Aylsham (under whose care this patient had been), I performed the usual lateral operation, and removed a single stone, of an oval flattened shape, weighing five drachms, of uric acid formation. An enlarged middle lobe of the prostate became engaged between the blades of the lithotomy-forceps, anterior to the hinge, and was unconsciously torn off and came away with the stone. There was free arterial hæmorrhage from a deeply seated vessel, which was without much difficulty seen and secured by ligature. A tube was placed in the wound.

On visiting the patient next day, I found him easy and comfortable. There had been no sickness; he had slept fairly well; pulse 64. The wound looked well; the urine was clear, and dropping freely from the tube and abundant in quantity. On the ninth day, he passed the whole of his urine through the penis, and the wound was healing rapidly. Three weeks later, I found him in excellent health, and the wound perfectly healed. He seldom found it necessary to micturate more than once during the night.

REMARKS.—This case presents some points of much interest.

1. The presence of a loud systolic *bruit* is not a pleasant sign in connection with the administration of chloroform, of which my patient inhaled from four to five drachms, and from which he suffered not the slightest inconvenience, either during the operation or subsequently.

2. The fracture of the neck of the right os femoris had resulted in ankylosis of the joint. The limb was immovably fixed in the straight position; therefore it could not be tied up in ordinary lithotomy fashion, but was held by an assistant in a straight direction over my left shoulder. This rendered the performance of the operation somewhat less easy than usual. The parts forming the perineum were lax instead of being tense, and, in order not to wound the rectum, which was large and flaccid, I passed my left forefinger into the bowel, and retained it until the point of the knife was lodged in the groove of the staff; and, by directing the edge of the knife very obliquely outwards, the rectum escaped injury—an event which, in all probability, would have occurred had not these precautions been adopted. If such an accident had happened, taking into account the age of the patient, I fear the termination of the case would have been unfavourable.

3. The removal of a large portion of the middle lobe of the prostate, though quite accidental, was attended with a happy result. The man was relieved of a trouble which, sooner or later, would have been a source of grievous annoyance to him.

I witnessed the same accident in a case operated on by Mr. Cadge. In the forceps, between the stone and the blades, there came away three masses, which were apparently fibrous outgrowths of the prostate, and which weighed one drachm two scruples. In two months, the wound had healed and the patient was strong and well. Mr. Cadge remarks: "It has happened to me twice before to remove small fibrous tumours of the prostate gland during the operation of lithotomy, and apparently without harm to the patient." (*Transactions of the London Pathological Society*, vol. xiii, 1862.) And he gives the experience of an expert modern lithotomist on this subject, who says: "It has occurred to me, eight or ten times, to bring away portions of the prostate and without noticeable injury to the patient. In more than one instance, it was the prominent third lobe which got between the handles, anterior to the hinge, and was torn off entire; and although I have never known unpleasant results to the patient, and that sometimes he has been benefited in after-life, by having got rid of an useless impediment to a natural function. I would not willingly that such an occurrence should happen, and I try to avoid it by turning the blade of the forceps to the lower angle of the wound as I leave the bladder; but when it does occur, I lay no account by it."

THE POLYURIA OF GRANULAR KIDNEY.

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DR. GEORGE JOHNSON'S short paper, in the JOURNAL for May 25th, seems to me to call for some response from those who differ from him in the explanation of the facts to which he refers. While admitting the importance of the support Dr. Johnson derives from M. Charcot, in believing the changes in granular kidney to begin in the tubular epithelium, I do not consider M. Charcot's reasoning quite free from objection; and I hope, at some future time, to address myself to that part of the subject. For the present, I am concerned with the latter part of Dr. Johnson's article. Dr. Johnson says: "Dr. Ewald appears to have looked for hypertrophy of the arterioles in the pia mater alone, and therefore his observations are incomplete." . . . "It is probable that the arterioles in other tissues, more especially in the skin, may have been sufficiently hypertrophied to explain the cardiac hypertrophy." Dr. Ewald, in common with most of Dr. Johnson's readers, did not imagine

