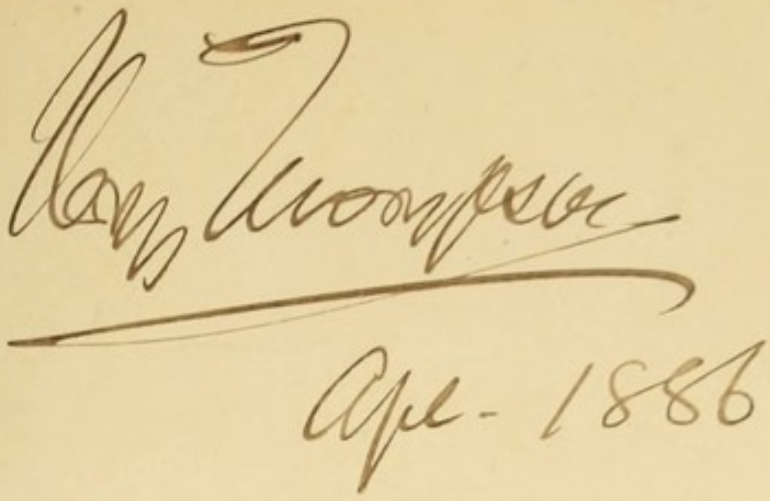
On the suprapubic operation of opening the bladder for the stone and for tumours / by Henry Thompson.

The Suprapubic Operation of Opening the Bladder

Thompson



THE

SUPRAPUBIC OPERATION

BY THE SAME AUTHOR.

STUDENT'S CHEAP EDITIONS.

Clinical Lectures on Diseases of the Urinary Organs
Delivered at University College Hospital. Seventh Edition, 8vo. 2*s.* 6*d.*

The Diseases of the Prostate, their Pathology and Treatment:
Comprising the Jacksonian Prize Essay for 1860. Fifth Edition, 8vo. 2*s.* 6*d.*

Lectures on some Important Points connected with the Surgery of the Urinary Organs
Delivered in the Royal College of Surgeons, London. 8vo. 2*s.* 6*d.*

Practical Lithotomy and Lithotrity;
Or, an Inquiry into the best Modes of Removing Stone from the Bladder. Third Edition, 8vo. 10*s.*

On Tumours of the Bladder: their Nature, Symptoms, and Surgical Treatment.
Preceded by a consideration of the best methods of Diagnosing all forms of Vesical Disease, including Digital Exploration and its Results. 8vo. 5*s.*

On Stricture of the Urethra and Urinary Fistulæ.
Fourth Edition, with 74 Engravings, 8vo. 6*s.*

ON THE

SUPRAPUBIC OPERATION

OF

OPENING THE BLADDER

FOR THE STONE

AND

FOR TUMOURS

BY

SIR HENRY THOMPSON F.R.C.S.

SURGEON EXTRAORDINARY TO HIS MAJESTY THE KING OF THE BELGIANS; CONSULTING SURGEON TO UNIVERSITY COLLEGE HOSPITAL; EMERITUS PROFESSOR OF CLINICAL SURGERY; LATE PROFESSOR OF SURGERY AND PATHOLOGY TO THE ROYAL COLLEGE OF SURGEONS OF ENGLAND; ETC.

LONDON

J. & A. CHURCHILL

11 NEW BURLINGTON STREET

1886

PREFACE.

The high operation for opening the bladder has, in my opinion, been rendered so safe and efficient by certain modifications recently made—chiefly by Professor Petersen, of Kiel—as to deserve the careful attention of all practical surgeons.

During little more than a year I have performed it eight times—six for large calculus, and twice for tumour, also large—all of these being test cases of no ordinary severity ; and the results are presented here for the consideration of my brethren.

The value of the rectal distension, which Petersen was the first to use, is very great, and has, indeed, rendered an operation, formerly associated with some risk, almost absolutely safe, as regards injury to the peritoneum. I have also found considerable advantage in limiting the use of the knife to the fibrous layers, and in employing the finger-nail, or an ivory separator, to divide other tissues and draw aside the veins, thus avoiding the risk

of serious hæmorrhage. I am not aware that this method has been adopted for the operation before ; the idea arose in my own mind in connection with my first case, in July 1884, and was described in the report at the time. This, however, is a matter of small importance ; but there can be no question as to the value of the method itself.

London : 35 Wimpole Street.
January 1, 1886.

LIST OF WOODCUTS.

ON

THE SUPRAPUBIC OPERATION

OF

OPENING THE BLADDER.

Calculus in adult generally amenable to lithotrity;

I THINK that among experienced surgeons there will be little or no dissent from the proposition that the operation of lithotrity at a single sitting is, in fairly experienced hands, that which is best calculated to ensure a successful result for nine cases out of ten of stone in the bladder occurring among adult patients. And it may also be held as generally agreed that neither stricture of the urethra nor hypertrophy of the prostate, neither chronic disease of the bladder nor organic disease of the kidneys, is a condition which forbids the application of the crushing operation, or demands instead thereof any application of the knife.

For the modern operation of lithotrity, when performed by a skilful operator, is effective to

even when hard and weighing from two to three ounces;

remove hard calculi of very considerable size, say those which are even above two ounces in weight; the largest I have thus dealt with being a hard uric acid calculus weighing $2\frac{3}{4}$ ounces (80 grammes), and with successful result. I by no means deny that even a larger size may be so extracted, but I do not say that it would be often prudent to undertake the task. Much depends on the operator and his experience. Phosphatic calculi of still larger weight may be crushed successfully. But there is a limit, which no man can define, even to the capability of modern lithotrity. There are calculi too large and too hard to be removed by that operation, and for which some other proceeding is necessary.

or, when phosphatic, still larger.

Large calculi ought not to be formed;

It is a fact deserving consideration, that such calculi ought not to exist; that it is always somebody's fault when a calculus even of one ounce is present in a human bladder. I am very far from saying that the oversight is frequently due to defective observation on the part of the medical attendant, an occurrence which, according to my experience of this matter, is rarely met with. Some patients endure their troubles without seeking advice; others are the victims of an incompetent quack; while not a few indulge themselves in consuming some

notorious 'remedy' or 'solvent' for the stone, and have thus rapidly augmented, as I have occasionally seen, the size of a foreign body in the bladder. By all of these means large stones are sometimes formed; destined when in that condition to be discovered as soon as the patient falls into the hands of a competent surgeon; and were this the place to adduce illustrative examples of this kind, it would be an easy task to furnish several. But patients themselves are sometimes curiously wilful, obstinate, or indifferent. About sixteen years ago I was consulted by a gentleman with the symptoms of stone; on sounding him I found a small one, and recommended that it should be crushed without delay. This advice was not taken; he did not reappear, and I soon lost all recollection of the circumstance. Last summer I was sent for into the country to examine a calculous patient of seventy-six years of age, who was too infirm and too severely suffering to come to London. I then learned that this was my former visitor who had been unable to decide on taking the advice given him, and now in his dire extremity, and after many years of suffering, had summoned me to do my best for him. I performed the high operation forthwith, removing a stone weighing no less than

are the result of neglect, incompetency, or indifference.

An illustrative case.

6½ ounces, after which he made a sound recovery, and is now quite well. His age and antecedents considered, he must be considered a fortunate man. See Case vi. p. 53.

Important to determine what is the best proceeding, when stone too large to be crushed.

It appears then that an important question which surgeons have now to determine is :—What is the best proceeding to employ as a supplement to lithotrity for those unusually large stones for which that operation is inadequate. It would not be legitimate to say that any single proceeding should be held up as necessarily the best and only possible one, applicable to every condition outside the comprehensive limits of the crushing operation ; but that there is one operation conspicuously superior to all others, is an opinion which has been forced upon me by the weight of testimony from others, and by my own experience. When I had the honour to fill the chair of Surgery and Pathology at the Royal College of Surgeons last year, I stated my opinion, based on the experience of European surgeons personally known to me, and I may say largely on that of my friend Professor Guyon of Paris, that the high operation with certain recent modifications was that which would most advantageously replace the lateral operation for extremely large calculi, and that

The high operation with recent modifications.

thenceforth I should certainly employ it. Fair opportunities of doing so have now fallen to my lot, and although at present moderate in number, have amply sufficed to satisfy me that there is no proceeding at all comparable to the high operation for stones of the kind referred to. I will go further, and I will add that it is my belief, that in the hands of most operating surgeons this proceeding will prove a safer and a far easier one than lithotrity, with all its advantages, for hard stones when they have arrived at about $1\frac{1}{2}$ to 2 oz. in weight.

A very safe and satisfactory proceeding.

It will be advantageous here briefly to trace the interesting history of the high, or suprapubic operation, from its earliest appearance to the present time, and observe the steps by which it has reached its present efficiency.

Historic sketch.

Whatever may be said relative to occasional speculative allusions by some writers to the subject, it is certain that there is no record of any suprapubic operation until that of Pierre Franco, the surgeon of Lausanne, about the middle of the sixteenth century. He cut a child of two years old, removing a large calculus. The method he employed was to inject the bladder forcibly with water, the presence of which was insured by an

Pierre Franco, 1556.

assistant grasping the penis throughout the operation, and to dissect to the bladder in the median line without a staff, opening the organ at its anterior aspect behind the pubic symphysis.[1]

Rousset, 1581.

Little more is heard of the operation for a long period of time, except a recommendation of it by Dr. F. Rousset, of Montpelier, based solely on theoretical grounds after several dissections of the subject, when advocating the cæsarian operation, for he did not practise lithotomy.[2] He suggested also, as one method of performing it, that a grooved catheter might be used as a guide to open the bladder upon.

Hildanus 1680.

Hildanus gives instructions for its performance, and makes a special point of the necessity for bringing the stone into position near the opening by putting the fingers into the rectum for that purpose. He thinks the operation is unfit for the adult, because the fingers are not long enough to accomplish this, as they are in the smaller organs of the child.[3] It is interesting to observe that at

[1] *Traité des Hernies*, par P. Franco. Lyon : A. Vincent, 1556, ch. xxxii.

[2] *Traité Nouveau de l'Hysterotomotokie, ou Enfantement Césarien.* Paris, 1581, ch. vii.

[3] *Treatise on Lithotomy*, printed at Frankfort, 1682. He speaks, evidently by misapprehension, of removing the stone by the groin, instead of in the middle line.

this early date there was a recognition of the advantage to be obtained by making pressure on the stone in a direction from below upwards, through the rectum. No doubt this was suggested by the well-known use made of the rectum for steadying the stone in the old Celsian procedure of 'cutting on the gripe.'

Proby, 1694.

At the end of the century, that is, in 1694, Proby of Dublin operated for the removal of a bodkin in the bladder of a young woman aged twenty, from above the pubes. He could feel the head of it there when his assistant pressed on the other end with his finger in the vagina. He simply cut down upon it direct, not in the median line, and withdrew it from the bladder; having tried without success to extract it from the organ by the urethra. She made a good recovery. He was acquainted by report with the 'sectio alta,' and on that account felt justified in performing the operation, which he reported in the 'Philosophical Transactions' of the year 1700.[1]

John Douglas, 1719.

After this the operation was employed by a well-known lithotomist in this country, John Douglas, F.R.S., Surgeon to the Westminster Hospital, who advocated it in a work first pub-

[1] *Phil. Trans.* vol. xxii. p. 155.

lished in 1720. In a subsequent work in quarto he gives the details of four cases occurring in boys, the oldest of whom was sixteen, all successful.[1] His plan also was to inject the bladder and to dispense with the staff. Deschamps observed respecting it, that the honour of establishing the high operation as a mode of practice was due to Douglas.[2]

Cheselden, 1723.

Cheselden performed it very successfully at the outset of his career, and published a treatise illustrating his method in 1723. He appends three plates, Nos. 3, 4, and 5, representing dissections to show that when the bladder is well distended, there is sufficient space to make a considerable opening above the pubes without endangering the peritoneum. He thinks an injection of 12 oz. sufficient for an adult, and 8 oz. for a boy of nine years old. His operation is the same as that of Douglas, without a staff. He appends the cases of nine patients, all lads below twenty years of age; his first case being operated on in May 1723.[3] Subsequently to this, Cheselden appears

[1] *Lithotomia Douglassiana.* London: Rivington, 1723. The date of his first operation was December 1719.

[2] *Traité historique.* Paris, 1796, tome ii. p. 196.

[3] *Treatise on the High Operation for the Stone.* By William Cheselden, F.R.S. With seventeen copper-plates. London: John Osborn, 1723.

to have been influenced by the reported success of Raw's perineal operation in Holland, and also by the fact that some English surgeons had, through want of care, burst the bladder by over-injecting it, and had also opened the peritoneal cavity, —neither accident having happened to himself. About this time several provincial surgeons published cases of the high operation, such as Pye and Thornhill of Bristol, Middleton, and Macgill of Edinburgh, 1722–24—in all about twenty-four cases, four of whom only were adults.

Cheselden subsequently advocates the lateral method.

Provincial English surgeons early in the eighteenth century.

Morand of Paris was strongly impressed in its favour by the results obtained in England, with which he was well acquainted. He published an account of these, adding a single operation by himself on a paralytic patient aged sixty-eight years, a very unfavourable subject, 'who demanded of him the English operation,' and who sank about six weeks after it.[1] Morand visited London in 1729 and saw much of English surgery. Deschamps says of him that he was 'much infected by Anglomania.'[2] He certainly followed Cheselden, after this visit, in relinquishing the high operation for that modification by him of the

Morand, 1725.

[1] *Traité de la Taille au Haut Appareil.* Par M. Morand. Paris, 1728, p. 229 *et seq.*

[2] *Deschamps sur la Taille*, vol. ii. p. 202. 1796.

perineal operation which became so generally known and employed here as 'lateral lithotomy,' and in France as 'la taille latéralisée.'

Heister, 1739.

Heister performed the high operation once only, and gave a full account of it. The patient was a man aged thirty years, in whom an attempt to remove the stone by the perineal operation had failed. Heister reproduced in his work the plates of Cheselden already referred to.[1]

How completely the lateral operation had by the middle of the century replaced the former, may be learned from Samuel Sharp, surgeon to Guy's Hospital, who wrote as follows:—'Some of the difficulties which occurred in the execution of it' (the high operation) 'appeared so frightful that it was suddenly disused, and at present there is no one surgeon in Europe who continues to practise it.' Nevertheless he continues, 'I should not be surprised . . . . if it should be revived and practised with success.'[2]

Sharp's observations, 1750.

Frère Come, 1758.

After this, Frère Come, who had been regularly and well educated as a surgeon, practised lithotomy largely in Paris, employing the lateral

[1] *Institutiones Chirurgicæ*. Heister, Laur. 2 vols. 4to. Amsterdam, 1739. Date of the English edition, translated, is 1753.

[2] *A Critical Enquiry into the Present State of Surgery*. By S. Sharp. London, 1750, p. 196.

method there at the Free Hospital for the Poor near the Rue St. Honoré, to which he was attached ; but, unlike other French surgeons, he employed the high operation for a good many exceptional cases during the third quarter of the last century, commencing in 1758. He subsequently published a treatise on the subject, viz. in 1779,[1] describing his own method, which consisted in making a small opening from the perineum to the urethra at the membranous portion (the boutonnière) in order to enable the operator to introduce a well-curved sound containing a sharp and strong stylet (sonde à dard) immediately behind the symphysis, at which spot the bladder was to be pierced by the dart from within outwards, when the organ had been reached by dissection from the surface. He dispensed with the process of injecting the bladder, which he declared to be the most painful part of the operation as hitherto performed, and was guided by the sound described. This method, however, never came into vogue in this country.

Frère Come's method with a stylet.

Deschamps even thought a rectal puncture of the bladder might supersede the boutonnière for introducing the sonde à dard, but it was not

Deschamps, 1790.

[1] Come's *Nouvelle Méthode d'extraire la Pierre, &c.* Bruxelles, 1779.

adopted, and the perineal incision also was generally rejected by subsequent surgeons.

Various surgeons of the present century.

During the present century the suprapubic route has been frequently adopted for unusually large examples of calculus, and for cases of exceptional difficulty presented in the perineum. Dupuytren, Scarpa, Soubierbielle for many years its warm partisan in Paris; Carpue, who studied under him there in 1817, advocated it zealously in London afterwards;[1] E. Home,[2] besides Leroy d'Etiolles, Velpeau, and Civiale, among others, practised it more or less in such circumstances. Murray Humphrey, of Cambridge,[3] performed it there in 1850, examining and discussing its merits favourably, after carefully collecting a large record of published cases.

I first performed the high operation on a young woman in 1865 in University College Hospital, to remove a hair-pin which I had vainly endeavoured to extract by the meatus; and again on a gentleman in 1877, aged 58, with an anchylosed hip not admitting him to assume the position necessary to the lateral operation, for a calculus weighing about two ounces.

[1] *History of the High Operation.* By J. C. Carpue, F.R.S. London, 1819.

[2] *Home on Stricture*, vol. iii. p. 359. London, 1821.

[3] *Provincial Med. Trans.* vol. xvii. 1850, p. 103.

In America the same operation has been adopted, and it has been found more successful for very large calculi than the lateral method.[1]

Such is a brief general outline of the history of the high operation up to recent times. A very complete and carefully-arranged historical study of this subject is to be found in a work by Dr. E. Bouley, of Paris, to which those who desire to pursue that matter further are referred.[2]

The method of performing the operation which has been pretty uniformly adopted by all operators during the last few years may be appropriately described here in very brief terms. The bladder having been made to retain as much fluid as the circumstances permit, the surgeon passes into it the sonde à dard (fig. 1), an instrument having the form of a prostatic catheter, and by depressing its handle raises the point nearly to the level of the upper border of the symphysis. The sound contains in its interior a strong stylet with a cutting point, which latter is concealed close to the apex of the sound, and lies in its concavity, whence it

The method of performing the operation adopted before 1880.

Distension of the bladder.

Introduction of a sound.

[1] *American Journal of the Medical Sciences*, July, 1875, page 39. Dr. C. W. Dalles collected from the literary records of surgery 465 cases, forty-two of which had been performed in America.

[2] *De la Taille Hypogas'rique*. Par E. Bouley, M.D. &c. Paris: Baillière et fils, 1883.

can be made to emerge at the will of the operator.

