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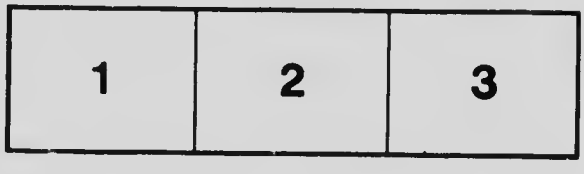

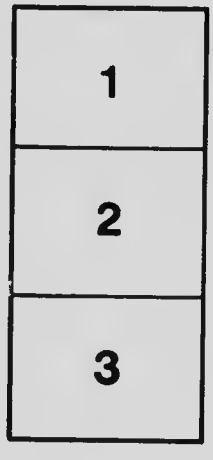

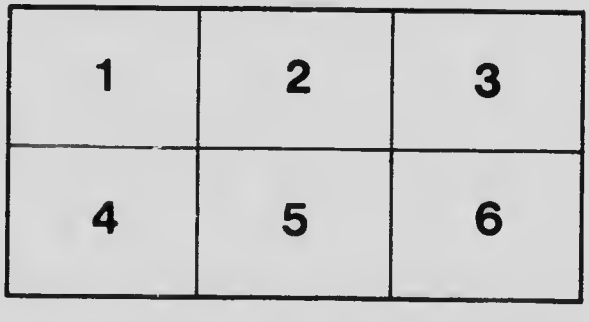

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1. A NEW METHOD OF CUTTING URINARY CALCULI. 2. A CASE OF UNUSUALLY LARGE CALCULUS REMOVED BY SUPRA-PUBIC SECTION.

...BY...

GEORGE A. PETERS, M.B., F.R.C.S. Eng.,
TORONTO, CANADA

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1. A NEW METHOD OF CUTTING URINARY CALCULI. 2. A CASE OF UNUSUALLY LARGE CALCULUS REMOVED BY SUPRA-PUBIC SECTION.*

By GEORGE A. PETERS, M.B., F.R.C.S. Eng.,

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The following is a method of cutting stones of all kinds, hard and soft, which the author has found to be of great use and of equal simplicity. So far as can be ascertained the method is new and original.

The stone is first of all dipped for a moment into melted paraffin wax. This gives it a very thin coating of the wax (Fig. 2 E) and prevents the sticking of plaster-of-Paris in which it is to be embedded. As a means of holding the stone absolutely immovable while it is being sawn, the aid of a horseshoe, as shown in the accompanying illustration (Fig. 1), is brought into use. The horseshoe is placed upon a board with its middle exactly over a line (Fig. 1 A) previously drawn longitudinally upon the board. This line is to serve as a constant fixed indication of the centre of the stone. The heels of the horseshoe may be tilted up by means of a short block (Fig. 1 B) placed crosswise under the shoe, so that they will about subtend the centre of the stone. The horseshoe is then nailed firmly into position on the board. The stone (Fig. 1 C) is now taken into the hands of the operator and carefully centralized opposite the line drawn on the board. Plaster-of-Paris cream is then run round it and over it in such a way as to embed the stone completely to the extent of not less than half an inch of covering at any part, and in such a manner that the embedding plaster also embraces the heels of the horseshoe

*Presented at a meeting of the Toronto Pathological Society, November 2, 1901.

(Fig. 1 D). The plaster is then allowed to set firmly, and if it can be left for several days until it is thoroughly dried so much the better, as it is found that the saw works more easily in thoroughly dry plaster. The stone is sawn directly through the plaster which embeds it in the line previously marked on the board, and a second cut is made through the plaster between the stone and the heel of the horseshoe. If the stone is very large and hard, the board may be fastened in a vice, and the saw cut made through the board also. This serves very materially to steady the saw. This section thus liberated can then be readily detached from the board, and will be found to contain one-half of the stone, which can be easily lifted

FIG. 1.

out of the embedding plaster, part of which may be cut away (Fig. 2 F). The removal of the stone from the plaster is facilitated by plunging the whole into hot water for a few moments, when the paraffin wax becomes softened and the stone can thus be easily separated from the plaster. The last trace of wax is then melted off by holding it under a hot water tap, or putting it into a basin of hot water for a few moments. The cut surface of the stone may be polished rapidly and easily by grinding it on a ground-glass surface. In the case of very hard stones the polishing process is facilitated by using powdered pumice stone or emery, though this is seldom necessary. In order to get a highly polished surface the stone should finally be rubbed on dry, plain glass, and

later on some woollen fabric which will bring up the polish of the stone. The author has found this method of cutting to be perfectly applicable to the hardest oxalate of lime, as well as to the softest phosphatic stones, and even to gall-stones. It is impossible for the stone to fracture. The only case in which any difficulty was ever experienced was one in which a very hard oxalate of lime nucleus was surrounded by a layer of phosphates of very loose formation, around which again was a more dense phosphatic layer. During the sawing of this stone the nucleus worked loose in the centre. The section was, however, satisfactorily completed.

FIG. 2.

