authorities) the chief channels for the conduction of impulses of all kinds. We can readily believe that, if these channels be invaded by a chronic inflammatory process, such as occurs in sclerosis, the centrifugal nerves will be more or less affected, and paralysis and tension are likely to supervene. We can further understand that a lesion occupying the same region of the spine would prove a source of irritation to the centripetal nerves in their passage upwards. In this manner, the increased reflex movements we observe in percussing over the tendons of certain muscles may be partially explained. But the investigations of Woroschiloff do not rest here. They go to prove that not only do afferent and efferent impulses travel along the lateral columns, but that here also (in part at least) lie the tracts which control reflex movements. If this be true, the sclerotic change may, by destroying these tracts, cut off the inhibitory influence exercised by the brain on the reflex arcs of the spine; releasing these centres from the salutary control to which they are normally subjected, and leaving the muscles a prey to every passing stimulus.

DR. DRESCHFELD'S DESCRIPTION OF THE SPINAL CORD IN
J. N.'S CASE.

The cord, when freshly examined, showed to the naked eye no abnormality except softening in the lowest dorsal region. After hardening in bichromate of ammonium, sections of the cord showed already to the naked eye one lighter coloured patch in each lateral column. This patch was particularly well marked in the dorsal region, and became less distinct in the cervical and lumbar regions. Sections stained in carmine showed the following histological changes. In the cervical region, there was a small patch of sclerosis in the lateral columns; internally, this patch was in close relation to the grey matter; anteriorly, it did not extend up to the anterior grey horns; and externally it did not reach to the external border of the white matter. The grey matter, the ganglion-cells in the anterior and posterior horns, and both anterior and posterior columns, were perfectly intact. In the dorsal region, the lesion was much better expressed. It occupied the same position, but extended a little further anteriorly. In the softened part of the dorsal region, the cord seemed a little out of shape; but the same sclerotic patches were easily recognised. In the lumbar region, the sclerotic portion formed a small triangular patch, close to the outer side of the posterior horns, extending almost up to the outer border of the lateral columns posteriorly, but extending but little anteriorly. As in the cervical, so also in the dorsal and in the lumbar regions, the other parts of the spinal cord (the anterior and posterior horns, and the anterior and posterior columns) were perfectly healthy.

M. Charcot, to whom I sent sections from the different regions, and who had the kindness to examine them, finds the lesions very characteristic. He likewise states that, as far as he knows, this is the first case recorded in which *post mortem* examination has demonstrated lesions confined to the lateral columns of the spinal cord without participation of either the grey matter or the posterior column.

In a second letter, after a further examination of the cord, M. Charcot thus writes: "Je crois en effet votre cas de sclérose latérale *unique* dans l'espèce, pour le moment."

LITHOTOMY IN CHILDREN, AND THE ADVANTAGES
OF A LONG-BEAKED STAFF.*

By JOHN WARD COUSINS, M.D. Lond., F.R.C.S.,
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I BEG to offer you to-day a few practical suggestions on the manner of performing lateral lithotomy; and to exhibit a special form of staff, which I have used successfully for some years.

From the day of Cheselden to the present time, this operation has been regarded as one of the most successful in the art of surgery; and, during the last fifty years, the details have undergone very little modification, although they are surrounded by many debatable questions. It is performed upon well-established rules, with great success, by surgeons in all parts of the world; yet it is a fact that most practical men have some hobby about the operation. Some expatiate upon the importance of some little manœuvre of their own; while others attribute a great deal of their success to a special knife, or other instrument; and upon their respective advantages they are ever ready to dilate. After all, it is only natural for us to regard with preference the instruments we have often used with success, and to be somewhat conservative when asked to replace them by others of which we have had no experience.

I know that I have the honour to address many to-day who have repeatedly performed the lateral operation; and I feel that I should,

indeed, be a bold man if I asked them to adopt my practice, or even give my long-beaked staff a trial. On the other hand, there may be some present who are about to perform their first lithotomy, and who may be willing to test the value of my experience. I do not pretend to offer any great innovation, but merely to point out that, by the steady observance of a few simple directions, and the use of a special modification of the ordinary staff, lateral lithotomy in children can be made easier, and the common difficulties of young operators avoided.

Now, it is evident that an operator must possess a sound knowledge of the anatomy of the perineum and pelvis; yet this is only a part of the equipment of the skilful lithotomist. The whole anatomy, so to speak, is within the field of mental vision, during the performance of the operation; but the mind is not merely occupied with anatomical details. Moreover, the eye cannot completely direct the hand, as it often does, when the structures to be divided are in a region exposed to view. The surgeon has mainly to rely upon the sensibility of the hand, and the sense of touch. His chief instrument is the left forefinger; and his concern is, first, to reach the staff at the right point; and then, directed by his finger, to cling to it as his only guide into the bladder.