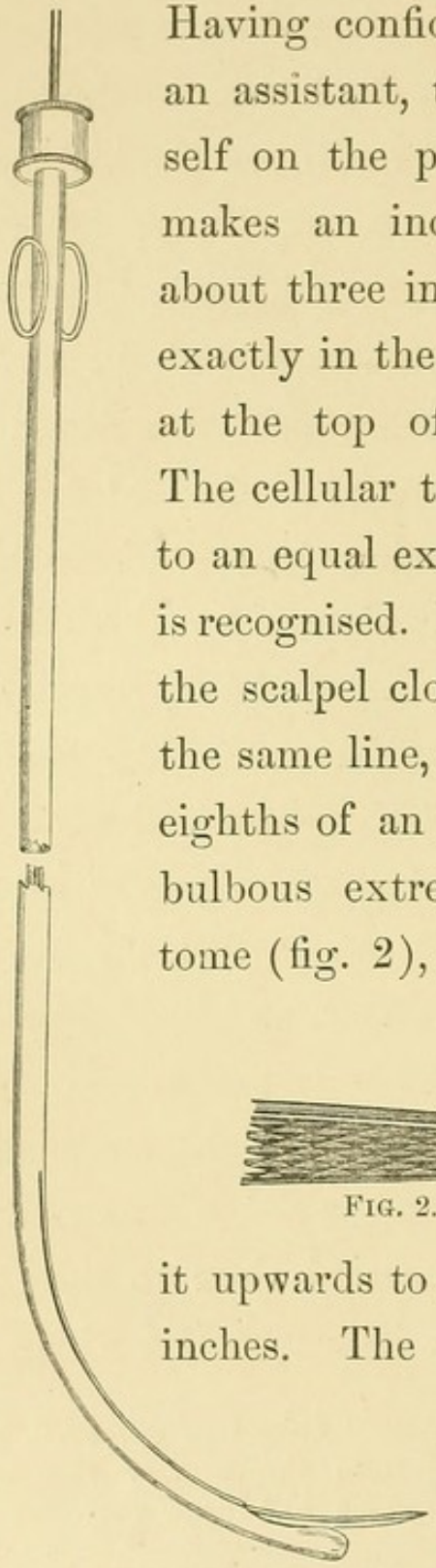


Fig. 1.—The 'Sonde à dard.'

First incision.

Linea alba cut by the aponeurotome.

Use of the sonde à dard.

Having confided the sonde à dard to an assistant, the surgeon places himself on the patient's right side, and makes an incision above the pubes, about three inches or more in length, exactly in the median line, and ending at the top of the pubic symphysis. The cellular tissue and fat are divided to an equal extent, until the linea alba is recognised. He next divides this with the scalpel close to the symphysis, in the same line, from a quarter to three-eighths of an inch, and introduces the bulbous extremity of the aponeurotome (fig. 2), incising the tissue with

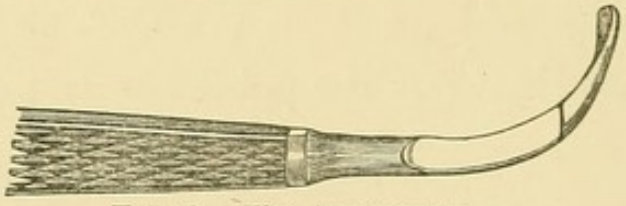


Fig. 2.—The Aponeurotome

it upwards to the extent of about two inches. The operator now takes the sonde à dard from the hands of the assistant, and with his left hand depresses its handle be-

tween the thighs of the patient, directing the point to the wound above the pubes. Here he seeks the end, now readily to be felt through the tissues still remaining uncut, and fixes it between the thumb, index, and middle finger of the right hand, taking care while doing so to remember that it is from the concave surface that the point will be protruded. Having rendered the instrument firm between his two hands, he directs the assistant to press the handle of the stylet so that the point issues from its place for two or three inches, and appears in the wound immediately above the symphysis. The surgeon having given the handle of the sound to his assistant to hold steadily and firmly, takes an ordinary scalpel, and, placing it in a groove existing for that purpose in the stylet, cuts downwards from the point of transfixion nearly to the neck of the bladder behind the symphysis. His forefinger is then applied, with its palmar surface upwards, to the top of the wound, to hook up the bladder, while the assistant withdraws the sonde à dard, having first replaced the stylet in its sheath. The hooked gorget now replaces the finger, and is committed to the charge of an assistant standing on the left side of the patient. The usual search then follows for the stone.

Bladder secured by hooked gorget.

All surgeons have recognised two chief dangers: 1, to the peritoneum; 2, infiltration of urine.

Returning to a consideration of the history which has been here very closely compressed, one cannot fail to observe on an examination of the numerous details and opinions supplied by the writers, that two special sources of danger have been more or less associated with the high operation in the minds of surgeons from the earliest time to the present. The first is the chance of injuring the peritoneum from its natural proximity to the symphysis pubis; the second is the possible occurrence of urinary infiltration, and its effects in the cellular tissue around the bladder. The first is unquestionably the chief risk, and the most to be dreaded, due as it may be to the narrow limit in some subjects of what may be called 'the supra-pubic interval.'

The supra-pubic interval.

Were this interval a constant quantity, so that we might be certain that the peritoneum would never be encountered below a certain line, the objection to the operation would have been less. But the extensibility of the bladder differs so greatly at different ages and in different circumstances, that supposing original conformation to be uniform in all individuals, which is not the case, great variability in the extent of the interval must be reckoned on. It is the element of uncer-

tainty as to the situation of the peritoneum, which has occasioned a general fear of making incisions in the locality described.

The perineal route to the bladder beset with dangers

But, on the other hand, it is agreed by all surgeons that the perineal route to the bladder offers several sources of danger, demanding careful study from the pupil, and constant circumspection by the operator. Indeed I think it will be apparent that these are far more serious than those which beset the suprapubic route. On the other hand, they are tolerably constant, and indeed but too persistently present. The one uncertain risk is that of hæmorrhage, due to unusual distribution of a blood-vessel in the deep perineum, which is far from uncommon, and cannot be foreseen ; but when divided the artery must be dealt with promptly and efficiently ; the latter condition, from the deep situation of the vessel, not being always easily practicable. However, in operating by the lateral method, the surgeon must always be prepared for hæmorrhage, since it is liable to occur and to be serious in any adult case from more than one source.

Hæmorrhage.

The anatomical sources of danger to elderly adults from the lateral operation—of the cases in children I do not here treat, for there is little risk

to them save that which occurs from the delicacy and laxity of their tissues, always demanding very gentle manipulation—are as follows.

Injury to the rectum.

Danger of cutting the rectum, especially in elderly men ; risk of hæmorrhage already adverted to ; and liability to injure the neck of the bladder, not so much by the knife or gorget, as by the bruising and splitting of tissues which inevitably occur from the process of extracting a large stone through that narrow outlet. No stone of two and a half or three ounces in weight (say from seventy to ninety grammes) can be drawn through within the blades of the forceps, however well placed therein, without considerably lacerating the vesical neck. And when stones of double that weight and more are so removed, the injury is very great.

Injury to the neck of the bladder when calculus is large.

Mortality in direct ratio to the size of the calculus in the lateral operation.

Hence it is that the mortality from the lateral operation is in almost a direct ratio with the size of the stone, when dealing with those which weigh upwards of two ounces. When the weight reaches four or five ounces (while some indeed of nine or ten have been so removed) without undergoing fragmentation—itself a very difficult and dangerous proceeding in an empty bladder—the injury inflicted on all the soft parts constituting the lower half of the bladder and the circumjacent parts

must be extreme, so much so that one is surprised that recovery after should ever be possible.

Infiltration of urine very rare in suprapubic operation.

It has already been said that liability to dangerous infiltration of urine about the neck of the bladder has been regarded as one of the objections to the suprapubic operation. I do not believe it will be met with if the proceeding is properly executed. We are too familiar with it in the cases of lateral lithotomy just referred to after the lacerations described, but I see no reason why it should take place after the suprapubic incisions. It has never occurred to any of my own cases, avowedly too few to enable me to speak with authority, yet still a material contribution towards a favourable view of the question, being in all ten in number: two by the old method, and eight by the new. Unless there be unnecessary interference with the cellular connections, low down between the anterior surface of the bladder and the pubic arch, and for which there can be no legitimate occasion, I do not see how such infiltration of urine should be occasioned.

The only real risk is that of injury to the peritoneum;

It is evident then that if we can eliminate from the suprapubic operation its one source of uncertainty and danger relating to the peritoneum, we should possess a means incomparably superior

to the lateral procedure for large stones, if not indeed for any which cannot be easily removed by lithotrity.

none whatever from hæmorrhage.

For there is no risk besides those named which can be deemed important. There is no risk at all from hæmorrhage. There are some large veins in the way which are troublesome if cut, but these have only to be dealt with properly, as we shall see hereafter, in order to avoid that contingency. Then there is not a single named artery near to the line of section, and not a single neighbouring organ can be injured.

Septicæmic poisoning naturally rare, and is preventible.

Lastly, there is the question of septicæmic infection, deemed important by many, resulting from the exposure of cut surfaces to atmospheric air. My reply to objection on that score is—as I long ago pointed out when comparing my own large experience of lithotrity and of lateral lithotomy, in which latter operation antiseptic treatment is impracticable—that although the wound is exposed to manifold sources of impurity, the occurrence of blood-poisoning is rare, being indeed more frequent in the crushing than in the cutting operation.[1] Furthermore, I have now performed

[1] *Medico-Chirurgical Trans.* vol. lxi. p. 155. Paper on five hundred cases of stone in the bladder operated on by Sir H. Thomp-

ten cases as above stated of the suprapubic operation without any special antiseptic precautions, adopting only the practice of scrupulous cleanliness in the use of instruments and dressings, and a weak solution of carbolic acid, one in 250, in all the water employed, varied sometimes by the use of boro-glyceride, and of boracic acid lint for local applications. I have never used the spray or impermeable coverings to the wound in a single case, believing them to be wholly unnecessary. The wound has been always freely exposed to air whenever the dressings are changed, as they frequently are. Neither do I employ any antiseptic precautions in exploring the bladder, and removing tumours by the perineal route, a proceeding which I have done fifty-six times during the last four or five years, and only one case of pyæmia has occurred, and apparently in the same manner as the few examples after lithotrity have been occasioned, viz. by inflammation of vesical veins through prolonged cystitis or mechanical injury; and this is now exceedingly rare, if not altogether absent, since I have adopted the modern system of emptying the bladder completely at a

Author's practice.

son. Twenty-nine deaths after lithotomy contained only one case in which the event was due to septicæmia.

single sitting. But for those who desire to employ antiseptic precautions to their fullest extent, the suprapubic operation affords far greater facilities than the lateral one.

A safe suprapubic interval, in which to operate, can be ensured.

We have therefore only to deal with the question of danger arising from proximity of the peritoneum to the line of incisions. Can we ensure the presence of an adequate suprapubic interval through which a calculus of the largest size can be safely extracted ? I think this important question can be answered in the affirmative.

Modern researches in relation to abdominal and pelvic organs.

At different periods during the last twenty years observations have been made by anatomists upon the relations which the pelvic and abdominal organs hold with each other, by means of freezing the dead subject and making sections while in that condition. The researches of Pirogoff, for example, thus made, are well known ; and among numerous other observations, the effect of distending the bladder, and the bearing of this condition on the peritoneum, are delineated in his great Atlas of Plates.[1] It is only at a more recent date that similar researches have comprehended

[1] *Anatomia Topographica.* St. Petersburg, 1859. Fasc. 3 A, tab. 19, 20. Dr. B. Milliot has been referred to in connection with this proposal, on the ground of his having suggested the employment of india-rubber balls for certain purposes by applica-

the influence of distension of the rectum upon the situation of the bladder. Some of the most important among them, perhaps, are those made by Dr. J. G. Garson, now curator at the Museum of the Royal College of Surgeons, London, with much care and labour, at Vienna in 1877. He observed the effect of a distended rectum upon the bladder in several adult bodies ; these were afterwards frozen, submitted to section, and the results were carefully measured by him and represented by casts and drawings ; the original preparations being themselves now in the museum of the Anatomical Institute at Leipsic. In these sections the bladder had been forced upwards out of the pelvis into the abdominal cavity by considerable disten-

Dr. J. G. Garson, 1877.

tion in the vagina, bladder, and rectum. His paper on *La Méthode opératoire par ballonnement*, published in 1875,[a] shows that he proposed the dilatation of the cavities named by means of thin elastic bags, in order to steady the adjacent parts and admit of suture application after operations of various kinds. He names those for vesico-vaginal, recto-vaginal, and recto-vesical fistulæ ; also for vesico-vaginal and recto-vesical lithotomy, for suprapubic lithotomy, and gastrotomy involving the stomach. There is no proposal whatever to act on the situation of the bladder in the way of raising it through inflating the rectum by a bag to a position above the pubes so as to facilitate the performance of the operation there. In short, the subject of Dr. Milliot's paper has no relation whatever with that now under consideration, and is only referred to here because it has by some authors been erroneously associated with it.

[a] *Gazette Médicale de Paris*, 1875, August 21, p. 422.

Influence of a distended rectum on the position of the bladder.

sion of the rectum; this change of position seeming to be effected chiefly through elongation of the prostatic and membranous urethra, which occurred to a remarkable degree. With the uplifted bladder

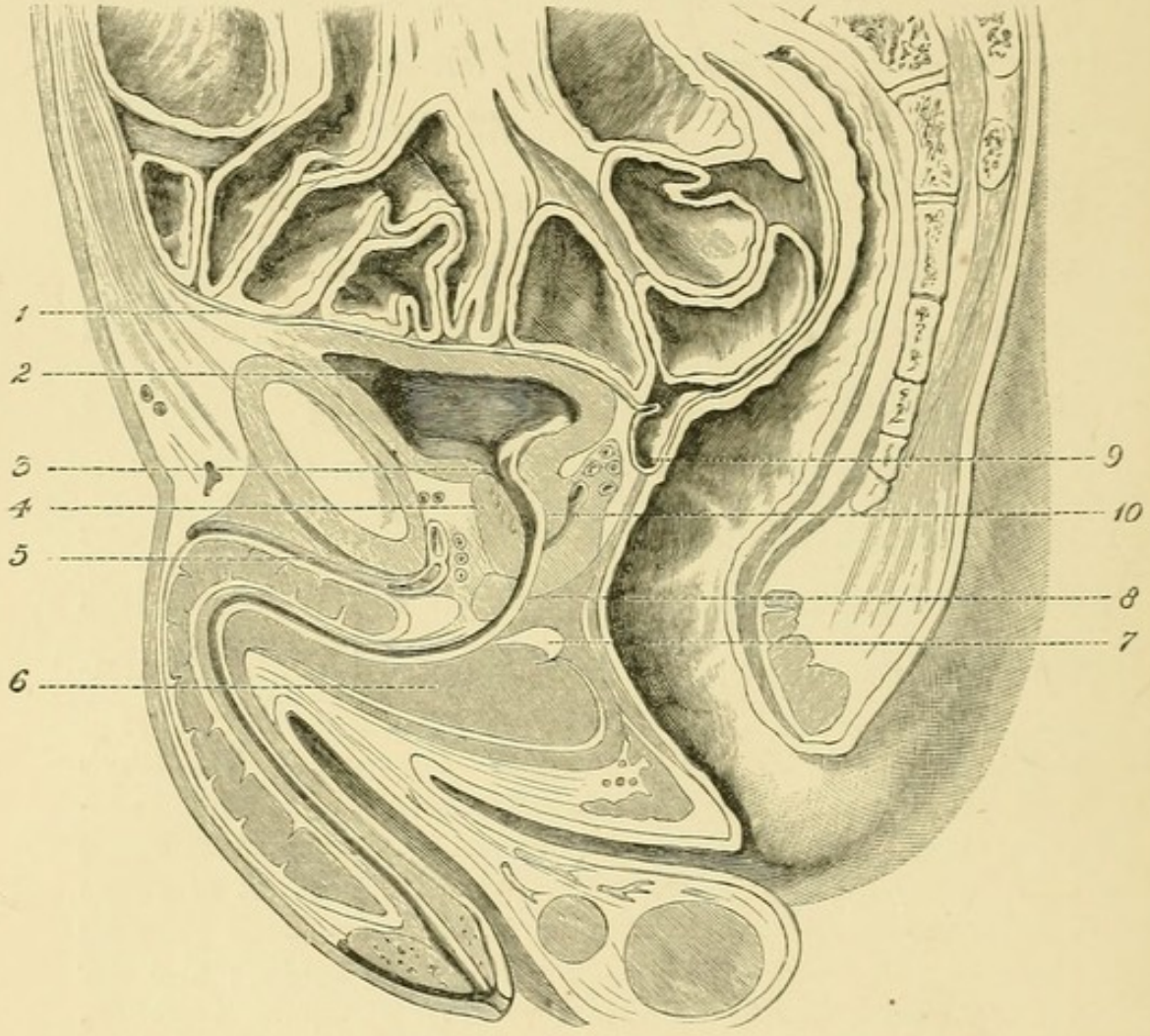


FIG. 3.—Drawing from Garson, showing position of organs in their natural condition; the numerals indicate the same anatomical parts in each drawing.

rose also the peritoneal covering, so as to leave a suprapubic interval of large extent. He drew up a memoir on the subject, embodying the facts obtained and his deductions therefrom, expressly

pointing out their importance in relation to the operation of suprapubic lithotomy. (See figs. 3 and 4, copied by permission from Garson's original