An ordinary carp[illegible] with a fair amount of "set" answers admirably. [illegible] thickened back, as is found on most surgical

CASE OF U[illegible] CALCULUS.

The specimen used t[illegible] method of cutting described above is a urinary [illegible] unusually large size for this era and this country [illegible] not common. Its circumference in the longe[illegible] inches; in the shorter diameter 5¾ inches. [illegible] symmetrical oval shape, being slightly lar[illegible] nd th[illegible] the other and somewhat flattened. Its w[illegible] time[illegible] al was 6 ounces and 230 grains.

The host was a farmer, Mr. ... ther ise strong and healthy, age 39. He had been the subject of ymptoms of stone in the bladder from the age of about 9 years. At times it produced much pain, but latterly the symptoms had largely subsided, and he really suffered but little. This was explained at the time of operation by the fact that the stone had become partially encysted, and thus was immovable in the bladder.

The calculus was removed by supra-pubic cystotomy on the 1st of June, 1901. On opening the bladder the stone was found with its large end upwards, and its smaller end embedded to a slight extent in the fundus of the bladder behind the prostate. The wound in the bladder wall wa.. nade large enough to allow the stone to be removed without undue lacera-tion. After removal the bladder was flushed out and stitched up with two rows of chromicized catgut sutures. The ethod employed for distending the bladder before peration v s that advocated by Greig Smith, viz. by attac e the tube of a reservoir at an eleva' n of about 2 ft. to a catheter introduced into the bladder, and after stitching up the incision, the bladder was tested for the accuracy of the suturing by allowing it to become distended through the catheter. A tube surrounded by a layer of gauze was used for drainage down to, but not into, the bladder. The patient had no bad symptoms whatever, and the bladder wound healed by first intention, so that at the end of ten days there was no leakage whatever. But shortly after this a very small leakage occurred and persisted for some time, ulti-mately healing, however, and leaving a good, healthy retentive bladder.

On section the stone proves to have been in the first instance an oxalate of lime calculus. There is a nucleus of very firm, laminated dark brown oxalate about $\frac{1}{4}$ of an inch in diameter and bounded by a very dark crenated line of the same salt. Outside of this is another layer $\frac{3}{8}$ of an inch thick, showing oxalates apparently of very much looser formation with striæ radiating towards the centre. On the outside of this central oxalate portion is a laminated crust varying from half an inch to an inch in thickness extending to the circumference and consisting probably of a mixture of urate of ammonium and phosphates. The X-ray photograph of the stone shows these

lamine most markedly, with various spots which are found on section of the stone to be probably due to the more dense phosphatic substance which is found irregularly distributed between the lamine.

If we were to attempt to read what Mr. Jonathan Hutchinson calls the "record written in stone" in this case, one might plausibly surmise the following history, which is, of course, in this case the actual one: A lad, from 4 to 7 years of age, suffers habitually from derangement of the digestive organs, with imperfect assimilation. Lateritious deposits are common in his urine in winter, while in summer he suffers from scalding and burning pain after passing urine indicating excretion of oxalates in excess. By and by he has renal colic and perhaps passes per urethram a few small jagged oxalate of lime calculi. The passage of these calculi is accompanied by blood in gross or microscopic quantities.

One day a stone drops down from the kidney but fails to escape from the bladder, and becomes the nucleus of the specimen in question. It now grows slowly by accretion. The white oxalate crystals absorb the pigments of urine and come brown almost to blackness. It is probable that the blackest part of the specimen consumed 15 or 20 years in its growth: that the looser, more chaotic, radiating layer outside of this formed in another 5 or 6 years: and that the deposits of the layer of urates and phosphates forming the crust, occupied the remainder of the 30 odd years of the life of this calculus. The sprinklings of phosphates throughout the stone may possibly indicate attacks of mild cystitis, calling for rest and resulting in cure. If one should predicate a marked oxalate "diathesis" in this individual, the change from the precipitation of oxalate of lime to the deposit of urates does not indicate a marked diathetic reversal, for Hutchinson points out that "conditions as regards derangement of digestive power similar to those which produce uric acid, may under slight alteration of diet, produce the oxalates" and *vice versa*.

It is an extraordinary fact, as exemplified in this case, that, though the oxalate calculus is rough and very heavy, pain and hemorrhage are not, as a rule, prominent symptoms.

I have spoken of this stone as one of unusual size because it is one of the largest, if not the largest, that

has come under my observation in this country as having been removed by operation. Stone is rare in Canada as compared with European and Asiatic countries, and it is but due to the medical profession in Canada to say that when present it is usually discovered and removed before it reaches any such dimensions as this specimen exhibits. But this is a small stone compared to some recorded cases. Hutchinson gives the following as some of the largest removed during life: A stone measuring in girth $16\frac{1}{2}$ x $12\frac{1}{2}$ inches, Utterhavens: Hunter, (Madras) weight 25 ounces: Morrison, (Northumberland) weight 1 pound $6\frac{3}{4}$ ounces: Sir Henry Thompson, weight 14 ounces, (avoir).

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