The staff, which I have used with great confidence for some years, is a modified rectangular staff, with a rounded-off angle, a long beak, and the point slightly turned upwards. The lateral groove commences half an inch above the angle, and terminates about the same distance from the point. The main peculiarity is the length of the beak, and this varies regularly with the size of the staff. (Fig. 1.)

I am aware that some of the best lithotomists do not recommend a long beak. Sir Henry Thompson says, in his elaborate treatise on *Practical Lithotomy and Lithotripsy*, page 15: "The curved portion is not to be so long as is usually made, since a small or contracted bladder is sometimes exposed to the danger of perforation when that portion of the staff protrudes far into the cavity." Again: he remarks (page 70), when referring to perforation of a diseased and softened bladder as an occasional cause of death after operation: "I have been frequently struck with the unnecessarily long curve which some staffs have; and have felt, when seeing such an one in use, how dangerous its point must be in a bladder affected in the manner described. I am strongly inclined to think, that, in those cases of rapidly fatal peritonitis, which are sometimes met with after lithotomy, if the search were carefully made, a minute rupture at the upper and back part of the bladder would be sometimes found. It may be very small, lying between the rugæ of the organ, and easily escape observation, yet give issue to a small quantity of urine into the peritoneal cavity; for it is not very easy to explain otherwise some of those attacks which carry off a patient in thirty-six hours or so after operation..... Let me say, injury to such bladders may as readily be inflicted by the forceps as by the staff; but I do not think the knife has anything to do with it." In these words, Sir Henry Thompson clearly points out the possibility of doing a serious injury to a weak and softened bladder with the staff; and that a long curve, under such conditions, increases the risk of perforation; still, I venture to remark that he does not mention a single case in which the accident has undoubtedly occurred; and, therefore, we may fairly conclude that, although such an unfortunate event is sometimes possible, yet, under ordinary circumstances, the danger is very remote. He remarks, moreover, that an injury to a weakened viscus may as readily be inflicted by the forceps as by the staff; and it must always be a very difficult matter to decide in any case the exact part of the proceeding in which the injury took place. It appears to me that the energetic use of the forceps is more likely to result in rupture of a diseased bladder, than the steady pressure of the blunt point of the staff. On the other hand, allow me to add, that I have never seen the slightest injury, or even irritation, follow the use of the long-beaked staff in any case in which I have used it, or have seen it used by my

* Read before the Southern Branch.

friends. Nearly all my patients have been children, and some of them had suffered from prolonged cystitis, and well-marked contracted bladder.

Another objection has been sometimes made to the long beak: the instrument must be very difficult to introduce. This, however, is not the case in practice. It can be readily and safely passed into the bladders of young children. Once I had to manoeuvre a good deal to get it in, for the boy had a false passage, and had been bed-ridden for two years with uninterrupted suffering. The rectum constantly prolapsed, the urine was very fetid, and he was greatly emaciated; but he made a rapid and excellent recovery after the operation.

Permit me now to mention what appear, to my mind, to be the special advantages of the long-beaked staff.

1. *The sharpness of the angle.* This permits the instrument to be easily felt, and so assists the operator in making the deep perineal incision. As soon as the angle is exposed, he readily learns by the finger the point of the staff he has reached. When the finger enters the groove, the position is indicated exactly by the part of the nail engaged in it. The point of the finger-nail informs the operator that he is on the angle (Fig. 2); but, directly the side of the nail is well insinuated

FIG. 2.

in the groove, he can be sure that he has reached the beak, and that a simple movement of the knife will open the bladder. (Fig. 3.)

FIG. 3.

2. *The beak is nearly straight; and is fixed at a right angle on the staff.* When the instrument is held firmly in position under the pubic arch, the floor of the bladder is steadily depressed; at the same time, the beak is parallel to the rectum; and so protects that organ from injury. The horizontal beak forms a straight guide into the bladder; and surely a straight movement of the knife in the groove is more readily and safely accomplished than the downward, inward, and upward thrust which must be made around the large angle of the ordinary staff. Moreover, in making the deep incision of the prostate and neck of the bladder, the knife can be accurately lateralised; the point can be easily directed upwards during the whole proceeding; its back can be kept in complete contact with the staff; and the depth of the incision estimated by the movement of the knife along the side of the left forefinger. Again: in withdrawing the knife after the completion of the deep incision, there is less danger of dividing too freely the deep structures, and of cutting out at too great an angle on the staff.