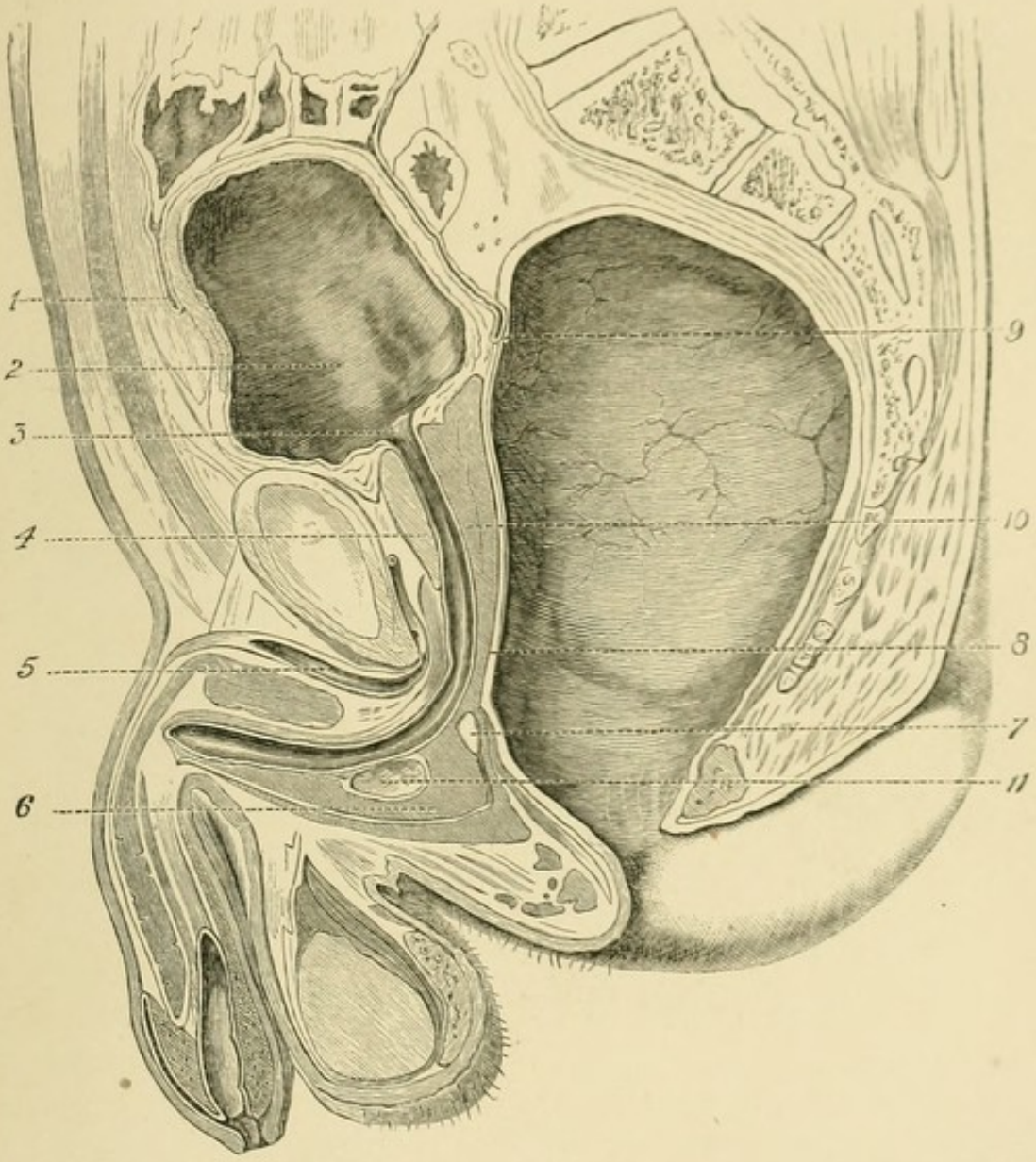


FIG. 4.—Drawing from Garson, showing position of bladder produced by distension of rectum.

work.) This memoir was read for him by Professor Braune at the Congress of German Surgeons on

April 12, 1878 ; it was illustrated by plaster casts of the sections and the drawings referred to, which latter, with the paper itself, were afterwards published in Germany,[1] and also in this country in the following autumn.[2] Professor Petersen of Kiel was present, and there is little doubt that he was thus led to test by practice the theoretical question of the abundant space in this manner obtained for the high operation, then raised by Garson. For in April 1880, at a subsequent meeting of the same Congress in Berlin,[3] Petersen read a paper advocating a resort to the suprapubic route on grounds derived from the facts described ; and he appears to have been the first to establish the practical facility which they offered to the lithotomist called upon to deal with calculus of large size. The method which he had adopted, and now proposed, was to inject the bladder as far as it would fairly bear with some antiseptic solution ; then to introduce a pear-shaped indiarubber bag with a capacity

Professor Petersen of Kiel proposes an important improvement, 1880.

His method ;

[1] *Dislocation der Harnblase und des Peritoneum bei Ausdehnung des Rectum.* Von Dr. Med. J. G. Garson, aus Edinburgh. Read at the Congress of German Surgeons at Berlin, April, 1878 ; and published in the *Archiv für Anatomie*, 1878, p. 171, with plates.

[2] In England this paper was first published in the *Edinburgh Medical Journal*, October, 1878 ; and as a pamphlet shortly afterwards.

[3] Memoir read by Professor Petersen at the Congress of Surgical Science at Berlin, April 7, 1880 ; appearing in the *Archiv für Clin. Chirurg.* vol. xxv. 1880.

of about sixteen ounces into the rectum. This being distended, he also found that the patient's bladder gradually rises into the abdomen and carries with it the fold of peritoneum, thus leaving above the pubes the interval described, in which the necessary incisions can be safely made. The steps of the proceeding were then not materially different from those employed by previous operators. Finally, the stone being removed, Petersen employed sutures to bring together the sides of the wound, leaving only space for a tube to convey the urine from the bladder. In one case he attempted to close the bladder entirely with sutures, but without success.

his attempt with sutures.

The proceeding was adopted subsequently in Germany, with and without modifications, chiefly in the cases of children, and with success. Périer was the first to try it in Paris in 1881 ;[1] he was soon followed, among others, by Guyon, whose interesting paper, with an account of eight cases, appeared in 1883.[2] I advocated the proceeding on the basis of these various reports in my lectures, as above stated, and very soon after doing so performed my first case, being the first example of

Results of his proceeding in other hands, 1881–3.

[1] *Mémoire à l'Académie de la Méd.*, August 1881, by M. Périer ; with report thereon by M. Gosselin, in September.

[2] *Contributions Cliniques*, par J. T. C. Guyon. *Annales des Maladies des Organes Urinaires.* Paris, 1883.

Author's first case, 1883;

calculus I had met with, during more than a year, sufficiently large according to my judgment to warrant me in substituting a cutting operation for the crushing one. On July 2 in that year I removed from a man aged thirty-six a calculus of pure cystine, weighing $2\frac{3}{4}$ ounces, or about 65 grammes, and he made an excellent, although slow, recovery.[1] Since that time I have performed seven other cases, making eight, by the new method of rectal distension, with one death only. Each one of the other seven patients is living and well at the present date.

followed by seven others.

The second case was in March 1885: that of a lad aged twelve years, with a calculus weighing $1\frac{1}{2}$ ounce, or about 44 grammes.[2]

The third was in April 1885: that of a gentleman aged seventy-three, from whom I took a calculus weighing also $1\frac{1}{2}$ ounce, or 44 grammes.[3]

The fourth, in the same month, was an enormous calculus of pure uric acid, weighing 14 ounces, or more than 400 grammes, from a man aged sixty-two.[4]

All these recovered. Then followed the fifth case, that of a very infirm and suffering patient of seventy years, whose calculus weighed $1\frac{3}{4}$ ounce,

[1] *Lancet* (report in), October 18, 1884.

[2] *Ibid.*, July 18 and 25, 1885. See also the reports of cases at the end of this volume. [3] *Ibid.* [4] *Ibid.*

or about 50 grammes, and who died of exhaustion, without manifesting any signs of local injury or of morbid action, on the ninth day.

The sixth case occurred in August last, in a gentleman of seventy-six years—the calculus weighing $6\frac{1}{2}$ ounces, or 195 grammes—who made a good recovery.

The seventh case was that of a lady aged seventy-three, in whom I performed it in October last, in order to remove a large papillomatous tumour, and did so successfully.

The eighth case was that of a gentleman aged fifty-five, for the removal of a very large papillomatous tumour, on November 16—who is recovering rapidly.

Description of the operation in detail.

I shall now consider the practical mode of performing the operation; detailing the steps which appear to me to be necessary in order to accomplish it safely and easily.

A very simple one.

First, let it be stated that it is a very simple proceeding, and easy of performance, much more so than is lateral lithotomy. A good deal has been written, as it appears to me, with a tendency to associate unnecessary complications with the new method, to induce the surgeon to take certain needless precautions in the way of preparatory

treatment in regard to the practical operative procedure, and to the after management.

Unnecessary refinements and additions have been employed.

Very few indeed of these proposals appear to be desirable, while some of them are, in my belief, absolutely injurious in practice.

No previous preparation of the bladder is necessary. Attempts to increase the capacity of the viscus by preliminary injection, which some surgeons have made, almost invariably fail to accomplish the object aimed at; on the contrary, they increase already existing irritation. Furthermore, a capacious bladder is by no means necessary.

An empty condition of the rectum having been ensured by enema, the patient may lie on his back on a table, with his head and shoulders slightly raised. As soon as he is unconscious, I roll the empty indiarubber bag into a cone, grease it well, and introduce it with a firm hand into the rectum, taking care that it shall be completely above the grasp of the sphincter (see fig. 5). Then about twelve or fourteen ounces of water are gently thrown into the rectal bag, in the case of an adult. I prefer to make this the first step of the proceeding. I next introduce a flexible catheter into the bladder, and inject slowly and gently six, eight, or ten ounces, feeling my way carefully

Introduction of rectal bag.

Injection of the bladder to be very carefully made,

according to the resistance perceived in the act, and the degree of eminence observed above the pubes, almost invariably obvious to the eye as well as to the hand, taking care to avoid the application of force. The rectal distension is essential, the vesical need not be considerable. The fluid used should be a mild antiseptic solution, such as one of boracic acid, which is often adopted. Employing carbolic acid solutions uniformly for most purposes, I generally inject one not exceeding in strength one part in 1,000. The catheter being withdrawn, the base of the penis is firmly ligatured with an indiarubber tube. Palpation above the symphysis now demonstrates the position of the bladder, most of it lying above the brim of the pelvis in the form of a rounded ball. Having taken my place by preference on the patient's left side, a vertical incision of the skin and cellular tissue, strictly in the median

with weak antiseptic solution.

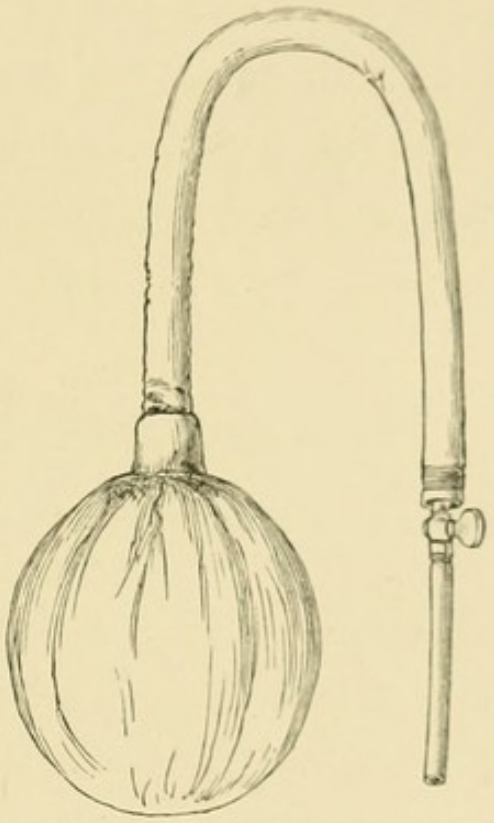


FIG. 5.—India-rubber bag for the rectum.

First incision.

line, over the salient bladder, is made about three inches long or a little more, overlapping the hard upper border of the symphysis below. The skin may be conveniently divided by transfixing a fold lifted up for the purpose; the precise method, however, is not material. This being done, I lay aside the knife, and prefer to use only the right

Separation of all soft tissues by means of the finger-nail.

index finger-nail for separating the tissues, which differ in nature and in thickness among individuals according to the amount of fat present—a matter very easily accomplished, until the linea

FIG. 6.—Flat director.

Division of the linea alba;

alba is reached. A few fibres of this should be seized and slightly raised by means of an artery forceps, while with the blade of a scalpel held horizontally a small opening is made, so as to admit a wide flat director (fig. 6) to be carried beneath, on which to divide that structure upwards and downwards for about an inch and a quarter in each direction. The finger-nail is then again employed, separating the muscles, &c. in the

of transversalis fascia.

median line until another fibrous layer is apparent, the transversalis fascia, and it is divided

on the director precisely as before. If the stone is large, the insertion of a rectus muscle into the pubic ramus on each side may be divided to a small extent. The yellow fat covering the bladder now comes into view. This should be carefully separated in the middle line by scraping with the nail from behind the symphysis pubis in the direction upwards, so as to place the peritoneum out of reach should it be near, until the prominence of the distended bladder is easily felt, and perhaps even the stone, covered only by the

Partial division of muscular insertion.

The yellow fat.

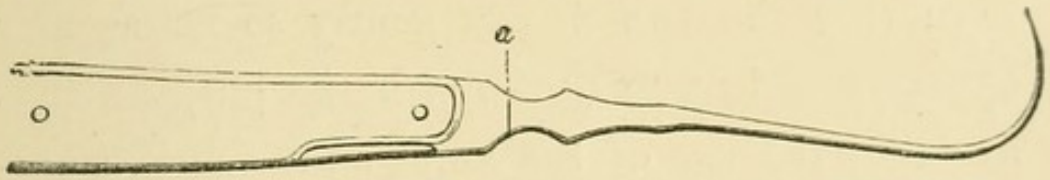


FIG. 7.—Hook used when opening the bladder.

vesical wall beneath the operator's finger. Veins appearing hereabout may give much trouble by bleeding if the knife is employed; but for this, however, there is no occasion. By scraping with the nail upwards and downwards, and pushing or drawing them carefully aside, they may be safely removed from the line of action until the fibres of the bladder are exposed. After due examination a small curved hook (fig. 7) should be carried through the vesical coats, when a little fluid is seen to issue by its side, proving that the bladder

Veins to be watched.

Opening the bladder.

has been fairly entered. Maintaining the hook elevated by the left hand, a scalpel in the right makes a small puncture by the side of the hook (which still retains its hold), just sufficient for the index finger to be introduced and partially stop the outflow of water now rapidly issuing from the orifice. A few moments suffice for the finger to determine the size, form, and position of the stone, and to decide how large an opening is necessary for its removal. I make the opening by introducing the left index by the side of the right, separating the two fingers gently so far as may appear sufficient to accomplish the purpose, thus avoiding the use of the knife, and with it, sometimes, troublesome hæmorrhage.

Enlarging the opening.

When the operation has been performed for the purpose of removing a tumour, I have passed a loop of stout silk through each margin of the vesical opening in the same manner as we have been accustomed to do in the borders of the cut urethra, when opening it from the perineum in front of an impassable stricture. Each loop gently held up by an assistant on either side gives easy access to the bladder, which may be further aided by letting some of the liquid issue from the rectal bag. In dealing with the large hard calculi for

Silk loops in margin of bladder when tumour to be removed.

which the operation has been chiefly adopted, the use of the silk is unnecessary.

Extraction of calculus.

The extraction of the stone may be done in the usual manner by means of forceps; but I prefer to effect it if possible by using the two index fingers as blades, while the two hands are locked together by interclasping the other fingers of each. In this manner one index is insinuated beneath the stone, the other follows above it, and then by grasping the two hands together, the stone is safely removed. Each finger is applied like the single blade of a midwifery forceps. The bladder is now ascertained to be free from other contents, and little else remains to be done. The open wound will give issue to the urine, and I have seen no danger of infiltration if the wound is left quite free for the purpose of ensuring a patent outlet. The only attempt I have made to limit the extent of the wound has been by introducing one large suture about an inch below the upper angle, through the abdominal walls. I have never used a single stitch in the bladder; and whether even the former is serviceable or not may be questioned. I have thought it desirable to leave five or six inches of large indiarubber tube for the first twenty-four or forty-eight hours to ensure

Leave the opening patent.

A tube for a day or so perhaps;

sometimes a catheter.

a free opening in case of hæmorrhage, and sometimes also a soft full-sized catheter in the urethra. The patient has generally been relieved by the removal of these in two or three days, sometimes sooner.

Position of the patient.

He lies on his back during the first twenty-four hours, and then on each side alternately for six hours at a time, and all the urine runs easily in this way from the wound, and excoriation of the skin is prevented by one side only being wetted for that short period at a time.

Subsequent dressings.

No other dressing than layers of lint soaked in weak carbolic acid solution, or in one of boracic acid, has ever been employed by me. Every patient has made a good recovery except one, the man of seventy-three years, who died, as before said, of sheer exhaustion on the ninth day.

No vessels require ligature when dissection is made by the finger-nail or instrument recently devised by author.

Among the eight cases one artery only was tied, and no torsion or other method was required, and there has been no venous hæmorrhage. This result I attribute to the substitution of the finger nail for the knife in the division of all tissues except the three layers named : the skin, the linea alba, and the transversalis fascia. The nail not only serves to guard the veins as above said, but to push up the peritoneum, should it be in the way, at the upper angle of the wound ; but this I

believe it rarely can be if the rectal distension has been properly made. In order to save the use of the finger-nail, and for those who are unable to rely on that appendage, I have lately designed and employed an ivory separator, which is, perhaps, more trustworthy than the former. It is made entirely of bone or ivory, and consists of a central handle with a projecting portion at each end : one to represent or to replace the nail, a thin lamina slightly serrated ; the other a curved hook to draw veins out of the way (fig. 8).

Ivory separator described.

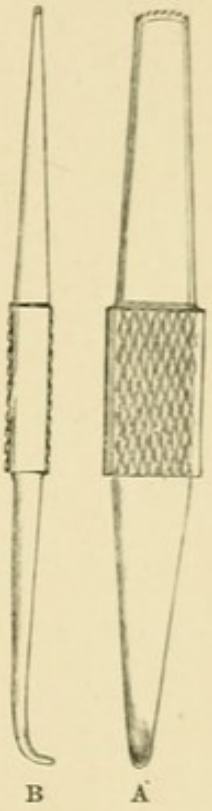


FIG. 8.—The ivory separator.
A, front view ; B, in profile, showing the hook.

There is a modification of the suprapubic operation necessary to be adopted when dealing with the female bladder, since it cannot be permanently distended like that of the male. And the same condition occurs in that of the male also, if, after opening the urethra for the purpose of exploring the bladder, it is deemed necessary immediately to operate above the pubes. This may happen, as it has done on one occasion to myself, when I have found the tumour too large to be removed by the perineal route, or is so situated that it can be

Modification of operation necessary for female patients ; and for males with urethra opened from the perineum.

only safely attacked from above. The distension of the rectum is to be fully made as usual; but as no fluid can be securely retained in the bladder in the circumstances described, the incision in the bladder must be made on a director previously passed into the viscus. This director should be in the form of a well curved hollow steel sound, with an open end neatly closed by an olivary bulb attached to a strong stylet running through the instrument, and capable of being fixed at the handle. Fig. 9 shows the sound, and fig. 10 the stylet with the bulbous end. At the extremity of the sound, a wide open slit about three-quarters of an inch long is made in the concave aspect (see fig. 11), with the bulb in place; fig. 12 shows the end of the instrument when the bulb is withdrawn.

