A probationary essay, on the extraction of calculi from the urinary bladder, containing some account of certain methods that have been recently proposed. Submitted, by authority of the president and his council, to the examination of the Royal College of Surgeons of Edinburgh, when candidate for admission into their body, in conformity to their regulations respecting the admission of ordinary fellows. March 1825 / [William Thomson].

A

PROBATIONARY ESSAY,

ON THE

EXTRACTION OF CALCULI

FROM THE

URINARY BLADDER,

CONTAINING SOME ACCOUNT OF CERTAIN METHODS THAT HAVE BEEN RECENTLY PROPOSED;

SUBMITTED,

BY AUTHORITY OF THE PRESIDENT AND HIS COUNCIL,

TO THE EXAMINATION OF THE

Royal College of Surgeons of Edinburgh,

WHEN CANDIDATE

FOR ADMISSION INTO THEIR BODY,

IN CONFORMITY TO THEIR REGULATIONS RESPECTING THE ADMISSION OF ORDINARY FELLOWS,

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BY

WILLIAM THOMSON,

MARCH 1825.

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William Brown.

TO

WILLIAM SOMERVILLE, M. D.

PHYSICIAN TO THE ROYAL HOSPITAL, CHELSEA;

AND

PRINCIPAL INSPECTOR OF MILITARY HOSPITALS.

My Dear Sir,

IN inscribing this little Probationary Treatise to You, I am desirous to express how highly I value the friendship of one of my Father's most esteemed Friends, and how grateful I feel for the numerous acts of kindness which I have received from you.

With the warmest wishes for the health and happiness of yourself, and of those who are nearest and dearest to you, I remain,

with much respect and regard,

yours very truly,

WILLIAM THOMSON.

5. George Street, Edinburgh,
March 1825.

REMARKS

ON

EXTRACTING URINARY CALCULI.

THE classical "Traité de la Taille" of M. DESCHAMPS, published in 1796, contains a summary of almost all that had been learned respecting Urinary Calculi, and their extraction from the urinary organs, previous to the time at which it was written. A work, which should exhibit a view of the knowledge that has since been acquired upon these subjects, would form a valuable supplement to this treatise; and, if executed in the same spirit, would render it almost unnecessary, in seeking for information on this branch of Surgery, to refer to any other authorities. Such a work, however, would require to be executed by one who enjoyed abundant opportunities of dissecting the parts

concerned in the operation of Lithotomy, on the dead subject; and who had had frequent occasion to put the knowledge he had thus acquired to the test of experience on the living body.

Notwithstanding all the pains that have been taken, in endeavouring to improve the operation of Lithotomy, and the very great success which some individuals have obtained in the performance of it, the average results of the cases operated on shew that it is still attended with great risk to the life of the patient. We hear, it is true, every now and then, of individuals who have cut a large number of patients for the stone, with a wonderfully small proportion of deaths; but to most of these operators, I believe, the same remark is applicable, which Dr MARCET has made in allusion to one of the Surgeons to the Norwich Infirmary, who, though "he 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 individual, however, to whom such a run of good fortune occurs, flatters himself with the persuasion, that he owes it to some superiority in the instruments he employs, in his mode of operating, or in the preparatory or subsequent treatment of his patients. One lithotomist attributes the success of his operations to his having exchanged the scalpel for the gorget; another, to his having replaced the gorget by the scalpel.

Within these few years, several proposals have been made, which have had for their object to diminish the dangers arising from Calculus in the Bladder. Some of these proposals have consisted of modifications of the operation of Lithotomy; others, of means by which calculi may be removed from the bladder, either entire or after having been broken down, without the division of the parts. Conscious that I am not qualified, by the extent of my own experience, to correct any errors, to solve any doubts, or to supply any deficiencies, in the principles or practice of surgery, it has occurred to me, that some account of those proposals might form a suitable topic for the Probationary Essay which it is my duty to submit to the Royal College of Surgeons.

RECTO-VESICAL LITHOTOMY.

A new mode of performing the operation of Lithotomy on the male subject, has lately been proposed upon the Continent of Europe. It consists in making the necessary incisions through the anterior part of the lower extremity of the Rectum, and the posterior part of the Neck of the Bladder, and has hence been termed the Recto-Vesical operation of Lithotomy.

The Peritonæum, as is well known, after being re-

flected backwards from the pubes, or, when the bladder is distended, from the abdominal muscles, covers a large portion of the superior fundus of the bladder; sinks a little way down between this viscus and the rectum, till it reaches to, in general, about an inch from the base of the prostate gland, and about four inches from the anus; when it again rises up on the rectum and back part of the pelvis. It appears, from this statement, that there remains below what has been well termed by the Professor of Midwifery in the University, the Diaphragm of the Pelvis,—a portion of rectum, and a portion of bladder in juxta-position, which may be divided without the sac of the peritonæum being cut into, and consequently, without incurring any risk of the urine or fæces escaping into that cavity. It is by an incision in this limited space, therefore, the seat of one of the operations which surgeons have been accustomed to perform for puncture of the bladder in cases of complete obstruction of the urethra, that it is proposed, by the favourers of the new operation of Lithotomy, to extract the calculus.

M. Martin de Saint Genis, physician at Lyons, has stated, in a Memoir *, published in November 1822, that this operation occurred to him thirty-six years before; and, that he performed it on

* Journal Complementaire du Diction. des Scienc. Medic. tom. ix. p. 225.

the dead body at the Hôpital de la Charité at Lyons in 1786, in presence of several witnesses. The Society of Medicine at Lyons, as appears from a communication addressed to M. MARTIN, by my friend Dr MONTAIN, adjudge to him the merit of being the first who proposed this mode of performing Lithotomy. M. MARTIN's suggestion, however, seems to have been altogether lost sight of, and the recto-vesical operation of Lithotomy was again proposed in 1816 or 1817, by M. SANSON of Paris, in his Inaugural Dissertation. It was first performed on the living subject, by the celebrated Parisian surgeon, M. DUPUYTREN. Professor VACCA BERLINGHIERI of Pisa, has been its most zealous supporter: the venerable SCARPA, and Professor GERI of Turin, its principal opponents.

It seems somewhat remarkable, that the idea of performing Lithotomy in this manner should not have been suggested to surgeons at an earlier period by the cases upon record, of men in whom Calculi have worked out a passage for themselves, by occasioning ulceration of the bladder and the adjacent portion of the rectum; as well as by those analogous cases of females, in whom, by a similar cause, communications have been produced between the bladder and rectum through the vagina.

