os pubis : my finger passed down with the knife, then I introduced the forceps, and soon extracted a large stone.

“ Matters went on promising for three or four days ; then began a violent pain in his right side, that hypochondrium tense and hard, dyspnœa, vomiting, &c. In the wound some small shew of digestion on the edges, but a black slough in the middle, by the side of which a large quantity of foetid sanies discharged : he held on thus sixteen or seventeen days and then died.

“ He was opened the next day : upon drawing the intestines on one side we found a large tumour in the duplicature of the peritonæum, stretching away from the fundus vesicæ up the ureter to the right kidney ; upon pressure it discharged itself in the wound by the slough above-mentioned.

“ What is remarkable in this operation, is, *that this abscess was external of the urinary passages* ; it led me into a serious consideration of some circumstances in the operation itself, that in cutting downward with the lenticulated knife, though I was in the bladder before the injection was dis-

charged, yet in passing my finger with the knife, it is possible I might by too quick a protrusion of the finger make a separation of the bladder from the peritonæum ; the consequence of which might be a sinus, and from thence this abscess between the membranes.

“ Upon reflecting on this case, I thought that if the incision was begun close to the os pubis, and so advanced upwards, that accident might be avoided for the future ; the bladder, if fairly injected, very much favouring such an incision.

“ The next that offered was a currier's child of Wootton-under-Edge, Gloucestershire, about five years old, a lively brisk boy, under frequent suppressions of urine ; the bladder being injected, the skin and muscles divided as before, I began the incision with a pointed knife, the back of the knife close to the os pubis ; I pushed down, till the injection appeared, and with the fore-finger of my left hand bore on the back of the knife, still sliding on my finger as I made the incision, till my finger slipt over the point, by which means that being guarded, the incision was made as far as I thought necessary, then I slipt down the forceps, and drew forth a smooth stone, about the bigness of a large nutmeg, in shape something like a kidney. There was no ill-accident attending this cure, and what is very extraordinary, after his first dressing, he never made any urine through the wound, and was well about the street at play the thirteenth day after the operation.

“ Another was a poor fellow of Wells, in Somersetshire, whom Mr. Lucas, an experienced surgeon of that place, desired me to cut: he was nineteen years old, and *from* a child under the affliction, *miserably emaciated*. Upon search I found a large stone, his bladder thick and hard, strongly contracted to it, a stillicidium urinæ constant on him and full of sabulous matter. I made the injection, but could not force in above two ounces: there appeared a small turgescency on one side the linea alba, just above the os pubis: I divided the skin, &c. and the turgescency appeared (such as it was) very visible, it being that part only of the bladder which was capable of extension. I pressed down the knife, as in the last observation, and with my finger examined the stone; the bladder so strictly encompassed it, that I could not propose to take hold of it, till dislodged from its strictures, which with some difficulty was done and then extracted. *It was a large soft sabulous stone, very porous and rough, the coats of the bladder ulcerated and very fungous, Mr. Lucas took the utmost care of him, the sloughs separated, but the discharge of matter was so much, and the bladder so extraordinarily affected, that after near a month's bearing up under all these difficulties he died. Upon opening him, he found the neck of the bladder, and where the stone was lodged, very schirrous, and full of deep ulcers.*

“ The last was a poor lad of Gloucester, recommended to my care by the charity of some

gentlemen there : he was about nine years of age, much emaciated, a fixed pain in his right kidney, a *stillicidium urinæ*. Upon searching him I found a large stone, pressing down very low in *perinæo*. I should have chose cutting him the old way, but the mother had been prejudiced against it, by some sinister insinuations, the particulars of which, as they are foreign to my purpose, I shall pass by with that contempt and disregard such usage deserves. I made the incision as before, and got into the bladder to my wish, took hold of the stone instantly, but to my surprize could not draw it forth ; bending the forceps a little backward, to loosen the stone, it broke and the piece in the forceps was brought forth ; it broke off in the middle, just under the *os pubis*, the remaining and biggest part lay in *perinæo*, the neck of the bladder strongly contracted round it : I then introduced my finger again, and with the forefinger of my other hand in ano, got up the other piece into the bladder, and then extracted it.

“ I had all the promising hopes of cure for sixteen or eighteen days, his wound *digested finely, and incarned as one could desire* ; but the nineteenth day, he complained of his side more than usual, grew faint, fell from his stomach, and died the one and twentieth day after the operation. As to his wound and belly, he never had any uneasiness there after the first two or three days.

“ Upon opening him *we found the bladder and*

parts adjacent free from any inflammation, and the wound incarned with the muscles of the belly ; upon removing the intestines, which were all well and free from any visible indisposition, the right kidney was found of a prodigious size, and strangely indurated ; the left kidney wasted to nothing but its external coat, and the ureter distended so as to admit the end of my little finger ; upon examining the right kidney I found it full of fœtid pus, and such a saburra of grit and other cretaceous matter, that its ureter was obstructed and filled half way down with it."

In 1727, John Middleton, M.D., published in quarto a work, entitled " a Short Essay on the Operation of Lithotomy, as it is performed by the New Method, above the Os Pubis ; to which is added, a Letter relating to the same Subject, from Mr. Macgill, of Edinburgh, to Dr. Douglas."

Dr. Middleton, in his preface, says, that at first he had a great dislike, and even contempt for the high operation ; but that on further inquiry and strict observation of matters of fact, his objections were solved with great clearness and strength of argument. He then says, " it is better to yield to conviction than to struggle against it ;" and that there is a noble example in the learned Plempius, who, having laboured hard in his differences with Dr. Harvey about the circulation of the blood, at last generously owned, " Primum mihi hoc inventum non placuit, quod voce et scripto publice tes-

tatus sum ; sed dum postea ei refutando et explodendo vehementius incumbo, refutor ipse et explodor ; adeo sunt rationes ejus non persuadentes sed cogentes." *Plemp. Fundam. Med. lib. 2, cap. 7.*

THE

HISTORIES OF SOME PATIENTS

THAT WERE CUT BY

MR. WILLIAM THORNHILL,

Surgeon in Bristol.

" I. The first was a boy of eight years of age, his name John Pritchett, of this city. The operation was performed February 3d, 1722. *He complained much of the pain which was occasioned by the distension of the bladder, when the water was injected to raise it ;* but, otherwise, he bore the operation very well. A stone was extracted which weighed three drachms ; he was drest warm with Arcæus's balsam and put to bed, and was ordered to feed on water gruel, and to drink freely of origany tea and sage tea ; and towards night his wound and abdomen were fomented with an emollient decoction. He rested well that night, and was fomented and drest next morning as before. He then complained of hunger, and wanted more substan-

tial food, which was not allowed him: the vulnery fever rose by degrees, without any bad symptoms. The fomentation and dressings being continued twice a day, the suppuration came on regularly well, digested matter appearing the fifth night. A few days after the dressings were made more mundifying, and the wound soon began to incarn. There was not a bad symptom of any kind to be observed till the sixteenth day, that he was somewhat feverish: but drinking freely of thin water gruel and sage tea, he was pretty easy at night, and continued so next day till afternoon, and then he was taken with a violent fever, and was sometimes delirious; another physician was there with me, and we agreed to order him to dilute plentifully with warm weak liquors, as the day before, and to cover him warm, to throw him in a sweat; which had the desired effect, and next morning he was perfectly cool and easy. On strict inquiry as to his regimen, Mr. Thornhill then discovered that his mother, who was his nurse, had the two preceding days privately given him a full meal of fresh meat for dinner, and washed it down with a cup of good ale; when he chid her for it, and told her the danger, she persisted in a resolution to do it again; and when means was found to have her removed from him, she went about exclaiming that the doctors and Mr. Thornhill would starve her child, and that he only wanted good things to comfort him. After this the part healed apace, and in twenty-eight

days was cicatrized; the boy continues to this day in perfect health, and free from all nephritic disorders.

“ II. The second operation was performed on Joseph Flower, a boy of six years of age, who lived near the city of Bristol. He was cut February 15th, 1722, and a round flattish stone was extracted, weighing five drachms. He bore the operation mighty well, as he did the whole course of the cure, with surprising patience and mildness of temper, and a strength of reason uncommon for one of his years; he was drest with warm digestives, and fomented. The second night the vulnerary fever rose very high, and was more violent next morning, when a rash began to appear, which by night was broke out all over his body; a temperate cordial was prescribed to him, and he was ordered to dilute plentifully with watergruel and sage tea, and at night he had a clyster of milk and sugar, and was fomented and dressed warm; the fifth day his wound came to a tolerable good digestion, and the fever diminished by degrees, and in a day or two after the rash went off in a scurf; the wound incarned without any other bad symptoms, and was cicatrized the twenty-fourth day after the operation.

“ III. The third who underwent the operation, March 1722, was Benjamin Milson, a boy of fifteen years of age, of Temple Street, Bristol. The incision in the integuments and in the bladder being somewhat too small, there was some diffi-

culty to extract the stone; but a little care in turning the forceps gently from side to side, made the parts relax, so that it slipt out without any hurt or contusion; it was a small long stone, with several rough knobs on it, and weighed half an ounce. The vulnerary fever rose gently, and the suppuration came on regularly the fifth day, and there was not a threatening symptom during the whole time of the cure, which was completed (the part being cicatrized) the twenty-fourth day after the operation, the boy continuing in perfect health ever since.

“ IV. The next who submitted to the operation was Joseph Segar, aged forty-five years, living about seven miles from Bristol, in the county of Somerset. He was cut June 12th, 1723, and a stone extracted near the bigness of a duck's egg, weighing above four ounces. He bore the operation well, in which there was nothing happened remarkable; but soon after it he was seized with a violent pain in the wound, which reached all over the capacity of the pelvis and the lower part of the abdomen; I ordered him a paregoric, and an emollient fomentation was soon applied, and after that a cataplasm of the same ingredients, which removed the violence of the pain, and no threatening symptoms appeared afterwards. The wound was drest warm, with a common digestive, and the same fomentation and cataplasm continued twice a day. The vulnerary fever rose very gently, and the suppuration came on, good matter appear-

ing the fifth day ; the digestion went on regularly, and the wound incarned apace till the fifteenth day after the operation ; he began now to think himself out of danger, and being weary of his regimen, he prevailed with his nurse to let him drink at liberty, and having no restraint, he was weak enough to suffer himself to be overtaken with liquor, the effect of which was the inflaming of the wound ; but a few days abstinence and low diluting diet soon took off the inflammation, and the wound was cicatrized the twenty-fifth day after the operation, and he returned to his business in the country with all the signs of perfect health ; but not being capable to confine himself from irregularities in diet, and indulging too freely with spirituous liquors, there soon ensued a nephritic paroxysm, in which his right kidney being exceedingly inflamed, imposthumated and discharged large quantities of purulent matter by urine, (which continued, in spite of all endeavours to prevent it) till he died, about eight months after the operation. Mr. Thornhill opened his body in presence of Dr. Logan, and found the right kidney almost totally consumed by a large abscess, which was then full of foetid matter, distending the pelvis ; and in the ureter, three inches below the kidney, there was a small ulcer ; *the bladder and contents of the pelvis were all perfectly sound ;* the bladder was united in the cicatrix with the muscles of the abdomen.

“ V. June 20, 1723, was cut a boy four years

of age, son to Mr. Barns, sugar baker, of this city, and a stone extracted the bigness of a peach stone. Fomentations were used by way of precaution, though no ill symptoms appeared; a common digestive brought on the suppuration regularly; the wound incarned, and the fifteenth day was cicatrized, the boy continuing well ever since.

“ VI. July 13, 1723. The operation was performed on Mr. Jeffrys, of Box, in the county of Wilts, aged 48. From too free a course of life he had contracted a cachexy, and had been asthmatic for many years, which he concealed before the operation, lest the discovery might have occasioned an unwillingness to undertake it. There was a round stone taken from him, which weighed three ounces one drachm; he bore it very well, *only complaining of the injection of the water in the bladder, which was still the great complaint in all the former operations.* There was an excoriation of the upper part of the penis, and of the scrotum and inguina.

“ The sixteenth day he took a fancy that drinking small liquors increased the scalding of the urine, which he abstained from; he now prevailed with his nurse to let him have some wine, of which he drank too freely, so as to be a little overtaken with it, which occasioned some uneasiness in his wound for two days; but due care in the regimen soon carried off the bad effects of it, and convinced him of his error; after that the

wound incarned apace, and was cicatrized the thirty-first day after the operation. He went home in a better state of health than ever he had possessed in his remembrance. I am informed, that from his little excursions in his way of living he has been subject to his old asthmatic disorders, and has suffered by two or three nephritic paroxysms; but I do not hear of any signs of a new stone in the bladder.

“ VII. October 27, 1723, the operation was performed on William Philips, a boy of fourteen years of age. He seemed to me to have a *cachexy with symptoms of an ascites*, on which account *I dissuaded Mr. Thornhill from the operation, who shifted it above two months, and would willingly have been excused; but he was at last prevailed on by the daily solicitations of the boy's relations, and the pressing desires of some of his own friends.*

“ In this operation, after the forceps was introduced and charged with the stone, the bladder contracted, and the lips of the wound stuck close to the forceps and stone; which gave occasion to observe, that if it had been attempted to pull out the stone suddenly, the bladder must certainly have been pulled out of the body along with it, the lips of the wound embraced it so strongly. Probably the bladder being *schirrous (as was afterwards found)*, might hinder it to stretch, and give way to the stone to come out; or perhaps the incision being too small in the bladder might be the occasion of the accident. The incision was en-

larged downwards under the os pubis with the point of a scalpel, and an assistant pressing down the lips of the wound with the flat of his forefingers on each side the forceps, the operator slipt the stone out with ease, and without any injury to the bladder. This shews that the incision in the substance of the bladder downwards under the os pubis can never be too large; the stone should have scope to come out without bruising or tearing the bladder, or being stopped in the manner above described.

“ The stone was four inches long, and larger at one end than the other; it weighed four ounces and two drachms. He bore the operation with great courage, and was drest warm and put to bed.

“ The vulnerary fever soon began to run high, and about four hours after the operation he was seized with vomitings, which continued (with some intermission) for three hours. I ordered him a paregoric and a temperate cordial, of which he drank at liberty; and an emollient fomentation was applied all over the abdomen, to take off the orgasm, and abate the inflammation of the parts. He slept a little, and was pretty easy till next morning; but then he turned delirious, and soon after he was convulsed; the fomentation was again applied, and a warm digestive to the wound, which gave some small relief; but the delirium and convulsions returned towards evening, and continued, with short intervals, till next morning that he died.

“ His body was opened ; both his kidneys were very large and flabby. There were two ureters came from the right kidney, which were of a monstrous size ; and half way down to the bladder they united into one, which was five times as large as the natural.

“ From the left kidney the ureter came off monstrously large, in which was contained *above a quart of urine*.

“ The bladder was *very schirrous*, and in some places *above an inch thick*. The peritonœum was gangrened ; the rest of the viscera were all sound.

“ When he was alive his belly was often much distended, and an appearance of water, as in the ascites ; which must have been occasioned by what was contained in the ureters, where a large quantity of urine had been often stopped ; he frequently voided three pints of water at a time, which could never be contained in the bladder of one of his years, and so small a stature. There was near that quantity in his left ureter when the body was opened.

“ VIII. The next was George Thomas, a blue-coat boy, in Redcliff Street, Bristol, aged thirteen years, who was cut December 10th, 1723. In this operation the peritonœum was wounded, and the intestines came down between the hands of the operator before the stone could be extracted, which however was soon done, and the intestines reduced. *A suture was made on the upper part of the wound*, in hopes to prevent the intes-

tines from being pushed down through the aperture ; but there was not that advantage from it as was expected. It is not possible by it to keep the wound so close shut, but that the urine will insinuate itself into the cavity of the abdomen, where (not having a free exit at every dressing) it must occasion the most dangerous symptoms, *till the stitches are cut, and the orifice is enlarged, to give vent to it ; and every stitch being a new wound, which increases the pain,* and adds to the vulnerary symptoms, without a right prospect of advantage from it ; in case of such an accident (which I think may be avoided) I should not advise others to try that practice.

“ The stone was round and flat, weighing an ounce and six drachms ; he was drest warm with linement arcæ, and took a paregorick. The vulnerary fever soon began to rise ; fomentations, embrocations, and cataplasms were applied all over the abdomen. He had a temperate cordial, and all means were used to relax the parts, and abate the inflammation ; the second day he had frequent vomitings and touches of a delirium ; that night he was sometimes convulsed, and the third day he died.

“ IX. December 14, 1723. The operation was performed on Emanuel Stibbins, of this city, eighteen years of age. He seemed to be of a good habit of body, abstracting from his nephritic symptoms, which often were the occasion of suppressions of urine, and of frequent discharges of

purulent matter, which seemed to come from one of his kidneys.

“ The wound incarned very well, and from the 14th day to the 24th, the urine and matter came as much by the urethra as by the wound, and then came all by the usual passage, excepting some oozings now and then from the wound, which the one-and-thirtieth day after the operation was cicatrized.

“ X. There was cut, June 1724, a boy of five years of age, from Taunton Dean, in Somersetshire. A small stone was taken from him of $3\frac{1}{2}$ ounces weight; he was drest warm with liniment arcei, and put to bed. About an hour after he complained of sickness at his stomach, which was soon succeeded by vomiting, which relieved him; an emollient fomentation was applied, and the feverish symptoms coming on too briskly, he was delirious in the evening; he was kept to the ordinary, low, diluting regimen, and had a temperate cordial. He sweated much that night, and next morning was pretty easy, the fever abating and continuing in a regular way, till the suppuration came on in due time; the wound digested and incarned regularly, without any more bad symptoms, and was cicatrized in three weeks after the operation.