A sound is desirable.

Described.

Mode of using it.

The sound being passed, and the olivary end felt above the pubes, after the dissection has approached the bladder, the stylet is removed. The end of the sound and the slit therein are now easily recognised by the index finger; and then the hook is passed deeply into the slit so as to take up a portion of the wall of the bladder and hold it securely, while it is perforated by a scalpel in an adjacent spot. By this means the bladder is prevented from collapsing and slipping down

out of sight or reach—an accident very apt to occur and to embarrass the operator if he opens

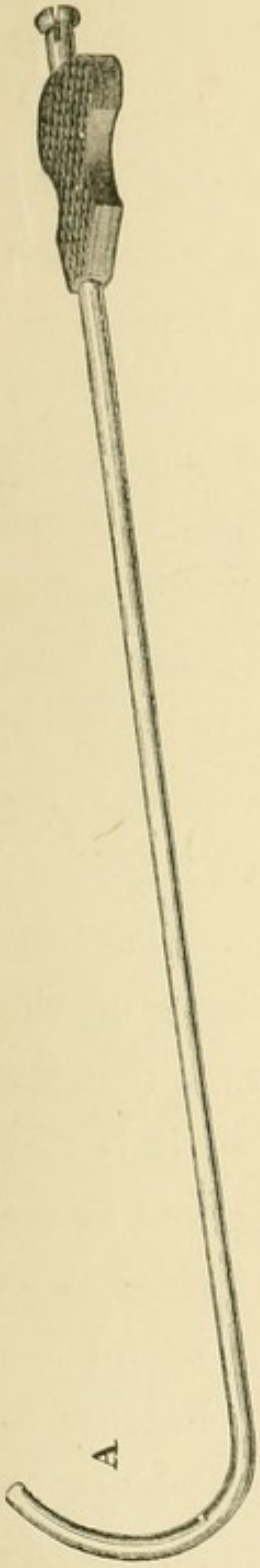


FIG. 9.—Hollow sound for the high operation.

FIG. 10.—Its stylet with a bulbous end.

FIG. 11. — End of the sound containing bulbous stylet. Natural size.

FIG. 12.—The same, with the bulb withdrawn.

the viscus on the end of an ordinary sound, which usually emerges by the opening while the bladder disappears by contracting and shrinking around the instrument.

In these circumstances it has been often found difficult to introduce anything into the cavity by the side of the sound, a dilemma which the little contrivance proposed above plainly provides against. And it is in precisely these circumstances, when the operator finds it difficult to regain his way into the bladder, lost by the sliding down of the empty viscus over the sound, and also when the opening made is small, and has not been secured with the loops of silk recommended above, that his finger is apt to fail in the attempt to enter the cavity. Nothing is easier than to be deceived in this matter, and he may break up cellular connections outside the neck and the base of the bladder, erroneously believing all the time that the finger is exploring the interior. Then it is that infiltration of urine is likely to occur; and as the accident described has, I believe, in former days not been an uncommon one when the sound has been relied on for a guide, the former liability to that unhappy occurrence may thus, perhaps, be explained. There is no fear of the contingency

happening now in the modern mode of performing the operation.

Practical result of some of Bouley's researches on the subject.

It is worthy of remark here, that Dr. Bouley, before referred to, has made numerous experiments by distending the rectum on the dead body, with the view of determining certain questions relating to the extent, &c., of the suprapubic interval, and among other observations he has made the following. He finds that, under the influence of rectal distension, the suprapubic interval is rather larger in persons inclining to be stout than in those who are thin ;[1] and that in very spare subjects the interval was still less affected by distension. Further, he believed that a sufficient interval is ensured by a moderate amount of distension, say about 13 or 14 ounces in the rectum, and about 8 or 10 ounces in the bladder, an opinion which my experience on the living corroborates. Without doubt it is the rectal distension which is the potent factor in forcing the bladder into the abdomen, and with it the peritoneal layer ; more so at least than the distension of the bladder itself—a fact which Garson has specially demonstrated.

In relation to the removal of vesical tumour, although a simple incision from the perineal sur-

[1] Bouley, *op. cit.* p. 95.

face to the membranous urethra, sufficing only to admit the index finger to enter and explore the bladder, enables an expert operator also to remove a polypoid growth, I am free to admit that large and compound tumours are more safely and efficiently dealt with by the modern suprapubic operation.

I have already expressed that opinion in my work on vesical tumours [1] in relation to exceptionally large growths, although I had not at the date of its publication thought it necessary to adopt the high operation for any of the cases which had come under my observation.

But a larger experience of the removal of calculus by the new procedure has increased my estimate of its probable value for the removal of tumours also. Naturally the high operation permits a somewhat more extended use of the sense of touch than is practicable by the perineal incision; and it adds thereto the ability to see to a limited extent, conferring also an opportunity to apply the cautery or styptics, in some cases perhaps a course not without value.

There is another ground also on which the suprapubic operation may be sometimes preferred

[1] *Tumours of the Bladder*, by the Author, p. 77. London, 1884.

to the other, and that is the remarkable freedom from hæmorrhage which characterises it. The wound in the abdominal region is much larger, much more formidable in appearance, than that in the perineum, but the latter may—although in quite exceptional cases—bleed largely; while, as has been shown in the foregoing pages, this accident can scarcely ever happen in connection with the first-named procedure, if performed in the manner there advised. I selected it in case No. 8 because the patient was the subject of a large growth, and also because he was so anæmic that I feared the risk of fresh hæmorrhage.

So safe and so simple indeed is the suprapubic operation here described, that I will reiterate in this place before concluding, and with increased emphasis, an opinion incidentally mentioned at the outset. I believe that a surgeon who is not practically familiar with lithotrity, on meeting with a hard calculus which is found on trial not to be readily seized with a lithotrite, will be more likely to achieve a lasting success for his patient by adopting the cutting in preference to the crushing operation.

Cases of the High Operation by the Modern Method, illustrating the foregoing remarks, and referred to in the text.

Case 1.—A gentleman, aged 36, formerly under the care of my friend Dr. William Roberts, of Manchester, who had observed continuous and large deposits of cystine in the urine for some time, came to me with severe symptoms of calculus in the bladder on June 18, 1884. On sounding, I immediately struck a large stone, and advised lithotrity without delay.

1884, *June* 19.—I attempted under ether to seize a large, hard, and rather rounded mass, but it escaped the grasp of my largest lithotrite. Dr. Caspar, of Berlin, and Dr. Pinter, of Buda-Pesth, were present. After devoting three or four minutes to the careful examination of the calculus, both by the bladder and rectum, I determined to wait a day or two, and then to perform the suprapubic operation. The patient had fever after this, which was unusually prolonged, and nearly a fortnight elapsed before I considered him in a fit state for operation.

July 2.—Mr. Moss gave ether; the gentlemen above named were present, and my friend Mr. Buckston Browne was my chief assistant. I commenced by injecting about nine or ten ounces of a weak solution of boracic acid in water into the bladder, and tying the penis firmly with a vulcanised catheter, I then introduced the pear-shaped indiarubber bag, folded longitudinally, into the rectum, distending it gradually with water from a large syringe until about twelve ounces had entered, when the stopcock was turned.

On percussing the lower part of the abdomen, it was obvious that the bladder was now occupying the suprapubic region, a rounded mass corresponding thereto being very clearly defined. I made the usual longitudinal incision about three or three inches and a half long in the median line, the lowest point of it reaching to the front aspect of the upper margin of the symphysis; on laying bare the linea alba, it was divided on a director; the transversalis fascia was treated in like manner, and also the fibrous attachments of the recti muscles to the symphysis for nearly half an inch laterally on each side of the opening. The yellow fat covering the bladder then came into view, and this I divided with the index-finger and forceps. Scraping in a direction upwards with the nail of the right index finger, and hooking up all the tissues therewith into the upper angle of the wound, it was easy to identify the distended bladder, the surface of which had thus been cleared. No artery was cut, but a vein or two in the fat had been drawn aside by the finger, so that almost no blood was seen. Inserting a well-curved hook into the bladder, and thus giving issue to a little of the injected solution, I incised the vesical coats sufficiently to admit my finger, when I felt lying there directly beneath it a large calculus, the position of which was, topographically considered, abdominal, and not pelvic. It was now a simple matter to enlarge the incision and remove the stone with a pair of small forceps and my finger, taking care to maintain the sides of the bladder in place by hook and spatula. The ligature was removed from the penis, and the water allowed to flow from the rectal bag; a No. 12 gum catheter was tied

in the urethra, and a large vulcanised tube five inches long (with a single lateral aperture only, close to the terminal one) deep in the bladder, so as to ensure free drainage. Finally the rectal bag was removed, completing the proceeding.

I laid the patient on his side, well supporting him in that position by numerous pillows at his back and between the legs. This position appears to be a desirable one in the after-treatment, since it facilitates the drainage and enables the attendants to keep the patient dry. He was changed once daily from the right to the left side, and *vice versâ*. The tube was removed from the bladder on the fifth day, the catheter on the sixth. The first urine passed naturally by the penis was on July 17, the fifteenth day after the operation.

July 19.—He had severe secondary hæmorrhage from an arterial source rather deep in the wound, which happily was stopped by a ligature within a few minutes of the occurrence. He gradually regained strength until July 29, when, without known cause, an attack of epididymitis in the left side set in, and again reduced him.

August 8.—He begins to sit up; passes much urine by natural passage; the wound is fast contracting.—16*th*. Has walked out of doors for the first time.—20*th*. Wound closed, holds urine three hours; appetite good; recovering strength fast; returned home on the 24*th*, and bore the journey to the North well.

The calculus proved to be cystic oxide throughout, was of a rounded oval form, and weighed two ounces and three-quarters.

I heard in September from Dr. Roberts that he had seen the patient, that his condition was quite satisfactory, and that no cystine was at present observable in his urine. In the summer of 1885 he called on me, an active, busily-engaged man, enjoying excellent health.

Case 2.—W. R. P——, a lad aged 12, seen in consultation with Dr. Powdrell, of Euston Road, on March 17, 1885. The symptoms had not been very severe, but had become more so during the last six months. Attention had been drawn to them through the fact that the lad was forbidden by his master at school to leave the class-room to pass urine, an occurrence which led to my opinion being sought. I had little doubt as to the cause, and on sounding him found a large calculus, which, the patient's age being considered, I decided to remove by the high operation.

March 24.—Mr. Moss gave ether; Mr. Buckston Browne assisted me, with Mr. Powdrell and Mr. Robert Priestley. The rectum bag was introduced, and the bladder injected in the usual manner. The incisions and mode of proceeding were the same as before described; one vessel only requiring to be tied. A wide flattish oval calculus weighing an ounce and a half was removed with some little trouble, owing to its form and size. The recovery took place steadily without interruption.

March 26.—A little urine has passed by the urethra.

March 31.—Healing of the wound has progressed rapidly.

April 12.—He sits up daily.

April 15.—All urine passes by the urethra, and he returns home to-day.

In the beginning of June the patient was brought to see me; his local and general condition being in every way satisfactory.

Case 3.—W. H——, aged 62, a man of large and apparently powerful frame, from whose indistinct recollection it may be inferred that symptoms of calculus in the bladder had been experienced from fifteen to twenty years. For the past eleven years he has been unable to work (he is a small farmer), and during the last seven years he has passed his time chiefly in bed and on the sofa, almost entirely within doors, unable, as he said, to make up his mind to undergo an operation.

On April 28th last I saw him for the first time, being sent to me by Mr. Atkinson, of Bennington, Boston, Lincolnshire, for consultation. I sounded him, finding a stone of extremely large size; I advised him at once to submit to lithotomy, and determined on the high operation, as above stated.

On the following day, April 29th, Mr. Moss gave ether, Mr. Buckston Browne chiefly assisting me, with the aid of Dr. Hickman of Dorset Square, and Professor Rockwood of Colombo, Ceylon. The india-rubber bag was first introduced into the rectum, and then distended with twelve or thirteen ounces of water. A catheter was introduced into the bladder and nearly the same quantity injected there. The penis was firmly tied with a vulcanised catheter as before. The position of the bladder above the pubes was now very distinctly

visible, and could also be defined by palpation and percussion; it resembled a small gravid uterus. I made an incision of the skin and fatty tissue from the symphysis pubis upwards by transfixion, about four inches long, dissecting in the manner directed down to the linea alba; no vessel requiring attention was met with. Arrived at the linea alba, I notched it, and incised it upwards and downwards on a director, the total extent being about three inches. I then divided its connection with the symphysis pubis on each side laterally for about a third of an inch, as well as the attachments of the recti, and separated the latter with my finger, then divided the transversalis fascia, and continued by means of the finger-nail to avoid the veins, and to arrive at the bladder without any hæmorrhage worth noticing, and having had no occasion to tie or twist a single vessel. The sense of fluctuation from the bladder beneath the finger was now so distinct that I had merely to insert a small curved hook; holding this in the left hand, I resumed the scalpel, but solely for the purpose of puncturing the bladder sufficiently to allow the index finger to enter, which stopped the outflow of water as it passed and came into contact at once with a large stone underneath. I now insinuated the other index finger and gradually enlarged the opening, solely by finger distension, until I made room for the use of a large lithotomy forceps. By means of this, after two or three attempts, I acquired a firm hold on the longitudinal axis of an enormous stone, and removed it without much trouble (see fig. 13). There was no hæmorrhage worth mentioning, and no treatment was required in regard to it.

The indiarubber rectal bag and the ligature from the penis being removed, he was placed in bed on his back. No tube or catheter was introduced, and the urine drained off freely from the wound. There was very little fever, and after two days the patient was placed alternately for six hours at a time on either side, so as to provide for the outflow of urine with as little excoriation of the skin as possible.

May 20.—He is slowly acquiring strength; the pulse about ninety; the temperature at times a degree and a half above the normal standard. He is prone to slight diarrhœa, but is gradually improving.

June 4.—Walks about his room. Passes four ounces of urine daily by the urethra.

June 14.—He is desirous to leave town and enjoy country air. One third of the urine passes by the urethra, the rest by the suprapubic opening. His health is excellent; he walks daily, and as the healing process of the wound, greatly as it has diminished in size, will progress better at home than in London, no objection is made to his return.

July 14.—He writes me that 'almost all the water passes by the proper channel;' the wound, nearly healed, 'would only just admit a cedar pencil;' that he is 'in capital health, and walks two miles daily.'

In September I heard from him, and from his medical attendant, Mr. Atkinson, that he had made a complete and sound recovery, and had acquired active habits and a state of health he had not enjoyed for years.

Case 4.—A gentleman, aged seventy-three, previously under the care of Dr. W. M. Campbell, of

Liverpool, and seen by me on April 28, 1885. The symptoms were severe, and had existed more or less during about five years.

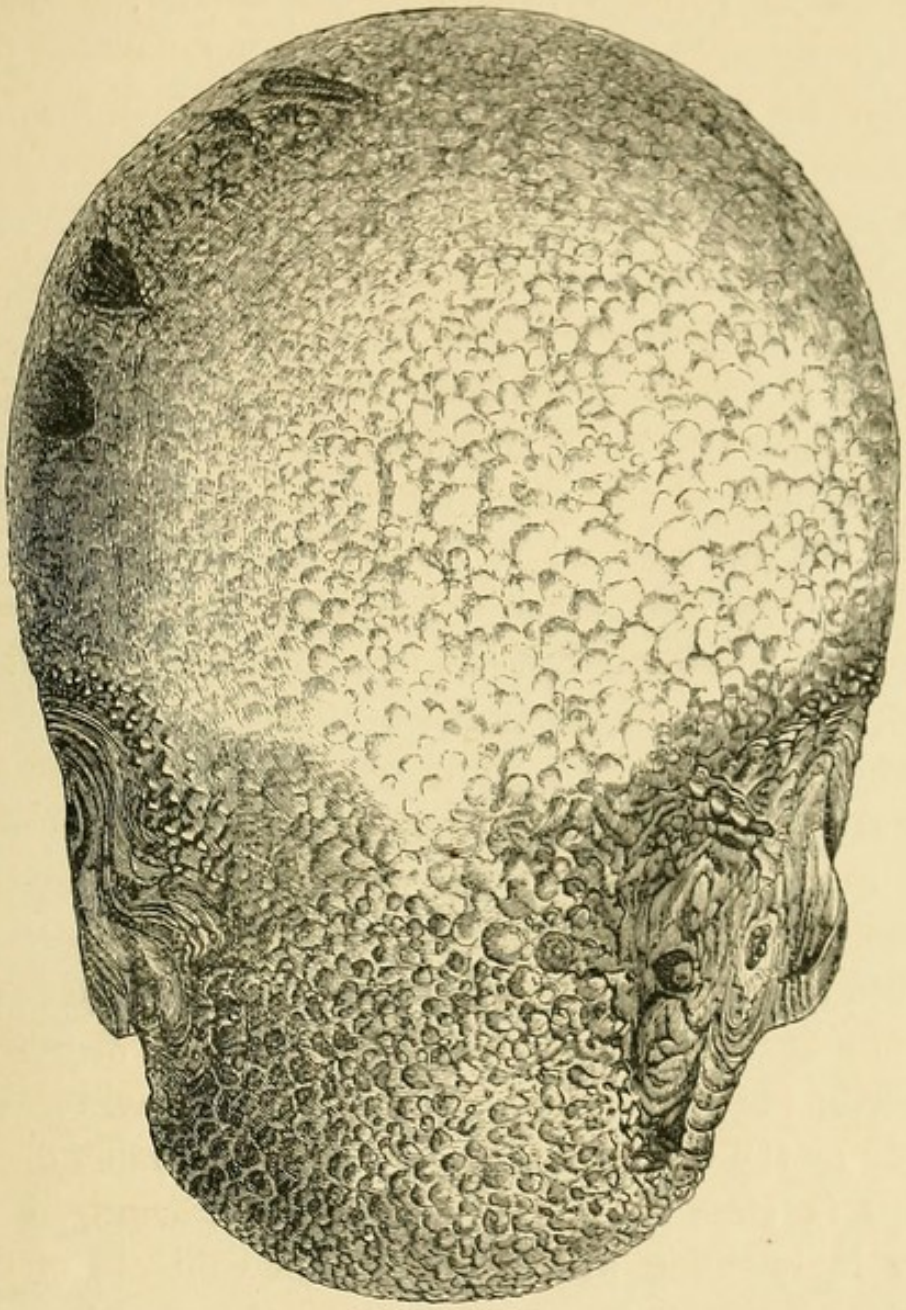


FIG. 13.—Uric acid calculus, represented of the natural size. It measures 4½ in. in length, by fully 3 in. in breadth; the major circumference being almost 12 in., the minor 8 in. The weight is 14 oz. avoirdupois, or about 400 grammes. There is a remarkable denudation of the layers of the calculus on each side, corresponding with the orifices of the ureters in the bladder; the entering currents from which have worn away the stone to a considerable extent.