M. SANSON suggested two modes of performing

the recto-vesical Lithotomy. In both of them, the first part of the operation is the same. A grooved staff having been passed into the urethra and bladder, the surgeon is to introduce a scalpel along-side of the forefinger of his left hand into the rectum; and, in withdrawing the scalpel, with its cutting edge in the median line of the anterior surface of the rectum, the lower portion of the gut and the sphincter ani muscle, with a portion of the integuments of the perinæum, are divided. The groove of the staff may then be discovered through the membranous portion of the urethra and the coats of the bladder, by the nail of the left forefinger, when the second incision is to be made. In one of M. SANSON'S modes of operating, this incision is confined entirely to the portion of the bladder between the recto-vesical doubling of the peritonæum, the vesiculæ seminales, and the base of the prostate gland, the portion generally denominated the Trigone or triangle of the bladder. In the other, it commences from the base of the prostate gland, divides this gland and the corresponding portion of the neck of the bladder and the canal of the urethra, as far forwards as the size of the calculus may require.

In the Tables inserted in the Appendix, I have arranged the cases in which the Recto-vesical Ope-

ration has been performed, that have come to my knowledge, under three heads: 1*st*, Those in which it may be said to have been successful; 2*d*, Those in which it was followed by the formation of a recto-vesical fistula; and, 3*d*, Those which terminated in death. I trust, that the accompanying notices will be found to embrace the most material points that have been recorded concerning each case.

The advantages which M. SANSON considers the recto-vesical operation of Lithotomy to possess over those generally practised are: 1*st*, The facility and promptitude with which it may be executed, two strokes of the knife being in general sufficient for the performance of the incisions. 2*d*, The small degree of danger that arises from wounding the parts that are divided in this operation. 3*d*, The small depth of the wound affording the operator greater facilities in combating the difficulties that may arise from the size of the calculi, their position, their breaking into pieces, their being encysted, &c. 4*th*, The certainty of avoiding hæmorrhage, both because there does not exist any considerable bloodvessel on the median line, and because the wound presents the greatest facilities for the application of ligatures. 5*th*, The wound being situated in the largest part of the inferior aperture of the pelvis, viz. the space comprised between the tuberosities of the ischia and the coccyx, calculi of a larger size may be extracted by this than

by the lateral operation. VACCA has added, as an additional advantage of this mode of operation, that, from the dependent position of the wound, the urine is less likely to be infiltrated into the surrounding cellular texture, than in the lateral operation.

I. With regard to the alleged facility of the operation, it seems to have been found by several of those who have performed it, that, from the difficulty of keeping the parts upon the stretch, they are liable to yield to the pressure of the knife without being cut through; and it has likewise been found, or at least has been supposed, that, in introducing a scalpel into the rectum, and in employing the finger along which it is passed, to discover the groove of the staff, there is a risk of wounding the gut at a part not intended; and various contrivances have been had recourse to, in order to secure the gut against such an accident.

Thus, BARBANTINI, who made his incision from the perinæum to within the intestine, introduced a gorget of wood to support the parietes of the gut, and protect its posterior surface from the point of the knife, and completed the division of the parts upon this gorget. M. CAMOIN having found, in a case in which he performed this operation, that the muscles, particularly the sphincter ani, contracted violently upon his finger, thinks it would be advantageous to dilate the

orifice of the anus by a gorget, the extremity of which should be bent downwards, and held by an assistant. GERI employed a gorget $1\frac{3}{4}$ inch in diameter at its base, which he introduced 3 inches within the rectum. In one of the cases in which I saw M. JANSON perform the operation, a pair of forceps with broad blades was introduced into the anus, and the gut was dilated transversely by means of them.

VACCA highly disapproves of the use of the dilating gorget, particularly as employed by GERI; and since, in performing the operation twenty-four times, he has not found it necessary to employ any instrument for dilating or protecting the parts, it seems probable, that these purposes may, in general, be fulfilled by a skilful surgeon, without the aid of any such instrument. Should further experience shew, that an instrument for keeping the rectum dilated, and facilitating the introduction and retention of the scalpel, is desirable, the Speculum Ani, with three blades, invented by Mr WEISS, will probably be found to answer these purposes sufficiently. By means of it, the dilatation may be made gradually, and may be varied in its extent, according as the age of the patient or the laxity of the parts may allow or require.

II.—1. With regard to the parts divided in this operation, it has been alleged, that the rectum, like the rest of the intestinal canal, is a highly irritable organ, and

that its division cannot fail to occasion most dangerous consequences. But the results of the cases in which recto-vesical Lithotomy has been performed, abundantly confirm the opinion, which the previous experience of surgeons, in the operation for fistula *in ano* seemed sufficiently to warrant them in forming, viz. that wounds of that part of the rectum, situated below the level of the peritonæum, do not give rise to the same dangerous train of symptoms that is occasioned by wounds of the rest of the intestinal canal.

2. A more serious objection that presents itself to this mode of performing Lithotomy is, that it establishes a direct communication between the bladder and rectum, in consequence of which fecal matter may enter the bladder, an occurrence which, it is alleged, cannot fail to produce most dangerous symptoms; and, in the second place, the urine escaping into the rectum by the wound, its complete cicatrization may be prevented, and a recto-vesical fistula established. Such fistulæ, it is well known, when they occur spontaneously, are extremely difficult to heal.

Professor VACCA is convinced, that the passage of fecal matter into the bladder, is much more likely to occur when that mode of operation is adopted in which the inferior fundus, than in that in which the prostatic portion of the bladder, is divided; and, accordingly, he gives a decided preference to the latter mode of

operating. Of the nineteen individuals on whom he has performed the operation in this manner with success, in one only has fecal matter passed into the bladder.* This accident occurred, also, in a case operated on, upon the same plan by CAMICI, but does not seem to have greatly interrupted the cure, as the wound was perfectly healed on the twentieth day. The passage of fecal matter into the bladder, has, as appears from the tables, occurred in about seven cases in which the first mode of operating has been performed, viz. in that of CAMOIN, in the first and second of DUPUYTREN, the first of GERI, the first and second of BARBANTINI, and the first of GIORGI. It occurred also in REGNOLI'S first case, and in that of MORI, in both of which, from the size of the calculi which were found to exist, it was necessary, besides dividing the prostatic portion, to extend the incision into the inferior fundus of the bladder. It is proper to remark, that, of the sixteen cases which terminated in death that are mentioned in the third table, in one only is the urine passed by the urethra stated to have been mixed with stercoral matter.

The advantage which Professor VACCA considers M. SANSON'S second mode of operating to possess over the first, is, that the wound of the rectum is at

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* In this case a recto-vesical fistula was produced.

least an inch lower down than that of the neck of the bladder, so that the parietes of the intestine act as a kind of valve in preventing the passage of fecal matter into the bladder. In order that the wound in the bladder may be situated higher up than that of the rectum, it is only necessary, the patient being placed in the ordinary position for Lithotomy, to hold the bistoury in a direction nearly horizontal, so that it will enter these viscera obliquely.

With regard to the liability to the formation of recto-vesical fistulæ after this operation, it seems better to state what have been the results of the trials that have been made, than the arguments which either party had previously adduced to demonstrate the probability or improbability of their occurrence.