“ There have been five or six more cut by Mr. Thornhill; of these one died the third day after the operation. When he was opened we observed *a schirrous tumour in his bladder.*

“ In another (a boy of five years of age, son to Mr. Sedgdy, a dissenting minister at Wareham, in Dorsetshire) there was *an adhesion of the stone, on one side, to the internal coat of the bladder*, which Mr. Thornhill separated with his finger; and when it was extracted, *there was a membrane stuck fast to that side of the stone which adhered*. This boy had violent pains in the wound for some hours after the operation; a paregoric gave him ease, and the cure was performed without any more bad symptoms during the course of it.”

A LETTER FROM MR. MACGILL,

A most ingenious and skilful Surgeon of Edinburgh, to DR. JAMES DOUGLAS, Physician at London; containing some curious and useful Observations in Lithotomy, performed after the High Way.

“ SIR;

Edinburgh, October 12, 1723.

“ I sent you last week an exact copy in plaister of Paris, of the two gravel stones I extracted by the High Operation, out of the bladder of the old gentleman mentioned in the beginning of Mr. Cheselden's late book. I had written to Dr. James Campbel about a patient of his and mine, and as a piece of news I told him of that operation, and its success, without any intention of its being published. I have nothing to add to that account, but that the patient had been for seven years grievously afflicted with these stones, and that he was

reduced to a very low and feeble state, so as to be hardly able to walk. During the eight days immediately preceding the day of the operation, he vomited almost every thing he took as nourishment, and was scarce an hour free from the hiccough. Only the day of the operation these symptoms abated, and Dr. Drummond, junior, his physician, a gentleman of great merit, with much ado, prevailed on me to perform it; and, indeed, after it, these symptoms decreased daily, his stomach retained every thing he took, and the hiccough gave him no trouble, except a little after his waking from sleep, and in ten days after it left him entirely. The stone sent lay across the beginning of the urinary passage, and weighed four ounces three drachms and a half. The other stone weighed four ounces two drachms and a half, and stood perpendicular on the first stone, with its end in the hollow of its superior side, the other end reaching to the bottom of the bladder; so that after I had made the incision as I judged sufficiently big, I was obliged, from this situation of the stones, to enlarge it, by slipping my finger betwixt the stone and the bladder, and with a pair of scissars so directed, to cut it open the length of the urachus, and then with ease I got them out. The black lines on the stones will show you their situation. From what I have said, this poor gentleman in all appearance would have perished by any of the other operations of lithotomy; whereas by this he was pulled out of the

jaws of death, and enjoys good health; and is hearty, better fleshed, and stronger than he had been a good many years before. The world can never be thankful enough to you and your brother, for your judicious courage in advising and executing a piece of surgery, so beneficial and easy to all those afflicted with this terrible disease.

“ When I had the honour to be with you in London, February last, I told you I had performed the High Operation about the end of the December preceding, on a boy of thirteen years; but of a growth no bigger than boys used to be at nine. He was much emaciated, stooped when he walked so as to walk double; for a year before he could not lie on his back; his belly was big and hard, like that of one troubled with worms. When I injected his bladder a pellucid swelling arose round his anus, which alarmed me. I held the catheter myself, so that I was certain his bladder suffered no violence by its extremity, for then I had not the apparatus for an ox's ureter. I made the incision easily and well, and took out of his bladder a stone, weighing two ounces and a drachm, one end of which was full of sharp prickles, besides a good many others were on the other parts of its surface, though not so sharp nor so thick set. This, with his complaining constantly of a pain in his fundament for the first five or six days, although the watery swelling disappeared the first day, and a pretty large quantity of a bloody sanies, which the fourth day he voided

by the anus, gave me ground to believe that his bladder had been perforated towards the intestinum rectum, and that this had made his lying on his back so painful, and given way to the liquor injected, to occasion the pellucid swelling. I freely own, that being my first attempt, and not having any rule to judge by, except that of the fullness above the os pubis, and which could not so easily be felt, because of the bigness and hardness above-mentioned, *it is probable I injected too great a quantity for a bladder so diseased.* I was obliged to leave him the fifteenth day. The twentieth he voided a worm half a yard in length. He had a second eruption of bloody sanies by the anus; but in spite of all these things, he left this place eight weeks after the operation perfectly well, the wound being firmly cicatrized, and he without any complaint. I had almost forgot to tell you, that the very first night he lay on his back without any uneasiness from that posture.

“ The 14th of August last I performed the High Operation on a man aged thirty-five years. He had been troubled with symptoms of a stone in his bladder from the time he could remember any thing. I made the incision with the greatest facility; but, to my surprise, in searching for the stone, I found the bigness of a large walnut towards the bottom of the bladder; but it was of a piece with a much larger part lying under the hollow of the os pubis, and spread laterally, with so great a constriction of that part of the bladder,

that I could not introduce the thinnest spatula betwixt the stone and it. Dr. Drummond, president of our college of physicians, and four surgeons, were present, each of whom I caused to feel its shape and fixed situation; I then tried to extract it, by grasping that part of it that was towards the bottom of the bladder with a tenette. It broke off from the rest of its body, leaving the remaining lump, which indeed was the bulk of the stone, as fixed as ever. I caused one of the surgeons present to introduce two fingers into the anus, to press the stone; but to no manner of purpose, it did not in the least give way. It was not in my power to introduce any thing to cut the constricted bladder under the os pubis, and indeed all my attempts, as well as those of the other surgeons, were vain. The seventh day after I attempted again to extract it, but with as little success as at first. The poor man died the thirteenth day. Next day I went to take out the stone; and that I might have the less obstacle, I cut off the muscoli recti from the os pubis, and used all my endeavours, but without effect, until I sawed off the os pubis. The stone had lain a great many years in the neck of his bladder, and the bladder had constricted itself above the shoulders of the great lump, and which were scarce so high as the superior edge of the os pubis, round the neck of that part which I mentioned before, to be of the bigness of a large walnut, and which broke off from the rest of the stone. Besides, a little lower

under the hollow of the os pubis, there was an irregular furrow quite round the stone, about a line in depth, where the bladder made a second insuperable constriction, and from this furrow the stone spread broader towards its inferior part, as it did upwards towards the superior. The stone, although of the lightest kind, now weighs five ounces. Although the injection had force enough to make its way to the bottom of the bladder, by some inequalities on the constricted part; after the operation he passed his urine by the yard, the superior constriction of the bladder round the shoulders of the stone being such, that his urine found the easiest passage to be that of his yard. From this account, it is plain to me that this stone could not be extracted any way. I mean either by the High Operation, Johannes de Romanis' manner, or by the lesser Apparatus. I am now using my endeavour to procure the stone from the widow; if I prevail I'll send it to London; if not, I'll send a copy of it in Paris plaister.

“ The same fifteenth of August I performed the High Operation on a boy of eight years, and I extracted out of his bladder a stone of the bigness of a large nutmeg. He was in some danger from the folly of his mother, who gave him the day after the operation a quartern of sherry, as a cordial; and to mend the matter, she gave him the fourth day as many raw onions as he could eat; however he recovered, and is gone home to Glasgow quite cured. Some days after the operation

the pledgits applied to his wound, when taken off, were pretty thick covered with small stones, of the bigness of mustard seeds; they had come down from his kidneys after the operation, for then there was nothing of that kind in his bladder.

“ These are all the times I have yet performed this noble operation. I have faithfully told you my successes as well as my disappointment, and I have mentioned nothing but what was done in the presence of physicians and surgeons of good reputation, and who are ready to vouch every thing I have said.”

HEISTER'S OPERATION.

“ IN the year 1723, April 17, I performed the High Operation without any fear, upon a man upwards of thirty years of age, at Helmstadt. For in this case I could not extract a large piece of the stone by the wound in perinæ, according to the method of Rau (which was sometimes used by me, perhaps, before any body besides its author), as the fragment of the stone could not be laid hold of, and consequently not extracted by the forceps, because it lay concealed in some sinus or cavity of the bladder, such as are sometimes observed by lithotomists. This I did in the presence of many surgeons and students in physic, the day after I had performed the other method of lithotomy without success. Nor did I in this case make any previous distension of the

bladder by injecting some liquor, for that was prevented by the wound already made in perinæo, but making an incision into the body of the bladder at the Ductus Rosseti and Douglassii, above the ossa pubis, I then enlarged it both upward and downward by the crooked scalpel armed with a button at the point, and introducing my fingers, I extracted the stone with great ease and expedition.

“ After having considered the several necessary circumstances, with regard to the nature and performance of the operation, delivered by Douglas, Cheselden, Thornhill, Smith, Pye, Macgill, Morand, myself, and others, I readily concluded, from the many instances of patients cured by them, that the great difficulty of healing the wound proceeded, not so much from the operation or the seat of the wound itself, as from a depraved habit in the patient, who is at the same time afflicted with other disorders.

“ I make an aperture in the bladder with the triangular needle or bodkin, called trocar, without the cannula. But this should be done very cautiously, when the bladder is very little, or not at all distended, for fear of wounding the fundus of the bladder. Then inserting the forefinger of my left hand into the perforation, I therewith gently remove the peritonœum backward from the os pubis, upon which it lies almost incumbent, and this to avoid injuring the peritonœum, or the fundus of the bladder.

“ By this means I never wounded the peritonœum, though I have justly performed the operation in several cases where the bladder had little or no distention : whereas, on the contrary, those who make their incisions from above downward, generally wound the peritonœum, which is attended with grievous symptoms, and the death of the patient, notwithstanding they had taken care to distend the bladder well by injecting some liquor. But my method of dividing the bladder succeeds as well in those cases where it is distended with liquor, as when it has little or nothing in its cavity, and is therefore preferable in all cases ; whereas their method is not well practicable but when the bladder has been distended to a great degree. Hence my method has been preferred to theirs by Thibaut, a late learned lithotomist at Paris, as Winslow and Morand informs us. When I have just perforated the bladder, sufficiently to admit my finger by the side of the scalpel, I gently introduce my left forefinger, and bending it in form of a hook towards its fundus, I gently draw that part and the peritonœum upwards toward the navel, and then enlarge the wound downward with the scalpel, by directing it towards the os pubis and neck of the bladder ; whereby the opening is generally made sufficiently large. In the mean time I also introduce the forefinger of my other hand into the bladder, and therewith examine the size and situation of the stone ; or whether, if it

be large, there will be any occasion to dilate the wound still more.

“ In patients where the stone cannot be extracted through the perincœum, which case has twice occurred to myself, and where the bladder can neither be extended by injecting water, nor retaining the urine by reason of the wound made, which has happened also to Greenfield, and I believe Francus; in that case, having carefully divided the skin and fat betwixt the recti muscles of the abdomen, I then cautiously insert the forefinger of my left hand between the os pubis and the membrane of the peritonœum, and thereby thrust it back from the os pubis that I may have room to make first a small incision and then a larger in the body of the bladder; and thereby extract the stone without injuring the peritonœum or fundus of the bladder. This method of performing the operation without distending the bladder is not taken notice of by any that I know of, who have written on the high operation, notwithstanding it may be very useful and even necessary in some cases; and that therefore distending the bladder by injecting some liquor is not so necessary to the operation as many have imagined, though it must be owned that more caution and diligence is required in this way, than when the bladder is filled with some liquor.

“ In some patients the natural passage of the urethra is obstructed with a sandy and mucous substance, so that the urine cannot make its exit

that way; in which case the best method is to lay the patient on one side and inject warm water through the urethra into the bladder, by which means the offending matter may be expelled through the wound; or instead of injecting water a blow pipe may be inserted into the urethra, and the matter thereby inflated into the bladder to be afterwards discharged at the wound; by either of which methods the urine generally passes afterwards in its former course by the urethra. This artifice was first practised by Rungius, an eminent surgeon at Breme, after he had seen me perform the same operation with success in the same city.

“ I have extracted the stone from two patients by the high operation, when I could not effect the same in perinœum by the lateral method, notwithstanding I might safely affirm myself perfectly versed in the practice of it.

“ I never met yet with any instance where the high operation was performed, and the patient could not be freed from the stone thereby, though it has in some cases been very large.

“ But though the stone may be thus readily extracted by the fingers, sometimes assisted with the forceps or a hook in the high operation, as Douglas, Cheselden, and Morand, acknowledge, yet in the lateral method and Apparatus Major, the surgeon is often a long time searching with the forceps for the stone in the dark, and often still longer in extracting it.

“ I have often known children make but little

clamour from the pain of this method, in comparison with what they often make in the lateral operation, and upon other occasions.

“ M. Le Dran confesses that large stones may be more securely this way extracted than by the Apparatus Major.”

MORAND'S OPERATION.

MR. Morand in his *Opuscules de Chirurgie*, printed at Paris in 1768, says that, “ it will appear little favourable to the *haut appareil*, an account of a patient who only survived forty-three days from the operation; and that it may appear an act of temerity to attempt to introduce an operation so long disused on a person sixty-eight years of age who was paralytic, having lost the use of one side; but the pain that this gentleman experienced was so considerable that he was determined to undergo the operation; he would not hear of the common method, being determined to undergo the high operation. His motives will be explained hereafter. In May 1727, Mr. Duprat, an invalid officer, aged sixty-eight, desired me to sound him for the stone, with which request I complied, and found a stone of a large size; I informed the patient of his situation, but in consequence of his age and infirmities I did not recommend an operation, yet he insisting on it I had made up my mind to operate by the *grand appareil*.”

“ I was greatly surprised at his declining to be operated upon by this method, saying, that he preferred the English method, *i. e.* the High Operation. In vain did I represent to him that this method was not now in use, and that I had never performed the operation; he persisted in saying he would not submit to any other method, and that he had every hopes of receiving a cure. On enquiring why he was so positive, he answered that he had known an officer who had a wound from a pistol in the bladder, and that the urine passed by the wound; that this officer by care and attention perfectly recovered; he saw in his mind a wound made by a knife could be more readily cured than a wound inflicted by a pistol. Seeing his determination I performed the High Operation on him in the presence of Messrs. Winslow, Boyer, Peyronie, and Guerin, and a great number of assistants. In this operation I made use of a bed instead of a table, to spare the patient the terror of the apparatus. I placed a board between two mattresses in such a situation, that the chest was lower than the abdomen, the legs hanging over the sides of the bed; his knees were tied to the bedposts, his hands held by the assistants. On sounding I found that the bladder was large. I emptied the bladder of urine, and introduced by means of a common syringe three ounces more water than there had been urine in the bladder. The patient now complained; the bladder seemed

to me very high notwithstanding there was so small a quantity of water injected into the bladder. I withdrew the catheter, when a small quantity of water escaped; I then desired an assistant to hold the penis to prevent the urine from escaping from the bladder. The assistant held the penis towards the fundament. I stood on the right side of the patient, with a common straight bistouri; I made a longitudinal incision of four fingers breadth through the integuments and fat to the root of the penis. I now made an incision in the linea alba parallel to the first, but not quite so long; when I had cut near to the pubis, I felt the swelling of the bladder and a fluctuation; I took a curved bistouri and holding the handle of the instrument with my left hand, I passed the bistouri into the body of the bladder, and made a quick incision from the top towards the pubis. On the incision being made the injection flowed out, but as the index finger of my left hand was not taken from the instrument conducted by my right, as soon as I had made a sufficient opening for the entrance of my finger, I passed it into the bladder and passed it towards the navel, and thus suspended the bladder in order with certainty to finish my operation. The incision seemed to be about two fingers breadth; I now quitted the bistouri, and introduced the thumb and the index finger of my right hand into the bladder towards its surface, and with great ease extracted a rough oblong stone, the size of a large

nut, weighing five drachms. I then introduced my finger into the bladder to feel if there were any other stones; I felt neither stone or gravel. From the time of operation till the dressing but two minutes and a half elapsed. So little hæmorrhage occurred that no compression was necessary; fearing that lint might enter the bladder and serve as a nucleus for another stone, I took a piece of linen about the size of my hand, larger than the wound, to which I applied it. I then placed lint round the edges higher than the wound, and applied a compress; round the body a napkin and bandages. The patient was taken to bed, and bled four hours after the operation. The urine wetting the dressings was changed every four hours, each time the abdomen was fomented with oil of roses and brandy. The day after the operation the patient was dressed with dry lint.

“ The patient was bled again the second day of the operation. During the three first days I found on the wound clots of blood which I thought came from the bladder with the urine, after the blood had run from the external wound into the bladder. I was not in a hurry to pass the catheter, thinking that if there was any clot of blood or sand, it would pass out at the wound. The first of June, seeing that the urine was clear, I passed a short catheter into the bladder. The next day finding that the compresses were little wetted with urine, the patient was only dressed every six hours.

The fifth day the compresses not being at all wet, the patient was dressed only twice during twenty-four hours. The nine first days he observed a strict regimen; there was not any tension of the abdomen towards the wound. The fourteenth of June, thinking that the wound in the bladder was united I withdrew the catheter; some urine passing by the wound I again introduced a catheter, and let it remain there till the twenty-first. The patient was now determined that the catheter should not remain, threatening every one, and by his agitation causing blood to issue through the penis. The twenty-first of June, three weeks and four days after the operation, I withdrew the catheter, not a particle of water now passing by the wound, nor did any come by the ordinary channel; so that on the next day I was obliged to introduce the catheter. For twenty-six days from the operation he was in a good state, in consequence of which I allowed him to take some soup; but when he was not observed he eat the fruits of the season, meat, &c. &c. and also drank wine. On the twenty-second of June I found him in a fever, and prescribed him a fever diet and bled him twice that day. The twenty-third I gave him a ptisan which he would not drink. The twenty-fourth, the fever continued, I ordered him a ptisan with the bark, and instead of taking this he told me he had eaten cherries. The twenty-seventh, he was troubled with a diarrhœa, in consequence of the irregularity of his diet. Medicines

were ordered, which he refused. The 1st of July, with much intreaty he took some medicine, and appeared better. He was now exceedingly impatient; would not take what I ordered, and drew out the catheter with great violence.