May 2.—Mr. Moss gave ether, Mr. Buckston Browne assisting me; Dr. Hickman, of Dorset Square, and Dr. Rockwood, of Colombo, were present. I intended to perform lithotrity, but found the stone large, constantly slipping from the lithotrite, and the bladder by no means a very favourable one for the purpose. I decided to perform at once the high operation, and did it in the manner above described. No vessel was met with requiring either ligature or torsion; and, as in the preceding case, the dissection beyond the linea alba was made entirely with the finger-nail, a large vein or two being drawn aside. Nevertheless, in the afternoon of the day rather free hæmorrhage took place, and was arrested by firmly plugging the wound, secured by a pad and firm bandage. The stone was somewhat more rounded than flat in its contour, and weighed rather more than an ounce and a half.

The patient was greatly troubled with hiccough for several days; he was very feeble, and his progress consequently was very slow. All the urine passed by the wound. It was a month before he was able to leave the bed and sit up. But on June 12 he was able to go out in a Bath chair, and had acquired a fair degree of strength, his age considered. The urine still came chiefly by the wound, which, however, had much diminished in size; an indiarubber pad was arranged to cover it, enabling him to retain the contents of his bladder about two hours or so. On the 23rd inst. he left town for the seaside, in an improved condition.

July 15.—The patient called on me. He now passes all the urine naturally, and the wound has all but cicatrised. His health and strength are remarkably good.

Case 5.—J. B. aged 70. He had suffered severely the last two or three years, and was, when I first saw him, July 29, 1885, with my friend Mr. John Adams of Aldersgate Street, in a condition of extreme distress. He had only just been called to see the patient, and, suspecting the cause, desired me to see him in consultation. I sounded him and found a stone of full size, and decided to operate as soon as matters could be arranged for the patient's comfort.

August 5.—On attempting to crush the stone, I found it hard and large, while the bladder and prostate were greatly diseased. I determined, therefore, to perform the suprapubic operation at once. It was done in the manner above described; no ligature was necessary. Besides Mr. Adams, Dr. Stein of New York—author of the well-known monograph on 'Tumours of the Bladder'—was present at the operation. Everything went on well locally, and no signs of infiltration or septicæmic affection appeared. The patient was at the first very weak, and never regained strength; was averse to food; showed slowly increasing exhaustion, losing power day by day, and died on the 13th inst.

Case 6.—J. B., a gentleman aged 76. Seen at Woodbridge, Suffolk, on August 12, 1885, with Mr. R. Jones and Mr. A. A. Henley there. I had first seen this patient on December 7, 1870, and on that occasion only, previously. He had consulted me in London then; I had sounded him, found a small calculus, advised his submitting to lithotrity without delay—advice, however, which he declined—and I saw him no more until last August, when being summoned to the country to visit a patient suffering severely, I discovered

my old patient of 1870. He was now the subject of a large stone, for which I advised the suprapubic operation, and I went down on the 19th inst. to perform it, accompanied by Mr. Moss to give ether, and Mr. Buckston Browne, meeting Mr. Jones and Mr. Henley. The operation was done in the manner already described. No vessel was tied, and the knife was used only for the skin and the two fascial layers, and for the

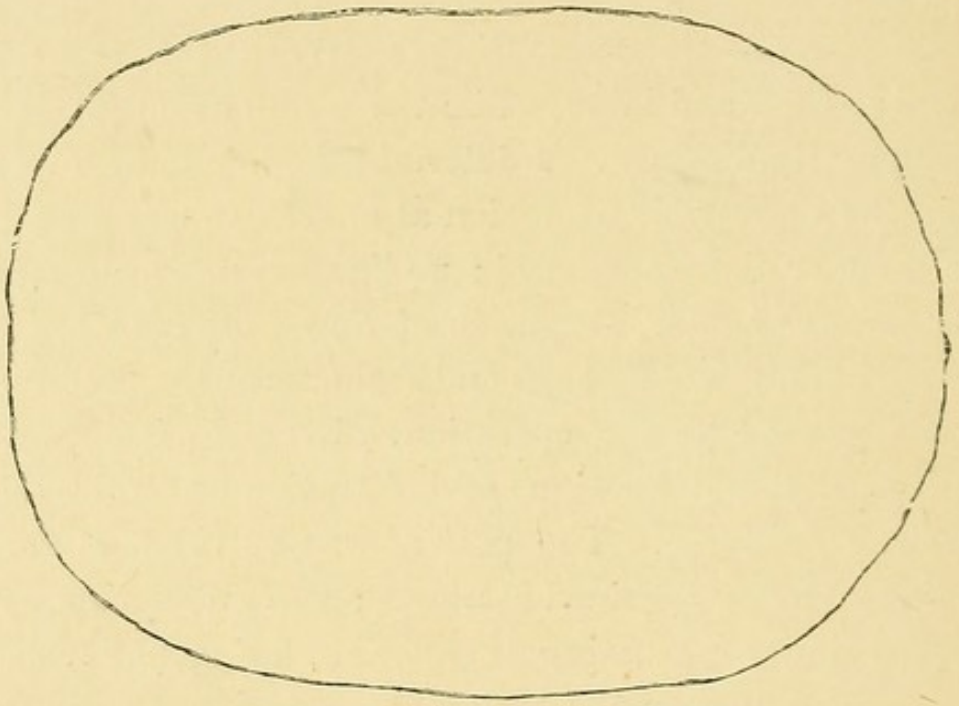


FIG. 14.—Large uric acid calculus with phosphatic coating.

puncture of the bladder. I removed a large oval uric acid calculus with my two index fingers in the manner described in the text. It weighed $6\frac{1}{2}$ ounces or 195 grammes, and measures $3\frac{1}{4}$ inches in length by $2\frac{3}{8}$ wide, and $1\frac{5}{8}$ in thickness: 9 inches by the largest circumference. (The fig. 14 gives the exact size and form.) It is interesting thus to be able to know the time requisite in this case to produce such a calculus. Sixteen years had elapsed since I struck a small stone,

which I then described as not larger than a nut. He made a good recovery; and is now well, without pain or other troublesome symptoms, and still active and healthy for his age. I saw Mr. Jones, his medical attendant, November 23, who gave me the foregoing report of his present condition.

Case 7.—Miss P., aged 73, sent to me in August 1885 by Dr. Edis of Gloucester. She has suffered from vesical hæmorrhage during the last year and half, and of late her symptoms have been severe and distressing. She is disturbed ten times in the night to relieve the bladder, and rarely has an interval of freedom during the day so long as three-quarters of an hour. She also suffers severely from pain during and after the act. On sounding, no stone is to be found, nor can anything like a firm growth be detected. On examining the urine no tumour débris is recognised. I decided to dilate the urethra and explore the bladder, suspecting the cause of her symptoms to be papilloma in some form. She desired to postpone this until the autumn.

October 17, 1885.—Mr. Moss gave ether; Mr. Buckston Browne assisting me as usual. On exploring the bladder, my finger encountered a large fleecy fimbriated papillomatous growth, springing from a single peduncle, not very narrow but not wide, at the upper extremity of the bladder. Accordingly I decided at once to do the suprapubic operation. This was performed with the indiarubber bag in the rectum as usual; but there was of course no distension of the bladder. In this I placed a sound, and then proceeded in the usual way, doing all the dissection with the

finger-nail, and finding no vessel to tie or twist; there was no bleeding worth naming. Having opened the bladder, I inserted in each margin of the opening a loop of stout silk to keep the cavity patent and to facilitate after proceedings. The tumour was found easily, and removed in several fragments, the whole being the size of a moderate orange. It is now in the hands of Mr. Shattock, the curator of St. Thomas's Hospital, for the purpose of preservation in the museum there. Very little constitutional disturbance ensued, and she made steady progress the next three weeks.

November 14.—Wound seems to be nearly closed. The urine passes in about equal quantities by it and by the natural passage.

November 21.—There is a great deal of irritation caused by the deposit of phosphates, probably on the base of the tumour remaining in the bladder. These are washed out, by which means relief is afforded.

December 7.—Wound nearly healed; much improved every way, and is beginning to take exercise.

Case 8.—A. S., aged 55. Has been the subject of frequent micturition for four or five years. I first saw him November 11, 1885.

In the commencement of 1884, the patient first observed blood in his urine in small quantities. The quantity, gradually increasing, has become very considerable the last few months. The patient looks exsanguine and is very feeble. Micturition extremely frequent day and night, taking place every half-hour or so. Pain severe at end of penis. Blood is most in quantity at the end of the act.

Sounded; nothing distinctly felt; rectum ex-

amined; prostate normal; the bladder is felt to be rather rounded and full beyond.

November 16, 1885.—Mr. Moss gave ether. Dr. Lloyd of Bloomsbury, Dr. Green of Iowa, U.S., and others present. Mr. Buckston Browne assisted me.

Expecting a large tumour, I did the suprapubic operation precisely as in the preceding case. A quantity of soft growth together with firmer masses was removed with the fingers and forceps, leaving a firm hard base close to the walls of the bladder. No vessel was tied; a tube was put in the wound, but no catheter.

November 17.—Removed tube. He lies on his side right and left alternately, and the urine runs out freely.

November 23.—Patient has had little suffering, requires no morphia. There is little or no rise of temperature, has no bad symptoms, takes light nourishment freely.

November 26.—Progressing satisfactorily.

December 7.—Recovering rapidly; urine commencing to pass by urethra.

The tumour, which is the largest I have removed, is at the museum of University College.

PRINTED BY
SPOTTISWOODE AND CO., NEW-STREET SQUARE
LONDON

Catalogue B] *London*, 11, *New Burlington Street*
October, 1885.

SELECTION

FROM

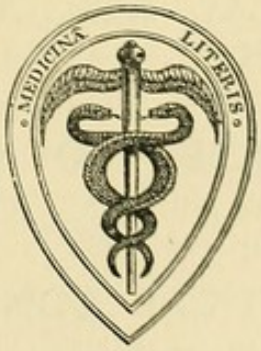
J. & A. CHURCHILL'S GENERAL CATALOGUE

COMPRISING

ALL RECENT WORKS PUBLISHED BY THEM

ON THE

ART AND SCIENCE OF MEDICINE



N.B.—As far as possible, this List is arranged in the order in which medical study is usually pursued

J. & A. CHURCHILL publish for the following Institutions and Public Bodies:—

ROYAL COLLEGE OF SURGEONS.

CATALOGUES OF THE MUSEUM.

Twenty-three separate Catalogues (List and Prices can be obtained of J. & A. CHURCHILL).

GUY'S HOSPITAL.

REPORTS BY THE MEDICAL AND SURGICAL STAFF.

Vol. XXVI., Third Series (1883). 7s. 6d.

LONDON HOSPITAL.

PHARMACOPŒIA OF THE HOSPITAL. 3s.

CLINICAL LECTURES AND REPORTS BY THE MEDICAL AND SURGICAL STAFF. Vols. I. to IV. 7s. 6d. each.

ST. BARTHOLOMEW'S HOSPITAL.

CATALOGUE OF THE ANATOMICAL AND PATHOLOGICAL MUSEUM. Vol. I.—Pathology. 15s. Vol. II.—Teratology, Anatomy and Physiology, Botany. 7s. 6d.

ST. GEORGE'S HOSPITAL.

REPORTS BY THE MEDICAL AND SURGICAL STAFF.

The last Volume (X.) was issued in 1880. Price 7s. 6d.

CATALOGUE OF THE PATHOLOGICAL MUSEUM. 15s.

SUPPLEMENTARY CATALOGUE (1882). 5s.

ST. THOMAS'S HOSPITAL.

REPORTS BY THE MEDICAL AND SURGICAL STAFF.

Annually. Vol. XI., New Series (1882). 7s. 6d.

MIDDLESEX HOSPITAL.

CATALOGUE OF THE PATHOLOGICAL MUSEUM. 12s.

ROYAL LONDON OPHTHALMIC HOSPITAL.

REPORTS BY THE MEDICAL AND SURGICAL STAFF.

Occasionally. Vol. X., Part III. (August, 1882). 5s.

OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM.

TRANSACTIONS.

Vol. II. (1881-2). 12s. 6d.

MEDICO-PSYCHOLOGICAL ASSOCIATION.

JOURNAL OF MENTAL SCIENCE.

Quarterly. 3s. 6d. each, or 14s. per annum.

PHARMACEUTICAL SOCIETY OF GREAT BRITAIN.

PHARMACEUTICAL JOURNAL AND TRANSACTIONS.

Every Saturday. 4d. each, or 20s. per annum, post free.

BRITISH PHARMACEUTICAL CONFERENCE.

YEAR BOOK OF PHARMACY.

In December. 10s.

BRITISH DENTAL ASSOCIATION.

JOURNAL OF THE ASSOCIATION AND MONTHLY REVIEW OF DENTAL SURGERY.

On the 15th of each Month. 6d. each, or 7s. per annum, post free.

A SELECTION

FROM

J. & A. CHURCHILL'S GENERAL CATALOGUE,

COMPRISING

ALL RECENT WORKS PUBLISHED BY THEM ON THE ART AND SCIENCE OF MEDICINE.

N.B.—*J. & A. Churchill's Descriptive List of Works on Chemistry, Materia Medica, Pharmacy, Botany, Photography, Zoology, the Microscope, and other Branches of Science, can be had on application.*

Practical Anatomy:
A Manual of Dissections. By CHRISTOPHER HEATH, Surgeon to University College Hospital. Sixth Edition. Revised by RICKMAN J. GODLEE, M.S. Lond., F.R.C.S., Demonstrator of Anatomy in University College, and Assistant Surgeon to the Hospital. Crown 8vo, with 24 Coloured Plates and 274 Engravings, 15s.

Wilson's Anatomist's Vade-Mecum. Tenth Edition. By GEORGE BUCHANAN, Professor of Clinical Surgery in the University of Glasgow; and HENRY E. CLARK, M.R.C.S., Lecturer on Anatomy at the Glasgow Royal Infirmary School of Medicine. Crown 8vo, with 450 Engravings (including 26 Coloured Plates), 18s.

Braune's Atlas of Topographical Anatomy, after Plane Sections of Frozen Bodies. Translated by EDWARD BELLAMY, Surgeon to, and Lecturer on Anatomy, &c., at, Charing Cross Hospital. Large Imp. 8vo, with 34 Photolithographic Plates and 46 Woodcuts, 40s.

An Atlas of Human Anatomy.
By RICKMAN J. GODLEE, M.S., F.R.C.S., Assistant Surgeon and Senior Demonstrator of Anatomy, University College Hospital. With 48 Imp. 4to Plates (112 figures), and a volume of Explanatory Text, 8vo, £4 14s. 6d.

Surgical Anatomy:
A series of Dissections, illustrating the Principal Regions of the Human Body. By JOSEPH MACLISE. Second Edition. 52 folio Plates and Text. £3 12s.

Medical Anatomy.
By FRANCIS SIBSON, M.D., F.R.C.P., F.R.S. Imp. folio, with 21 Coloured Plates, 42s.

Anatomy of the Joints of Man.
By HENRY MORRIS, Surgeon to, and Lecturer on Anatomy and Practical Surgery at, the Middlesex Hospital. 8vo, with 44 Lithographic Plates (several being coloured) and 13 Wood Engravings, 16s.

Manual of the Dissection of the Human Body. By LUTHER HOLDEN, Consulting Surgeon to St. Bartholomew's Hospital. Edited by JOHN LANGTON, F.R.C.S., Surgeon to, and Lecturer on Anatomy at, St. Bartholomew's Hospital. Fifth Edition. 8vo, with 208 Engravings. 20s.

By the same Author.

Human Osteology.
Sixth Edition, edited by the Author and JAMES SHUTER, F.R.C.S., M.A., M.B., Assistant Surgeon to St. Bartholomew's Hospital. 8vo, with 61 Lithographic Plates and 89 Engravings. 16s.

Also.

Landmarks, Medical and Surgical. Fourth Edition. 8vo. [*In the Press.*

The Student's Guide to Surgical Anatomy. By EDWARD BELLAMY, F.R.C.S. and Member of the Board of Examiners. Third Edition. Fcap. 8vo, with 81 Engravings. 7s. 6d.

The Student's Guide to Human Osteology. By WILLIAM WARWICK WAGSTAFFE, late Assistant Surgeon to St. Thomas's Hospital. Fcap. 8vo, with 23 Plates and 66 Engravings. 10s. 6d.

The Anatomical Remembrancer; or, Complete Pocket Anatomist. Eighth Edition. 32mo, 3s. 6d.

Diagrams of the Nerves of the Human Body, exhibiting their Origin, Divisions, and Connections, with their Distribution to the Various Regions of the Cutaneous Surface, and to all the Muscles. By W. H. FLOWER, F.R.S., F.R.C.S. Third Edition, with 6 Plates. Royal 4to, 12s.

Atlas of Pathological Anatomy. By Dr. LANCEREAUX. Translated by W. S. GREENFIELD, M.D., Professor of Pathology in the University of Edinburgh. Imp. 8vo, with 70 Coloured Plates, £5 5s.

A Manual of Pathological Anatomy. By C. HANDFIELD JONES, M.B., F.R.S., and E. H. SIEVEKING, M.D., F.R.C.P. Edited by J. F. PAYNE, M.D., F.R.C.P., Lecturer on General Pathology at St. Thomas's Hospital. Second Edition. Crown 8vo, with 195 Engravings, 16s.

Post-mortem Examinations: A Description and Explanation of the Method of Performing them, with especial reference to Medico-Legal Practice. By Prof. VIRCHOW. Translated by Dr. T. P. SMITH. Second Edition. Fcap. 8vo, with 4 Plates, 3s. 6d.