Of sixty-nine cases of recovery mentioned in Tables I. and II., thirteen, as appears from Table II., terminated in fistula,—that is, nearly one case out of five. This proportion might indeed be diminished, by subtracting the two first operations of DUPUYTREN, which were performed upon the same subject. As the fistula existed in this individual previous to the performance of the recto-vesical operation, it is more just to say, that it was not cured, than that it was caused by this operation. Since, of the remaining number, only three occurred out of the thirty-seven cases which are recorded in VACCA'S third memoir, and the remaining

eight belong to the forty-eight cases which are recorded in his previous memoirs, or in publications prior to the date of his third, we have some reason to hope, that, as surgeons become better acquainted with the manner of performing the operation, and of treating their patients subsequently to it, this occurrence will become less frequent.

That, in his practice, fistula should have occurred only in two out of nineteen cases of recovery, VACCA attributes to the precaution which he employs of rubbing the surface of the wound, almost every day after the primary inflammation has abated, with lunar caustic. This, he conceives, prevents the wound from falling into that indolent state so unfavourable to adhesion, which the trickling of the urine over its surface is apt to produce.

It has been supposed, that, by introducing dressings between the lips of the divided rectum, and thus causing the wound to heal from within outwards, it might be possible to prevent the infiltration of urine into the surrounding cellular texture, and the formation of fistula; but experience has shewn, that it is extremely difficult to retain dressings in this situation, both on account of the impossibility of applying pressure, and the liability of the dressings to be pushed inwards by the fæces or outwards by the urine. Even though it were possible to retain the dressings, their

use would be exposed to the same objections which M. DESCHAMPS has urged to this practice after lateral Lithotomy *.

Though in some cases VACCA passed an elastic catheter into the bladder by the urethra, none of the individuals who have performed this operation seem to have tried the effects of introducing a Canula into the wound for the first few days, and thus protecting its surface from the action of the urine. Several testimonies, however, highly favourable to the use of this instrument, after the lateral operation, are to be found upon record. "Some lithotomists," says M. DESCHAMPS *, "and particularly COLLOT, had adopted the use of a canula, which they placed in the bladder immediately after the operation of Lithotomy. This canula has the advantage of preventing the accumulation of blood in the track of the wound, and the consequent retention of urine in the bladder, an occurrence which is also occasioned sometimes by the spasmodic contraction of that organ. Moreover, I have observed, that the patients in whom I have employed the canula have suffered much less from the burning pain generally produced by the urine, in consequence of this fluid having a more easy issue. I therefore advise the use of it after the operation, but

* Tom. iii. p. 348. † Ibid. p. 350.

only during the first three days, after which it should be withdrawn." We learn, from an Essay published in the American Medical Recorder *, by Mr G. S. PATTISON, that Dr PHYSICK of Philadelphia has, for a considerable number of years back, been in the habit of introducing from the wound into the bladder a piece of a gum catheter, which he allows to remain; and the success of his operations has, he conceives, been much increased by the use of this instrument. Mr SHAW, in an Inquiry into the present methods of performing the operation of Lithotomy, in the Quarterly Journal of Foreign Medicine and Surgery †, and Mr LISTON, in an Essay on Lithotomy, which he has published in the last number of the Edinburgh Medical and Surgical Journal ‡, have very strongly recommended the use of the canula after the operation of Lithotomy.

It deserves to be remarked, that, in the cases in which fistulæ have formed, after recto-vesical lithotomy, only a few drops of urine have escaped by these passages, and that, too, at the time this fluid was voluntarily expelled by the urethra.

3. Another objection to the recto-vesical mode of operating, which has been much insisted on by its opponents, is the danger of wounding one or both of the

* For January 1820. † Vol. iii. p. 38. For January 1821.
‡ For January 1825.

seminal ducts, an accident which they allege could not fail to occasion impotency. It will be remembered, that one of the vasa deferentia enters the substance of the prostate gland on each side of the notch at the middle of its base, after joining at a very acute angle with the lower extremity, or cervix of the vesicula seminalis, along the inner side of which it passes. The common duct penetrates the substance of the prostate, and after forming a tube, varying from a half to three quarters of an inch in length, opens into the urethra by a small aperture on the side of the caput gallinaginis. The vesiculæ seminales are separated from one another at the base of the prostate gland, only by the vasa deferentia, and extend upwards and outwards along the surface of the bladder, so that their upper extremities are placed at a considerable distance from one another.

Vacca acknowledges, that, from the narrow space between these two canals, where they pass through the veru-montanum, or caput gallinaginis, it is very difficult, in performing recto-vesical lithotomy, to avoid wounding one of them in an oblique direction, though the dissection of some of the individuals who have died after the operation has shewn that this is not impossible. I shall not enter into the discussion which he and Scarpa have carried on with regard to the *probable* effects of such an occurrence, but content myself with mentioning, what has been stated both by

Vacca and Cavarra as the result of their experience, viz. that patients operated on in this manner have been able, after their cure, to resume their generative function without inconvenience or injury. It seems probable, too, as Vacca has remarked, that, though one duct were obliterated, the other would sufficiently perform the functions of both.

4. It has also been alleged, that the recto-vesical mode of operating exposes the surgeon to the risk of wounding the peritonæum, and that this may happen, either when, in consequence of the emptiness, or from morbid contraction of the bladder, the peritonæum sinks down lower in the pelvis than its usual level, or when this occurs in consequence of malformation. In the case operated on by Geri, in which death occurred, the peritonæum was found to have been wounded. It is obvious, that this accident is much more likely to occur in the performance of the first than of the second mode of recto-vesical Lithotomy. But to determine how far the risk of this occurrence should be considered as a fatal objection to the proposed operation, would require a more numerous series of dissections, made expressly for the purpose of ascertaining how low the recto-vesical fold of the peritonæum descends in the different periods of life, and in the various states of the bladder and adjacent parts, than is yet to be found upon record. So far as my own observation

goes, I cannot think there is any great risk of wounding the peritonæum, provided the incision in the bladder does not extend beyond the base of the prostate gland.

III. We seem to be justified in attaching considerable importance to the preservation from the risk of hæmorrhage, which the operation in the median line affords, from the great attention which practical surgeons have paid to the contrivance and description of modes of arresting both the primary and secondary hæmorrhage which is liable to occur after the ordinary operations of Lithotomy. And though we may not be disposed wholly to concur in the opinions of the two greatest operating surgeons of the present day, as stated by Mr PATTISON *, that hæmorrhage is the most frequent cause of the deaths that occur after this operation, we cannot doubt that they have had some grounds for forming this opinion. That his apprehension of hæmorrhage should have led one of these surgeons to the conclusion that the wounds in Lithotomy should be made as small as possible, and that we should trust for the extraction of the stone to the dilatation of the parts, seems to me a strong argument in favour of such a mode of operating as relieves the sur-

* American Medical Recorder, January 1820, p. 7.

geon at once from the necessity of making small incisions, and the apprehension of dividing large blood-vessels. It is to be feared, that, were the principle of making small incisions to be generally acted upon, the distinction between dilatation and laceration, if, in the present case, such a distinction actually exists, would not at all times be sufficiently kept in view.