“ The diarrhœa continuing, he died the 9th of July. The cicatrix of the bladder was complete, and the wound in the integuments nearly healed. On the 10th I opened the body in the presence of Messrs. Winslow, Boyer, Bouquot, and Houstet. I opened the abdomen with great care; and that I might see the posterior part of the bladder, I made a transverse incision above the navel, and an incision towards the ilia on either side. I now turned the integuments and the peritonœum over the pubis, which I found had not been wounded. On examining the parts above the pubis, I observed that the bladder had adhered to the contiguous parts. I now examined all the parts near the bladder; nor was there any lodgment of pus or urine, which facts appear highly advantageous to this operation. The bladder being completely opened, we could not discover where the incision had been made, the reunion being so complete. The internal tunic of the bladder seemed to have been hurt by the repeated introduction of the catheter.”

MR. MORAND'S ACCOUNT OF MR. BERNIER'S
OPERATION.

“ An operation was performed at St. Germain-en-Laie, 10th December 1727, by Mr. Bernier, surgeon of that town. This operation was performed on a child four years old; the child had been afflicted with the stone from the age of two years. The operation was performed in the presence of Messrs. Dodard, Helvetius, Senac, Duréclaux, and Mr. Morand. The child was somewhat unruly, which rendered the operation tedious, and prevented the dilating the bladder by injection. The incision being made rather high towards the navel, in consequence of the struggles of the child, the peritonœum was pushed through the superior angle of the wound; to prevent its being wounded, an assistant supported it with his fingers during the operation, and to keep it in its place after the operation a suture was made. M. Bernier introduced the staff into the bladder, by which means it was elevated, and a stone was with great ease extracted the size of a nutmeg.

“ The wound was lightly dressed, and an embrocation was applied on the abdomen, the scrotum, and the penis, and a simple bandage applied. The patient was taken to bed, and seemed uneasy for an hour and a half; in two hours from this period he was bled; in half an hour from this

time he slept for an hour and a half; he then awoke, crying he wanted to make water; some urine came by the penis, and some by the wound. He slept again for half an hour; he remained quiet for five or six hours, at which time the wound was again dressed. An hour from this, which was seven in the evening, he was bled again; at eight o'clock he took an opiate. He now lay upon his belly, and slept at intervals for the space of two hours. Bloody water now issued from the wound; from this period his urine was not mixed with any extraneous substance. He was dressed again at twelve at night; in a quarter of an hour he dosed during the space of three hours. He was dressed four times on the 11th of December; he seemed much agitated this day.

“ At night an opiate was given, and he slept till four o'clock in the morning.

“ The 12th he had six evacuations; the wound began to suppurate; the pulse became tranquil.

“ The child now asked for something to eat.

“ The 13th the dressings put him to greater pain; his skin was hot, and his pulse agitated; the bleeding was repeated at nine in the evening.

“ From the 13th to the 18th, which was the eighth day from the operation, nothing particular happened; the fever was much abated; a small quantity of pus was passed by the penis.

“ The fifteenth day from the operation the patient made a few drops of water by the penis.

“ The seventeenth he made half a glass of urine.

“ From that day to the 2d of January, the twenty-fourth day from the operation, three parts of the urine passed by the penis, and the rest by the wound.

“ From the 2d to the 5th not any water came by the wound, which was perfectly healed the thirtieth day, at which period the child made water by the penis without any pain.”

Mr. Morand remarks, that the King was so interested for the fate of this child, that he went to St. Germain to see him. Mr. Morand then remarks that he could give the histories of forty cases of the High Operation, out of which thirty-five recovered.

He finishes this account by the following remark, “ that the influence that fashion has over the most essential things is no less inconceivable than true.”

THE
HIGH OPERATION

Had not been performed from the time of Mr. Bernier, at St. Germain-en-Laie, when Frère Côme, whose experience as a lithotomist was very considerable, finding the Lateral Operation unsuccessful in a variety of cases, made a trial of the High Operation: but only in such cases where he considered the Lateral Operation would not succeed, as where the weakness of the patient was very considerable, in a very advanced period of life, when the perinœum or urethra were greatly diseased, or where the stone was so large that it could not be extracted by the Lateral Operation. His success was equal to the Lateral Operation; yet he found, though a catheter was kept in the urethra, that there was sometimes a lodgment of pus and urine in the cellular substance; which was the occasion of his inventing the operation that is to be described in the following pages.

“ Frère Côme,” says a modern lithotomist, “ a priest of an order consecrated to the charitable duties of attending in the hospital; ignorant, like Frère Jaques, of anatomy, or the principles of our science.” But to this singular effusion of error and injustice, the shortest and best reply will be a succinct history of this really eminent practitioner’s life.

John Baseilhac, better known by the name of Frère Côme, was born in 1703, in the parish of Poyestruc, near Tarbes, in the department of the Hautes Pyrénées. His father and grandfather, Francis and Simon, were surgeons, under whom he first studied the science of surgery. In 1722 he went to Lyons, where he studied under his uncle, surgeon of the Hôtel-Dieu. He entered as pupil of that hospital in 1724; then went to Paris, where he attended the different lectures and hospitals. In 1726 he was admitted one of the élèves of the Hôtel-Dieu; shortly after he was appointed surgeon to Prince Francis Armand of Lorraine, on his appointment to the bishoprick of Bayeux. This venerable bishop established an hospital, of which he appointed Baseilhac surgeon. The worthy prelate died in the year 1728. To show his esteem and regard for Baseilhac, he left him a sum more than sufficient to pay his expenses on entering St. Côme. The death of the bishop was severely felt by Baseilhac; this irreparable loss, and his love of retirement, made him resolve to embrace the monastic state. In 1729 he was received at the convent of the Feuillans, as *frère donat*, and took the name of Frère Jean de St. Côme. He was professed in 1740; but was allowed by the superior to attend the poor daily, and also to perform operations. Among the poor who attended, were many afflicted with the stone. Reflecting on the serious consequences belonging to the ope-

ration for that disease, and having considered the success which attended the celebrated Frère Jaques' operations, he made many experiments on dead bodies, which led to the discovery of his *lithotome caché*. Having shown this instrument to Mr. Tardi, surgeon-major of the Royal Marine, the latter advised him to use it on a living subject. This instrument being shown to M. Laroche, he was convinced of its utility; and in the year 1748 he performed the operation on M. Le Roi, aged sixty years, at Melun. Having succeeded to his most sanguine wishes, an account of his success (with a description of the instrument), was published in the Journal de Verdun, in the month of November following, without the author's name. Frère Côme's reputation as a lithotomist being very considerable, and as the number of applicants to be operated on was very great, he established an hospital near the rue St. Honoré, where the poor were received gratis, operated on, and attended till their recovery. This establishment was begun in 1753, and continued till the death of the worthy founder. Frère Côme was assisted in this institution by his nephew, M. Baseilhac. According to the register of this hospital, upwards of a thousand operations in lithotomy were performed. In 1750 he invented instruments for extracting the crystalline lens; by the number of the lens preserved in this hospital, it is proved that he performed no less than five hundred operations. Frère Côme invented a bent trocar, for

puncturing the bladder above the pubis, in cases of retention of urine. In 1779 he published his account of the High Operation for the Stone, which had not been performed since the days of Morand. The reputation of this eminent surgeon procured him an extensive connexion, and the emoluments which he derived from the exercise of his profession were spent in acts of benevolence and charity. His generosity was not limited to his patients and pupils, but extended also to young people destined to different professions, arts, and trades, without compelling them to submit to any humiliating degradations to obtain his assistance. His life was austere; his food vegetables; he would not allow himself a fire during the rigorous season of winter. His drink was water: till, at the solicitations of his superior, at the latter period of his life, he took a small quantity of wine. He was beloved by his brethren, respected and revered by his pupils, esteemed by the members of his profession, which he continued to exercise till the year 1781, when a catarrhal affection, to which he had long been habitually subject, terminated the life of this valuable man on the 8th of July, in the seventy-eighth year of his age. For a more particular account of his life, see "La Taille Latérale," by Pascal Baseilhac, his nephew.

Frère Côme's book, which was published in the year 1779, is entitled "Nouvelle Méthode d'extraire la Pierre de la Vessie urinaire par dessus le Pubis, qu'on nomme vulgairement le Haut Ap-

pareil—dans l'un et l'autre sexe, sans le secours d'aucune fluide retenu ni forcé dans la vessie."

Frère Côme quotes Douglas, Cheselden, Macgill, Thornhill, Bamber, and Heister.

In this publication he gives a chapter on the necessity and advantage of the method called the High Operation ; but he remarks, that it will require an experienced lithotomist to decide in what cases the operation is necessary.

Frère Côme says, the operation should be performed where there is an affection of the perinœum or of the urethra, or the disease of parts contiguous to the bladder, or the largeness of the stone, or the weakness of the patient, who cannot bear the irritation of the extraction by the perinœum. In females, from his experience he finds that when the urethra is dilated or cut, there is generally an incontinence of urine, which is as much to be dreaded as the stone itself. He says, that in females the High Operation is far superior to every other.

If there is inflammation or thickening in the bladder, it will be impossible to distend the bladder with water ; and, in the female, the urethra being short, it will not be possible to retain the water injected into the bladder. These circumstances considered, as also the great pain occasioned by the injection of fluid into the bladder, and which was carried to such an extent as even to burst the bladder ; that the urine, pus, &c. &c. were often effused in the cellular substance contiguous

to the bladder, produced frequently sinuses, lodgment of matter and urine, spasm, &c. &c.

These circumstances being considered, induced Frère Côme to make a number of experiments on the dead body, the result of which was the present mode of operation.

FRÈRE CÔME'S OPERATION.

A Method to extract the Stone from the Bladder, without the Injection of Fluid.

Situation of the Patient.

In the first part of this operation the patient is placed and secured as in the Lateral Operation: that is, his hands are tied to his feet; he is held by two assistants, one holding each thigh and foot, and a person supporting him behind.

When the sonde-de-dard has been introduced into the bladder, it is to be held by the assistant, and the ligatures are to be taken from his hands and feet. The lower extremities are to be held and supported by assistants; the arms are to be brought behind the patient's head, and to be also held by assistants. Pillows are to be placed under the patient's head and shoulders.

A List of the Instruments invented by Frère Côme for the High Operation.

1. A staff.
2. A grooved director.
3. A sonde-de-dard.

4. A trois-quarts bistouri ; this is a trocar, in which is contained a bistouri.
5. A curved probe-pointed bistouri.
6. A suspensor of the bladder.
7. A bistouri cachée.
8. Flexible gum catheter.
9. Forceps of different kinds.

A staff is introduced into the bladder, which is to be held by an assistant ; a small opening is made in the perinœum.

A second incision is made in the membranous part of the urethra (as close to the prostate as possible) on the groove of the staff ; a finger is to be passed into the groove.

The operator takes a grooved director in the right hand, and introduces it into the groove of the staff. He now takes the staff from the assistant, bringing the handle downward, as in the common operation, and passes the director into the bladder.

The staff is now withdrawn.

The sonde-de-dard is introduced into the bladder upon the director, which is to be withdrawn. The ligatures are now removed.

An incision is now made through the integuments and fat, about three or four inches in length, in the direction of the linea alba from above downwards to the pubis.

A trocar, in which there is a concealed bistouri, is passed into the linea alba close to the pubis.

The concealed bistouri is pulled towards the navel, which cuts the lower part of the linea alba.

The operator takes a scalpel with a blunt point, and introduces it into the incision ; holds the handle with his left hand, and the back of the blade with his right. This he pushes forward, and divides the *linea alba*.

The operator now takes the *sonde-de-dard* in his right hand, and pushes it upwards, by which means he elevates the bladder, and feels with his left hand for the instrument. Great care is to be taken that the *sonde-de-dard* is kept as near the pubis as possible, the bladder being elevated by the *sonde-de-dard*.

The assistant pushes the stilet, which is concealed in the cannula of the *sonde-de-dard*, through the upper part of the bladder. The operator takes hold of the stilet, in the anterior part of which is a groove or director.

He now takes a probe-pointed bistouri, and introduces it into the groove of this director, and makes an incision in that part of the bladder which is opposite the symphysis pubis. The stilet is now withdrawn. The index of the left hand is introduced into the bladder, which suspends it.

A suspensor of the bladder is introduced, and given to an assistant to hold. The operator now withdraws his finger from the bladder, the bladder being suspended by this instrument.

If the incision is not sufficient for the extraction of the stone, a bistouri cachée is introduced into the wound, which is enlarged.

A flexible gum catheter is to be introduced, and the stone extracted.

A

SUMMARY

OF THE

HISTORY OF THE LATERAL OPERATION.

IT will appear from the preceding history of the Lateral Operation, that the operations of Franco, Frère Jacques, the second operation of Cheselden, and the mode of operation in the present day, whether with the knife or cutting gorget, are the same, and that the treatment previous and subsequent also agree; that the Lateral Operation was first performed in Switzerland, or in Provence, by Franco, and that it had not been performed publicly in Paris, until it was introduced there by Frère Jacques; that from the prejudices of the French surgeons it was discontinued; that it was then performed by Rau in Amsterdam, and repeated by Heister, in the year 1709; that an attempt was made to perform it by Bamber, at St. Bartholomew's Hospital, and Cheselden, at St. Thomas's; that these gentlemen performed an operation which was said

by Albinus to be Rau's operation, but that Albinus was deceived, as proved by Heister's account; that their operation did not succeed; that Cheselden then performed Frère Jacques's operation (an account of which had been published in 1699, see p. 251), and succeeded beyond his most sanguine expectations;* that Cheselden's success was much talked of in France, so much so, that Morand, surgeon of the Invalides, ever anxious to improve the science of surgery, made a journey to England purposely to see Cheselden operate, and to investigate the merits of the operation; that being fully convinced of the great advantages of the Lateral Operation over that of the Grand Appareil, which had been performed in Paris for a period of twenty-seven years, he reintroduced the Lateral Operation into Paris.

REMARKS.

The invention of the Lateral Operation may be considered as an epoch in surgery; and, whatever

* There has been some confusion in dates, as that operation of Cheselden, commonly called the Second or Lateral, was in fact his Third. An account of the First Operation was published by Douglas in 1726; this not succeeding, Cheselden says he attempted a second operation. (See page 143.) In 1727, Cheselden performed the Lateral Operation: this is the operation that Cheselden performed when Morand was in London. In a letter to Mr. M. he says, "I am so far satisfied with this mode of operation, that in my mind no further trial will be necessary." However Cheselden discontinued this method of operation, and an account of his Fourth Operation is published by Douglas in 1732. (See p. 43.)

disadvantages may attend this operation, its advantages over the Grand Appareil are incalculable.

Before we consider what is done in the Lateral Operation, it is necessary that we should understand the situation of the bladder and its connexions.

If the parts were of the same dimensions in every subject, as in books we are taught to believe, the operation would be performed with satisfaction to the surgeon, as there would be a greater certainty of success. I am astonished to find men of acknowledged talent, reputation, and celebrity in their profession, describing the parts in the following manner:—The prostate gland is so many lines in breadth; the urethra is so many inches in length; the prostate gland is situated exactly in such a situation;—whereas, in truth, the parts are as different, in size and situation, as are the face and features of a European and Esquimaux in form and expression.

If, for a moment, we consider the situation of the bladder and the parts connected with it, (such as the levatores ani, the obturatores interni, the coccygic muscle, the muscles from the rami of the ischium), we shall find that these muscles act upon a part, (*i. e.* the bladder), which is but slightly attached to the pubis by cellular substance, and by the lateral ligaments; these I find, by repeated dissections, are seldom the same in different subjects. I say, if we consider the action of these muscles, the situation of the bladder must vary under different circumstances. It

will also be necessary to consider the muscular coat of the bladder. In the collection of my friend Mr. Brooks, there is a preparation of the human bladder, where the fasciculi of the muscular coat are so large that they have the appearance of the columnæ carneæ of the heart.

It will be obvious to every common observer, that the bladder is sensibly affected by changes of the weather: even in a healthy bladder this is obvious. In cold weather its muscular fibres contract, and a person has a continual inclination to empty it; in a theatre or heated room the parts are so much dilated, that a person can retain his urine for seven or eight hours. If the parts are never the same in a healthy bladder, is it possible that we can expect to find them so in a diseased one, or in a bladder in which there are extraneous substances?

We will now consider what are the parts operated upon in the Lateral Operation.

First Incision

Is through the integuments of the perinæum and some fibres of the contiguous muscles.

Second Incision

Is through the fat, cellular substance, &c. &c. into the membranous part of the urethra. This part of the operation, if properly performed, is of little consequence to the patient; but if four or five incisions are made where only one is necessary, serious consequences may ensue. If in this

part of the operation there should be an hemorrhage, the artery can with great ease be secured.

Third Incision.

The third incision is through the prostate gland, neck, and part of the bladder. The surgeon has placed the beak of the gorget or the knife in the groove of the staff: in many cases, when he endeavours to pass the gorget or knife into the bladder, when they come in contact with the prostate, they escape from the groove, and are passed between the bladder and rectum.

This is by no means an uncommon occurrence. Franco was perfectly aware of it, for he expressly states that his razor or knife should cut at the point, and that it should cut well; remarking, that if this is not the case, the contiguous parts will be driven forward by the knife.

Mr. John Bell, in his History of Lithotomy, says, "I have seen the gorget driven twice, not into the bladder, but deep among the bowels; for although there was a stone, the surgeon never reached the bladder. Not one drop of urine followed; the stone was not extracted, and the boy died the second day from the operation."