The Human Brain: Histological and Coarse Methods of Research. A Manual for Students and Asylum Medical Officers. By W. BEVAN LEWIS, L.R.C.P. Lond., Deputy Medical Superintendent to the West Riding Lunatic Asylum. 8vo, with Wood Engravings and Photographs, 8s.

Manual of Physiology: For the use of Junior Students of Medicine. By GERALD F. YEO, M.D., F.R.C.S., Professor of Physiology in King's College, London. Crown 8vo, with 300 Engravings, 14s.

Principles of Human Physiology. By W. B. CARPENTER, C.B., M.D., F.R.S. Ninth Edition. By HENRY POWER, M.B., F.R.C.S. 8vo, with 3 Steel Plates and 377 Wood Engravings, 31s. 6d.

Syllabus of a Course of Lectures on Physiology. By PHILIP H. PYE-SMITH, B.A., M.D., F.R.C.P., Physician to Guy's Hospital. Crown 8vo, with Diagrams and an Appendix of Notes and Tables, 5s.

Sanderson's Handbook for the Physiological Laboratory. By E. KLEIN, M.D., F.R.S.; J. BURDON-SANDERSON, M.D., F.R.S.; MICHAEL FOSTER, M.D., F.R.S.; and T. LAUDER BRUNTON, M.D., F.R.S. 8vo, with 123 Plates, 24s.

A Treatise on Human Physiology. By JOHN C. DALTON, M.D. Seventh Edition. 8vo, with 252 Engravings, 20s.

A Text-Book of Medical Physics, for the Use of Students and Practitioners of Medicine. By JOHN C. DRAPER, M.D., LL.D., Professor of Chemistry and Physics in the Medical Department of the University of New York. With 377 Engravings. 8vo, 18s.

Histology and Histo-Chemistry of Man. By HEINRICH FREY, Professor of Medicine in Zurich. Translated by ARTHUR E. J. BARKER, Assistant Surgeon to University College Hospital. 8vo, with 608 Engravings, 21s.

The Law of Sex. By G. B. STARKWEATHER, F.R.G.S. With 40 Illustrative Portraits. 8vo, 16s.

Manual of the Laws Affecting Medical Men. By ROBT. G. GLENN, LL.B., Barrister-at-Law. With a Chapter on Medical Etiquette, by A. CARPENTER, M.D. 8vo, 14s.

Medical Jurisprudence: Its Principles and Practice. By ALFRED S. TAYLOR, M.D., F.R.C.P., F.R.S. Third Edition, by THOMAS STEVENSON, M.D., F.R.C.P., Lecturer on Medical Jurisprudence at Guy's Hospital. 2 vols. 8vo, with 188 Engravings, 31s. 6d.

By the same Author.

A Manual of Medical Jurisprudence. Tenth Edition. Crown 8vo, with 55 Engravings, 14s.

Poisons, *Also.* In Relation to Medical Jurisprudence and Medicine. Third Edition. Crown 8vo, with 104 Engravings, 16s.

Lectures on Medical Jurisprudence. By FRANCIS OGSTON, M.D., late Professor in the University of Aberdeen. Edited by FRANCIS OGSTON, Jun., M.D. 8vo, with 12 Copper Plates, 18s.

A Handy Book of Forensic Medicine and Toxicology. By C. MEYMOTT TIDY, M.D., F.C.S., and W. BATHURST WOODMAN, M.D., F.R.C.P. 8vo, with 8 Lithographic Plates and 116 Engravings, 31s. 6d.

The Student's Guide to Medical Jurisprudence. By JOHN ABERCROMBIE, M.D., Lecturer on Forensic Medicine to Charing Cross Hospital. Fcap. 8vo, 7s. 6d.

Microscopical Examination of Drinking Water and of Air. By J. D. MACDONALD, M.D., F.R.S., Ex-Professor of Naval Hygiene in the Army Medical School. Second Edition. 8vo, with 25 Plates, 7s. 6d.

Dress: Its Sanitary Aspect. A Paper read before the Brighton Social Union, Jan. 30, 1880. By BERNARD ROTH, F.R.C.S. 8vo, with 8 Plates, 2s.

A Manual of Practical Hygiene. By F. A. PARKES, M.D., F.R.S. Sixth Edition, by F. DE CHAUMONT, M.D., F.R.S., Professor of Military Hygiene in the Army Medical School. 8vo, with numerous Plates and Engravings. 18s.

A Handbook of Hygiene and Sanitary Science. By GEO. WILSON, M.A., M.D., F.R.S.E., Medical Officer of Health for Mid-Warwickshire. Fifth Edition. Crown 8vo, with Engravings, 10s. 6d.

By the same Author.

Healthy Life and Healthy Dwellings: A Guide to Personal and Domestic Hygiene. Fcap. 8vo, 5s.

Sanitary Examinations Of Water, Air, and Food. A Vade-Mecum for the Medical Officer of Health. By CORNELIUS B. FOX, M.D., F.R.C.P. Crown 8vo, with 94 Engravings, 12s. 6d.

Dangers to Health: A Pictorial Guide to Domestic Sanitary Defects. By T. PRIDGIN TEALE, M.A., Surgeon to the Leeds General Infirmary. Fourth Edition. 8vo, with 70 Lithograph Plates (mostly coloured), 10s.

Hospitals, Infirmaries, and Dispensaries: Their Construction, Interior Arrangement, and Management; with Descriptions of existing Institutions, and 74 Illustrations. By F. OPPERT, M.D., M.R.C.P.L. Second Edition. Royal 8vo, 12s.

Pay Hospitals and Paying Wards throughout the World. By HENRY C. BURDETT, late Secretary to the Seamen's Hospital Society. 8vo, 7s.

By the same Author.

Cottage Hospitals — General, Fever, and Convalescent: Their Progress, Management, and Work. Second Edition, with many Plans and Illustrations. Crown 8vo, 14s.

Hospital Construction and Management. By F. J. MOUAT, M.D., Local Government Board Inspector, and H. SAXON SNELL, Fell. Roy. Inst. Brit. Architects. In 2 Parts, 4to, 15s. each; or, the whole work bound in half calf, with large Map, 54 Lithographic Plates, and 27 Woodcuts, 35s.

Manual of Anthropometry: A Guide to the Measurement of the Human Body, containing an Anthropometrical Chart and Register, a Systematic Table of Measurements, &c. By CHARLES ROBERTS, F.R.C.S. 8vo, with numerous Illustrations and Tables, 8s. 6d.

By the same Author.

Detection of Colour-Blindness and Imperfect Eyesight. 8vo, with a Table of Coloured Wools, and Sheet of Test-types, 5s.

A Manual of Psychological Medicine. With an Appendix of Cases. By JOHN C. BUCKNILL, M.D., F.R.S., and D. HACK TUKE, M.D., F.R.C.P. Fourth Edition. 8vo, with 12 Plates (30 Figures) and Engravings, 25s.

Illustrations of the Influence of the Mind upon the Body in Health and Disease: Designed to elucidate the Action of the Imagination. By DANIEL HACK TUKE, M.D., F.R.C.P., LL.D. Second Edition. 2 vols. crown 8vo, 15s.

By the same Author.

Sleep-Walking and Hypnotism. 8vo, 5s.

A Manual of Psychological Medicine and Allied Nervous Disorders. By EDWARD C. MANN, M.D., Member of the New York Medico-Legal Society. With Plates. 8vo, 24s.

Mental Diseases. Clinical Lectures. By T. S. CLOUSTON, M.D., F.R.C.P. Edin., Lecturer on Mental Diseases in the University of Edinburgh. With 8 Plates (6 Coloured). Crown 8vo, 12s. 6d.

The Student's Guide to the Practice of Midwifery. By D. LLOYD ROBERTS, M.D., F.R.C.P., Lecturer on Clinical Midwifery and Diseases of Women at Owen's College; Obstetric Physician to the Manchester Royal Infirmary. Third Edition. Fcap. 8vo, with 2 Coloured Plates and 127 Wood Engravings, 7s. 6d.

Handbook of Midwifery for Midwives: By J. E. BURTON, L.R.C.P. Lond., Surgeon to the Hospital for Women, Liverpool. Second Edition. With Engravings. Fcap. 8vo, 6s.

Lectures on Obstetric Operations: Including the Treatment of Hæmorrhage, and forming a Guide to the Management of Difficult Labour. By ROBERT BARNES, M.D., F.R.C.P., Obstetric Physician to St. George's Hospital. Third Edition. 8vo, with 124 Engravings, 18s.

By the same Author.

A Clinical History of Medical and Surgical Diseases of Women. Third Edition. 8vo, with Engravings. [*In the Press.*

Clinical Lectures on Diseases of Women: Delivered in St. Bartholomew's Hospital, by J. MATTHEWS DUNCAN, M.D., F.R.C.P., F.R.S.E. Second Edition. 8vo, 14s.

By the same Author.

Sterility in Woman. Being the Gulstonian Lectures, delivered in the Royal College of Physicians, in Feb., 1883. 8vo, 6s.

The Student's Guide to the Diseases of Women. By ALFRED L. GALABIN, M.D., F.R.C.P., Obstetric Physician to Guy's Hospital. Third Edition. Fcap. 8vo, with 78 Engravings, 7s. 6d.

West on the Diseases of Women. Fourth Edition, revised by the Author, with numerous Additions by J. MATTHEWS DUNCAN, M.D., F.R.C.P., F.R.S.E., Obstetric Physician to St. Bartholomew's Hospital. 8vo, 16s.

Notes on Diseases of Women: Specially designed to assist the Student in preparing for Examination. By J. J. REYNOLDS, L.R.C.P., M.R.C.S. Second Edition. Fcap. 8vo, 2s. 6d.

By the same Author.

Notes on Midwifery: Specially designed for Students preparing for Examination. Fcap. 8vo, 4s.

Dysmenorrhœa, its Pathology and Treatment. By HEYWOOD SMITH, M.D. Oxon., Physician to the Hospital for Women, &c. Crown 8vo, with Engravings, 4s. 6d.

Obstetric Aphorisms: For the Use of Students commencing Midwifery Practice. By JOSEPH G. SWAYNE, M.D. Eighth Edition. Fcap. 8vo, with Engravings, 3s. 6d.

Obstetric Medicine and Surgery: Their Principles and Practice. By F. H. RAMSBOTHAM, M.D., F.R.C.P. Fifth Edition. 8vo, with 120 Plates, 22s.

Schroeder's Manual of Midwifery, including the Pathology of Pregnancy and the Puerperal State. Translated by CHARLES H. CARTER, B.A., M.D. 8vo, with Engravings, 12s. 6d.

Influence of Posture on Women in Gynecic and Obstetric Practice. By J. H. AVELING, M.D., Physician to the Chelsea Hospital for Women. 8vo, 6s.

By the same Author.

The Chamberlens and the Midwifery Forceps: Memorials of the Family, and an Essay on the Invention of the Instrument. 8vo, with Engravings, 7s. 6d.

A Handbook of Uterine Therapeutics, and of Diseases of Women. By E. J. TILT, M.D., M.R.C.P. Fourth Edition. Post 8vo, 10s.

By the same Author.

The Change of Life In Health and Disease: A Clinical Treatise on the Diseases of the Nervous System incidental to Women at the Decline of Life. Fourth Edition. 8vo, 10s. 6d.

Chronic Disease of the Heart: Its Bearings upon Pregnancy, Parturition, and Childbed. By ANGUS MACDONALD, M.D., F.R.S.E., Physician to the Edinburgh Royal Infirmary. 8vo, with Engravings, 8s. 6d.

Ovarian and Uterine Tumours: Their Pathology and Surgical Treatment. By Sir T. SPENCER WELLS, Bart., F.R.C.S., Consulting Surgeon to the Samaritan Hospital. 8vo, with Engravings, 21s.

By the same Author.

Abdominal Tumours: Their Diagnosis and Surgical Treatment. 8vo, with Engravings, 3s. 6d.

The Principles and Practice of Gynæcology. By THOMAS ADDIS EMMET, M.D., Surgeon to the Woman's Hospital, New York. Third Edition. Royal 8vo, with 150 Engravings, 24s.

Diseases of the Uterus, Ovaries, and Fallopian Tubes: A Practical Treatise by A. COURTY, Professor of Clinical Surgery, Montpellier. Translated from Third Edition by his Pupil, AGNES MCLAREN, M.D., M.K.Q.C.P.I., with Preface by J. MATTHEWS DUNCAN, M.D., F.R.C.P. 8vo, with 424 Engravings, 24s.

Backward Displacements of the Uterus and Prolapsus Uteri: Treatment by the New Method of Shortening the Round Ligaments. By WILLIAM ALEXANDER, M.D., M.Ch.Q.U.I., F.R.C.S., Surgeon to the Liverpool Infirmary. Crown 8vo, with Engravings, 3s. 6d.

The Female Pelvic Organs: Their Surgery, Surgical Pathology, and Surgical Anatomy. In a Series of Coloured Plates taken from Nature; with Commentaries, Notes, and Cases. By HENRY SAVAGE, M.D., F.R.C.S., Consulting Officer of the Samaritan Free Hospital. Fifth Edition. Roy. 4to, with 17 Lithographic Plates (15 coloured) and 52 Woodcuts, £1 15s.

The Student's Guide to Diseases of Children. By JAS. F. GOODHART, M.D., F.R.C.P., Assistant Physician to Guy's Hospital; Physician to the Evelina Hospital for Sick Children. Fcap. 8vo, 10s. 6d.

The Wasting Diseases of Infants and Children. By EUSTACE SMITH, M.D., Physician to the King of the Belgians, Physician to the East London Hospital for Children. Fourth Edition. Post 8vo, 8s. 6d.

By the same Author.

Diseases in Children: A Practical Treatise. 8vo, 22s.

Also.

Clinical Studies of Disease in Children. Second Edition. Post 8vo. [*In the Press.*

A Practical Manual of the Diseases of Children. With a Formulary. By EDWARD ELLIS, M.D. Fourth Edition. Crown 8vo, 10s.

By the same Author.

A Manual of what every Mother should know. Fcap. 8vo, 1s. 6d.

Diseases of Children.
For Practitioners and Students. By W. H. DAY, M.D., Physician to the Samaritan Hospital. Second Edition. Crown 8vo, 12s. 6d.

Infant Feeding and its Influence on Life; By C. H. F. ROUTH, M.D., Physician to the Samaritan Hospital. Third Edition. Fcap. 8vo, 7s. 6d.

A Manual for Hospital Nurses and others engaged in Attending on the Sick. By EDWARD J. DOMVILLE, Surgeon to the Exeter Lying-in Charity. Fifth Edition. Crown 8vo, 2s. 6d.

A Manual of Nursing, Medical and Surgical. By CHARLES J. CULLINGWORTH, M.D., Physician to St. Mary's Hospital, Manchester. Second Edition. Fcap. 8vo, with Engravings, 3s. 6d.

By the same Author.

A Short Manual for Monthly Nurses. Fcap. 8vo, 1s. 6d.

Notes on Fever Nursing.
By J. W. ALLAN, M.B., Superintendent and Physician, Glasgow Fever Hospital. Crown 8vo, with Engravings, 2s. 6d.

Manual of Botany:
Including the Structure, Functions, Classification, Properties, and Uses of Plants. By ROBERT BENTLEY, Professor of Botany in King's College and to the Pharmaceutical Society. Fourth Edition. Crown 8vo, with 1,185 Engravings, 15s.

By the same Author.

The Student's Guide to Structural, Morphological, and Physiological Botany. With 660 Engravings. Fcap. 8vo, 7s. 6d.

Also.

The Student's Guide to Systematic Botany, including the Classification of Plants and Descriptive Botany. Fcap. 8vo, with 350 Engravings, 3s. 6d.

Medicinal Plants:
Being descriptions, with original figures, of the Principal Plants employed in Medicine, and an account of their Properties and Uses. By Prof. BENTLEY and Dr. H. TRIMEN. In 4 vols., large 8vo, with 306 Coloured Plates, bound in Half Morocco, Gilt Edges, £11 11s.

The National Dispensatory:
Containing the Natural History, Chemistry, Pharmacy, Actions and Uses of Medicines. By ALFRED STILLÉ, M.D., LL.D., and JOHN M. MAISCH, Ph.D. Third Edition. 8vo, with 311 Engravings, 36s.

Royle's Manual of Materia Medica and Therapeutics. Sixth Edition. By JOHN HARLEY, M.D., Physician to St. Thomas's Hospital. Crown 8vo, with 139 Engravings, 15s.

The Student's Guide to Materia Medica and Therapeutics. By JOHN C. THOROWGOOD, M.D., F.R.C.P. Second Edition. Fcap. 8vo, 7s.

Materia Medica and Therapeutics. By CHARLES D. F. PHILLIPS, M.D., F.R.S. Edin., late Lecturer on Materia Medica and Therapeutics at the Westminster Hospital Medical School.
Vol. 1—Vegetable Kingdom. 8vo, 15s.
Vol. 2—Inorganic Substances. 8vo, 21s.

Binz's Elements of Therapeutics: A Clinical Guide to the Action of Drugs. Translated by E. I. SPARKS, M.B., F.R.C.P. Crown 8vo, 8s. 6d.

Materia Medica.
A Manual for the use of Students. By ISAMBARD OWEN, M.D., F.R.C.P., Lecturer on Materia Medica, &c., to St. George's Hospital. Crown 8vo, 6s.

The Pharmacopœia of the London Hospital. Compiled under the direction of a Committee appointed by the Hospital Medical Council. Fcap. 8vo, 3s.

A Companion to the British Pharmacopœia. By PETER SQUIRE, F.L.S., assisted by his Sons, P. W. and A. H. SQUIRE. 13th Edition. 8vo, 10s. 6d.

By the same Authors.

The Pharmacopœias of the London Hospitals, arranged in Groups for Easy Reference and Comparison. Fifth Edition. 18mo, 6s.

Bazaar Medicines of India,
And Common Medical Plants: With Full Index of Diseases, indicating their Treatment by these and other Agents procurable throughout India, &c. By E. J. WARING, C.I.E., M.D., F.R.C.P. Fourth Edition. Fcap. 8vo, 5s.

Tropical Dysentery and Chronic Diarrhœa — Liver Abscess — Malarial Cachexia—Insolation—with other forms of Tropical Diseases, &c. By Sir JOSEPH FAYRER, K.C.S.I., M.D. 8vo, 15s.

By the same Author.