IV. With regard to the greater size of the aperture for the passage of the calculus, which is obtained by this operation, VACCA states, that his incision is about 21 lines in length; the wound in the perinæum measuring 8 or 9 lines, and that of the intestine about an inch. The branches of the pubes at this place leave between them a space of from 20 to 24 lines; and since the soft parts surrounding the wound are capable of being dilated, he thinks it evident, that calculi may be extracted, by the recto-vesical, of a considerably larger size than can be extracted by the lateral, operation of lithotomy; and this, too, without its being necessary to divide the inferior fundus of the bladder.

Professor SCARPA seems to consider the increased size of the wound, which may be obtained by performing the recto-vesical, in preference to the lateral operation, as of little practical importance; both because

large calculi may be extracted above the pubes, and because, in his opinion, whenever a calculus has attained a very great size, the coats of the bladder are so much affected with chronic inflammation, that an operation can only hasten the death of the patient. But, in the *first* place, it is obviously impossible to ascertain before operation the exact form and dimensions of the calculus that is to be removed; and that mode of operating, therefore, should be preferred which allows of an increase of the wound, in the event of this being necessary, with the least danger of injury to the patient. Now, SCARPA has stated, that the division of the whole substance of the prostate gland, and the neck of the bladder, in the common lateral operation, is liable to occasion urinous infiltration, followed by gangrenous abscesses: whilst VACCA maintains, that, in the new operation, the wound may be enlarged without the patient being exposed to such a risk. In the *second* place, VACCA does not allow that a large calculus necessarily produces such a diseased state of the bladder as to render the operation of Lithotomy inexpedient, the figure and degree of roughness or smoothness having, in his opinion, much more influence in this matter than the size of the stone. Several cases certainly have occurred in which calculi that had attained such a size as to render it impossible to extract them entire through the incision made

in the lateral operation, have been extracted, either above the pubes, or, after being broken down in the bladder, by the perineum, and yet the patients have done well; shewing that, in these cases, the morbid alteration of the bladder either had not been produced by the large calculus, or had been cured by its removal.

OPERATIONS OF LITHOTOMY BY M. DUPUYTREN.

M. DUPUYTREN has proposed and practised a modification of the operation of Lithotomy, by which he conceives he retains the advantages that result in the recto-vesical operation from the wound being made in the median line, and at the same time frees himself from the evil consequences that may be produced by the division of the rectum. A description of M. DUPUYTREN'S mode of operating is to be found annexed to a French translation by M. GUERIN * of the papers relative to Lithotomy, which my father edited about sixteen years ago. After introducing a staff into the bladder, he commences his external incision about 2½ inches (French), and continues it to about 1 inch in front of the anus. In his second incision, he divides the bulbo-cavernous muscles, and the adipose substance that fills the space between the bulb of the urethra anteriorly, and the rectum behind. By

* 8vo., Paris, 1818.

his third incision, he divides the membranous part of the urethra, through its whole extent, from the bulb back to the veru-montanum,—that is to say about an inch in length. He next introduces the knife into the bladder, along the staff, which he then withdraws. Turning the edge of the knife upwards and forwards, towards the symphysis of the pubes, he withdraws it in that direction, so as to divide, 1*st*, the neck of the bladder, and as much of the lower part of its anterior wall as is wished; 2*d*, the upper part of the vesical extremity of the urethra, and the upper part of the prostate gland. Should the aperture thus obtained be insufficient for the extraction of the calculus, the original wound of the urethra is to be enlarged by another incision, commencing at the posterior angle of the first, and carried from above downwards, and from within outwards, towards the tuberosity of the ischium, thus dividing the inferior part of the neck of the bladder and of the prostate gland. In this incision, those parts will, it is said, be divided which hindered the extraction of the calculus, without its being necessary to increase the original wound of the integuments. By this double incision, it is obvious, the neck of the bladder, and the prostate gland, are divided, not only downwards and outwards, but also upwards, and the dimensions of the wound which penetrates the bladder, are thus greatly augmented.

Two cases are subjoined to the account of M. DUPUYTREN'S mode of operating, in which he executed it with success. Mr SHAW mentions, in the Essay to which I have already referred, his having been informed by a very intelligent foreigner, that he had seen M. DUPUYTREN cut seven patients in this manner, and that of these, five died in consequence of the lodgment of urine between the bladder and pubes. Though those who are in any degree versed in the annals of lithotomy controversies will know with how much caution they ought to receive the accounts given by one individual of the results of another's practice in this branch of surgery, yet this unfavourable statement respecting M. DUPUYTREN'S want of success in the operations he performed according to this method, seems to derive some confirmation, from his having more lately proposed a different mode of performing Lithotomy *. After dividing the membranous portion of the urethra in the usual manner, a double lithotome caché is to be introduced into the bladder. This instrument is then to be opened, and in withdrawing it, with the cutting edge of each blade directed outwards, the prostate gland is to be divided into an anterior and a posterior half. The object of performing the operation in this manner is to avoid wounding the vasa deferentia, the rectum, the transverse artery of the perinæum, and the

* Quoted in the Lond. Med. Phys. Journ., September 1824, from the Bulletin des Sciences Medicales, Juin.

arteria pudica. A child on whom M. DUPUYTREN performed this operation recovered without the occurrence of any unfavourable symptom.

ON THE EXTRACTION OF CALCULI THROUGH THE NATURAL PASSAGES.

I.—*In Women.*

Surgeons have long been aware of the possibility of dilating the female urethra to such a degree as to admit the introduction of a pair of forceps into the bladder, and the extraction of calculi of moderate size. Besides the additional confirmation which this practice has of late years received, particularly from some cases recorded in the Transactions of the Medico-Chirurgical Society of London, by Mr THOMAS *, Dr YELLOLY †, and Sir A. COOPER ‡, a very important modification of the operation has recently been proposed by Sir A. COOPER ||. Instead of the gradual dilatation of the urethra, by means of gentian root, of sponge-tent, &c. formerly practised, which requires to be borne for several hours, and during that time exposes the patient to the pain and inconvenience of retention of urine, Sir ASTLEY recommends, that the dilatation should be made by means of an instrument constructed upon the principle of the speculum ani,

* Vol. i. p. 123.
† Vol. vi. p. 574.
‡ Vol. viii. p. 427.
|| Vol. xii.

and speculum oris, and admitting of being gradually dilated by means of a stile and screw. He is disposed to believe, that, if the stone be small, the dilatation of the urethra with this instrument should be accomplished in a few minutes, as was done in one of the cases he has recorded; but that, if it be large, it will be better to dilate but little from day to day, carefully avoiding contusion, which, he remarks, is much to be dreaded.