that it was the part of his theory to exclude certain areas from the "stop-cock" function; but he shall speak for himself. He says: "I have restricted myself to this part (the pia mater of the pons) for many reasons: first, the vessels there are under the same conditions as all the other capillaries of the body which do not lie directly between the heart and the kidneys, so that the changes here found, as far as they are of an universal nature, must affect all the other vessels in the same degree. Secondly, because Gull and Sutton, and Johnson, have found the same changes in the vessels of the skin and intestines as they originally found in the cerebral vessels; so that if I could verify their results on one or the other side, in a limited region, the data would rightly hold for the whole vascular area. Finally, the vessels of the pia mater, as has been said, give the best preparations, and are besides more investigated and studied under pathological conditions, so that it is easier to distinguish the process in question from accidental or different pathological changes." (*Virchow's Archiv*, Band lxxi, Heft 4, page 458). In the second place, Ewald's argument, that "the absence of cardiac hypertrophy in amyloid and atheromatous thickening of the arterioles is against the vascular changes as causes of the heart-affection," must be taken as rather directed against the views of Gull and Sutton than against those of Dr. Johnson. Dr. Johnson goes on to say that "it has been suggested that the polyuria of granular kidney is the result of increased pressure in the Malpighian capillaries, consequent on obstruction in front". The existence of obstruction in front of the Malpighian tufts is proved by Thoma's researches. He found, by making careful coloured injections, that the fluid ran well into the tufts, but beyond them the capillary network had undergone destruction, and the efferent vessels were often obliterated (*Virchow's Archiv*, Band lxxi, Heft 3 and 4). Dr. Johnson says: "Increased pressure on the Malpighian capillaries would cause, not a copious secretion of urine, but an abundant transudation of albumen"; this is scarcely a fair assertion, as the transudation of albumen is the result of the high pressure being carried to an excessive degree. It is a generally accepted physiological fact, that the secretion of urinary water is in direct proportion to the pressure in the glomeruli. (*Foster's Text-Book of Physiology*, page 278, *et seq.*) He then enforces this statement by telling us that, "when, as a result of valvular disease of the heart, the return of venous blood from the kidney is impeded, the increased pressure on the Malpighian capillaries is associated with a scanty secretion of highly concentrated urine, which, too, is often copiously albuminous". In this he overlooks altogether the fact that the rate of flow through the renal vessels is much diminished in cardiac disease; while it is at least more than probable that the blood accumulates, not in the capillaries of the tufts, but in the venous plexuses on the farther side of them. It is not pretended that the blood-pressure in the renal glomeruli is the sole cause of the polyuria of the granular kidney; for while, on the one hand, it is impossible to believe that active secretion could be going on from a gland the secreting part of which was in a state of anæmia, the experiments of Heidenhain, Ustimowitsch, and Grützner have proved the influence which urea, urates, etc., circulating in the blood, have upon the renal function, a fact which Dr. Johnson most properly regards as an important factor in the production of polyuria; but which the experiments of the last quoted observer prove to be totally opposed to Dr. Johnson's view, that the arterioles of the kidney are firmly contracted.* Grützner (*Pflüger's Archiv*, Band xi) found that, when he injected saltpetre into the blood, the renal nerves on one side only being divided, copious urinary secretion followed equally from both kidneys; but, when the general blood-pressure was raised by suspension of the respiration (with contraction of the arterioles, of course, throughout the body), the secretion of urine sank at once in the kidney the nerves of which were undivided; proving that the contraction of the renal arterioles, imagined by Dr. Johnson, is altogether inconsistent with the copious diuresis characteristic of this malady.

There is still one more anatomical point to which I must refer, and that is the increased permeability of the renal vessels which Thoma observed. This change was not susceptible of anatomical demonstration, but was very marked, even in parts of the organ apparently little affected by the degenerative process. The observations of Thoma and Ewald seem to weigh equally against the theories of Dr. Johnson and of Gull and Sutton; for their very careful measurements prove that the small vessels of the kidney have their lumina generally widened. If it could be proved, by careful injection, that there is anything approaching the nature of capillary atrophy present throughout the body, it would be a satisfactory solution of the problem; at present, I do not believe we have any precise knowledge of the nature of the general obstruction which leads to cardiac hypertrophy and increased

* "There is evidence that the renal arterioles in these cases are more firmly contracted and more decidedly hypertrophied than those of any other organ or tissue." *Lumleian Lectures on the Muscular Arterioles*, p. 44.)

blood-pressure; but I think it is proved that, so far as the kidney is concerned, there is no shutting off of the blood from the glomeruli; and it is probable that, throughout the body, the obstruction is really in the capillary network, though whether that depends on structural alterations in the vessels or altered relations of osmosis between the intravascular and extravascular fluids, I will not attempt to decide, although the latter seems to me, in the absence of any anatomical facts, to offer a plausible explanation.

