CASE OF MULTIPLE CALCULI IN THE URETHRA.

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THE Rev. Mr. —, aged 26, recommended by Dr. Paterson of Leith, came to my house on the evening of April 22nd, 1868, on account of an attack of retention of urine. The patient had never suffered from urinary symptoms until four months previously, when he began to have some difficulty and pain in passing his urine. Two months after these symptoms appeared, he sought the advice of Dr. Paterson, who detected the presence of several calculi in the region of the prostate. The calculi were apparently lodged in a cyst in the prostate; but Dr. Paterson observed that they occasionally passed forwards into the urethra; and, after remaining there for a short time, and giving rise to obstruction (which was, however, never complete) to the passage of urine, they returned again to their original place of lodgment in the prostate. The attacks of difficulty and pain in micturition during the passage of the stones into the urethra had lately increased in frequency; and this morning he was seized, for the first time, with complete retention of urine.

An examination showed the penis semi-erect and swollen. This condition depended partly upon congestion, but principally upon the presence in the urethra of six calculi, which could be distinctly felt externally. The calculi were impacted in the urethra, at slight intervals between the bulb and meatus. The first one was situated about three-quarters of an inch from the meatus, and the last opposite the bulb. The patient was suffering great pain; and the urethra was thoroughly obstructed, and the bladder distended.

Having administered chloroform, and incised the margin of the meatus, which was too tight to permit of the stones being extracted through it, I readily removed the calculi, one after the other, with the urethral forceps. A No. 12 silver catheter was then passed without difficulty into the bladder, and the urine drawn off. Another stone was struck at the neck of the bladder in passing the catheter, and was pushed into the bladder. Before allowing the patient to recover from the chloroform, I introduced a lithotrite into the bladder, seized the remaining stone, and satisfactorily crushed it.

On visiting the patient next day, I found he had passed urine freely several times, and had also passed the fragments of the crushed stone. These fragments, when put together, made up a mass exactly resembling, in size and composition, the stones removed from the urethra. On examination, no other calculi could be detected.

The stones removed from the urethra are represented very faithfully, as to size and shape, in the woodcut. They were many-sided in shape,

of a reddish-brown colour externally, and had smooth facets on some of their surfaces. Each calculus measured, in its greatest diameter, exactly half an inch. A section through one of them displayed in its centre a small nucleus about the eighth of an inch in diameter, and of a dark brown colour. The remainder of the section was of a dark fawn colour, and showed regular layers or lines of deposit. Dr. A. Crum Brown has kindly furnished me with the following analysis of portions taken from two of the calculi, which had been dried at 212°.

Oxalate of lime	. . .	71.9 per cent.
Phosphate of lime	. . .	6.9 „
Organic matter	. . .	21.2 „

100

REMARKS.—This case is interesting—

(1) From the composition of the calculi. The analysis of calculi which have formed entirely in the prostate gland has usually showed that their composition consisted principally of phosphate of lime (84.5 per cent., according to Lassaigne). Even when calculi which have formed in the kidney or bladder become lodged in the prostate, they generally increase in size by deposits of phosphate or carbonate of lime on their exterior. Such was not the case in the calculi just described; and, as

they had undoubtedly lodged in a prostatic cyst for some months at least, the nature of their composition is certainly exceptional to that described by those who have investigated the subject.

(2) From the number and size of the calculi impacted in the urethra. There are a few cases on record in which numerous calculi have lodged in a cyst connected with a dilatation of the urethra, situated behind a stricture of the canal; but the lodgment of so many as six entire stones in this canal is certainly very uncommon. The occasional movement of the calculi forwards into the urethra, and their passage backwards again, had evidently caused a gradual dilatation of the canal; otherwise they could scarcely, owing to their size, have passed so far along the urethra as to be impacted in its anterior portion.

In regard to the removal of the stones, I have little to remark. After the incision of the orifice of the meatus, no difficulty was experienced in extracting the calculi singly with urethral forceps; and the relief of the case was successfully completed by the fortunate seizure and crushing of the remaining calculus, which had passed into the bladder. I might possibly have removed this last stone with the urethral forceps, as has been done by Sir A. Cooper, Sir B. Brodie, and others; but the introduction of the lithotrite appeared to me to be more likely to be successful, and therefore this plan was adopted.

PROFESSOR HUXLEY'S HUNTERIAN LECTURES ON THE ANATOMY OF THE VERTEBRATA.

Delivered at the Royal College of Surgeons of England.

LECTURE X.

IN the Chimæra, the cartilaginous skull presents us on each side with a large triangular plate, the apex of which is directed downwards, and suspends the mandible; while the hyoidean apparatus is attached to the hinder margin of the same plate towards its lower end. This triangular lamella appears to represent the proximal parts of the first two visceral arches, together with the pterygo-palatine arcade, all fused together.

The Sturgeon presents us with an interesting transition to the true osseous skull. The cranium is cartilaginous, and very extensive, its hinder part taking the place of certain of the most anterior trunk-vertebrae. There are no true cranial cartilage-bones, but numerous bony plates are developed in the perichondrium. These partly simulate, partly represent, true cranial bones; and we may, more or less correctly, speak of the supraoccipital, parietal, frontal, postfrontal, prefrontal, etc. There is a vomer, and an enormously developed parasphenoid.

The Sturgeon, when feeding, makes use of a small proboscis which it protrudes from the under surface of the head. The skeleton which supports this proboscis is very curious, and consists of two small jaws, supported by a very long and segmented suspensorium. The lower jaw plainly corresponds to the mandible of other Vertebrates. The upper jaw (which, apart from the suspensorium, is only attached to the head by soft structures) certainly answers to the pterygo-palatine, or rather palato-quadrate, arcade of the Sharks; while bony structures attached to it answer perhaps to the palatine, the maxilla, and the jugal.

The osseous Fishes (taking the Cod as our type) exhibit a cranium formed of successive segments. The hindmost of these consists of the basioccipital, the two exoccipitals, and the supraoccipital. The penultimate segment is not furnished with any inferior or basilar bone, but only with two alisphenoids, two parietals, and two postfrontals. The antepenultimate segment is very much more imperfect as regards osseous tissue, as there is none either below or at the sides; and the frontal above is the only bony element in it. The most anterior segment of all consists of a median and two lateral ethmoids, with the nasal above, and the vomer beneath. The posterior part of the side-wall of the skull is furnished with several bony elements, ossifications of the acoustic capsule. These are, the prootic, the epiotic, the opisthotic, and finally a bone which has been often described as the squamosal, but which is really a bone formed from cartilage, as was ascertained by Mr. Parker, who proposed for it the name pterotic. Finally, the parasphenoid underlies the skull, but is not so large as in the Sturgeon.

The descending arches are formed by premaxillæ and maxillæ; and there are orbital, suborbital, and supraorbital ossicles, some of which may possibly represent the lacrymal and jugal. The suspensorium is formed by the hyomandibular and symplectic bones; and the large hyoidean arch is furnished with branchiostegal rays (bones formed from membrane), some of which are always attached to the outside of the