Mr Weiss, who constructed the female urethra dilator, upon Sir A. Cooper's suggestion, has, in the Explanations of the Surgical Instruments he has invented, published three additional cases in which this instrument was employed by Mr Brodie, Mr Green and Mr Phillips. The result of each of these cases seems to have been most satisfactory.

The case of calculus extracted from the female bladder that has been related by Dr Yelloly, and several of those recorded in the Philosophical Transactions, to which he has referred, seem sufficiently to prove, that the female urethra is capable of being dilated to such an extent as will permit the passage of calculi of the largest size; and that, therefore, few, if any, cases can occur in which division of the parts will be required for the extraction of these bodies. If further experience shall confirm the hopes, which the results of the trials hitherto made seem to hold out, that when the

dilatation of the urethra is performed in the manner Sir A. Cooper has proposed, the power of retaining the urine (the loss of which forms so serious an objection to the incision of the urethra) is either not lost or speedily regained, we may then consider the operation for extracting calculi from the female bladder as brought to a very high state of perfection.

II.—*In Men.*

Although the structure of the urinary organs in man, precludes the possibility of the urethra being dilated to nearly an equal extent as the female urethra, yet small calculi have, in a considerable number of cases, passed spontaneously through this canal, whilst, in other instances, their passage has been facilitated by dilating the urethra and mouth of the bladder by means of bougies.

Prosper Alpinus has described a mode of extracting calculi through the male urethra, which he saw practised in Egypt.* The urethra, it is said, was dilated by insufflation, and the calculus pushed from the bladder into its canal by means of the finger introduced within the rectum. I owe to the kindness of Mr Benjamin Bell, the following brief description of an instrument, that was employed by a patient

* See Deschamps, v. ii. p. 271 ; or Dr Kerrison, Lond. Med. Chir. Trans. vol. xii.

of his father's, for removing calculi from the bladder; and of the mode of its application.

" The instrument is simply a catheter of silver, equal in size to number 17 or 18 of our scale. It is open at both extremities. Previous to being introduced into the bladder, the lower extremity of the instrument is plugged up by a silver nodule attached to a stilette. When the bladder was distended with urine, Mr ———, after introducing the instrument, partially withdrew the nodule, and then *fishing* about with the vesical extremity of the catheter, endeavoured to entangle a calculus in the tube; having succeeded in doing so, he allowed it to make its exit with the flow of urine. By the foregoing process he was fortunate enough to void upwards of a hundred calculi of different sizes, some of them larger than a pea, and others less than a mustard seed. The cure was complete."

But though it might occasionally be possible, by these or similar contrivances, to effect the removal of small calculi from the bladder, it is obvious, that any plan which afforded no means of ensuring the entrance of the calculi into the vesical aperture of the urethra, could not, in all cases, prove effectual, even where the calculi were of so small a size that they would pass through, provided they were once introduced into, the canal of the urethra. The frequent occurrence, however, of cases in which nume-

rous calculi of small dimensions are formed in the bladder, rendered the contrivance of some method by which they could be extracted of very great importance; and the want has been supplied by a surgeon, whose profound knowledge of his profession, and ardent zeal for its improvement, have happily kept pace with one another, and have, upon many occasions besides the present, rendered most important services to mankind.

On the 6th February 1821, Sir ASTLEY COOPER communicated to the Medico-Chirurgical Society of London, an account of a case in which numerous calculi were extracted from the urinary bladder in a male, without the employment of cutting instruments. The instrument which he employed for this purpose, was a pair of forceps, formed into the shape of a sound, the blades of which could be opened and closed, while in the bladder, by means of a stilette, thus allowing of small calculi being seized, fastened, and extracted *. In this case, eighty-four calculi were removed, the largest of which are described as having been as large as horse-beans. The removal of the calculi is said by the patient to have produced a very inconsiderable degree of pain, and that chiefly at the glans penis.

* An instrument, constructed upon a similar principle, had been proposed some time before by my friend Mr B. BELL, for dilating strictures of the urethra.

In a second communication to the same Society *, Sir ASTLEY COOPER has detailed three additional cases, in which calculi were extracted from the bladder by means of the same instrument. One of these cases occurred to Mr BRODIE. The operation was repeated about ten or twelve times, and in all about sixty calculi were extracted. These were of various sizes, a few being not larger than a pin's head, a great number of the size of ordinary peas, but of an oval shape, and some of them considerably larger. The largest measured half an inch in one diameter, and five-eighths of an inch in the other, and had four sides and angles; and it was not until after two or three unsuccessful trials, in each of which some small fragments were broken off by the instrument, that Mr BRODIE succeeded in removing it.

In one of Sir A. COOPER'S own cases, he extracted two calculi, one of which weighed fifty-four grains, and was so large as to render it necessary to dilate the urethra with bougies for nearly a fortnight previously to extracting it. The chief impediment to its extraction, Sir A. remarks, was found in the part of the urethra near the glans; and he is disposed to believe, that, when the stone is of equal magnitude, it would be better to make a small incision into the urethra anteriorly to the scrotum, than employ force

* Read 19th November 1822. Published Med. Chir. Trans. vol. xii.

for the extraction of the stone through this narrower part of the urethra. From his second patient, Sir ASTLEY extracted twenty-nine calculi in six repetitions of the operation. A third case is subjoined to his paper, as published in the Transactions, in which he extracted a calculus of moderate size, and enabled two others to pass through the urethra, by withdrawing the instrument in its dilated state.

ON INSTRUMENTS FOR BREAKING DOWN CALCULI WITHIN THE BLADDER.

Since the time of CELSUS, a number of lithotomists have endeavoured to contrive some instrument by which calculi, that have attained such a size as to render it impossible to extract them entire by the lateral operation of lithotomy, might be broken into fragments within the bladder. M. DESCHAMPS has detailed * the various attempts which have been made to invent a pair of forceps which could embrace the calculus between its blades, and crush it to pieces by the closing of the blades, or which might be made to pierce the calculus, and cut it or break it into fragments by the separation of the blades. Surgeons, however, have found these instruments difficult and dangerous in their application to actual practice.

Mr EARLE has contrived an instrument which he considers calculated to break down calculi within the

* Tom. iii. p. 294.

bladder, without being liable to the same objections as the other instruments devised for this purpose. I must refer for a full explanation of the nature of this instrument, to the description and delineations of it which Mr E. has given in the 11th volume of the London Medico-Chirurgical Society's Transactions. I shall content myself with remarking, that it consists of three cylinders, one within another, each terminating in a curved blade. These blades are made to close under one another, so as to give to the instrument somewhat the shape of a catheter; but when they have been passed below the calculus, by revolving the cylinders, the blades may be made to embrace the calculus in three directions. Through the innermost cylinder, a perforator is introduced which is worked by a screw. It is to be regretted, that Mr EARLE'S description of his instrument is not accompanied with any account of its having been tried either upon the living or dead body.