3. *The long beak.* This part of the staff enters the bladder to the extent of an inch, or a little more, and is kept in contact with the stone. Now, the long beak affords important advantages, especially in the operations upon children; for, during early life, the urethral structures are more soft and delicate, and the bladder is situated high up behind the pubic arch. It is a simple safeguard against one of the most common and painful accidents which occur during lithotomy, as the point cannot be pushed out of the bladder. It has frequently happened that, after only partial division of the urethral structures, and an effort to in-

troduce the finger, the operator has found himself suddenly foiled, from the point of the short staff having been pushed out of the bladder. Such an accident I believe to be impossible with the long beak. The urethra may be torn across by injurious pressure with the finger; still the point of the staff will remain *in situ*, and it will be possible to complete the operation after another well-directed incision of the neck of the bladder.

Again: the long beak renders the introduction of the finger into the bladder, over the staff, both easy and safe (Fig. 4). The upper con-

FIG. 4.

cave border of the staff is the best guide to the stone in all operations upon children; for, not only is the upper wall less prone to shift under the finger, but, by gentle pressure in this direction, the bladder is brought down, and its neck very readily dilated. It, moreover, effectually prevents the surgeon from slipping his finger into the areolar tissue of the recto-vesical space, which has often been mistaken for the interior of the bladder itself. This little manoeuvre I have practised often with great advantage; and it is one of many useful suggestions I have received from my old friend and colleague Mr. E. K. Knight. Mr. Christopher Heath favourably mentions it in his work on *Operative Surgery*; for he remarks, with reference to lithotomy in children: "In practice, one is often obliged to take the upper or concave border of the staff as the guide, and to insinuate the finger between it and the upper or fixed wall of the urethra."

An address appeared in the JOURNAL last January, by Mr. Furneaux Jordan, in which he recommended the deep incision of the prostate and neck of the bladder, in young children, to be made with a concealed bistoury; and in this way he proposed to simplify the operation. "It seems to me," he says, "that no lithotomy could be more simply contrived and formulated than this: open the membranous portion of the urethra on a grooved staff, put a strong simple concealed bistoury into the bladder, project the blade upwards and draw out the bistoury; put the finger into the bladder, feel the stone, and extract it as usual". This, it is true, is a simple formula; but the method is not quite so easy in practice as it looks on paper. In the hands of an experienced operator, the *bistouri caché* is no doubt a safe instrument, and so also is the knife on the old-fashioned gorget; but, is it the best and safest instrument for an operator to select who is about to commence a surgical career? Is it well to commence by depending, at the most critical part of the operation, upon a mechanical arrangement, however perfect, rather than upon a well-directed and intelligent movement of the hand? A surgeon must become more skilful and confident in doing an operation, who performs it—not by the aid of tools, whose cutting powers are regulated by springs and screws—but by instruments completely under the guidance of his judgment. I have seen the *bistouri caché* used many times; and it is, in my opinion, far less handy than the ordinary knife. The surgeon loses the sensibility of the hand as a guide; and his attention is occupied in opening and shutting the knife, in addition to the ordinary movements of introduction and withdrawal. In children, where the urethra is very small, the operator is sometimes obliged to take the staff in the left hand, and assist the introduction of the *bistouri caché* into the bladder by a simultaneous movement of both hands, as in Aston Key's operation.

Some years ago, I was present at a case of lithotomy, in which the *bistouri caché* snapped in the wound, and the broken blade was removed by the operator, who was much perplexed at the moment; but he managed to complete the operation, and extract three calculi, which are still in my possession. Unfortunately, severe hæmorrhage followed the operation, and the patient died on the second day.

To conclude: the simple knife is at the present time used by the large majority of well-known operators, and also very generally by surgeons throughout the country. I should be very sorry to see this fashion change; and, if any of my friends present are about to do their first

lithotomy, I hope they will stick to the knife, which is the best and safest instrument; and, at the same time, give the long-beaked staff a trial. I am sure that they will gain confidence in the performance of an operation, which is often attended with some difficulty, and is always undertaken with some degree of anxiety by surgeons who have a due sense of their responsibility.

REMOVAL OF A CONSTRICTING IRON FROM THE PENIS.

By P. J. HAYES, F.R.C.S.E.,
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THE BRITISH MEDICAL JOURNAL of December 18th, 1880, contains editorial observations concerning the manner of removing tight rings from the fingers. I think the following rather peculiar case may, in some degree, serve to illustrate the subject, so far as it relates to the advantage to be gained by making peripheral compression, before attempting to withdraw the constricting agent.

Eighteen months ago, a man, aged 20, was admitted to the Mater Misericordiae Hospital, suffering from the pressure of an iron tube, which, on the previous day, he had removed from the handle of a plough, and had passed over his penis. It was difficult to obtain anything like a candid statement from the patient; but the account he gave amounted to this. He was "tricking" with the iron, and, having occasion to pass urine, it occurred to him to try if he could get his organ through the tube. His efforts proved successful; but then the organ, resenting the treatment to which it had been subjected, became swollen, and the youth found it impossible to rid himself of his encumbrance. In fear and distress, he sought the aid of a blacksmith, who managed, with chisel and hammer, to cut obliquely through the iron cylinder; but, on attempting to force the edges of his section apart, the upper margin of the divided iron wounded the penis, and so he was obliged to desist.