Sir James Earle also observes, "I have more than once known a gorget, though passed in the right direction, pushed on so far, and with such violence, as to go through the opposite side of the bladder."

We must add, that on the incision being made into the bladder, if it contains urine, on this fluid

escaping, the bladder, if in a healthy state, contracts; or if there is a spasmodic contraction, the bladder may be wounded in this case, as in the former one.

Cheselden observes, that if there is any quantity of urine in the bladder before the operation, it flows out on the introduction of the gorget, and that the bladder does not contract, but collapses into folds, which makes it difficult to lay hold of the stone without hurting the bladder.

Mr. Benjamin Bell remarks, that of such patients as have died of this operation, he has, in two instances, found, on dissection, that the bladder was wounded in three different parts: in its cervix, in its side, considerably above the cervix, and again very near its superior part.

A case of this kind occurred at St. George's Hospital. Mr. Bromfield, in passing the gorget, perforated the opposite side of the bladder, and on withdrawing the gorget the intestines followed. On this distressing occasion Mr. Bromfield showed great presence of mind: he says, "that this was sufficient to embarrass a much abler operator than himself. He got an assistant to keep up the intestines, while he laid hold of the stone; but during the extraction they were pushed out again, by the child's screaming; nevertheless, as he had the stone secure in the forceps, he proceeded to extract it, which he did very easily. He then got hold of a second stone, which he likewise extracted. He now extracted another piece of stone,

which from its shape appeared to have been situated in the neck of the bladder. As soon as he was convinced, by his finger, that the bladder was totally free from any pieces of stone, he again returned the intestines into the pelvis, and brought the child's thighs close together; a piece of dry lint was applied to the wound, and a pledget over it; he was then sent to bed, with no hopes of his surviving till the next day: but, contrary to expectation, the child had a very good night, and was perfectly well in little more than a fortnight."

HÆMORRHAGE.

A branch of the internal pudical artery, which is ramified upon the prostate (and the ramifications of which are as various as those of an oak), is frequently divided by the gorget,* the bistouri cachée, and the knife; and I have known several patients die in consequence of the division of this artery. While I am writing this I have received an account of a gentleman who lately died of hæmorrhage; and Cheselden mentions a patient who bled to death. He says, "this accident taught me afterwards, whenever a vessel bled that I could not find, to dilate the wound with the knife till I could see it. Now if Jaques, or others, who of late have been said to perform this operation, whether by design or chance, did not take

* A branch of this artery is sometimes wounded on withdrawing the gorget.

care to secure the blood-vessels, which as yet has not been supposed, whatever their dexterity in operating might be, their success at least can be no secret, for many of their children and most of their men patients must have bled to death.”

EXTRACTING THE STONE.

This part of the operation is frequently tedious, and often attended with the most serious consequences, dreadful to the patient and most distressing to the operator, as the stone may be situated in the posterior part of the bladder, between the vasa deferentia; it sometimes lodges above the prostate, behind the pubis; it is sometimes contained in a sack; I have seen cases where stones have adhered to the bladder. When the bladder does not contract, it is hidden between the folds; the stone is sometimes covered with a mucus, secreted by the bladder, in which case it frequently slips from the chops of the forceps; in other cases a part of the bladder is included with the stone in the forceps, and drawn out with the stone. In a case which occurred in my presence, the stone could not be found; indeed, when the stone is small it is found with great difficulty. A case has come to my knowledge, where a boy had been operated upon and the stone could not be found; the wound healed; a year from this period, on sounding, the stone was distinctly felt. The stone sometimes breaks in the forceps: this is a very

serious accident, as the parts are with great difficulty extracted; and though we inject the bladder, it frequently happens that a particle may remain, which serves as a nucleus for a new stone. I have heard of two cases where some particles remained in the bladder, which formed nuclei for fresh stones, and the persons were compelled to undergo a second operation.

Stones are sometimes contained in cists, which can only be broken with great difficulty. If the opening is not sufficiently large, the dilatation of the bladder produces the most serious consequences, such as fistulas, &c. &c.

I have always found, in this operation, that an ample incision was necessary, but Scarpa is of a different opinion. It will be seen, by an examination of his gorget, that he only divides part of the prostate, conceiving that the parts may be much dilated. In this method of operating there is certainly less danger of wounding the pudical artery; also where the gorget, No. 2 (plate 4), is used, there is not so much danger of wounding the pudical artery: but here there must be a dreadful laceration of parts. The use of these gorgets by no means agrees with the practice of Cheselden, who expressly states, "if I find the stone very large, I again cut upon it, as it is held in the forceps." Mr. S. Cooper remarks, in his *Chirurgical Dictionary*, that in the course of nineteen years attendance in Bartholomew's hospital, those surgeons who made only a small incision into the bladder,

and kept their patients a long while upon the operating table before they succeeded in getting out the stone, by the repeated and forcible use of the forceps, had the mortification to see very few of their patients recover, a large proportion being carried off by peritonitis on the third or fourth day after the operation; but, on the contrary, where the incisions were ample, the operations were frequently successful.

I have heard of cases where such violence has been used in the extraction of the stone, that the operator has fallen into the arms of his assistant.

John Bell says, that a surgeon actually grasped with the point of his forceps, and twisted away great part of the prostate gland, which, when he had it thrown down, was picked up by a professor of anatomy; the parts were dissected on the death of the patient, and were preserved. He also gives an account of an operation at which he was present: he says, that two or three pair of forceps were successively twisted and broken; the operator then tried a larger and stronger pair; that the patient had struggled under his hands a full hour in the most dreadful agonies. The patient died the second day after the operation.

Sometimes the stone is so large, that it cannot be extracted through the space between the tuberosities of the ischii. A case of this kind occurred some years since at St. Thomas's Hospital; the surgeon (I believe Mr. Cline) was fortunate enough to succeed in breaking the stone. How-

ever, there are many cases on record where the stones could not be broken, and where consequently they have been left in the bladder. In other cases, where operations have been unsuccessfully performed in the perinœum, the stone has afterwards been extracted by the High Operation, as in the cases mentioned by Heister, p. 110 ; as also in a case reported by Deschamps, in his scientific *Traité de l'Opération de la Taille*, see page 166.

The bistouri cachée and the knife seem to me the most unexceptionable instruments in the Lateral Operation : yet sometimes the rectum is wounded. Mr. Cheselden, in a letter to Mr. Morand (published in his *Opuscules de Chirurgie*), says, that twice he wounded the rectum : I have been informed, that some short time since a surgeon, on operating with the knife, wounded the rectum. Mr. S. Cooper says, “ when I was in Paris, in 1815, I saw a French lithotomist, a descendant of Frère Côme (Dr. Souberbielle) operate with this instrument (the bistouri cachée) ; a stone of considerable size was extracted from a gentleman who I should think was not less than seventy. I understand this operator hardly ever lost a patient.”

I trust it will be seen, that very serious consequences frequently attend the Lateral Operation. It is true, if on the incision being made, the branch of the pudical artery which runs upon the prostate is not divided, and that an adequate incision is made

through the prostate and bladder to allow of the extraction of the stone, and where the stone is readily received by the forceps, there is every probability of success; but when we consider the situation of the bladder, and the uncertainty of readily laying hold of the stone, the success of the operation must in many cases be doubtful; but the grand and insurmountable objection to the Lateral Operation is, *that we are operating in the dark.*

I shall conclude with an account of the recoveries and deaths by the Lateral Operation. Cheselden's account is as follows:

He says, "he filled the bladder with water, leaving the catheter in, and then cutting outside of the catheter into the bladder, in the same place as upon the gripe, which I could do very readily, and take out stones of any size with more ease than in the other way. My patients for some days after the operation seemed out of danger, but the urine which came out of the bladder continually lodging on the cellular membrane on the outside of the rectum, made foetid ulcers, attended with a vast discharge of stinking matter, and from this cause I lost four patients out of ten. I then tried to cut into the bladder in the same manner that Mr. Rau was commonly reported to do: but that had the same inconvenience, from the urine's lodging on the cellular membrane on the outside of the rectum." He continues, "Upon these disappointments I contrived the manner of cutting which is now called the lateral way." (See p. 43).

Cheselden says, "What success I have had in my private practice I have kept no account of, because I had no intention to publish it, that not being sufficiently witnessed publicly. In St. Thomas's Hospital I have cut 213; of the first fifty only three died; of the second fifty, three; of the third fifty, eight; and of the last sixty-three, six. The reason why so few died in the two first fifties was, that at that time there were few bad cases occurred; in the third, the operation being in high request, even the most aged and miserable cases expected to be relieved by it; besides, at that time I made the operation lower, in hopes of improving it, but found I was mistaken. But what it is of most consequence to know, is the age of those who recovered and those who died :

<i>" Age.</i>	<i>Cut.</i>	<i>Died.</i>	<i>TOTAL.</i>	
Under 10 years	105	3	Under	<i>Cut. Died.</i>
Between 10 and 20	62	4	10 years..	105 3
Do. 20 and 30	12	3	Between	
Do. 30 and 40	10	2	10 & 20 ..	62 4
Do. 40 and 50	10	2	From	
Do. 50 and 60	7	4	20 to 80 ..	46 13"
Do. 60 and 70	5	1		
Do. 70 and 80	2	1		

By the preceding account it will appear, that Cheselden was more successful in children than in adults.

Dr. Marcet, physician to Guy's hospital, in his essay on calcareous disorders, gives the following account :

“ There is reason to believe, as will be seen in the course of this work, that the average proportion of deaths from the operation is no less than one in five ; and that the proportion of calculous cases admitted into our hospitals, is one for each three or four hundred cases of all descriptions.”

In page 25 of the doctor's work, he gives the following table :

Returns of the Cases of Lithotomy in the Norfolk and Norwich Hospital, from 1772 to 1816, making a period of forty-four years.

	NUMBER OF OPERATIONS.			DEATHS.		
	<i>Children under 14.</i>	<i>Adults.</i>	TOTAL.	<i>Children.</i>	<i>Adults.</i>	TOTAL.
Males . .	227	251	478	12	56	68
Females	8	20	28	1	1	2
	235	271	506	13	57	70

It appears from the above table, that the mean annual number of cases of lithotomy, in the Norwich Hospital, during the last forty-four years, has been eleven and a half, or twenty-three in every two years ; and that the total number of fatal cases in the five hundred and six operations, is seventy : a proportion of deaths corresponding

to one in seven and a quarter, or four in twenty-nine. It appears, also, that the proportion of females undergoing the operation, is to that of males as fifty-eight to one thousand, or about one to seventeen; and that the mortality from the operation in children is about one in eighteen, while in adults it is four in nineteen, that is, nearly quadruple.

Dr. Marcet says, that "he has reason to believe that the number of fatal cases in Guy's Hospital is as three to twenty; and that the number of deaths in La Charité is one in five or six." M. Baseilhac, formerly surgeon of La Charité, says, that in the year 1782 more than half the patients operated on at the Hôtel-Dieu died. That in the same year, at La Charité, with the bistouri-cachée, he performed twenty-two successful operations.

I have only further to remark, upon this interesting document, that it does not appear, from the particulars which are annexed to it, that any one of the distinguished surgeons who have succeeded each other for the last forty years, in the Norwich Infirmary, has been marked by any notable pre-eminence of success in that operation. They have probably all been more successful than the average practice of lithotomy would be found to be, but a singular uniformity has prevailed in their respective results; and it is remarkable, that one of these gentlemen who operated forty-seven times in succession without losing a single patient, has

upon the whole met with the same average number of losses as his colleagues.

THE OPERATION EN DEUX TEMPS

Is not mentioned in any of our works on surgery, nor can I find this article in Cooper's Chirurgical Dictionary. The French have continued the mode of practice from the time of Franco. In the posthumous works of Callot we see the following cases :

“ The 29th of May 1694 I was called to a consultation with Messrs. Pajot and Fontaine, in the case of M. Chanvelin, seventy-five years of age. He was exceedingly ill with fever and flux. He had also a stone in the bladder, which was of a moderate size. There was great disease of the bladder, and a suppression of urine ; his head was so much affected, that he was totally insensible. We agreed that it was impossible the Abbé could exist long in this deplorable state. I drew off the water ; he was now so much recovered, as to be able to receive the sacrament. It was then thought advisable to make an opening in the perinæum, as the bladder had lost all its powers of contraction, in consequence of the irritation occasioned by the passing of the catheter. In seventeen days, his health was considerably better, and the wound suppurated. The eighteenth I extracted the stone ; there was a considerable discharge from the internal parts of the bladder. Mr. Chanvelin regained his health and strength, the bladder and wounds cicatrized: he received a perfect cure, and lived

till the age of ninety. A few days after Callot was equally successful in the case of M. Maurel, whose exhausted state would not allow him to extract the stone on the day of the operation. On the 17th of January 1791, Callot performed an operation on Mr. Usson, from whom he extracted thirty-five stones; the tenth day of the operation the parts had digested, and he extracted thirty-six stones of the size of haricot-beans; the wound was in a very good state, and would have cicatrized, but fearing that there might be other stones, and conceiving it necessary to inject the bladder, he kept it open by means of a small canula; he continued in good health for five years, but at different periods ten other stones were extracted." "Callot," says M. Deschamps, in his *Histoire de la Taille*, "pursued this practice, in a patient of extreme weakness, aged sixty-two; the hæmorrhage was very considerable, and lasted at different periods for seven days: the fifteenth day he withdrew four stones, and the sixteenth he withdrew the others with the greatest facility, altogether amounting to thirteen; on the fortieth day the patient was well. Saviard operated in a case, where he extracted at different intervals from thirty-five to forty stones; he was obliged to place a canula in the wound: in two years the patient was perfectly well. In 1693, Tolet performed an operation on a gentleman aged thirty; the stone escaping from the forceps several times, Tolet thought it imprudent to attempt the extrac-

tion at this period, the patient being so much exhausted ; on the eleventh day he extracted a stone the size of a tennis ball."

M. Deschamps gives a chapter on this method of operation, and says, that " in the autumn of 1725 an adult was operated on at the hospital of La Charité ; there was a considerable hæmorrhage ; the stone was found with great difficulty ; during the extraction the hæmorrhage was stopped, by the pressure of the forceps which contained the stone ; however, the patient died on the fourth day from the operation." M. Deschamps remarks, that if proper means had been employed before the extraction of the stone to stop the hæmorrhage, there would have been a probability of saving the life of this patient ; and is also of opinion, that the operation *En Deux Temps* is advisable in a variety of cases. The truth of this observation is evident, as may be seen in the preceding and in the following cases.

Professor Thompson, of Edinburgh, published a case in the year 1710, where, no doubt, by his prudence and forbearance, he saved the life of a patient. Thompson says, that after repeated fruitless endeavours to lay hold of the stone with the forceps, the patient was considerably exhausted ; it appeared expedient to desist for the present, and to put him to bed. On the tenth day from the operation, a stone, that had a rough surface, and was nearly an inch and an half in length, and the same in breadth, was extracted :

the patient recovered. The operation was performed in 1708, and in 1710 the patient (Robert Walker) was in perfect health.

HIGH OPERATION.

I shall now proceed to investigate the advantages and disadvantages of the High Operation. We will progressively state, as we have done in the Lateral Operation, the first and succeeding stages.

First Incision,

In the perinæum, in the same part as in the Lateral, but considerably less.

Second Incision,

Into the membranous part of the urethra. This opening is small, merely sufficient for the introduction of a sonde-de-dard. It must here be observed, that the prostate is not cut, therefore there is no danger of hæmorrhage. This incision is by no means understood by Mr. Cooper, in his Chirurgical Dictionary: for he says that Frère Côme proposed to open the bladder *in perinæo*. From this authority, I apprehend, a great outcry has been made by many eminent surgeons against the High Operation; they saying that it is impossible to think of it, as we are opening the bladder at its superior and inferior parts; whereas, in truth, neither the bladder nor the prostate are divided in Frère Côme's method. Thus this part of the operation is not attended with any danger to the patient; but I trust sur-

geons will see the great advantages of this incision.

Third Incision,

Through the common integuments of the abdomen. If the person is not very corpulent, this is of little consequence. On continuing the incision through the linea alba there is seldom any hæmorrhage, though a hæmorrhage is possible. In the course of my dissections and demonstrations (and I beg leave to observe, that I have been in the habit of injecting with glue for a number of years every subject that I have dissected), I have seldom seen an artery in this situation; however, Thornhill and Frère Côme, on making their incision, divided an artery; both their patients recovered, nor was this division attended with much inconvenience. This occurrence must be very rare, as I believe every surgeon in London now performs the operation of the paracentesis of the abdomen in the linea alba. Although I cannot count the number of operations I have performed, I never had an hæmorrhage, nor have I ever heard of one.* Thus, I trust, I may with propriety say, that there is nothing to fear from hæmorrhage.

* In the old method of performing this operation, hæmorrhage must be common, as I have been sent for to examine three persons who died shortly after the operation, and who, on inspection, I found had died from hæmorrhage, from the puncture of a branch of the circumflexus ilii, which anastomized with the epigastric.

THE INCISION IN THE LINEA ALBA.