The class of instruments to which I have just referred, is obviously intended to act merely as auxiliaries to cutting instruments, being in fact introduced into the bladder through the wound made in the performance of the operation of Lithotomy. But some attempts have lately been made to invent instruments for the purpose of breaking down calculi within the bladder, that might be introduced by the natural pas-

sage of the urethra. The case of Colonel MARTIN having been related by Dr SCOTT in the 1st volume of the Journal of the Royal Institution, and alluded to by Dr MARCET in his Essay on Calculous Disorders, is now pretty generally known. This gentleman being affected with calculus of the bladder whilst in India, contrived to introduce into his bladder by the urethra, through a cannula, a delicate saw or file, made of the steel-spring of a watch, with which he daily succeeded in dividing and pulverizing some portion of the calculus, which was discharged in the form of powder along with the urine, till at last he perfectly succeeded in removing the whole of the stone.

Notwithstanding the successful issue of this case, it is obvious, that the instrument employed is liable to numerous objections, particularly its affording no means of fastening the calculus to which the rough instrument was to be applied, and the danger of the internal surface of the bladder being injured. A fact in anatomy, that has recently been ascertained, has led to the contrivance of an instrument that seems calculated to obviate these difficulties.

My friend M. AMUSSAT, Lecturer on Anatomy in Paris, has inserted into the twelfth volume of the Journal Complementaire, a note, * "On the possibility

* Published in April 1822.

of sounding the male bladder with a straight sound, without injuring the canal of the urethra, which has suggested the idea of extracting small urinary calculi from the bladder, and of breaking down large calculi with a modification of HUNTER's forceps." M. AMUSSAT has since entered into a more detailed statement of his opinions in a series of Essays, " Sur l'Uretre de l'Homme et de la Femme *." In the first of these, he has strongly insisted on the fact, that when the rectum is empty, so as to allow the bladder to sink down into the hollow of the sacrum, and the penis is pulled forwards and upwards, the canal of the urethra forms a straight or nearly a straight line.

M. CIVIALE, who seems to have been carrying on his investigations respecting the urethra about the same time as M. AMUSSAT †, has also satisfied himself that straight sounds can be very easily introduced by the urethra into the bladder; and, proceeding upon this fact, he has invented an instrument for grinding down calculi within the bladder.

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* Read to the Academy of Surgery 11th December 1823, and published in the Archives Générales de Médecine, &c. vol. iv. pp. 31. and 547.

† Il parait bien certain," say the editors of the Archives Générales, (vol. iv. p. 617.) " que cette modification (tout-à-fait droite,) de la sonde a été faite d' abord par M. AMUSSAT, et que c'est depuis qu'il en a donné l'idée, que MM. CIVIALE et LEROY l'ont adoptée."

M. CIVIALE'S instrument consists of a straight catheter of a large diameter, which receives within it another straight catheter made of steel and divided, at the extremity which is to be introduced into the bladder, into three curved branches. These branches, which remain in contact with one another so long as they are retained within the outer catheter, expand, in consequence of their elasticity, as soon as they are pushed beyond its orifice. If the calculus can be caught between these branches, it may be firmly fixed, by pushing forwards the outer catheter. A straight steel sound, the extremity of which is formed into a file, circular trepan, or any other similar form, is then introduced into the inner catheter, and the rough extremity being kept steadily applied against the calculus, the sound is made to revolve by means of a drill-bow, and by this means the calculus is thus gradually crumbled to pieces.

M. CIVIALE after having repeated this operation several times on the dead subject, has put it in practice on the living body; and in the Report of MM. CHAUSSIER and PERCY, who were appointed by the Institute of France to inquire into the merits of the proposal, three cases are mentioned, in which the operation had been performed without occasioning great pain or any disagreeable symptom, and in which, not the smallest fragment of calculus could, after the ope-

ration, be detected in the bladder by the sound. The destruction of the calculus was not in any of these cases completed by one, but by several operations, and at the conclusion of each, a quantity of tepid water was injected into the bladder, which brought away along with it a calculous sediment, and fragments of different sizes.

ON THE USE OF A STRAIGHT DIRECTOR IN PERFORMING LITHOTOMY.

Mr KEY, in a work he has lately published on the section of the prostate gland, has described and delineated the urethra as forming a straight canal; when, from the empty state of the rectum and bladder, the latter viscus sinks into the hollow of the sacrum: and he has proposed to substitute a straight for a curved staff, in the performance of the lateral operation of Lithotomy. The chief objections to the curved staff as at present used, are the liability of the cutting instrument which is employed to slip out of the groove, and its rendering it necessary to make the incision of the bladder in the same direction as the groove of the staff, which cannot be turned round to the direction in which we may wish to divide the bladder. In fact, the straight director seems to combine, in one instrument, those advantages which M. Le DRAN, Mr DEASE, Mr MUIR of Glasgow, and my Father, hoped to gain by the use of two, when

they recommended, that the surgeon, after having made his external incision, and an opening into the urethra, should introduce a straight director into the bladder, along the groove of the curved staff; and, after having withdrawn the latter instrument, should perform the incision of the bladder, by a scalpel under the guidance of the straight director.

The hopes which the progress of chemistry at one time inspired, of our being able to discover some internal remedies by which calculi might be decomposed within the bladder, have unfortunately proved to be fallacious; and this class of cases has been again returned into the hands of the surgeon. The various proposals which have been mentioned in this Essay shew, with how much assiduity, and, I may add, with how much success, surgeons are labouring to diminish the dangers attendant upon calculous diseases. There is pleasure even in recording those efforts of human genius, which have for their object the alleviation of human misery. The preservation of life, by the successful performance of a fearful, and what the ignorant might consider a hopeless operation, may certainly be, in many instances, a just cause of triumph to the surgeon; but his triumph is surely far nobler, who points out a means of attaining the same object, which subjects the unfortunate individual to less suffering, and his life to less hazard.

APPENDIX.