Climate and Fevers of India, with a series of Cases (Croonian Lectures, 1882). 8vo, with 17 Temperature Charts, 12s.

Family Medicine for India.
A Manual. By WILLIAM J. MOORE, M.D., C.I.E., Honorary Surgeon to the Viceroy of India. Published under the Authority of the Government of India. Fourth Edition. Post 8vo, with 64 Engravings, 12s.

By the same Author.

Health-Resorts for Tropical Invalids, in India, at Home, and Abroad. Post 8vo, 5s.

Diseases of Tropical Climates,
And their Treatment: With Hints for the Preservation of Health in the Tropics, By JAMES A. HORTON, M.D., Surgeon-Major. Second Edition. Post 8vo, 12s. 6d.

Spirillum Fever
(Synonyms, Famine or Relapsing Fever), as seen in Western India. By H. VANDYKE CARTER, M.D., F.R.C.P., Surgeon-Major I.M.D. 8vo, with Plates, 21s.

The Student's Guide to the Practice of Medicine. By MATTHEW CHARTERIS, M.D., Professor of Materia Medica in the University of Glasgow. Fourth Edition. Fcap. 8vo, with Engravings on Copper and Wood.
[*In the Press.*

Hooper's Physicians' Vade-Mecum. A Manual of the Principles and Practice of Physic. Tenth Edition. By W. A. GUY, F.R.C.P., F.R.S., and J. HARLEY, M.D., F.R.C.P. With 118 Engravings. Fcap. 8vo, 12s. 6d.

Clinical Medicine:
A Systematic Treatise on the Diagnosis and Treatment of Disease. By AUSTIN FLINT, M.D., Professor of Medicine in the Bellevue Hospital Medical College. 8vo, 20s.
By the same Author.

Phthisis:
In a series of Clinical Studies. 8vo, 16s.

The Student's Guide to Clinical Medicine and Case-Taking. By FRANCIS WARNER, M.D., F.R.C.P., Assistant Physician to the London Hospital. Second edition. Fcap. 8vo, 5s.

The Student's Guide to Medical Diagnosis. By SAMUEL FENWICK, M.D., F.R.C.P., Physician to the London Hospital. Fifth Edition. Fcap. 8vo, with 111 Engravings, 7s.
By the same Author.

The Student's Outlines of Medical Treatment. Second Edition. Fcap. 8vo, 7s.
Also.

On Chronic Atrophy of the Stomach, and on the Nervous Affections of the Digestive Organs. 8vo, 8s.

How to Examine the Chest:
Being a Practical Guide for the use of Students. By SAMUEL WEST, M.D., F.R.C.P., Physician to the City of London Hospital for Diseases of the Chest; Medical Tutor and Registrar at St. Bartholomew's Hospital. With 42 Engravings. Fcap. 8vo, 5s.

The Contagiousness of Pulmonary Consumption, and its Antiseptic Treatment. By J. BURNEY YEO, M.D., Physician to King's College Hospital. Crown 8vo, 3s. 6d.

The Operative Treatment of Intra-thoracic Effusion. Fothergillian Prize Essay. By NORMAN PORRITT, L.R.C.P. Lond., M.R.C.S. With Engravings. Crown 8vo, 6s.

The Microscope in Medicine.
By LIONEL S. BEALE, M.B., F.R.S., Physician to King's College Hospital. Fourth Edition. 8vo, with 86 Plates, 21s.
Also.

On Slight Ailments:
Their Nature and Treatment. Second Edition. 8vo, 5s.

The Spectroscope in Medicine.
By CHARLES A. MACMUNN, B.A., M.D. 8vo, with 3 Chromo-lithographic Plates of Physiological and Pathological Spectra, and 13 Engravings, 9s.

Diseases of the Chest:
Contributions to their Clinical History, Pathology, and Treatment. By A. T. HOUGHTON WATERS, M.D., Physician to the Liverpool Royal Infirmary. Second Edition. 8vo, with Plates, 15s.

Winter Cough
(Catarrh, Bronchitis, Emphysema, Asthma). By HORACE DOBELL, M.D., Consulting Physician to the Royal Hospital for Diseases of the Chest. Third Edition. 8vo, with Coloured Plates, 10s. 6d.
By the same Author.

Loss of Weight, Blood-Spitting, and Lung Disease. Second Edition, to which is added Part VI., "On the Functions and Diseases of the Liver." 8vo, with Chromo-lithograph, 10s. 6d.
Also.

The Mont Dore Cure, and the Proper Way to Use it. 8vo, 7s. 6d.

Notes on Asthma:
Its Forms and Treatment. By JOHN C. THOROWGOOD, M.D., Physician to the Hospital for Diseases of the Chest. Third Edition. Crown 8vo, 4s. 6d.

Croonian Lectures on Some Points in the Pathology and Treatment of Typhoid Fever. By WILLIAM CAYLEY, M.D., F.R.C.P., Physician to the Middlesex and the London Fever Hospitals. Crown 8vo, 4s. 6d.

Diseases of the Heart and Aorta:
Clinical Lectures. By G. W. BALFOUR, M.D., F.R.C.P., F.R.S. Edin., late Senior Physician and Lecturer on Clinical Medicine, Royal Infirmary, Edinburgh. Second Edition. 8vo, with Chromo-lithograph and Wood Engravings, 12s. 6d.

Manual of the Physical Diagnosis of Diseases of the Heart, including the use of the Sphygmograph and Cardiograph. By A. E. SANSOM, M.D., F.R.C.P., Assistant Physician to the London Hospital. Third Edition. Fcap. 8vo, with 48 Engravings, 7s. 6d.

Studies on Functional Nervous Disorders. By C. HANDFIELD JONES, M.B., F.R.S., Physician to St. Mary's Hospital. Second Edition. 8vo, 18s.

Medical Ophthalmoscopy : A Manual and Atlas. By WILLIAM R. GOWERS, M.D., F.R.C.P., Assistant Professor of Clinical Medicine in University College, and Senior Assistant Physician to the Hospital. Second Edition, with Coloured Autotype and Lithographic Plates and Woodcuts. 8vo, 18s.

By the same Author.

Epilepsy, and other Chronic Convulsive Diseases : Their Causes, Symptoms, and Treatment. 8vo, 10s. 6d.

Also.

Pseudo-Hypertrophic Muscular Paralysis : A Clinical Lecture. 8vo, with Engravings and Plate, 3s. 6d.

Also.

Diagnosis of Diseases of the Spinal Cord. Third Edition. 8vo, with Engravings, 4s. d.

Also.

Diagnosis of Diseases of the Brain. 8vo, with Engravings, 7s. 6d.

Visceral Neuroses : Being the Gulstonian Lectures on Neuralgia of the Stomach, and Allied Disorders. By T. CLIFFORD ALLBUTT, M.A., M.D. Cantab., F.R.S., F.R.C.P., Consulting Physician to the Leeds General Infirmary. 8vo, 4s. 6d.

Diseases of the Nervous System. Lectures delivered at Guy's Hospital. By SAMUEL WILKS, M.D., F.R.S. Second Edition. 8vo, 18s.

Nervous Diseases : Their Description and Treatment. A Manual for Students and Practitioners of Medicine. By ALLEN M. HAMILTON, M.D., Physician at the Epileptic and Paralytic Hospital, New York. Second Edition. Royal 8vo, with 72 Engravings, 16s.

Diseases of the Nervous System: Especially in Women. By S. WEIR MITCHELL, M.D., Physician to the Philadelphia Infirmary for Diseases of the Nervous System. Second Edition. 8vo, with 5 plates, 8s.

Nerve Vibration and Excitation, as Agents in the Treatment of Functional Disorder and Organic Disease. By J. MORTIMER GRANVILLE, M.D. 8vo, 5s.

By the same Author.

Gout in its Clinical Aspects. Crown 8vo, 6s.

Regimen to be adopted in Cases of Gout. By WILHELM EBSTEIN, M.D., Professor of Clinical Medicine in Göttingen. Translated by JOHN SCOTT, M.A., M.B. 8vo, 2s. 6d.

Notes on Rheumatism. By JULIUS POLLOCK, M.D., F.R.C.P., Senior Physician to the Charing Cross Hospital. Second Edition. Fcap. 8vo, with Engravings, 3s. 6d.

Diseases of the Liver : With and without Jaundice. By GEORGE HARLEY, M.D., F.R.C.P., F.R.S. 8vo, with 2 Plates and 36 Engravings, 21s.

Diseases of the Stomach : The Varieties of Dyspepsia, their Diagnosis and Treatment. By S. O. HABERSHON, M.D., F.R.C.P. Third Edition. Crown 8vo, 5s.

By the same Author.

Pathology of the Pneumogastric Nerve : Being the Lumleian Lectures for 1876. Second edition. Post 8vo, 4s.

Also.

Diseases of the Abdomen, Comprising those of the Stomach and other parts of the Alimentary Canal, Œsophagus, Cæcum, Intestines, and Peritoneum. Third Edition. 8vo, with 5 Plates, 21s.

Also.

Diseases of the Liver, Their Pathology and Treatment. Lettsomian Lectures. Second Edition. Post 8vo, 4s.

Acute Intestinal Strangulation, And Chronic Intestinal Obstruction (Mode of Death from). By THOMAS BRYANT, F.R.C.S., Senior Surgeon to Guy's Hospital. 8vo, 3s.

Gout, Rheumatism, And the Allied Affections ; with Chapters on Longevity and Sleep. By PETER HOOD, M.D. Third Edition. Crown 8vo, 7s. 6d.

Diseases of the Nervous System. Clinical Lectures. By THOMAS BUZZARD, M.D., F.R.C.P., Physician to the National Hospital for the Paralysed and Epileptic. With Engravings, 8vo. 15s.

A Treatise on the Diseases of the Nervous System. By JAMES ROSS, M.D., F.R.C.P., Assistant Physician to the Manchester Royal Infirmary. Second Edition. 2 vols. 8vo, with Lithographs, Photographs, and 332 Woodcuts, 52s. 6d.

Food and Dietetics, Physiologically and Therapeutically Considered. By F. W. PAVY, M.D., F.R.S., Physician to Guy's Hospital. Second Edition. 8vo, 15s.

By the same Author.

Croonian Lectures on Certain Points connected with Diabetes. 8vo, 4s. 6d.

Headaches : Their Nature, Causes, and Treatment. By W. H. DAY, M.D., Physician to the Samaritan Hospital. Third Edition. Crown 8vo, with Engravings, 6s. 6d.

On Megrim, Sick Headache, and some Allied Disorders : A Contribution to the Pathology of Nerve Storms. By E. LIVEING, M.D., F.R.C.P. 8vo, 15s.

Health Resorts at Home and Abroad. By MATTHEW CHARTERIS, M.D., Physician to the Glasgow Royal Infirmary. Crown 8vo, with Map, 4s. 6d.

Winter and Spring
On the Shores of the Mediterranean. By HENRY BENNET, M.D. Fifth Edition. Post 8vo, with numerous Plates, Maps, and Engravings, 12s. 6d.

By the same Author.

Treatment of Pulmonary Consumption by Hygiene, Climate, and Medicine. Third Edition. 8vo, 7s. 6d.

Also.

Nutrition in Health and Disease. Third (Library) Edition, 8vo, 5s. ; Cheap Edition, fcap. 8vo, 2s. 6d.

The Riviera :
Sketches of the Health-Resorts of the Coast of France and Italy, from Hyères to Spezia : its Medical Aspect and Value, &c. By EDWARD I. SPARKS, M.B., F.R.C.P. Crown 8vo, 8s. 6d.

The Principal Southern and Swiss Health-Resorts : their Climate and Medical Aspect. By WILLIAM MARCET, M.D., F.R.C.P., F.R.S. With Illustrations. Crown 8vo, 7s. 6d.

Medical Guide to the Mineral Waters of France and its Wintering Stations. With a Special Map. By A. VINTRAS, M.D., Physician to the French Embassy, and to the French Hospital, London. Crown 8vo, 8s.

The Ocean as a Health-Resort :
A Practical Handbook of the Sea, for the use of Tourists and Health-Seekers. By WILLIAM S. WILSON, L.R.C.P. Second Edition, with Chart of Ocean Routes, &c. Crown 8vo, 7s. 6d.

Principal Health-Resorts
Of Europe and Africa, and their Use in the Treatment of Chronic Diseases. By T. M. MADDEN, M.D. 8vo, 10s.

Handbook of Medical and Surgical Electricity. By HERBERT TIBBITS, M.D., F.R.C.P.E., Senior Physician to the West London Hospital for Paralysis and Epilepsy. Second Edition. 8vo, with 95 Engravings, 9s.

By the same Author.

A Map of Ziemssen's Motor Points of the Human Body : A Guide to Localised Electrisation. Mounted on Rollers, 35 × 21. With 20 Illustrations, 5s.

Mechanical Exercise a Means of Cure : Being a Description of the Zander Institute, London ; its History, Appliances, Scope, and Object. Edited by the Medical Officer of the Institution. Crown 8vo, with 24 Engravings, 2s. 6d.

Electricity and its Manner of Working in the Treatment of Disease. By WM. E. STEAVENSON, M.D., Physician and Electrician to St. Bartholomew's Hospital. 8vo, 4s. 6d.

Ambulance Handbook for Volunteers and Others. By J. ARDAVON RAYE, L.K. & Q.C.P.I., L.R.C.S.I., late Surgeon to H.B.M. Transport No. 14, Zulu Campaign, and Surgeon E.I.R. Rifles. 8vo, with 16 Plates (50 figures), 3s. 6d.

A System of Practical Surgery. By Sir W. FERGUSSON, Bart., F.R.S. Fifth Edition. 8vo, with 463 Engravings, 21s.

Surgical Emergencies :
Together with the Emergencies Attendant on Parturition and the Treatment of Poisoning. By PAUL SWAIN, F.R.C.S., Surgeon to the South Devon and East Cornwall Hospital. Third Edition. Crown 8vo, with 117 Engravings, 5s.

Operative Surgery in the Calcutta Medical College Hospital. Statistics, Cases, and Comments. By KENNETH MCLEOD, A.M., M.D., F.R.C.S.E., Surgeon-Major, Indian Medical Service, Professor of Surgery in Calcutta Medical College. 8vo, with Illustrations, 12s. 6d.

A Course of Operative Surgery. By CHRISTOPHER HEATH, Surgeon to University College Hospital. Second Edition. With 20 coloured Plates (180 figures) from Nature, by M. LÉVEILLÉ, and several Woodcuts. Large 8vo, 30s.

By the same Author.

The Student's Guide to Surgical Diagnosis. Second Edition. Fcap. 8vo, 6s. 6d.

Also.

Manual of Minor Surgery and Bandaging. For the use of House-Surgeons, Dressers, and Junior Practitioners. Seventh Edition. Fcap. 8vo, with 129 Engravings, 6s.

Also.

Injuries and Diseases of the Jaws. Third Edition. 8vo, with Plate and 206 Wood Engravings, 14s.

Surgical Enquiries :
Including the Hastings Essay on Shock, the Treatment of Inflammations, and numerous Clinical Lectures. By FURNEAUX JORDAN, F.R.C.S., Professor of Surgery, Queen's College, Birmingham. Second Edition, with numerous Plates. Royal 8vo, 12s. 6d.

On Dislocations and Fractures. By JOSEPH MACLISE, F.R.C.S. Uniform with "Surgical Anatomy." 36 folio Plates and Text. Cloth, £2 10s.

The Practice of Surgery:
A Manual. By THOMAS BRYANT, Surgeon to Guy's Hospital. Fourth Edition. 2 vols. crown 8vo, with 750 Engravings (many being coloured), and including 6 chromo-lithographic plates, 32s.

The Surgeon's Vade-Mecum:
A Manual of Modern Surgery. By ROBERT DRUITT, F.R.C.S. Twelfth Edition. Fcap. 8vo, with Engravings. [*In the Press.*

Outlines of Surgery and Surgical Pathology. By F. LE GROS CLARK, F.R.S., assisted by W. W. WAGSTAFFE, F.R.C.S. Second Edition. 8vo, 10s. 6d.

Regional Surgery:
Including Surgical Diagnosis. A Manual for the use of Students. By F. A. SOUTHAM, M.A., M.B., F.R.C.S., Assistant Surgeon to the Manchester Royal Infirmary. Part I. The Head and Neck. Crown 8vo, 6s. 6d. — Part II. The Upper Extremity and Thorax. Crown 8vo, 7s. 6d.

Illustrations of Clinical Surgery.
By JONATHAN HUTCHINSON, F.R.S., Senior Surgeon to the London Hospital. In occasional fasciculi. I. to XVIII., 6s. 6d. each. Fasciculi I. to X. bound, with Appendix and Index, £3 10s.

By the same Author.

Pedigree of Disease:
Being Six Lectures on Temperament, Idiosyncrasy, and Diathesis. 8vo, 5s.

Treatment of Wounds and Fractures. Clinical Lectures. By SAMPSON GAMGEE, F.R.S.E., Surgeon to the Queen's Hospital, Birmingham. Second Edition. 8vo, with 40 Engravings, 10s.

Injuries of the Spine and Spinal Cord, and NERVOUS SHOCK, in their Surgical and Medico-Legal Aspects. By HERBERT W. PAGE, M.C. Cantab., F.R.C.S., Surgeon to St. Mary's Hospital. Second Edition, post 8vo, 10s.

Lectures on Orthopædic Surgery. By BERNARD E. BRODHURST, F.R.C.S., Surgeon to the Royal Orthopædic Hospital. Second Edition. 8vo, with Engravings, 12s. 6d.

By the same Author.

On Anchylosis, and the Treatment for the Removal of Deformity and the Restoration of Mobility in Various Joints. Fourth Edition. 8vo, with Engravings, 5s.

Also.

Curvatures and Diseases of the Spine. Third Edition. 8vo, with Engravings, 6s.

Face and Foot Deformities.
By FREDERICK CHURCHILL, C.M., Surgeon to the Victoria Hospital for Children. 8vo, with Plates and Illustrations, 10s. 6d.

Fractures:
A Treatise. By LEWIS A. STIMSON, B.A., M.D., Professor of Surgical Pathology in the University of New York. 8vo, with 360 Engravings, 21s.

Orthopædic Surgery,
And Diseases of the Joints. By L. A. SAYRE, M.D., Professor of Orthopædic Surgery in Bellevue Hospital Medical College. Second Edition. 8vo, with Coloured Plate and 324 Engravings, 21s.