In dividing the linea alba, the peritonœum has been wounded, and the intestines have protruded ; this will occasionally happen ; it will be remembered, in reading the preceding cases, that very few of the patients died. It will be unnecessary to prove that wounds of the peritonœum are not mortal, for we are daily in the habit of puncturing it in the paracentesis of the abdomen ; we also divide the peritonœum, in our operation for strangulated hernia. I could give a variety of cases, where, in wounds of the peritonœum, the patients have recovered. Though this accident is not attended with any danger,* it embarrasses the surgeon. In the old way of operating, it frequently occurred ; and if we consider the method of operation, this might be expected, but, pursuing that of Frère Côme, it will seldom happen. In Frère Côme's practice it did occur,

* A curious case occurred at Hammersmith, some fifteen or twenty years since. A man was confined in Hammersmith workhouse, who was insane ; Dr. Flower at that period attended the workhouse : the insane man was called in ; a knife by some accident was left on a table in the room, which the insane person seized, and with which he cut open the centre of the abdomen ; he then ran out of the workhouse into the road ; the doctor ran after him. The intestines and omentum protruded through the wound ; he seized the omentum, which he tore off, and threw it at the doctor, who caught it. This is now preserved by Mr. Bowling, of Hammersmith, the doctor's successor. The parts were brought together, and the man recovered.

in the case of a child, who was exceedingly unruly during the operation, but it was not attended with any serious consequences. Previously to my operating with Frère Côme's instruments, on making my experiments on dead subjects, the peritonœum was frequently wounded; but since I have used his trocar, with a concealed bistouri, and his sonde-de-dard, though I have made at least twenty experiments, I have not wounded the peritonœum in one.

THE OPENING OF THE BLADDER.

It is found that this incision, made in the bladder, readily heals, which is proved in the preceding pages. Even Mr. Pye, who was happy to record any thing that could militate against the High Operation, states that incisions in the bladder readily cicatrized.

EXTRACTING THE STONE FROM THE BLADDER.

If the stone is of a moderate size, it is extracted in a second; if it is of a considerable size, there will be some difficulty in the extraction; and this is expressly stated by Frère Côme.

When the stone is of a very considerable size, it will be necessary to use the forceps invented by Frère Côme (see plate 4). In my remarks on the bladder, I stated that this viscus was never of the same size; this I can demonstrate by a number of preparations in my collection. In a

case of a large bladder, and where the stone is of a considerable size, there is sometimes difficulty in the extraction, inasmuch as the intestines fall on the posterior part of the bladder. This difficulty is in a great degree removed, by the use of the forceps represented in plate 4. One of the blades of the forceps is to be gently insinuated under the stone; the other blade is to be passed under the bladder, on the superior part of the stone; the forceps are to be then locked; by this means calculi of great magnitude have been extracted by Frère Côme.

If the stone should break, the particles can be extracted with much greater certainty, in less time, and with considerably less pain than by the Lateral Operation; nor will there be danger of any particle remaining which would form a nucleus for another stone.

M. De Walville's case made a lasting impression on my mind. After Dr. Souberbielle had extracted a great quantity of calcareous matter, Baron Percy said, "Dr. S., you had better inject the bladder." The answer was, "There is no occasion: I feel every part of the bladder, and there is not a particle of calculus remaining."

CAUSES OF THE NEGLECT OF THE HIGH OPERATION, AS WELL AS OF ITS RESUSCITATION.

The principal cause was the mode of operation.—1st. injecting the bladder, which was frequently

done with such violence, that Dr. Middleton, who attended all Thornhill's operations, expressly states, "The great pain of the whole operation consists in this one article, *viz.* the injection of the water; the pain of the incision being but trifling in comparison." We have also seen, that in a variety of cases the bladder burst in consequence of the injection that the peritonœum was frequently wounded; and that, for want of a dependent opening, there were lodgments of pus, urine, &c. &c. And what added principally to the ill success of the operation, was its having been performed in cases where there was not the least probability of success: as in those cases related by Mr. Pye, where there was a schirrosity of the bladder. In Mr. Cheselden's Appendix to the Anatomy of the Human Body, he states his reasons for declining the continuance of this operation. He says:

"After Mr. John Douglas performed this operation, a surgeon of St. Thomas's Hospital cut two, who both recovered; but the same gentleman afterwards cutting two, miscarried, by the cutting or bursting of the peritonœum, so that the guts appeared. This way became as much decried as it was before commended; upon which the surgeons of St. Bartholomew's Hospital, who had prepared to perform this operation, altered their resolution, and went on in the old way. The next season, it being my turn in St. Thomas's, I resumed the High way; and, cutting nine with

success, it came again into vogue. After that every lithotomist of both hospitals practised it; but *the peritonæum being often cut or burst, twice in my practice, though some of these recovered; and sometimes the bladder itself was burst, from injecting too much water, which generally proved fatal in a day or two.* Another inconvenience attended every operation of this kind, *which was, that the urine's lying continually in the wound, retarded the cure;* but then it was never followed by an incontinence of urine. And though this operation came into universal discredit, I must declare it my opinion, that it is much better than the old way; to which they all returned except myself, who would not have left the High way, but for the hopes I had of a better, being well assured that it might hereafter be practised with greater success: these fatal accidents having pretty well shown how much water might be injected, and how large the wound might safely be made. But hearing of the great success of Mr. Rau, professor of anatomy at Leyden, I determined to try, though not in his manner, to cut directly into the bladder."

Mr. Sharp, who had been the pupil of Cheselden, in his Critical Enquiry into the present State of Surgery, makes the following observation: "The objections to this method are to be found in several books, and therefore I shall not repeat them; but it may be observed, that they are too indiscriminately applied, because there are certain instances where we may be sure that some of the

most important ones do not take place; and though they have absolutely discredited this way of cutting with the present age, I shall not be surprised if, hereafter, on particular occasions, it should be revived and practised with success."

Although these gentlemen gave it as their opinion, that the High Operation might be performed at a future period, and though they state, with great propriety, incontrovertible reasons for the discontinuance of this mode of operation, they do not point out any means by which the operation may be performed with safety. However, Mr. Cleland (surgeon to General Wade's regiment of horse), seeing with regret the discontinuance of an operation which seemed to him more calculated to relieve those unfortunate beings, who laboured under a disease which no doubt is more to be dreaded than any other disorder incidental to the human frame, gave in the following paper to the Royal Society :*

" A Description of a Catheter made to remedy the inconveniences which occasioned the leaving off the High Operation for the Stone.

" As this operation was left off precipitately, in order to introduce that method now called the Lateral Operation, which has been practised for some time with good success; notwithstanding, had the operators at that time had the advantage

* See Philosophical Transactions, vol. 41, p. 844.

of this instrument I here offer to this honourable Society, I am persuaded the advantage would have been more than equal in favour of this High Operation, and preferable to any other method yet practised; and I humbly hope, that the description, and the method of using this catheter, will be a means of reviving an operation so happily begun, and calculated for the good of those that are afflicted with the stone in the bladder.

“ This catheter is made either of silver or steel, of different sizes, to suit different ages, and has the outward appearance of a common catheter, and will answer the same uses; but, in respect to this operation, it differs from the common in this, that it is composed of two legs with blunt points, a long tube, a sliding bolt, and a handle which serves to open and shut the legs. The bolt, which is fixed to the extremity of the tube, goes into two holes, fixed in the plate of the handle; the one serves to keep the legs close during the time it is to be introduced into the bladder, the other to extend the points at the distance of an inch or more, during the time the operator is performing; this instrument is to prevent the necessity of injecting the bladder.”

I do not find that this instrument has ever been used; nor do we hear any more of the High Operation in England or in France till the year 1727, when M. Morand, surgeon of the Invalides, performed the operation on M. Duprat, which case is given in page 115.

In the year 1738, Frère Côme, seeing with regret the ill success of the Lateral Operation in a variety of cases, reintroduced the High Operation, but only in such cases where there was no probability of success by the Lateral.

Frère Côme soon observed, though the success was equal to his expectations, yet that in some cases there was a lodgment of urine and pus in the parts contiguous to the bladder, which was the occasion of his invention of the present method; that is, making an opening in the perinœum, by which means he not only prevented the necessity of injecting the bladder, but by the introduction of a flexible gum catheter, he afforded a passage for the discharge of urine, pus, &c. &c., and thus prevented a lodgment which from the time of Cheselden had been a continual cause of complaint.

STATEMENT OF THE SUCCESS AND FAILURES IN THE HIGH OPERATION.

Mr. Douglas performed four operations; one patient, a child, died of convulsions.

Mr. Paul, of St. Thomas's Hospital, four; all recovered, though the peritonœum was wounded in two.

Mr. Cheselden, nine; one died, vide J. Clark. Mr. Cheselden observed, that it was no small credit to the operation that he lived so long. Dr. Cottesworth, who attended him, was of opinion

that he would not have lived so long had he not been cut. (See this case, page 83).

Mr. Pye performed four operations; three patients died. The first was a poor lad, who died, being hectic, &c. "The second patient," Mr. Pye says, "was miserably emaciated; on dissection, the neck of the bladder, where the stone was lodged, was schirrous, and full of deep ulcers." The third was a lad from Gloucester; he died on the twentieth day. "The wound digested finely, and incarned as one could desire; the bladder and parts adjacent were free from inflammation, and the wound incarned with the muscles of the belly; the left kidney was wasted; the right kidney was much enlarged, and full of foetid pus." (See page 89).

Mr. Thornhill performed sixteen operations, three of which were fatal. The first that died was Mr. Thornhill's eighth patient, William Philips, fourteen years of age. Dr. Middleton dissuaded Mr. Thornhill from the operation, who would willingly have been excused; on dissection his bladder was found to be schirrous, and in some places above an inch thick. George Thomas, aged thirteen, was cut December 7, 1723. The peritonæum was wounded; a suture was made on the upper part of the wound, in hopes to prevent the intestines being pushed down; the suture produced a considerable irritation: in this case there was a lodgment of urine, &c. in the cavity of the abdomen. (See. p. 101). In the third case the patient died three days after

the operation; when opened, a schirrous tumour was observed in the bladder.

Mr. Macgill performed four operations; one patient died (the thirteenth day). Mr. Macgill says, "It is my opinion that this stone could not be extracted by any operation." On the death of the patient he cut off the recti muscles from the pubis, and used all his endeavours, but without effect, to extract the stone; nor could he extract it till he had sawn off the os pubis.

Mr. Smith, of St. Thomas's, is said to have performed several successful operations.

Mr. Dobbins and Mr. Bamber, of St. Bartholomew's, are also said to have been successful. There is no register of the operations performed at either of these hospitals, and these gentlemen did not publish their cases.

Heister has given no statement of his cases; however, he says, "I have extracted the stone from two patients by the High Operation, when I could not effect the same in perinœo, by the Lateral Method; and I never yet met with an instance where the High Operation was performed, and the patient could not be freed from the stone thereby, though it had in some cases been very large."

M. Morand performed one operation; the patient died of a diarrhœa the 9th of July. See page 115.

M. Bernier performed one operation; the patient recovered.

Frère Côme performed an hundred operations ; but it must be observed he did not perform the High Operation, if there was any chance of success by the Lateral Method. Nineteen died.

He operated on forty-one males and fifty-nine females ; ten men and nine females died. It will be seen that Frère Côme was more successful in his operation on females than on males, though some of the former were hopeless cases, such as the following, published by M. Baseilhac :

“ Frère Côme operated in 1780 on the widow Donneri, aged fifty-eight years. She had had many children. In consequence of the irritation of the stone, she could not walk nor take the least exercise ; in this deplorable state she was brought to Paris on a bed placed in a cart. Frère Côme attempted to sound her : the sound was stopped at the neck of the bladder by the stone. Frère Côme performed the High Operation : the stone adhered to the bladder ; it was of an irregular form, and its tuberosities adhered to and were incarcerated in various parts of the bladder ; this rendered the introduction of the forceps exceedingly difficult ; however, Frère Côme succeeded by the use of his forceps. (See plate 4.) The stone was light, weighing seven ounces and a half ; but, from its size, it had the appearance of a stone of twelve ounces. This female, before the operation, had an incontinence of urine. Notwithstanding the enormous size of the stone, and the consequent large inci-

sion of the body of the bladder, she recovered in the space of five weeks, and could retain her urine before she left Frère Côme's infirmary."

M. Baseilhac agrees with Frère Côme on the propriety of the High Operation being performed on females; as, by the common operation, where the neck of the bladder is divided, there is frequently an incontinence of urine. (See page 164.)

Miss Couteau, of Fontainebleau, aged eighteen, had from her birth great pain in making water. In the spring of 1784 her father brought her to Paris. She was sounded by the surgeons of the Hôtel-Dieu, who found the stone. M. Baseilhac says, "Fortunately for the girl, I operated by the Haut Appareil, for it would have been impossible to extract the stone by the neck of the bladder, without destroying the internal coat. The stone weighed five ounces, was round, unequal, and tuberculated; it adhered, and was incarcerated in the internal coats of the bladder. After having made the incision, I in vain endeavoured to introduce the blades of the forceps. Having examined with attention the cause of this failure, I observed that the tubercles of the stone were lodged in cells which had formed in the bladder, to which the stone adhered; I broke away this connexion with my nails. Having been so fortunate as to detach the stone from the bladder, I with ease introduced the blades of my forceps, and laid hold of the stone, which I extracted with great faci-

lity. I now placed a flexible gum catheter in the urethra. A great part of the urine passed by the wound; but it must be recollected that this young lady was afflicted with the stone from her birth, and that the bladder, in consequence of its connexion with the stone, was of an irregular shape; part of the internal coat of the bladder sloughed, which obstructed the passage of the urine through the tube of the catheter. I injected tepid water into the bladder; and I sometimes placed her in an upright position, and made her walk, which had the desired effect. The parts cicatrized, and the young lady received a complete cure. She had no incontinence of urine." M. Baseilhac remarks, that in the year 1798 the young lady had no return of the complaint, and that at that period she was in perfect health.

FRÈRE CÔME'S OPERATION OF LITHOTOMY IN FEMALES.

If the stone is small there is no occasion for an operation, as the urethra may be distended by means of a sponge-tent, when the stone may be extracted. If it is of the size of an almond with its shell, the neck of the bladder may be divided with the knife or bistouri-cachée, provided the opening is not more than five lines in breadth. Frère Côme and M. Baseilhac invariably found, that when a larger incision was made, or where the parts were much dilated, there was an incontinence of urine, and therefore recom-

mended the High Operation. This is performed in a very short space of time.

HIGH OPERATION IN FEMALES.

The incision is to be made in the integuments.

The sonde-de-dard is to be introduced by the meatus urinarius into the bladder.

The incision into the linea alba as in males.

The stilet is to be passed through the upper part of the bladder; the probe-pointed bistouri is to be introduced into the groove of the stilet, and an opening made into the superior part of the bladder; the stilet is to be withdrawn. The index-finger of the left hand is to be introduced into the bladder, to suspend it. A suspensor of the bladder is now to be introduced, which is to be held by an assistant, and the stone is to be extracted. A flexible gum catheter is to be passed into the meatus urinarius, and retained in the bladder.

The Maltese lady whom I saw at Paris, and who had been operated upon by Dr. Souberbielle, showed me a large calculus which had been extracted by the doctor, and said, "Sir, I lingered out a wretched existence for a number of years, fearing to undergo an operation, as my husband was in the army, and I had a daughter whose youth required a mother's care; but had I known how soon the operation was over, I should have consented to it many years before; and I hope that my case, as well as the benefit I

have received from the operation, may be known to females of other countries, who may now labour under that dreadful calamity, the stone.”

M. DESCHAMP'S CASE OF THE HIGH OPERATION, SUCCESSFULLY PERFORMED AFTER A FAILURE BY THE COMMON METHOD.

M. Deschamps gives the following case, which he says was communicated by M. Catin de Beaumarchais, member of the Academy of Surgery at Paris. “ The 30th of August, 1786, Mr. Lasus performed an operation on a girl aged six years, who had complained for a considerable time. The operation was performed with Hawkins's gorget; he introduced the forceps, and laid hold of the stone; he made many efforts to extract it, but in vain, the stone being too large to be extracted by the usual means. A consultation was held, and it was agreed that the High Operation should be performed; the patient recovered, but there was an incontinence of urine, in consequence of the first operation.

Dr. Souberbielle, who, as is stated by Mr. S. Cooper, has operated with uncommon success with the bistouri-cachée, is the first, since the time of M. Bernier, of St. Germain-en-Laie, who has performed the Haut Appareil in cases where the Lateral Operation might have been resorted to. His reasons for preferring this operation are, that he found, in many cases where the Lateral

Operation had been attempted, and not succeeded, the High Operation had been performed, and proved successful; from this he naturally concluded, that as patients recovered after having suffered the pain and fatigue of two operations, if the High Operation was performed in the first instance, there would be every reason to expect success. Under this impression, he performed this operation on M. de Walville, at which I was fortunate enough to be present.

Subsequently to that period, Dr. Souberbielle has, I understand, performed between twenty and thirty successful operations, on male subjects, all from fifty to eighty-six years of age, except one, who was fifteen.*

On my return from Paris, in 1818, I waited upon Sir Joseph Banks (whose anxiety to be informed of, and to encourage, whatever may be for the benefit of society, in any branch of science, is so generally known), in order to exhibit to him the apparatus for the High Operation, and the cast of a large stone which had been extracted with success by Dr. Souberbielle. At Sir Joseph's I had the pleasure to meet Sir Everard Home, whose pupil I had the honour, some twenty years since, to be. On looking at the calculus, Sir Everard said that "It could not have been extracted by the Lateral Operation." On the fol-

* Dr. Souberbielle, when I was in Paris, informed me that he intended publishing an account of his cases.

lowing day I received a letter from Sir Everard, desiring me to show him the instruments that were used in the High Operation, and to inform him of every particular connected with the important subject of its performance. With these requests I cheerfully complied. All who have the advantage of Sir Everard's acquaintance, are well aware, that though quick of apprehension, he never ventures an opinion without being fully master of the subject; nor was he at all satisfied with the propriety of the High Operation, till I informed him of the opening in the perinœum. A short time after this, I received a second letter from Sir Everard, saying, that he was so well satisfied of the advantages of the High Operation, that he had a patient on whom he intended to perform it; but at the same time politely added, that if I had an operation in view, he would defer his till mine had taken place. Being anxious to have the operation performed in this country, and more particularly by the hands of Sir Everard Home, I sent him the instruments which I had brought from Paris, and accompanied him to St. George's Hospital on the day of the operation.