TABLE I.—*Cases of Recto-Vesical Lithotomy followed by Cure.*

Operator.	*Age.*	*Mode of Operation.*	*Size and Weight of Calculi.*	*Fæces by Urethra.*	*Date of Recovery.*	*Remarks.*
Camoin,	20	First operation.	Weight 2 oz.	Several times.	Less than two months.	Cure delayed by complication of catarrh of the bladder.
Pezerat,	17	Ditto.	21 lines by 1 inch.	Never.	About 2 months.	
Dupuytren, 3d.	11		Medium size.	At different times.	52 days.	
Vacca, 3d,	38	Second operation.	Pigeon's egg.		30 days.	Complicated with diarrhœa, dysentery, purulent and bloody urine.
Vacca, 4th,	74	Ditto.	50 small calculi.		25 days.	
Vacca, 5th,	38	Ditto.	Large pigeon's egg with appendix.		A month.	Stone broke in pieces. Appendix resembled little finger.
Vacca, 6th,	2	Ditto.	10 lines by 3.		14 days.	
Vacca, 7th,	60	Ditto.	Weight 4 oz.		60 days.	Stone broke. Stricture in urethra retarded the closure of the wound.
Vacca, 8th,	46	Ditto.		Never.	4 months.	Stone broke. Previous bad health and stricture retarded the cure.
Vacca, 9th,	11	Ditto.			22d day.	
Vacca, 10th,	12	Ditto.	Moderate size.		A month.	
Vacca, 11th,	15	Ditto.	2 of middle size.			
Vacca, 12th,	65	Ditto.	Pretty considerable.		22 days.	Testicles swelled about the 8th day, in consequence of walking about.
Vacca, 13th,	8	Ditto.	Pigeon's egg.		13 days.	
Vacca, 15th,	6	Ditto.	Large do.		35 days.	
Vacca, 17th,	14	Ditto.	Extracted by great diameter, 19 lines.		6 months.	Scrophulous habit; languid health; purulent urine; pain extending to left kidney. After operation, evening febrile paroxysms, diarrhœa, quantity of gravel discharged with urine both by urethra and wound.
Vacca, 20th,	6	Ditto.	1½ inches by 11 lines.		2 months.	Wound reopened on 30th day by violent exertions te pass urine, which was accompanied with much gravel.

TABLE I.—*Continued.*

Operator.	*Age.*	*Mode of Operation.*	*Size and Weight of Calculi.*	*Fæces by Urethra.*	*Date of Recovery.*	*Remarks.*
Vacca, 21st,	16	Second operation.	Small, friable.		45 days.	Only a few drops passed the wound for some days previous to time specified.
Vacca, 22d,	10	Ditto.	Small nut.	Always clear.	36 days.	
Vacca, 24th,	3½	Ditto.	Size and shape of an almond.		12 days.	
Giorgi, 2d,	Child.	Ditto.		Never.	20 days.	
Giorgi, 3d,	12	1st and 2d ditto.	Very large.		Within 2 months.	Unequivocal marks of diseased bladder
Giorgi, 4th,	2½		Pigeon's egg.	Never.	12 days.	
Giorgi, 5th,	5		Larger than ditto.	Never.	17 days.	
Giorgi, 6th,	9		Ditto ditto.		Within 24 days.	Calculus extracted by the finger.
Giorgi, 7th,	4		Two calculi, each size of an almond.		About 1 month.	
Giorgi, 8th,	12		Pullet's egg, weighed 2 oz.		About 34 days.	Urine turbid, bloody, purulent, fœtid.
Giorgi, 9th,	53	Second operation.	Weighed 6 oz.			From size of calculus it was necessary to break it down within the bladder. It adhered at some points. Inflammatory symptoms occurred, but they were subdued by bloodletting.
Giorgi, 10th,	4		Moschata nut.		8 days.	
Cittadini, 1st,	12	Ditto.	Middling size.	Never.	20 days.	
Cittadini, 4th,	65		Ditto.		12 days.	
Farnesè, 1st,	50	Ditto.	Weight 1 oz. 12 deniers.	Never.	30 days.	
Barbantini, 1st,	50	First operation.	3 inches 2 lines by 2½ inches.	Some fluid.	Within 80 days.	
Giuseppe,	75	Second operation.	Hen's egg.	Never.	30 days.	
Camici,	Young	Ditto.		Did pass.	20 days.	
Geri, 1st,		First operation.		Did pass.		
Janson, 1st,	3				6 weeks.	

Janson, 2d,	Youth.				5 months.	
Janson, 3d,	30		Round. ½ inch in diameter.		About 45 days.	Small fistula at time of dismissal, which soon closed.
Janson, 5th,			Considerable size.			Fistula in perineo remaining from previous lateral operation was cured.
Orlandi,	6		3 calculi, largest size of small nut.		17 days.	
Bandiera,	Youth.	First and second operation.	Calculus small.	Never.	45 days.	Calculus previous to operation supposed to be large, and a large wound made on this account.
Regnoli, 1st,	8	Ditto.	3 calculi.	Did pass.	40 days.	
Moschi, 1st,	73	Second operation.	Large nut.		Little more than 1 month.	
Moschi, 2d,	16	Ditto.			14 days.	Calculus adherent at one point.
Moschi, 3d,	40	Ditto.				Had urinary fistulæ, and strictures of urethra, which caused the urine, after it had resumed its natural passage by 15th day, again to flow by intestine, but by use of elastic catheters this was soon got the better of.
Gallori,						
Manfredini,						
Cavarra, 2d,	60	In Cavarra's five first cases a modification of the second operation.	3 calculi, each 1 inch in diameter.		12 days.	
Cavarra, 3d,	62		10 calculi, the largest of small nuts.		Within a month.	Lateral operation could not be performed, the pelvis being distorted.
Cavarra, 4th,	3		Size and form of a walnut.		Within 20 days.	
Cavarra, 6th,	53	Second operation.	Small nut.		18 days.	
Cavarra, 7th, (subject of Case 1st.)	71	Ditto.	Broke in pieces.		18 days.	Fistula remaining from previous operation healed.
Cavarra, 8th,	9	Ditto.	2 large calculi.		About 20 days.	
Cavarra, 9th,	2½	Ditto.	Large. Broke in pieces.		19 days.	
Cavarra, 10th,	60	Ditto.	2 calculi, 2 inches in large diameter.		25 days.	

TABLE II.—*Cases of Recto-Vesical Lithotomy followed by Fistula.*

Operator.	*Age.*	*Mode of Operation.*	*Size and Weight of Calculi.*	*Fæces by Urethra.*	*Date of Dismission.*	*Remarks.*
Vacca, 2d,	5	Second operation.		Never.	43 days.	Brought back, and fistula nearly closed at the date of publication.
Vacca, 23d,	2	Ditto.	Medium size.	Did pass.	18 days.	Passage of fæces by urethra attributed to too speedy reunion of the sphincter ani muscle.
Giorgi, 1st,	28	First operation.		Did pass,	27 days.	A few drops passed by fistula.
Cittadini, 3d,	7	Second operation.	Small.	Never.		A few drops occasionally.
Cittadini, 5th,	70	Second operation, and partly 1st also.	Large.		30 days.	
Mori,	50	Second operation, and partly 1st also.	Two calculi weighing 9 oz.	Did pass.		
Cliet,	12	Second operation.	Small nut.	Not mentioned to have passed.		Died of pulmonary tuberculous consumption within three months after the operation.
Geri,		Vacca alleges that Geri performed the 1st operation.				
Geri,						
Geri,						
Dupuytren, 1st,	57		Large nut.	Several times.	25 days.	Had been twice lithotomized before, and a fistula existed which had been produced by first lateral operation.
Dupuytren, 2d, (subject of Case 1st.)						At a distance of six months. Is said to have recovered from this operation from the first.
Cavarra, 1st,	70		Broke in pieces.		About 1 month.	Numerous strictures in urethra.