Clubfoot:
Its Causes, Pathology, and Treatment. By WM. ADAMS, F.R.C.S., Surgeon to the Great Northern Hospital. Second Edition. 8vo, with 106 Engravings and 6 Lithographic Plates, 15s.

By the same Author.

On Contraction of the Fingers,
and its Treatment by Subcutaneous Operation; and on Obliteration of Depressed Cicatrices, by the same Method. 8vo, with 30 Engravings, 4s. 6d.

Also.

Lateral and other Forms of Curvature of the Spine: Their Pathology and Treatment. Second Edition. 8vo, with 5 Lithographic Plates and 72 Wood Engravings, 10s. 6d.

Spinal Curvatures:
Treatment by Extension and Jacket; with Remarks on some Affections of the Hip, Knee, and Ankle-joints. By H. MACNAUGHTON JONES, M.D., F.R.C.S.I. and Edin. Post 8vo, with 63 Engravings, 4s. 6d.

On Diseases and Injuries of the Eye: A Course of Systematic and Clinical Lectures to Students and Medical Practitioners. By J. R. WOLFE, M.D., F.R.C.S.E., Lecturer on Ophthalmic Medicine and Surgery in Anderson's College, Glasgow. With 10 Coloured Plates and 157 Wood Engravings. 8vo, £1 1s.

The General Practitioner's Guide to the Diseases and Injuries of the Eye and Eyelids. By LOUIS H. TOSSWILL, B.A., M.B. Cantab., M.R.C.S., Surgeon to the Exeter Eye Infirmary. Fcap. 8vo, 2s. 6d.

Hints on Ophthalmic Out-Patient Practice. By CHARLES HIGGENS, Ophthalmic Surgeon to Guy's Hospital. Second Edition. Fcap. 8vo, 3s.

The Electro-Magnet,
And its Employment in Ophthalmic Surgery. By SIMEON SNELL, Ophthalmic Surgeon to the Sheffield General Infirmary, &c. Crown 8vo, 3s. 6d.

The Student's Guide to Diseases of the Eye. By EDWARD NETTLESHIP, F.R.C.S., Ophthalmic Surgeon to St. Thomas's Hospital. Third Edition. Fcap. 8vo, with 150 Engravings and a Set of Coloured Papers illustrating Colour-Blindness, 7s. 6d.

Manual of the Diseases of the Eye. By CHARLES MACNAMARA, F.R.C.S., Surgeon to Westminster Hospital. Fourth Edition. Crown 8vo, with 4 Coloured Plates and 66 Engravings, 10s. 6d.

A Manual of the Principles and Practice of Ophthalmic Medicine and Surgery. By T. WHARTON JONES, F.R.C.S., F.R.S. Third Edition. Fcap. 8vo, with 9 Coloured Plates and 173 Engravings, 12s. 6d.

Atlas of Ophthalmoscopy. Composed of 12 Chromo-lithographic Plates (59 Figures drawn from nature) and Explanatory Text. By RICHARD LIEBREICH, M.R.C.S. Translated by H. ROSBOROUGH SWANZY, M.B. Third edition, 4to, 40s.

Glaucoma: Its Causes, Symptoms, Pathology, and Treatment. By PRIESTLEY SMITH, M.R.C.S., Ophthalmic Surgeon to the Queen's Hospital, Birmingham. 8vo, with Lithographic Plates, 10s. 6d.

Refraction of the Eye: A Manual for Students. By GUSTAVUS HARTRIDGE, F.R.C.S., Assistant Physician to the Royal Westminster Ophthalmic Hospital. Crown 8vo, with Lithographic Plate and 84 Woodcuts, 5s.

Hare-Lip and Cleft Palate. By FRANCIS MASON, F.R.C.S., Surgeon to St. Thomas's Hospital. 8vo, with 66 Engravings, 6s.

By the same Author.

The Surgery of the Face. 8vo, with 100 Engravings, 7s. 6d.

A Practical Treatise on Aural Surgery. By H. MACNAUGHTON JONES, M.D., Professor of the Queen's University in Ireland, late Surgeon to the Cork Ophthalmic and Aural Hospital. Second Edition. Crown 8vo, with 63 Engravings, 8s. 6d.

By the same Author.

Atlas of Diseases of the Membrana Tympani. In Coloured Plates, containing 62 Figures, with Text. Crown 4to, 21s.

Diseases and Injuries of the Ear. By W. B. DALBY, F.R.C.S., Aural Surgeon to St. George's Hospital. Third Edition. Crown 8vo, with Engravings, 7s. 6d.

Diseases of the Throat and Nose: A Manual. By MORELL MACKENZIE, M.D. Lond., Senior Physician to the Hospital for Diseases of the Throat. Vol. I. Diseases of the Pharynx, Larynx, and Trachea. Post 8vo, with 112 Engravings, 12s. 6d.

Vol. II. Diseases of the Nose and Naso-Pharynx; with a Section on Diseases of the Œsophagus. Post 8vo, with 93 Engravings, 12s. 6d.

By the same Author.

Diphtheria: Its Nature and Treatment, Varieties, and Local Expressions. 8vo, 5s.

Endemic Goitre or Thyreocele: Its Etiology, Clinical Characters, Pathology, Distribution, Relations to Cretinism, Myxœdema, &c., and Treatment. By WILLIAM ROBINSON, M.D. 8vo, 5s.

Lectures on Syphilis of the Larynx (Lesions of the Secondary and Intermediate Stages). By W. M. WHISTLER, M.D., Physician to the Hospital for Diseases of the Throat. Post 8vo. 4s.

Sore Throat: Its Nature, Varieties, and Treatment. By PROSSER JAMES, M.D., Physician to the Hospital for Diseases of the Throat. Fifth Edition. Post 8vo, with Coloured Plates and Engravings. [*In the Press.*

The Ear: Its Anatomy, Physiology, and Diseases. By C. H. BURNETT, A.M., M.D., Aural Surgeon to the Presbyterian Hospital, Philadelphia. Second Edition, 8vo, with 107 Engravings, 18s.

A Treatise on Vocal Physiology and Hygiene, with especial reference to the Cultivation and Preservation of the Voice. By GORDON HOLMES, M.D., Physician to the Municipal Throat and Ear Infirmary. Second Edition, with Engravings. Crown 8vo, 6s. 6d.

By the same Author.

A Guide to the Use of the Laryngoscope in General Practice. Crown 8vo, with Engravings, 2s. 6d.

A System of Dental Surgery. By JOHN TOMES, F.R.S., and C. S. TOMES, M.A., F.R.S. Third Edition. Fcap. 8vo, with many Engravings. [*In the Press.*

Dental Anatomy, Human and Comparative: A Manual. By CHARLES S. TOMES, M.A., F.R.S. Second Edition. Crown 8vo, with 191 Engravings, 12s. 6d.

Mechanical Dentistry in Gold and Vulcanite. By F. H. BALKWILL, L.D.S.R.C.S. 8vo, with 2 Lithographic Plates and 57 Engravings, 10s.

Principles and Practice of Dentistry: including Anatomy, Physiology, Pathology, Therapeutics, Dental Surgery, and Mechanism. By CHAPIN A. HARRIS, M.D., D.D.S. Revised and Edited by FERDINAND J. S. GORGAS, A.M., M.D., D.D.S., Professor in the Dental Department of Maryland University. Eleventh Edition. 8vo, with 750 Illustrations, 31s. 6d.

The Student's Guide to Dental Anatomy and Surgery. By HENRY SEWILL, M.R.C.S., L.D.S. Second Edition. Fcap. 8vo, with 78 Engravings, 5s. 6d.

A Manual of Dental Mechanics. By OAKLEY COLES, L.D.S.R.C.S. Second Edition. Crown 8vo, with 140 Engravings, 7s. 6d.

By the same Author.

Deformities of the Mouth. Third Edition. 8vo, with 83 Wood Engravings and 96 Drawings on Stone, 12s. 6d.

Notes on Dental Practice. By HENRY C. QUINBY, L.D.S.R.C.S.I. 8vo, with 87 Engravings, 9s.

Elements of Dental Materia Medica and Therapeutics, with Pharmacopœia. By JAMES STOCKEN, L.D.S.R.C.S., Pereira Prizeman for Materia Medica, and THOMAS GADDES, L.D.S. Eng. and Edin. Third Edition. Fcap. 8vo, 7s. 6d.

Dental Medicine: A Manual of Dental Materia Medica and Therapeutics. By F. J. S. GORGAS, A.M., M.D., D.D.S., Editor of "Harris's Principles and Practice of Dentistry," Professor in the Dental Department of Maryland University. 8vo, 14s.

Eczema. By MCCALL ANDERSON, M.D., Professor of Clinical Medicine in the University of Glasgow. Third Edition. 8vo, with Engravings, 7s. 6d.

Diseases of the Skin: With an Analysis of 8,000 Consecutive Cases and a Formulary. By L. D. BULKLEY, M.D., Physician for Skin Diseases at the New York Hospital. Crown 8vo, 6s. 6d.

On Certain Rare Diseases of the Skin. By JONATHAN HUTCHINSON, F.R.S., Senior Surgeon to the London Hospital, and to the Hospital for Diseases of the Skin. 8vo, 10s. 6d.

Diseases of the Skin: A Practical Treatise for the Use of Students and Practitioners. By J. N. HYDE, A.M., M.D., Professor of Skin and Venereal Diseases, Rush Medical College, Chicago. 8vo, with 66 Engravings, 17s.

Parasites: A Treatise on the Entozoa of Man and Animals, including some Account of the Ectozoa. By T. SPENCER COBBOLD, M.D., F.R.S. 8vo, with 85 Engravings, 15s.

Atlas of Skin Diseases. By TILBURY FOX, M.D., F.R.C.P. With 72 Coloured Plates. Royal 4to, half morocco, £6 6s.

Leprosy in British Guiana. By JOHN D. HILLIS, F.R.C.S., M.R.I.A., Medical Superintendent of the Leper Asylum, British Guiana. Imp. 8vo, with 22 Lithographic Coloured Plates and Wood Engravings, £1 11s. 6d.

Certain Forms of Cancer, With a New and Successful Mode of Treating it. By A. MARSDEN, Senior Surgeon to the Cancer Hospital. Second Edition. 8vo, with Coloured Plates, 8s. 6d.

Cancer of the Breast. By THOMAS W. NUNN, F.R.C.S., Consulting Surgeon to the Middlesex Hospital. 4to, with 21 Coloured Plates, £2 2s.

On Cancer: Its Allies, and other Tumours; with special reference to their Medical and Surgical Treatment. By F. A. PURCELL, M.D., M.C., Surgeon to the Cancer Hospital, Brompton. 8vo, with 21 Engravings, 10s. 6d.

Sarcoma and Carcinoma: Their Pathology, Diagnosis, and Treatment. By HENRY T. BUTLIN, F.R.C.S., Assistant Surgeon to St. Bartholomew's Hospital. 8vo, with 4 Plates, 8s.

By the same Author.

Malignant Disease of the Larynx (Sarcoma and Carcinoma). 8vo, with 5 Engravings, 5s.

Clinical Notes on Cancer, Its Etiology and Treatment; with special reference to the Heredity-Fallacy, and to the Neurotic Origin of most Cases of Alveolar Carcinoma. By HERBERT L. SNOW, M.D. Lond., Surgeon to the Cancer Hospital, Brompton. Crown 8vo, 3s. 6d.

Diseases of the Testis, Spermatic Cord, and Scrotum. By THOMAS B. CURLING, F.R.S., Consulting Surgeon to the London Hospital. Fourth Edition. 8vo, with Engravings, 16s.

The Surgery of the Rectum. By HENRY SMITH, Professor of Surgery in King's College, Surgeon to the Hospital. Fifth Edition. 8vo, 6s.

Lectures on the Surgical Disorders of the Urinary Organs. By REGINALD HARRISON, F.R.C.S., Surgeon to the Liverpool Royal Infirmary. Second Edition, with 48 Engravings. 8vo, 12s. 6d.

By the same Author.

Lithotomy, Lithotrity, and the Early Detection of Stone in the Bladder; with a description of a New Method of Tapping the Bladder. 8vo, with Engravings, 2s. 6d.

Diseases of the Urinary Organs.
Clinical Lectures. By Sir HENRY THOMPSON, F.R.C.S., Emeritus Professor of Clinical Surgery in University College. Seventh (Students') Edition. 8vo, with 84 Engravings, 2s. 6d.

By the same Author.

Diseases of the Prostate:
Their Pathology and Treatment. Fifth (Students') Edition. 8vo, with numerous Engravings, 2s. 6d.

Also.

Surgery of the Urinary Organs.
Some Important points connected therewith. Lectures delivered in the R.C.S. 8vo, with 44 Engravings. Students' Edition, 2s. 6d.

Also.

Practical Lithotomy and Lithotrity; or, An Inquiry into the Best Modes of Removing Stone from the Bladder. Third Edition. 8vo, with 87 Engravings, 10s.

Also.

The Preventive Treatment of Calculous Disease, and the Use of Solvent Remedies. Second Edition Fcap. 8vo, 2s. 6d.

Also.

Tumours of the Bladder:
Their Nature, Symptoms, and Surgical Treatment. 8vo, with numerous Illustrations, 5s.

Also.

Stricture of the Urethra, and Urinary Fistulæ: their Pathology and Treatment. Fourth Edition. With 74 Engravings. 8vo, 6s.

Urinary and Renal Derangements and Calculous Disorders. By LIONEL S. BEALE, F.R.C.P., F.R.S., Physician to King's College Hospital. 8vo, 5s.

Hydrocele:
Its several Varieties and their Treatment. By SAMUEL OSBORN, late Surgical Registrar to St. Thomas's Hospital. Fcap. 8vo, with Engravings, 3s.

By the same Author.

Diseases of the Testis.
Fcap. 8vo, with Engravings, 3s. 6d.

Fistula, Hæmorrhoids, Painful Ulcer, Stricture, Prolapsus, and other Diseases of the Rectum:
Their Diagnosis and Treatment. By WILLIAM ALLINGHAM, Surgeon to St. Mark's Hospital for Fistula. Fourth Edition. 8vo, with Engravings, 10s. 6d.

Diseases of the Rectum and Anus. By W. HARRISON CRIPPS, F.R.C.S., Assistant Surgeon to St. Bartholomew's Hospital, &c. 8vo, with 13 Lithographic Plates and numerous Wood Engravings, 12s. 6d.

Pathology of the Urine.
Including a Complete Guide to its Analysis. By J. L. W. THUDICHUM, M.D., F.R.C.P. Second Edition, rewritten and enlarged. 8vo, with Engravings, 15s.

Student's Primer on the Urine.
By J. TRAVIS WHITTAKER, M.D., Clinical Demonstrator at the Royal Infirmary, Glasgow. With 16 Plates etched on Copper. Post 8vo, 4s. 6d.

Syphilis and Pseudo-syphilis.
By ALFRED COOPER, F.R.C.S., Surgeon to the Lock Hospital, to St. Mark's and the West London Hospitals. 8vo, 10s. 6d.

Genito-Urinary Organs, including Syphilis: A Practical Treatise on their Surgical Diseases, for Students and Practitioners. By W. H. VAN BUREN, M.D., and E. L. KEYES, M.D. Royal 8vo, with 140 Engravings, 21s.

Lectures on Syphilis.
By HENRY LEE, Consulting Surgeon to St. George's Hospital. 8vo, 10s.

Coulson on Diseases of the Bladder and Prostate Gland.
Sixth Edition. By WALTER J. COULSON, Surgeon to the Lock Hospital and to St. Peter's Hospital for Stone. 8vo, 16s.

On Rupture of the Urinary Bladder. Based on the Records of more than 300 Cases of the Affection. By WALTER RIVINGTON, F.R.C.S., President of the Hunterian Society; Surgeon to the London Hospital. 8vo, 5s. 6d.

The Reproductive Organs
In Childhood, Youth, Adult Age, and Advanced Life, considered in their Physiological, Social, and Moral Relations. By WILLIAM ACTON, M.R.C.S. Sixth Edition. 8vo, 12s.

The Medical Adviser in Life Assurance. By E. H. SIEVEKING, M.D., F.R.C.P. Second Edition. Crown 8vo, 6s.

A Medical Vocabulary:
An Explanation of all Terms and Phrases used in the various Departments of Medical Science and Practice, their Derivation, Meaning, Application, and Pronunciation. By R. G. MAYNE, M.D. LL.D. Fifth Edition. Fcap. 8vo, 10s. 6d.

A Dictionary of Medical Science:
Containing a concise Explanation of the various Subjects and Terms of Medicine, &c. By ROBLEY DUNGLISON, M.D., LL.D. New Edition. Royal 8vo, 28s.

Abridged Medical Account Books. The "Expedite" Method. By J. MACNAB, L.R.C.S.E. *Index Ledger* Royal 4to., 15s. *Visiting List.* Cloth, 3s. Leather, in Pocket-book form, with Pencil, 5s.

Medical Education
And Practice in all parts of the World. By H. J. HARDWICKE, M.D., M.R.C.P. 8vo, 10s.

INDEX.

[*Continued on the next page.*

The following CATALOGUES issued by J. & A. CHURCHILL will be forwarded post free on application :—

A. *J. & A. Churchill's General List of about* 650 *works on Anatomy, Physiology, Hygiene, Midwifery, Materia Medica, Medicine, Surgery, Chemistry, Botany, &c., &c., with a complete Index to their Subjects, for easy reference.* N.B.—*This List includes* B, C, & D.

B. *Selection from J. & A. Churchill's General List, comprising all recent Works published by them on the Art and Science of Medicine.*

C. *J. & A. Churchill's Catalogue of Text Books specially arranged for Students.*

D. *A selected and descriptive List of J. & A. Churchill's Works on Chemistry, Materia Medica, Pharmacy, Botany, Photography, Zoology, the Microscope, and other branches of Science.*

E. *The Half-yearly List of New Works and New Editions published by J. & A. Churchill during the previous six months, together with particulars of the Periodicals issued from their House.*

[Sent in January and July of each year to every Medical Practitioner in the United Kingdom whose name and address can be ascertained. A large number are also sent to the United States of America, Continental Europe, India, and the Colonies.]

AMERICA.—*J. & A. Churchill being in constant communication with various publishing houses in Boston, New York, and Philadelphia, are able, notwithstanding the absence of international copyright, to conduct negotiations favourable to English Authors.*

LONDON: NEW BURLINGTON STREET.

Pardon & Sons, Printers,] [*Wine Office Court, Fleet Street, E.C.*