The operation was somewhat lengthened in consequence of the stone being in a cist; yet its duration was very short, in comparison with what it would have been had it been performed in perinœo. I am enabled to state the exact time, as a friend, who held a watch in his hand, stated to me that the operation lasted

exactly seventeen minutes. In this case the stone was with difficulty felt by the sound, and when Sir Everard introduced his finger into the bladder he could not feel it; however, he soon discovered the cist, which he was compelled to break, and then readily extracted the stone. I received the stone from him, and observed part of the cist adhering to it: this I detached with my nail. The boy recovered, and is at this time in perfect health.

In common cases, the High Operation is performed in a very short space of time, by surgeons who are in the habit of dissection, and who understand well the anatomy of the parts; and in cases of difficulty (such as that of Sir Everard Home) with more certainty as well as expedition.

I will now recapitulate the mode of operation, and the subsequent treatment of the patient.

A staff is introduced into the bladder.

First, an incision is made through the integuments of the perinœum, and a small incision into the membranous part of the urethra; a director is introduced into the bladder, upon the staff: the staff is withdrawn; the sonde-de-dard is introduced upon the director into the bladder: the director is now withdrawn; the sonde-de-dard is held by an assistant. An incision is then made, three or four inches in length, through the integuments of the abdomen. The trocar-bistouri is passed through the

linea alba, close to the posterior part of the pubis. The concealed blade is opened, by means of which the lower part of the linea alba is divided. A probe-pointed bistouri is introduced, through the opening which had been made by the concealed bistouri, into the lower part of the linea alba, and the incision is continued by means of this instrument. The operator takes the sonde-de-dard from the assistant with his right hand, and pushes it forward, by which means he elevates the bladder above the pubis. The assistant now holds the sonde-de-dard, and the surgeon with his right hand pushes the stilet (which is contained in the cannula of the sonde-de-dard) through the superior and anterior part of the bladder; he takes hold of the end of the stilet with his left hand, and passes a probe-pointed bistouri along the groove (which is in the anterior part of the stilet), and makes an incision in the superior anterior part of the bladder. He passes the index-finger of his left hand into the bladder, by means of which he supports it. The stilet is withdrawn from the cannula of the sonde-de-dard, which is now lowered and held by an assistant; the operator introduces the suspensor of the bladder, which is held by an assistant. The stone is now to be withdrawn with the finger and thumb, which, if small, is done with great ease. If the bladder is large, a finger is introduced per rectum, by which the bladder is elevated, and the stone more readily found. If the

stone should be in an excavation, and the bladder is not of a very large size, it may be discovered with the finger, by means of which the surgeon will know whether a scoop, or what kind of forceps, is indicated. If the stone should be of such magnitude as is represented in the case of the widow Donneri, Frère Côme's forceps must be used ; if the stone should adhere to the bladder, or be contained in a cist, the means used by M. Baseilhac and Sir Everard Home should be resorted to. When the stone has been extracted, Dr. Souberbielle introduces a silver wire through the cannula of the sonde-de-dard, and passes it through the wound made in the linea alba ; this is held while the sonde-de-dard is withdrawn ; a flexible gum catheter is now passed into the bladder, through the wound in the membranous part of the urethra, by means of this wire. The wire is now withdrawn. The catheter is confined in this situation, by means of tapes passed round the thighs and pelvis of the patient ; a bladder is tied to it, to receive the urine. Though this method of introducing the catheter is done in a very short time, yet I think that if the point of the catheter were introduced into the sonde-de-dard, the sonde-de-dard might be brought through the opening in the linea alba, and by this means the catheter might be conducted into the bladder with the greatest facility ; or the cannula of the sonde-de-dard might be made of flexible gum, which, in place of silver, would contain the stilet, and this

might remain in the bladder, and the lower part might be cut off, thus answering every purpose.

Method of dressing the Patient.

A piece of soft linen, half an inch wide and six or eight inches long, is to be introduced, by means of a pair of forceps, into the bottom of the bladder; the edges of the wound are to be covered with lint; to prevent the urine excoriating the parts, the linen is to be allowed to pass over the pubis on either side, and by this means the portion of the urine which is not carried away by the catheter will be carried off by means of this linen.*

Lint and light dressings are to be applied to the wound, and a bandage passed round the abdomen.

Great care is to be taken that the catheter is kept open; a stilet should occasionally be passed. Much attention should be paid to the subsequent dressings. Usually on the third day the linen may be taken from the bladder, as by that time the greatest part of the urine will pass by the catheter. By this time the wound usually suppurates. Adhesive plaster may be applied, in order that the divided parts may be brought into contact. In the course of twenty years' practice, I have invariably found, that the after-treatment of the patient is not of less importance to his life, than is the operation itself.

* If you place a piece of linen in the bottom of a cup filled with water, and let the ends rest upon a plate, in three or four hours the whole of the water will be in the plate.

REASONS

FOR

PREFERRING THE HIGH OPERATION.

I trust, that in the preceding pages I have given a faithful history of the Lateral, as well as of the High Operation, and that I have "nothing extenuated." In my mind, the *High Operation* is in most cases to be preferred :

1. Because it is generally performed in less time than the Lateral Operation.
2. There is less pain.
3. There is no fear of a fatal hæmorrhage.
4. There is no division of the prostate, nor of the inferior part of the bladder ; nor is there any danger of wounding the rectum.
5. The stone, if of a certain size, cannot be extracted by the Lateral, but may be extracted by this method.
6. A small stone is more readily discovered by this method than by the Lateral.

7. If the stone breaks, the particles can be extracted with more certainty than in the Lateral Operation.

8. If the stone is concealed in a cist, the cist can be destroyed and the stone extracted, as is proved in Sir Everard Home's case; and if the stone should be situated above the prostate, or in any cavity which is occasionally found in the bladder, it can with greater ease be discovered and extracted. There is also no danger of including part of the bladder with the stone, in endeavouring to extract it, nor any danger of a fistulous opening after the operation.

9. In case there should be any disease of the bladder, it can be examined, and proper means prescribed for the cure.

CASES WHERE THE HIGH OPERATION OUGHT
NOT TO BE PERFORMED.

It should not be performed on a corpulent subject.

Nor where there is schirrus, nor affection of the bladder; so that the sonde-de-dard cannot raise the bladder above the pubis.

In cases where there is stricture of the urethra, or a disease of the prostate, so that a staff cannot be passed into the bladder, the operation might

be performed per rectum, by the method by which we puncture the bladder for retention of urine.* (See method of puncturing the bladder per rectum).

* In performing the High Operation, the sonde-de-dard might always be introduced per rectum. I mentioned this to Dr. Souberbelle, who objected to the plan, saying, "That then there would be a puncture at the superior and inferior parts of the bladder."

In patients where the staff cannot be passed, in consequence of stricture or disease of the prostate, or where the calculus is of a certain magnitude, there is no choice of the mode of operation. Either the *High Operation must be performed*, or the patient is doomed to linger out a life of wretchedness.

METHODS

OF

PUNCTURING THE BLADDER.

Proper means having been resorted to, there will seldom be any necessity for puncturing the bladder. However, cases occur, where, though attention has been paid, the catheter cannot be passed into the bladder. When the secretion of urine is continued, the bladder becomes distended, a fluctuation is evidently felt above the pubis, the desire of making water torments the patient, who is now in the greatest distress, the bladder and contiguous parts become exceedingly painful. At this period an operation is unavoidable. There are three ways of puncturing the bladder; *above the pubis, by the perinæum, and per rectum.*

I. ABOVE THE PUBIS.

The operation is best performed by a bent trocar. A perpendicular incision is made through the integuments, between the pyramidal muscles, the trocar is then introduced into the bladder. My first objection to this operation is, that the urine is not evacuated from the bottom of the bladder. I remember, in a case where a common trocar was used, I dissected the parts; the blad-

der fell on the sharp edge of the trocar; this produced inflammation of the bladder and peritonæum, which occasioned the death of the patient. In another case, a gentleman plunged a trocar through the linea alba; not any water followed. He passed a probe through the cannula; he declared there was no urine in the bladder. The symptoms continued. The attendant surgeon was of opinion that there was water: the other still contended that there was not; the patient died. The gentlemen examined the body; the bladder had burst. In truth, the trocar had pushed the bladder from its connexion with the posterior part of the pubis, where it is slightly attached.

II. BY THE PERINŒUM.

An incision is made, beginning at the commencement of the membranous part of the urethra, towards the anus. A trocar is to be passed a little above, and to the left of the prostate gland. I saw this operation performed; I went in the morning to see the patient: I found him dead in his bed. An artery had been punctured, and he died of hæmorrhage.

III. PUNCTURING THE BLADDER PER RECTUM.

This operation is not attended with any danger if properly performed. I have not, in my practice, ever had occasion to puncture the bladder but once; in this case the gentleman was upwards of sixty. He perfectly recovered. This operation

was by no means painful, nor was it attended with any inconvenience whatsoever.

Second Case.

I met Mr. Phillips, in consultation, in a case where the gentleman was upwards of seventy, and where it was totally impossible to pass the catheter. The bladder was considerably distended: an operation was indispensable. The bladder was punctured per rectum, and a considerable quantity of urine was drawn off. The cannula was left in the bladder, and as the water did not pass by the penis, it was suffered to remain during six days. This did not produce the slightest inconvenience. On the seventh day the cannula slipped from the wound. The bladder again became distended with urine; Mr. Phillips punctured the bladder a second time; the cannula was suffered to remain in the wound during the space of five days, when the patient made water by the penis. The cannula was withdrawn, and the patient perfectly recovered, nor did he experience the least inconvenience from the punctures which had been made in the rectum.

That much mischief has been done by this operation, there cannot be the least doubt; but this is not owing to the operation, but to the manner in which it is performed. It will be seen by the following account, that for want of a proper attention to the anatomy of the parts, this operation has been misconceived.

“ OF THE PUNCTURE THROUGH THE RECTUM.

“ The patient is to be put in the posture which would be recommended for lithotomy ; an assistant is to make pressure on the abdomen, just above the os pubis, in order to make the prominence of the bladder more distinct to the surgeon’s finger in the rectum. A curved trocar, with its point drawn within the cannula, is to be introduced with the right hand, and conveyed upon the index finger of the left *as high as the surgeon can reach up the intestine*, along the swelling formed by the distended bladder. The instrument should be kept exactly in the central line of the front portion of the rectum ; and, when conveyed sufficiently beyond the prostate gland, the point of the trocar is to be pushed into the bladder through the anterior part of the intestine.

“ The only chance of doing mischief arises from the situation of the vesiculæ seminales ; *but all risk is removed, when the trocar and the finger are introduced very high into the rectum* ; hence the trocar employed in this operation ought to be somewhat longer than in ordinary cases.”

It will be seen by plate 1, that if the operation is performed as here directed, the trocar will pass through the rectum and its peritonœal covering, it will then pass in the cul-de-sac, and then enter the bladder at its inferior part. It will also be seen, that the only part where the bladder can be

punctured with safety per rectum, is a very short space beyond the prostate, between the vasa deferentia; here, and here alone, ought this operation to be performed. Thus the trocar which is usually sold at the instrument-makers cannot with any propriety be used; and that invented by Flurant, surgeon of the Hôpital de la Charité at Lyons (an engraving of which is given by Camper, in his "Secundo Libro demonstrationum Anatomico Pathologicarum," printed at Amsterdam in 1762), is the only instrument that can be used with safety.

APPENDIX.

APPENDIX.

I beg leave to observe, that Ploucquet has been of great use to me in the preceding pages, who has given a list of all the works that are known to have been written on urinary calculi and lithotomy, classed with the utmost care and precision, in his valuable work, entitled, "*Literatura Medica Digesta.*" This elaborate catalogue occupies twenty-nine pages in quarto, printed in the closest manner.

It will be seen, in my observations on Franco, that I differ from Scarpa and many preceding authors, who consider him as a zealous defender of the doctrine of Hippocrates. It is true, from partially reading his works, such a conclusion may be drawn; but on considering his motives, and the operations which he expressly states he performed, and which he recommends, I trust I shall be found justified in the conclusions that I have drawn from the writings of that eminent surgeon. However, that the public may be fully informed, I have in this Appendix printed the whole of what Franco has written on the subject, extracted from "*Petit Traite contenant vne des parties principales de Chirurgie laquelle les Chirurgeins hernieres excercent ainsi quil est montré en la page suiivante. Fait par Pierre Franco, Chirurgien de Lausanne.—Il faut endurer pour durer.—A Lyon. Par Antoine Vincent, M.D.LVI.*"

De la cure de la pierre par incision.

CHAPITRE XXXII.

PREMIEREMENT nous monstrerons la methode de l'extractiō de la pierre, laquelle est plus commune & vsitee encores auiourdhuy de la plus part. En apres nous declarerons l'experience: en laquelle moymesme ay esté enseigné estre beaucoup meilleure: comme on verra cy apres au plaisir de Dieu. Premierement, il est necessaire auant que commencer l'œuure de purger le patient, s'il est cacochyme ou replet, ainsi que dessus est dit. Puis apres deux ou trois iours faire l'incision, & non point le lendemain de la medecine: d'autant que nature est encores esmeuë & alterée par icelle: ce que pourroit grandement nuire au patient. La phlebotomie en corps pletoric est fort requise auant l'operation, & aux enfans la purgation par clysteres. Estant donq le patient préparé, il fault venir à l'operation. Faisant en premier lieu saulter le patient deux ou trois fois de hault en bas: afin de faire descendre la pierre plus bas vers le col de la vessie, si elle n'y est: pour plus aisément la pouoir prendre avec les doigts. En apres fault situer le patient sur le bord d'un lict, ou table, ou banc, comme le plus souuent ceux de nostre art ont fait, & font encores la plus part. Se que ie ne mesprise pas, sinon d'autāt que les patiēs ont plus grāde frayeur: qui peut estre occasion de grād inconuenient. P'aymerois donc mieux les situer sur vne eschelle, en y mettāt vn trauersier ou cuissin, ou chose semblable: leur faisant leuer les genoux contremont en les eslargissant tant que sera possible, & que deux forts hommes tiendront vn de chasque costé. Et pour plus grande seureté, & afin que l'operation ne soit empeschée, à cause du mouuement que le patient pourroit faire, est bon auoir vne bende forte, qui soit liée de l'un de ces bouts vn peu dessus les malleoles ou cheuilles du pied, puis la passer derriere le col du patient, & de l'autre bout ira attacher l'autre pied, comme est dit: afin

qu'il ne puisse alonger les iambes, & pareillement le corps, ains qu'il soit la tenu subiect. Dauantage on aura deux petites estaches fortes, desquelles on liera les deux mains, sur le carpus ou sur la malleole du pied, apres la ligature precedente, afin que par ce moyen soit du tout tenu subiect. Ayant fait ces choses, le maistre oindra deux doigts d'huile ou d'autre chose, assauoir l'index, & medius, & les mettra au fondemēt tous deux pour tenir mieux la pierre, & de l'autre main pressera tout bellement sur l'epigastre ou petit ventre: afin d'amener la pierre de hault en bas vers le col de la vessie, ou doit estre faite l'incision. car fault que la pierre descende au dessous de l'os pubis, ou pectinis, ou estant descendue est assez aisée à retenir avec l'ayde dudit os, en appuyant les doigts contre iceluy par dessus la pierre: avec ce, qu'il y a capacité dessous l'os: tellemēt que mesme il empesche la pierre de retourner en hault, principalement quand vne fois le maistre l'a surmontée à tous ses doigts. Bien est vray, que quelquefois on diroit que la pierre est attachée au plus hault de la vessie, si qu'il semble qu'on la tire en hault par violence. Je dy aucunes, tellement, que bien souuent me suis trouué auoir les doigts si lassez de l'effort qu'il falloit faire pour la tenir bas, que demeuroy deux ou trois iours sans gueres bien me pouuoir ayder des deux doigts. Parquoy il se fault faire ayder en ces pierres difficiles à quelque seruiteur, ou autre, qui pressera de l'autre costé le petit ventre, & le maistre & le seruiteur tenant chacun vne poignée d'estoupes ou chose suauē en leur main, de peur de blesser avec les doigts les muscles de l'epigastre, qui sont choses fort à craindre, à cause de l'inflammation qui s'en peut ensuiure, voyre plustost que de l'incision. ce que adient souuent, & principalement quand le maistre ne sait suenir a vn tel accident: tellement, que tous ceux, ou la pluspart qui feront l'incision apres auoir ainsi comprimé lesdits muscles, ne s'en trouveront ia bien. Parquoy ie conseille de plustost les laisser, que de les entreprendre. Or l'ayant mené au col de la vessie, & la tenant subiette, il fault faire l'incision entre le fondement, et les testicules deux au trois doigts loin du siege ou fondement à vn ou deux doigts à costé de la commissure ou perineum: & se donner bien garde de faire l'incision sur icelle pour les inconueniens, qui s'en peuvent suyure, comme conuul-