When the lad was placed under my care, I found his penis in an extraordinary and alarming condition. Close to the pubes, it was encased

by the tube figured in the annexed woodcuts. The upper edge of the divided tube seemed to be buried in the right side of the corpus cavernosum;

whilst the distal portion of the penis was enormously swollen, and, indeed, seemed to be upon the verge of becoming gangrenous.

The patient was at once brought under the influence of ether. Then, with a Syme's knife, I extensively punctured the congested and infiltrated tissues, so as to permit free drainage of blood and serum. Next, I obtained a narrow bandage of fine muslin, which I squeezed out of warm water, and applied, as tightly as was possible, from the extremity of the glans penis up to the lower border of the constricting iron. The thin damp muslin proved most useful; it allowed outward filtration of bloody serum, and, at the same time, it served to compress and empty the engorged tissues. As soon as the abnormal volume of the penis was reduced, I removed the compressing bandages; and, with considerable difficulty, succeeded in passing a flat hernia-director beneath the incurved edge of the divided iron. Two ordinary directors were also passed between the penis and the cylinder, so as to facilitate slipping forwards of the latter; then steady traction caused the iron to glide from its position, without producing any laceration of the soft parts. The young man was able to leave hospital three or four days after his admission, with an organ little the worse of having been iron-clad for thirty hours.

With regard to weight and dimensions: the tube weighed six ounces; its length was two inches and a quarter; its calibre nearly seven-eighths of an inch; and the iron was about one-sixth of an inch in thickness. Micturition was not very much interfered with during the period the penis suffered from compression.

ON THE BISMUTH TEST FOR SUGAR IN THE URINE.

By WALTER G. SMITH, M.D. Dubl.,
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In the clinical examination of urine little difficulty attaches to testing for albumen and bile, and the reagents employed (nitric acid, and tincture of iodine) are to be had everywhere, and keep well. But, in common with others who have had occasion to use the copper test for sugar in urine, I have sometimes felt the inconvenience of not being able to rely upon a copper solution which had lain aside for some time. It is well known that the solution of cupro-potassic tartrate is apt to gradually suffer a partial reduction even in the cold, especially when exposed to light, and that, when heated alone, it may afford a precipitate of cuprous oxide. The addition of a fresh excess of liquor potassæ at the time of making the experiment does not appear to be a satisfactory mode of getting over this difficulty, and, for clinical purposes, or for private practice, it is a desideratum to have a test-solution, which, while sufficiently delicate, will be convenient to use, and above all be permanent.

From time to time I have occasionally tried Böttcher's test (1857) (*Jahrb. für Pharm.*, Bd. xxii, 29; *Jahr. für Chemie*, Bd. lxx, 432; *Journ. de Pharm. et de Chim.*, 1857, Bd. xxxii, pp. 159, 371), i.e., subnitrate of bismuth and sodic carbonate, and in 1876 I made some experiments with a solution of potassio-bismuth iodide, recommended by E. Brücke (*Fresenius' Zeitschr. für Anal. Chem.*, 1876, p. 100). This reagent may be prepared by dissolving freshly precipitated subnitrate of bismuth in a hot concentrated solution of iodide of potassium, to which a little hydrochloric acid has been added. The solution thus obtained is a deep red liquid, and has been proposed as a precipitant for the alkaloids. The method of performing the test is as follows—Acidulate the urine, or other fluid, with a little hydrochloric acid; then add an excess of the reagent, which precipitates any albuminous substance or sulphide present in the urine; filter; to the filtrate add an excess of liquor potassæ, which throws down a white precipitate of the hydrate of bismuth, and boil. If the slightest trace of sugar be present, a black precipitate will be formed.

The only precautions to be taken in performing this test are to be sure that the liquid is boiled sufficiently, since, in the presence of a small amount of sugar, the reduction takes place with some difficulty; and secondly, to avoid the presence of too large an amount of the white hydrate of bismuth before boiling, since it might obscure the detection of a small amount of the black precipitate. Brücke considers that, applied as above, the bismuth test is fully as delicate and certain as the copper test for detecting the presence of small amounts of grape-sugar in the urine. The bismuth solution is not reduced by uric acid or creatinin. A practical inconvenience connected with the use of this test is the necessity of employing two reagents (hydrochloric acid and liquor potassæ) in addition to the bismuth solution; and hence it does not fully meet the needs of the busy practitioner who wants a single reliable test-solution that can be confidently appealed to at a moment's notice.