SOME INDICATIONS FOR THE DIAGNOSIS AND TREATMENT OF AORTIC ANEURISM.*

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[Concluded from page 817 of last number.]

So far, two classes of cases have been considered: one in which both pulses were affected by the aneurism; the other in which the right was alone or chiefly concerned. A third class remains, that in which the right is unaffected while the left presents aneurismal characters; these cases are due to aneurism of the transverse arch or about the root or in the course of the left subclavian. Fig. x illustrates the

FIGURE X.—Aneurism of Transverse Aorta, slightly involving Orifice of Innominate (Mr. C. Heath).

1. Right. Pressure, 3 ounces. Indicates Hypertrophied Heart and very Degenerate Arteries.

2. Left. Pressure, 1 ounce. Upstroke rather sloping. Percussion almost disappeared. Signs of Aneurism.

tracings obtained from a patient under the care of Mr. Heath with aneurism of the transverse part of the arch, which also slightly involved the orifice of the innominate. The chief disease, however, was situated in the transverse arch. The right radial tracing has no characters imparted to it by the aneurism, except a slight vibration or thrill imparted to it and visible on the summit of the tidal wave. The well-marked percussion, the height of the upstroke, the sustained and square-topped tidal wave, and the sudden collapse of this wave—all indicate an hypertrophied heart and a very degenerate and almost aneurismally dilated aorta, conditions which were found at the *post mortem* examination to have been present. The left pulse has many modifications produced in it by the aneurism; the upstroke is slightly sloping, percussion has disappeared, and all the waves are less distinct. The tracings would have indicated, had the question of distal ligation been raised, that the vessels on the left side of the arch should be tied if any operation were undertaken, which, however, the signs of general arterial disease exhibited by the right pulse rather contraindicated. In this case, the indication thus afforded, though correct, inasmuch as the chief sac of the aneurism was beyond the innominate and involved the transverse arch, still practically, as the innominate actually arose from immediately within the opening of the aneurismal sac, it would have been probably better to promote coagulation in this vessel, which might have extended into the sac, with which it was directly continuous.

A better illustration of the manner in which the left pulse may be

FIGURE XI.—Illustrates the Typical Effect of Aneurism on the Pulse. Aneurism of Left Subclavian Artery, involving Arch of Aorta (Dr. Broadbent).

1. Right. Pressure, 3 ounces. Indicates a somewhat Hypertrophied Heart and Degenerate Vessels.

2. Left. Pressure, 2 ounces. Shows obliteration of all the Waves, sloping Upstroke, and uninterrupted Downstroke; the result of Aneurism directly in the course of the Vessel.

affected is seen in fig. XI, obtained from a patient under the care of Dr. Broadbent, but who subsequently died in St. George's Hospital. The physical signs in this case were those of an aneurism of the descending part of the arch, which, indeed, was the seat of the disease; but it extended as high as, and involved the origin of, the left subclavian; the only indication of this was afforded by the pulse, which is seen to be typically aneurismal on this side.

Occasionally, the mere proximity of an aneurism will affect the blood-stream, although it may not actually pass through the sac; so was it in a case, under the care of Dr. Broadbent, from whom the tracings in fig. XII were obtained. This was a case of aneurism

FIGURE XII.—Aneurism of Descending Arch of Aorta (Dr. Broadbent).]

1. Right. Pressure, 2 ounces. Merely indicates a Large and Hypertrophied Heart, with Aortic Regurgitation.

2. Left. Pressure, 7 ounces. Shows a considerable diminution in size of Pulse and of all the Waves.

of the descending part of the arch, beyond the origin of the left subclavian. The left pulse is, however, distinctly affected by the aneurism, which appears to have partially diverted the stream from the left subclavian; the upstroke is shorter, the percussion-wave much diminished,

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