sions ou inflammations, joint aussi que la plaie ne se consolideroit point. Il faut commencer l'incision avec le rasoir, tel qui sera cy apres figuré, qui tranche des deux costez vers la poincte, & coppe bien. Estant aussi à demy rond en la poincte, & petit : car fault qu'il coppe de la poincte. Estant donc tel ledit rasoir on le conduira tout droit vers la pierre, sur laquelle estant posé, faudra le trainer sur ladite pierre, afin de copper le col de la vessie sur icelle, en menant le rasoir depuis le plus hault de la pierre, iusques au plus bas, c'est adire d'un bout de la pierre, iusques à l'autre : afin de faire l'incision telle, que la pierre puisse sortir. Et par ce moyen on ne fera pas l'incision plus grande, que la pierre. Il se fault dōner garde de ne copper trop hault vers la capacité de la vessie pour le danger eminent, d'autant que le lieu est membraneux : tellement, qu'il ne se peult consolider sans les accidens qui ont coustume s'en ensuire. Car pour le moins le patient pisseroit tousiours par ou l'incision auroit esté faite. Dauantage, se fault donner garde de copper l'intestin droit, ou rectum. car à raison de tant d'efforts qu'on fait à tirer la pierre, il se redouble aucunes fois au dessous de la pierre : tellement que quand le rasoir va trop auant vers les doigts du costé de dessous la pierre, il peult ataindre ledit intestin, & le copper, comme i'ay veu souuent aduenir, voire aussi au chirurgien à se copper les doigts, & puis apres la matiere fecale subtile vient à passer par la playe & pareillement l'vrine par le fondement, & les deux aussi par les deux, qui est chose facheuse, quand aduient que la matiere fecale s'euacue par le conduit de l'vrine : avec ce, que bien souuent l'incision ne se consolide point. Il fault doncq tenir le rasoir sur la pierre bien asseuré. Estant faite l'incision conuenante, fault tirer la pierre avec les crochets lesquels ont esté & sont encores fort en vsage & idoines pour ceste façon : desquels noz predecesseurs ont vsé, & de bien peu d'autres instrumens pour l'extraction de ladite pierre, fust elle grande, ou petite : desquels i'use encores à present aucunes fois, et nommement, quand la pierre se presente basse, pource qu'ils sont fort commodes à ce faire : pourueu, qu'ils soyent bien faits, & ployez aucunement. Aucuns en ont voulu vser de tous droitz, & les mener iusques à la pierre, ce que ne se fait

pas si commodement, comme quand ils sont aucunement ployez ainsi que les voyez icy en figure. Il se fault aussi donner garde de n'user de trop grande violence, en titant la pierre. car, cōme a esté dit, l'incision n'estant bien faite droitement, ny assez grande, on pourroit faire telle force à la tirer, qu'on l'arracheroit bien aucunement de son lieu, tellement, que la mort s'en pourroit ensuyure. Si la playe estoit trop grande, on peult faire vn point ou deux d'eguille, comme Guidon enseigne. Il est vray, que ie n'en ay iamais vsé, n'y veux faire, d'autant qu'il est expedient que la sanie s'euacue, & avec ce, que sans cela, les labies de l'ulcere se reunissent facilement sans point d'eguille, à raison qu'elles sont tousiours assez conioinctes & quelquefois par trop, d'autant qu'elles empeschent que le sang, qui est là demeuré, ne se peult vacuer : ains se concrèent en cassons & trōbes, qui empeschēt l'issue de l'urine. Tant plus donq sera decousu, aussi tant plus baillera d'empeschement & à la playe & à la verge, car bien souuent lesdites trombes empeschent les deux. Aucuns y mettent vne tente, laquelle doit estre percée : afin de n'empescher l'urine de sortir, & seroit bon qu'elle fust de plomb. Notez, que ne deuous appliquer en ce lieu là ferremens froids, d'autant que ce sont parties nerueuses, soit en tirant la pierre, ou autrement, pour ne inciter douleur. car n'y a rien plus a craindre, non pas la tente mesmes. Je n'ay point accoustumé d'y mettre tentes, que bien peu souuent. Toutefois on y en peult mettre, afin d'empescher la glutination qui bien souuēt se fait en vn iour ou deux : & principalement, quand la pierre est petite estāt la glutination faite l'urine est retenue. ce que ie voudroye faire tant seulement au premier appareil, & puis non plus : afin que l'urine sorte plus à son aise, & si voudrois que la ditte tente soit percée : autrement n'y en mettre point : afin que ne face retention du sang, & de l'urine : & que par ce moyen le sang se vienne à coaguler, & empescher la sortie de l'urine & par la verge & par la playe, tellement qu'il est necessaire passer ou sonde, ou chandelle, ou plomb par la verge, ou par la playe, ou avec autre instrument pour dissouldre ledit trombus : afin que l'urine ne soit point retenue. Apres auoir tiré la pierre & mis le premier appareil, & bien

bendé, il fault considerer la pierre : par laquelle on peut facilement connoistre s'il en y a encores d'autres, ou non : comme bien souuent en y a plusieurs. & toutefois ne s'en presente que vne, autrefois deux, ou plus : avec ce, que en ayant tiré vne, le patient est foible & debile : à cause de la douleur, & sang qui peut estre flué : tellement, que le maistre ne l'ause plus presser, encores qu'il trouue l'autre pierre, au moins, s'il est homme de bien : Car aucuns ont tant tenu les patiens en leurs mains, qu'ils sont demeurez morts. Il vaudroit mieux le faire à deux fois, comme sera cy apres monstré, que de les precipiter à la mort. Autrefois on n'en trouue que celle que l'on tire, encores qu'il en yeust d'autres, lesquelles se tenoyent plus hault, comme bien souuent m'est aduenu. Or pour connoistre s'il en y a d'autres à la pierre, fault entendre qu'elle est plus vnue d'un costé que d'autre : à cause que quelque fois, & bien souuent, se touchent, & principalement, quand elles descendent ensemble au col de la vessie. qui est cause de les rendre vnies & cōmunement plus d'un costé que d'autre, comme i'ay veu par plusieurs fois : lequel presage est fort certain. D'auantage qu'en ayant tiré vne, la douleur neantmoins continue, comme auparauant. Et les indices de pierre tant par la douleur que la difficulté de l'urine perseuerent : toutesfois à cause que la playe est ouuerte, l'urine passe plus facilement par quelques iours sans tant de douleur, voire quelque fois iusques à ce, que la playe est presque consolidée : puis apres est à recommencer. Bien est vray, que quand la pierre se vient appuyer sur l'ulcere, que ce ne se peut faire sans douleur. Ayant donq entendu & connu qu'il y peut encores auoir pierre, il fault essayer la tirer si le patient est exempt de fieure, & autre chose n'empesche. car le plus souuent elles se viennent rendre d'elles mesmes à la playe, soit qu'il en y ait vne ou plus. Alors est facile les tirer hors par la playe mesme. Et si d'elles mesmes ne descendoient bas, & que ne se presentassent, il fault vser des moyens que auons dit cy deuant pour les y amener : & ne fault craindre de comprimer mediocrement le petit ventre. car le danger d'inflammation est hors, pource que les muscles & parties sont distendues, comme i'ay experimenté souuēt. Apres auoir tout fait pour obuier à l'inflammation, qui se fait le plus souuent à la vessie, à

cause de l'incision, comme autrement ne peult estre, que n'en y ayt quelque peu, il sera bon y siringuer quelques choses propres pour seder la douleur, & empescher ladite inflammation. Toutefois se fault garder de faire iniectiion en la vessie des choses froides, considerant que icelle est composée de membranes nerueuses, estant ainsi que les nerfs n'ont plus grand ennemy que le froid. Les anodins serót meilleurs, que les froids, à cause de leur temperaturé. Il fault aussi regarder, que les medicamens ou injections ne soyent chauds, de peur d'augmenter l'inflammation & douleur. Lesquels medicamens & remedes seront mis en la fin & dernier Traité de la pierre, tant par bains que fomentations, & cataplasmes, linimens, & autres remedes à ce propres.

Autre façon de tirer la pierre avec tenailles.

POUR venir à ceste seconde maniere de extraire la pierre, fault que le corps soit préparé comme dessus, et le patient situé de mesmes, puis faire l'incision au lieu mesmes. mais auant il conuient auoir vne canule d'argent, laquelle sera de la figure de la sonde, hors mis qu'elle doit estre ouuerte au dehors, & d'assez large ouuerture, & non par trop seulement : afin que le rasoir y puisse entrer & suyure le long d'icelle, comme elle est icy figurée. Il fault passer ladite canule par la verge, comme auons dit cy dessus de la sonde, n'estant besoin qu'elle soit du tout si longue que la sonde, mais qu'elle soit assez forte, l'ayant mise iusques au vuide de la vessie, vn seurteur ou autre là tiendra ferme, en l'appuyant aucunement en bas contre la commissure ou perineum, estant toutefois tourne vn peu vers le costé droit : afin de faire l'incision droitement dedans icelle : & afin aussi que le rasoir y entre plus facilement, d'autant qu'il vient aucunement du costé gauche, là ou communemēt est faite l'incision. Estant le rasoir à l'endroit de ladite canulé, il fault copper le col de la vessie sur la cavité d'icelle. Ce fait, on trainera ledit rasor par dedans icelle, lequel comme auons dit par cy deuant, coppera des deux costez, selon qu'il est figuré : ayant fait assez bonne ouuerture vers la capacité de la vessie, & contre la verge, grande dy-ie selon la pierre. Iagoit que la moindre incision soit la meilleure, pourueu que la pierre y puisse passer : & pa-

reillement ne soyt par trop petite tant qu'il faille que la pierre sorte avec grande violēce. Bref il est requis de tenir mediocrité. Cela fait, il fault oster le rasoir, & prendre le gorgeret, tel qui est dessus figuré : & de sa pointe aller trouuer la canule, mettant la pointe du gorgeret dedans icelle. Pource fault baisser la canule du deuā, ce que fera celuy que la tient, afin qu'elle s'sleue en haut au dedans, pour donner par ce moyen au gorgeret plus facile entrée dedans la vessie. Alors fault pousser le gorgeret, en suyuant tousiours de sa pointe la canule, iusques à tant que ledit gorgeret sorte hors la fente de la canule. Estant donques le gorgeret dedans la vessie, & bien assuré qu'il y est : fault retirer la canule dehors : demeurant le gorgeret bien auant dedans la vessie : puis on prendra les tenailles cy apres figurées lesquelles on mettra dedans le gorgeret, & par la cavitē d'iceluy on les poussera iusques en la capacité de la vessie. Ou estāt l'on retirera le gorgeret dehors, & maniera les tenailles en les ourant & fermant iusques à ce quand la pierre soit dedans : & que les tenailles l'ayent empoignée. Ce qui se pourra connoistre quād les tenailles ne se iointront derriere à la main : & au contraire, n'ayant rien prins, se iointront comme parauant, dequoy le maistre se prendra garde, afin de ne les retirer vuides, pour puis apres recommencer, suyuant ce qu'en a esté dit dessus : qui seroit chose facheuse. Estant la pierre dedans, il fault tenir ferme la tenaille, en la tirant hors, avec la plus grāde d'exerité, que faire se pourra, & tournant aucunement ça & là. Or estant la pierre tirée, faudra proceder au reste suyuant la manière enseignée cy dessus. Les tenailles cy apres figurées de mon inuention, sont fort propres. Car encores qu'elles s'eslargissent fort part deuant : ce neantmoins elles demeurent estroites au derriere en telle sorte, qu'elles ne font point d'oppression ou lesion à la chair, d'autant qu'elles ne la dilatēt point par trop. Et par ainsi il n'est ia besoin de faire si grande ouuerture, comme quand on vse des autres tenailles, desquelles n'ay point monstré la figure : d'autant que sont fort vsitées, & conncües d'un chacun, & principalement des gens de nostre art. Lesquelles s'eslargissent tout du long, qui cause plus grand flux de sang, pour raison de la violence qu'elles font à la playe. Le trouue ceste façon de proceder assez facheuse, pour autant

qu'il fault necessairement faire grande ouuerture, & demeurer long temps à faire l'operation, & nommement, si la pierre est grosse ou roigneuse : laquelle chose est à craindre, pource que la force du patient peut estre prosternée ou bien demeurer entre les mains du maistre, tant à raison de la douleur, que de la grande fluxion du sang. car on ne peut empescher ces choses. Je trouue meilleur (comme j'ay fait plusieurs fois) de le faire en deux fois, ainsi que monstreray au chapitre suyuant, au plaisir de Dieu : lequel fault prier vouloir conduire l'œuure.

Autre façon de tirer la pierre plus propre que les autres, d'autant qu'elle est sans grand peril & douleur, inuentée par l'Auteur.

CHAP. XXXIII.

PREMIEREMENT il fault que le patient soit préparé, comme dessus, & apres faire l'incision en la mesme façon ne plus ne moins qu'auons dit au chapitre precedēt : & l'ayant faite selon la pierre, comme a esté dit, on pourra mettre vne tente si l'on veult, telle qu'auons enseignée cy deuant : afin d'empescher la glutination : & coagulation du sang n'estant besoin de rien tenter apres la pierre pour ceste fois, si d'auenture ne se presentoit d'elle mesme à la playe. Que si elle se presentoit fort basse, on la pourroit tirer avec tenailles ou crochets, desquels les crochets seront plus idoines, si la pierre est vnüe. Laquelle n'estant point basse, ou par trop grosse, apres auoir faite l'incision, fault mettre les appareils dessus la playe, avec bandages, comme dessus. Apres quelques iours quand on connoistra le patient estre en bõne disposition, & sans fiure (laquelle ne luy aduiendra moyennant qu'il tienne bon regime) si la pierre se presentoit à la playe, comme le plus souuēt fait, ainsi qu'ay par plusieurs fois expérimenté, faudra la tirer suyuant la maniere exposée. Mais ne se presentant point, il a fault faire descendre en mettant les doigts au fondement, & en comprimant le petit ventre, comme a esté dit dessus, & ne fault craindre de mediocrement le comprimer, d'autant que les parties sont distendues, à raison que l'urine s'est tousiours euacuée, & le patient à vsé de bonne diete, & aussi que la force n'est pas si grande, ne la violence pour si fort tendre les muscles de

l'epigastre : & aussi puis que l'inflammation, si point en y a eu, est passée communement, & ne reuiet plus, comme i'ay maintefois experimēté. Ayant donq mené la pierre au col de la vessie, il la fault tirer avec tenailles ou crochets comme a esté dit. Et si la pierre estoit si grosse, qu'elle ne peut passer par le col de la vessie, sans copper le corps de la vessie (laquelle chose est fort à craindre pour les raisons dessusdites, qui est la cause que tantost s'ensuyt inflammation, & bien souuent la mort, ou bien grands accidens : ioint, que la playe ne consolide point) il fault adonq se garder de copper la vessie hors de son col : là ou il y a graisse & muscles. Mais estant la pierre par trop grande, il fault auoir de tenailles incisiues cy apres figurées de mon inuention, lesquelles sont à ce fort propres, pourueu qu'elles soyent bien aguisées, & assez fortes pour rompre la pierre dans la vessie, à vne, ou plusieurs fois, selon la disposition du patient : comme auourd'hui vn peu, & au bout de deux ou trois iours y retourner, en y appliquant tousieurs remedes idoines à seder la douleur, & empescher l'inflammation : ayant tousiours esgard, à ne les appliquer actuellemēt froids. Ainsi est beaucoup meilleur de la tirer par pieces, estant rompue, que de la laisser, & qu'il faille que le patient meure en telle langueur, car de deux maux il fault tousiours eslire le moindre. Je me suis trouué autrefois n'ayant point de ces tenailles n'y autre moyen, pour tirer la pierre qui se presentoit si grosse, que i'ay esté lors contraint la laisser ne l'ausant aucunement entreprendre, craignant qu'ils ne mourussent entre mes mains, ausquels aussi conuenoit necessairement mourir avec grand trauail & peine : & à tels personnages est plus expedient la mort que la vie si miserable. Je n'ay point trouué, comme de fait on ne trouue, (au moins que ie sache) aucuns Docteurs auoir escrit ceste façon de faire. Et de fait, aucuns le trouuent estrange de laisser son patient ainsi en repos l'espace de cinq ou six iours plus ou moins apres auoir fait l'incision. Bien est vray que gens de bon iugement, quand ils ont entendu les raisons, sont esté satisfaits, ou le doiuent estre. Or l'expérience le m'a enseigné m'estât quelque fois aduenu, que apres auoir tiré vne pierre, le patiēt estoit tant debile, que ie n'ausoye entreprendre de le plus prest ser, pour sauoir s'il y en demeuroit point d'autre, creig-

nant qu'il ne mourust entre mes mains. Or ayant mis les appareils sur la playe, & bendé comme auons dit dessus, ie le laissoye iusques à ce qu'il fust plus fort, & bien souuent ay trouué que en changeant le premier appareil, ou apprest, que la pierre qui estoit demeurée, estoit sortie du tout dehors d'elle mesme, & principalement, quand elle estoit plus petite que cela qui auoit esté tirée. Autrefois la pierre d'elle mesmes'estoit rendue à la playe: tellement, que l'on la pouuoit voir: mais d'autant que la playe du dehors est tousiours plus petite, que celle du dedans, ou doit estre, la pierre estoit là arrestée: tellement que bien souuent en sortoit vne patrie dehors. Dauantage, si la pierre estoit plus grosse que la premiere, elle venoit iusques au col de la vessie sur la playe, & leur dōnoit douleur comme les autres. Ce sont les vnies qui descendent volontiers d'elles mesmes, & les autres non pas tant, & quelquefois rien. Or si la pierre ne s'y estoit présentée, on la fera facilement descendre, en mettant les doigts par le fondement, en comprimant le petit ventre, comme a esté dit. Laquelle chose ne fault craindre à faire. Quelquefois ie pensoys estre resolu, qu'il n'y en auoit plus: neantmoins au bout de quelques iours i'experimentoye le contraire, à raison de la douleur, qu'il sentoit, comme au parauant, & des autres signes exposez. Voyant cela, ie estoys contraint pour mon honneur & deuoir de la tirer, ce que ie faisoye plus aisément que à la premiere fois, & sans grande douleur au patient. Voyant ces choses, & les ayant par plusieurs fois pratiquées, i'ay colligé ceste methode contenue en ce chapitre: assauoir qu'apres l'incision faite de ne tirer la pierre tout à la fois si d'elle mesme ne s'y presentoit, ains attendre comme auons dit cy dessus. le reciteray ce que vne fois m'est aduenu voulant tirer vne pierre à vn enfant de deux ans ou environ: auquel ayant trouué la pierre de la grosseur d'un œuf de poule, ou peu pres, ie fey tout ce que ie peu pour la mener bas: & voyant que ie ne pouvoye rien auancer par tous mes efforts, avec ce, que le patient estoit merueilleusement tormenté, & aussi les parens desirans qu'il mourust plustost que de viure en tel trauail: ioint aussi, que ie ne vouloye pas qu'il me fut reproché de ne l'auoir seu tirer (qui estoit à moy grand folie) ie delibéray avec l'importunité du pere, mere, & amis, de coper ledit

enfant par dessus l'os pubis, d'autant que la pierre ne voulut descendre bas, & fut coppé sur le penil un peu à costé & sur la pierre. car ie leuoyz icelle avec mes doigts, qui estoyēt au fondement, & d'autre costé en la tenant subiette avec les mains d'un seruiteur, qui comprimoit le petit ventre au dessus de la pierre, dont elle fut tirée hors par ce moyen, & puis apres le patient fut guarý, (nonobstant qu'il en fut bien malade) & la playe consolidée : combien que ie ne conseille à homme d'ainsi faire ; ains plustost vser du moyen par nous inuenté ; duquel nous venons de parler, qui est conuenant, plustost que de laisser les patiens en desespoir, comme ceste maladie porte.