TABLE III.—*Cases of Recto-Vesical Lithotomy followed by Death.*

Operator.	*Age.*	*Mode of Operation.*	*Size and Weight of Calculi.*	*Time of Death.*	*Remarks.*
Dupuytren, 4th,	13		2 in. and 4 lines. 1 in. and 8 do. 1 in. and 4 do.	36th day.	Large abscess between the rectum and inferior fundus of bladder.
Vacca, 1st,	70	Second operation.	Very long.	4th day.	Inflammation in the abdomen. Gangrene of the inner surface of bladder, to which the calculus adhered.
Vacca, 14th,	6	Ditto.	Pigeon's egg.	8th day.	Pain in hypogastric region the night after the operation. Febrile symptoms came on during the night, and gradually increased in severity.—*Dissection.* Marks of severe inflammation in all the pelvic viscera.
Vacca, 16th,	55	Ditto.	Medium size.	About 2 months.	On admission, in a state of great emaciation. Diarrhœa occurred, afterwards some degree of jaundice, but he sunk without marked symptoms of disease.—*Dissection.* The urinary bladder and all the contents of the pelvis were in a healthy state. Wound in neck of bladder and of prostate gland was healed; that of the membranous portion of urethra alone remained uncicatrized. The ejaculatory ducts either had not been cut, or their wound had been reunited. Substance of the liver converted into schirrous tubercles, and diminished in volume. Gall-bladder greatly enlarged.
Vacca, 18th,	56	Second operation.	2 lines in diameter, by which extracted.	11th day.	Robust constitution. Sanguine temperament, of extraordinary obesity. Fever and delirium on 16th day. Three paroxysms of fever each day.—*Dissection.* Intestines, peritoneum, kidneys, ureters, bladder, and all the viscera of the pelvis without trace of inflammation, or any other affection. Wound between the two seminal ducts so as not to divide either.

TABLE III.—*Continued.*

Operator.	*Age.*	*Mode of Operation.*	*Size and Weight of Calculi.*	*Time of Death after Operation.*	*Remarks.*
Vacca, 19th,	55		2 calculi of considerable size.	6 hours.	Robust temperament. Had been in the habit of taking opium, and received, soon after operation, 16 grains and afterwards 8 grains. Irregular motions of muscles of face, with paralysis of extremities and lethargy.—*Dissection.* Prostate greatly enlarged, projecting 1½ inch into the bladder, separating the fundus from the orifice, and giving the fundus the appearance of a sac which contained two calculi.
Cittadini, 2d,	70	Second operation.	Enormous.	40 hours.	Died of an epileptic fit. Bloody extravasation found within the cranium.
Barbantini, 2d,	Elderly.	First operation.		24 hours.	Nearly hopeless from great disease of the bladder. Urine was stercoral. Peritonitis supervened.
Geri,	Child.				Division of the peritoneum.
Janson, }	Children.				Violent inflammation of the abdomen.
Janson, }					
Janson,	26			24 hours.	Bladder ulcerated, lined with gravel on internal surface.
Regnoli, 2d,	79		Large.	15 days.	From size and adherence, stone could not be extracted.
Moschi, 4th,	7	Second operation.			Died of obstinate vermination, terminating in slow pulmonary inflammation. Enlargement of the lymphatic glands, particularly those of the abdomen.
Meli,	12	Ditto.		3d day.	Inflammatory symptoms soon after the operation.—*Dissection.* Prostate gland so prominent as to resemble an uterus. Ureters four times their natural size, filled with pus, as were also the kidneys, the cortical and tubular substances of which were destroyed.
Cavarra, 5th,	Adult.		Hen's egg, weight 3½ oz.	40 hours.	Robust constitution. Sanguine temperament. Operation easily performed. The night of the operation, acute pain of the bladder and febrile symptoms, suppression of urine, black vomit.—*Dissection.* Bladder large, indurated, becoming cartilaginous; the fundus and the of the wound gangrenous. The ureter and right kidney inflamed.

M. DUPUYTREN's three first cases are to be found in SANSON's Thesis, entitled, "Des Moyens de parvenir à la Vessie par le Rectum; 4to. Paris 181 ." This was republished, along with a translation of VACCA's First Memoir; 8vo. Paris 1821.

Of Professor VACCA BERLINGHIERI's cases, six are recorded in his "Memoria sopra il metodo di estrarre la pietra dalla Vescica Orinaria per la via dell' Intestino Retto," 8vo. Pisa, 1821; five in his "Memoria Seconda," ibid. 1822*; and thirteen in his "Memoria Terza," ibid. 1823.

GERI's Cases are recorded in the "Repertorio Medico-Chirurgico de Torino," Nos. 11. and 18.; but the only account I have seen of them is that given by VACCA in his Second Memoir.

The following Cases are recorded in VACCA's First Memoir:

BARBANTINI, Two Cases.
FARNESE's First Case.

The following are recorded in VACCA's Second Memoir

GIORGI, Two Cases.
FARNESE's 2d Case.
CITTADINI, Three Cases.
GIUSEPPE, One Case.
MORI, One Case.
CAMICI, One Case.
CAMOIN, One Case.

The following cases are recorded in VACCA's Third Memoir:

ORLANDI.
BANDIERA.
CITTADINI, Two Cases.
REGNOLI, Two Cases.
MOSCHI, Four Cases.
GALLORI.
MANFREDINI.
MELI.
CAVARRA, Ten Cases.
GIORGI, Eight Cases.

* A pretty full abridgment of VACCA's Second Memoir is given in the 14th volume of the Jour. Compl. p. 267.

The following Cases are recorded in the Journal Complementaire:

* Barbantini's 1st Case, vol. vi. p. 79.
* Camoin, One Case, vol. xii. p. 19.
Dupuytren's 4th Case, vol. xv. p. 86.
Sanson, One Case, vol. xv. p. 87.
Pezerat, One Case, vol. xviii. p. 128.

M. Cliet's Case is contained in the "Seconde partie du Compte-Rendu Medico-Chirurgical des observations recueillies à l'Hôpital general de la Charité de Lyon;" 8vo. 1823.

M. Janson's Cases are recorded in the Second Part of his "Compte-Rendu de la Pratique Chirurgicale de l'Hôtel Dieu de Lyon;" and are quoted in the Archives Generales de Medecine, vol. vi. p. 83.

Williaume's Case is alluded to in the Journ. Compl. vol. x. p. 180.