De la cure de la pierre aux femmes.

CHAP. XXXIII.

LES femmes & filles ont pierre en la vessie, comme les hommes & enfans ; & de semblables couleurs, que celles des hommes. Elles ont aussi les mesmes signes. Ausquels on pourra auoir recours pour la connoissance d'icelles. Il est au reste plus facile de trouuer la pierre aux femmes qu'aux hommes : d'autant qu'on peut mettre les doigts en la matrice ainsi qu'aux hommes dans le fondement. Or la cause pourquoy il est plus aisé, car, que le col de la matrice est ioignant le col de la vessie, qui est assis sur celuy de la matrice. Et si est aussi plus court aux femmes qu'aux hommes : avec ce, qu'on peut plus facilement trouuer la pierre, si elle y est avec la sonde, la passant par le conduit de la vessie ; n'estant ia besoin, que la sonde soit ainsi pliée, comme celle des hommes, ains à peu pres toute droite : ny pareillemēt qu'elle soit si longue. Ie suis bien asseuré qu'il y a plusieurs maistres de nostre art, au moins se disans tels, qui ne sauroient discerner l'orifice de la vessie, ou celuy de la matrice : ains mettront souuent la sonde en la matrice au lieu de la mettre en la vessie. Le col de laquelle est, comme auons dit cy deuant de celuy de la matrice, assez petit, s'il n'est dilaté. Touchant aux ieunes filles, on ne peut pas ainsi proceder, assauoir de mettre les doigts en la matrice sans faire violence ; combien que selon la grandeur (touchant la sonde, se peut mettre à l'une et à l'autre. Car puis

qu'elles ont sept ou huit ans, il s'y pourroit mettre le doigt. Ne le pouuant donq, fault proceder comme aux enfans, assauoir par le fondement. Et se fault prendre garde de ne inciser le col de la matrice, lequel est entre le fondement & le col de la vessie. Il fault aussi en icelles faire l'incision tout ainsi qu'aux enfans, & vser de mesme procedure. Laquelle bref est tousiours plus aisée aux femmes. Car soit par mettre le doigt ou doigts en la matrice ou fondement, on trouuera facilement la pierre avec iceux, soit par la sonde ou autrement: & aussi aux ieunes filles avec la sonde est fort facile à la trouuer; & avec les doigts aux femmes la mener bas, moyennant qu'elle ne soit par trop grosse, que quand bien ainsi seroit, tousiours est il plus facile par trop qu'aux hommes. Touchant à la cure, il fault faire l'incision ne plus ne moins qu'auons dit aux hommes & enfans, assauoir au costé du col de la vessie, ou se vient rendre le col de la matrice. Il conuient se prendre garde de ne coper le col de ladite matrice, d'autant que les deux cols sont ioignants, puis proceder au reste, comme auons monstre cy dessus à l'extraction de la pierre aux hommes, & enfans, assauoir en faisant descendre la pierre iusques au col de la vessie, & la tirer avec crochets ou tenailles comme auons dit. Que si elle estoit trop grosse, la fault rompre avec tenailles incisives bien subtiles, car si elles estoient trop grosses, elles feroient oppression aux muscles, lesquels empeschent que l'urine ne sorte sinon volontairement. Avec ce, il fault considerer qu'elles ont le col de la vessie plus court que les hommes; qui cause qu'on ne peult, & ne doit faire si grande ouuerture. car la faisant grande, fault necessairement que le corps de la vessie soit coppé, ce qui est grandement à crainde pour les causes prealleguées, car en ce faisant pour le moins l'urine coulera tousiours par là de soy mesme; qui est chose facheuse, hors mis plus grands inconueniens, comme est dit, soit pour auoir coppé les muscles ou les lieux membraneux de la vessie; laquelle ne se peult puis apres consolider. Parquoy il y fault proceder prudemment pour bien faire son deuoir, & la tirer tant bellement & subtilement qu'il sera possible. Ceste procedure est trop meilleure, que celle de laquelle aucuns vsent, assauoir avec vn dilatoir: lequel ils passent par le conduit de la vessie iusques à ce, qu'ils sont à la ca-

pacité d'icelle : & lors ils delatent le col, tant qu'ils puissent tirer la pierre pour la dilatation, laquelle fault que soit grande : d'autant que le dilatoir occupe vne partie de l'ouuerture, là ou fault que la pierre passe. Lesquelles choses ne se peuuent faire sans rompre les fibres du muscle, qui retient l'urine : tellement, que de toute leur vie l'urine sort par là, sans leur congé, qui est fort facheux : combien que ce soit plus supportable que d'auoir tousiours la pierre pour endurer tel torment. Toutefois si la pierre n'estoit gueres grosse, assauoir comme pourroit estre vne noix muscade, ou enuiron, peu plus, peu moins, & selon que la pierre est ou roigneuse ou viue. Car l'unie pourra passer plus grosse, que la roigneuse pour les raisons exposées. Considerant aussi, que le col de la vessie des femmes est plus court & plus large, que celui des hommes. Lesquelles choses se pourront faire sans incision avec le dilatoir, tel qui est icy figuré. Ayant mis le dilatoir, & deüement ouuert selon la pierre, fault aller prendre icelle avec telles tenailles que dessus, ou autres. Or ce pendant qu'on fait l'operation, il est requis tenir la pierre par derriere avec les doigts au col de la matrice, si c'est femme : & au fondement si elle est ieune, afin qu'elle ne recule, & aussi pour la tenir plus ferme contre l'instrumēt, & quelque seruiteur tiendra le dilatoir ouuert. Et le maistre de l'autre main prendra la pierre avec les tenailles, comme est dit, & la tirera hors tout bellemēt, en branlant ça & là. Le trouue meilleur tenāt ainsi la pierre subiette, comme auons dit, prendre la canule & tariere, laquelle est propre pour tenir la pierre, quand elle est à la verge, suyuant ce qu'en a esté dit en son lieu : puis mettre ladite canule au col, on conduit de la vessie, iusques à ce qu'elle touche la pierre : En apres passer la tariere par dedans, pour aller percer la pierre, laquelle estant ainsi percée, on essayera la tirer en tirant la canule, & tariere ensemble. En ce faisant plustost tirer fort la canule que la tariere, à cause que la canule en sortant tire la tariere & la pierre, avec l'ayde qu'on dōne par derriere avec les doigts, qui sont en la matrice, ou au fondement : & par ce moyen n'est ia besoing faire si grāde ouuerture, que avec le dilatoir. Pource que default ce, que le dilatoir peut contenir &

empescher, & aussi les tenailles ou crochets. Ces façons de faire sont fort propres, principalement quand les pierres se trouuēt vnies. car les autres sont à craindre. Apres ces choses, fault proceder à la guerison comme aux hommes, en vsant d'iniectiōs ou autres remedes pour empescher l'inflammation, douleur, & accidens qui y peuuent suruenir.

DESCRIPTION

DESCRIPTION OF THE PLATES.

EXPLANATION OF PLATE I.

A lateral view of the male pelvis. (1)

That the relative situation of the parts may be understood, I have drawn a line from the ensiform cartilage downwards, marked A. I have also drawn an horizontal line, from the line A to the apex of the os coccygis, marked B. By means of these lines, we may understand the relative situation of the parts to be described.

In making this preparation, an incision was made through the integuments, muscles, bones of the pelvis, &c. ; and the obturator internus, the fascia of the obturator internus, and the levator ani, the prostatici of Winslow, the arteries, nerves, &c. &c. are removed. In consequence of this, great allowance must be made, as the bladder, prostate, &c. &c. are unsupported. (2)

A. A line drawn from the ensiform cartilage.

B. A line drawn from the line A. to the apex of the coccyx B.B.

1. Part of the pubis, sawed near the arch.
2. An arrow pointing to the arch of the pubis.
3. The tuberosity of the ischium on the left side.
4. The os coccygis.
5. The os sacrum.
6. Part of the os ilium.
7. Sacro iliac symphysis.

8. Last lumbar vertebra.
9. An inverted arrow, showing the common integuments, the pyramidal rectus, obliquus externus, internus, and transversalis muscles, as also the fascia transversalis.
10. An arrow pointing to the linea alba.
11. The bladder in a contracted state; that part not covered by peritonœum.
12. The entrance of the left ureter.
13. Part of the vesiculæ seminales on the left side.
14. The neck of the bladder.
15. The urethra passing through the prostate gland.
16. The prostate.
17. The rectum connected to the bladder and prostate.
18. The anus.
19. The triangular ligament.
20. The situation of the membranous part of the urethra.
21. The situation of the bulb of the urethra.
22. The bladder connected to the pubis by cellular substance.
23. The situation of the lateral ligament of the bladder. (3)
24. 1st Marking the course of the peritonœum attached to the fascia transversalis of the abdomen. (4)
- 2d 24. Covering the upper part of the bladder.
- 3d 24. The back part of the bladder.
- 4th 24. An arrow pointing to the fold in the peritonœum.
- 5th 24. The cul de sac.
- 6th, 7th, and 8th 24. The peritonœum covering the rectum.

9th 24. Meso-rectum.

25. That part of the rectum uncovered by the peritonæum.

26. Ligamentum cutaneum ossis coccygis.

27. The bladder distended with urine.

28, 29, and 30. Mark the method of passing the sound or catheter into the bladder. (⁵)

A. The first stone extracted by the High Operation since the time of Franco, by Douglas. (See page 78.)

B. Calculi extracted by Macgill. (See page 104.)

C. Calculus extracted by Dr. Souberbelle by the High Operation.

DESCRIPTION OF PLATE III.

Fig. 1. The director.

Fig. 2. The sonde-de-dard. A. the cannula ; B. part of the stilet, the other part being concealed in the cannula.

Fig. 3. A. the sonde-de-dard ; B. the stilet passed from the sonde-de-dard ; C. the part that is passed through the bladder, an arrow pointing to the groove in the stilet.

Fig. 4. The trocar bistouri.

Fig. 5. The lithotome cachée.

Fig. 6. The suspensor of the bladder.

Fig. 7. Franco's forceps closed.

FRANCO'S INSTRUMENTS.

The cannule, rasoir, and gorgeret are seen in Plate 2, page 19.

I. A dilator of the urethra. See page 20.

II. A tenailles à quatres.

III. Double bistouri cachée.

IV. A fondamental. See page 21.

A bodkin extracted from the bladder of a girl by Mr. Proby (see page 68). A. to B. the blunt end of the bodkin; B. to C. the part which was out of the bladder, in the pelvis.

DESCRIPTION OF PLATE IV.

Description of Frère Côme's Forceps.

In cases of large calculi, Frère Côme found it necessary to use large forceps, somewhat like those used in midwifery. Fig. 1. forceps shut. Fig. 2. the blades of the forceps separated. One of the blades of the forceps is to be insinuated under the stone, the other is to be passed under the bladder, on the superior part of the stone; the forceps are then to be locked, and the stone withdrawn.

The Gorgets commonly used in the Operation of Lithotomy.

The gorget, Fig. 3, is strongly recommended by Scarpa. This gorget is well contrived to prevent the pudical artery from being wounded; but the prostate is but partially cut, the opening being no more than is seen at A. (⁶)

Fig. 4. It will be seen that a bold incision is made by means of this gorget, through the prostate and side of

the bladder : yet the wound will be no more than is represented in the line A. to B.

In using this gorget there is great danger of wounding the pudical artery, particularly if the gorget is held in an horizontal position ; and if it is held obliquely downwards, there is danger of wounding the rectum.

Fig. 5. The cutting part is from A. to B. In using this gorget there is not so much danger of wounding an artery, as in using the gorget No. 4 ; but in the use of this gorget there will be a considerable laceration.

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NOTES.

(¹) *Usual Dimensions of the Pelvis.*

	Males.		Females.	
	Inches.	Lines.	Inches.	Lines.
Distance between the anterior superior spines of the ossa innominata...	9	0	11	0
Between the ilia at the superior aperture	4	6	5	6
Between the sacrum and pubis	4 or 5		4	9
From the sacro iliac symphysis obliquely to the opposite pubis	4	2	5	0
Between the tuberosities of the ischia	3	2	4	0
Between the apex of the coccyx and pubis	3	0	4	6
Depth of the symphysis pubis	1	10	1	6
Distance of the apex of the coccyx from the upper edge of the sacrum	4	10	5	0

However, the pelvis varies in different subjects : so much so, that an eminent practitioner observes :—

“ When you find the tuberosities of the ischia very nearly approaching each other, it is best not to perform the operation of Lithotomy.”

(²) I have made a series of preparations, to illustrate the various operations for lithotomy, which are preserved by means of corrosive sublimate.

The drawing was made by Mr. Paris, from one of these preparations, who accurately measured the different parts.

(³) *Description of the Fascia.*

Opposite the lower part of the bladder there is a fascia attached to the inner surface of the obturator internus; the anterior extremity of this fascia is inserted on one side of the pubis, and the posterior part to the middle of the sacro ischiatic ligament.

(⁴) The anterior peritonæal coat covers the posterior convex side of the bladder; the peritonæum is continued from the upper part of the bladder, and is attached to the fascia which lines the abdominal muscles. Between this fascia and the peritonæum we observe the two obliterated umbilical arteries, and from the superior part of the bladder the urachus. These parts being connected with the umbilicus, serve as suspensory ligaments to the bladder. That part of the peritonæum which covers the posterior part of the bladder, forms a transverse fold when the bladder is contracted, which disappears when the bladder is distended. The peritonæum, descending to the lower part of the bladder, forms a cul de sac; it is then passed backwards towards the rectum, which it receives as in a sling, and is attached on either side a little to the left of the sacrum, forming what is termed meso-rectum. The peritonæum is then reflected from the sacrum to the inner part of the pelvis, and is continued to the sides of the bladder.

(⁵) *Method of passing the Sound or Catheter.*

The sound or catheter is usually introduced with its convexity towards the abdomen, and the point of the catheter is gently passed down, the penis being drawn upwards with the right hand till the sound or catheter is stopped by the curvature of the urethra, as is seen in the plate. 2. The catheter is turned upwards towards the umbilicus. 3. It is gently pressed downwards, and brought in nearly a horizontal position, with the concave side upwards, and passed upward through the prostatic part of the urethra into the bladder.

There is sometimes difficulty in passing the sound when it comes to the prostatic part of the urethra; but by depressing the catheter, and then elevating it a little, by passing the finger into the rectum, it is frequently introduced into the bladder. A flexible gum catheter, when it comes in contact with the prostate, by pressing the catheter, and withdrawing the stilet (which should be silver), the catheter will frequently pass into the bladder. However, if there should be any degree of inflammation or spasm, it will be impossible to pass the staff or catheter without injuring the urethra; and in a case of this kind, it would be highly imprudent to persevere, and the usual means for the cure of spasm and inflammation should be resorted to.

(⁶) The Lateral Operation, though executed with the greatest precision, does not exempt the surgeon from dilating, to a certain degree, the orifice of the bladder and cervix of the urethra; the dilatation of those parts, however moderate, being always necessary, even where the calculus is of middling size. The orifice of the blad-

der in the adult dilates almost spontaneously to the diameter of five lines, as may be found by introducing the point of the finger into the cavity of the bladder, through the neck of the urethra. The lateral incision, within proper limits, divides the body and base of the prostate gland to the depth of four, or at most five lines, forming with the five, to which, as it has been stated, the orifice of the bladder naturally yields, an aperture of ten lines; but in an adult, a stone of ordinary size and oval figure is sixteen lines in the small diameter, to which must be added the thickness of the blades of the forceps, consequently, even after the incision has been made with the most scrupulous exactness, the stone, though of moderate size, cannot pass out of the bladder unless the dilatation of the base of the gland and orifice of the bladder be carried to the extent of nearly eight lines beyond the size of the aperture made by the knife. But if, in order to avoid distending the parts to the extent of eight lines, the base of the prostate gland, together with the orifice of the bladder, and a part of its fundus, be divided to a depth equivalent to it, the event must necessarily be an effusion of urine into the cellular membrane between the rectum and bladder, and consequently suppuration, gangrene, fistulæ, and other serious evils.—*Vide Scarpa's Memoir, translated by J. Briggs, 1816.*

THE END.



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