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.*

By F. A. MAHOMED, M.D.,

Medical Registrar to Guy's Hospital; Assistant-Physician to the London Fever Hospital; etc.

[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,

* Read in the Section of Medicine at the Annual Meeting of the British Medical Association in Manchester, August 1877.

and the dirotic recoil less marked than in the right pulse, which is that of aortic regurgitation with hypertrophied heart. These tracings might have been misleading, as they would rather indicate an aneurism before the origin of the left subclavian, but the physical signs negated this.

The tracings represented in fig. XIII were obtained from a very remarkable case lately in Guy's Hospital under the care of Dr. Hilton Fagge. In this patient, the only physical signs were those of pressure on the left bronchus, and it was impossible to say whether this was due to

FIGURE XIII.—Aneurism of Descending Arch, affecting Left Pulse.

aneurism or to some other cause. Under these circumstances, the tracings of the pulse afforded actually the only guide on which to found a diagnosis; they were characteristic of aneurism. Neither pulsation, tumour, *bruit*, or area of dullness could be detected, and the general symptoms were only cough and pleurodynia. The sphygmographic diagnosis was confirmed three months afterwards by a *post mortem* examination in which an aneurism of the descending part of the arch was found projecting forwards and compressing the left bronchus. That an aneurism in this position should have so greatly interfered with the left pulse appears at first unlikely, but a careful search failed to detect any other cause for its diminution, and a consideration of the experimental results illustrated by fig. IV explains it; moreover, I have met with other similar cases.

In aneurism of the lower thoracic or abdominal aorta, the sphygmograph will not aid the diagnosis beyond affording a very valuable indication of the amount of general arterial disease and cardiac hypertrophy. In a recent discussion at the Clinical Society on the method of treating aneurism of the aorta by distal ligation of one or other of the large vessels taking origin from the arch, two points were especially commended to the attention of physicians: first, the importance of an accurate diagnosis of the exact position of the aneurism, and its relation to the great vessels; second, the necessity of ascertaining the extent to which general arterial disease exists. The preceding cases will, perhaps, permit a judgment to be formed as to how much the sphygmograph may assist in forming a conclusion on these points in any case. It is an assistance that we cannot afford to neglect. Physical signs are all alike liable to mislead in some cases; there is not one infallible; nor can the sphygmograph be considered so. In a few cases, it will give little or no help; in others, it will rather mislead; but in by far the larger proportion it proves itself of the greatest value. It may be well if a few instances of fallacy in a sphygmographic diagnosis be given.

FIGURE XIV.—Fallacy in Diagnosis from Deposit of Fibrin in Aneurism. Aneurism of Innominate Artery, nearly full of Clot, producing scarcely any alteration in Right Radial Pulse (Mr. Cooper Forster).

Fig. XIV illustrates one, which, however, under some circumstances may rather be taken as a most valuable indication. It proves that the presence of a large quantity of clot in an aneurismal sac may remove all indications of aneurism from the pulse. This is exactly what might be anticipated on theoretical grounds. The aneurismal pulse obtains its character from the presence of a more or less elastic sac, which diverts the blood-stream and absorbs the head-wave. Let this sac be filled up with firm clot, or its walls be even greatly thickened, and it must cease to produce the same effect on the stream. If, then, a pulse have been aneurismal, and gradually return to the normal, we are fairly entitled to assume that a deposit of fibrin is taking place in the sac. The tracings in fig. XIV were obtained from a patient under the care of Mr. Cooper Forster, who died shortly afterwards. A large aneurism of the innominate was found, having an opening into the aorta the size of a five-shilling piece. It involved half an inch of the carotid, but none of the subclavian. It was nearly full of old laminated clot, resembling soaked brown paper. The aorta was very bad, rough, and much calcified. There was great hypertrophy of the left ventricle, the heart weighing twenty-five ounces. In this case, the tracings from the two radials are almost exactly similar; that from the right being very slightly the smaller of the two, and having its percussion-wave a little diminished, but scarcely enough to found a diagnosis upon. Doubtless this pulse had presented much more marked aneurismal characters before the deposit of fibrin had taken place; but the patient was not then under observation.

Another fallacy occurs from the pressure of the aneurismal sac upon a vessel not itself affected. This is seen in the tracings in fig. XV,

FIGURE XV.—Fallacy in Diagnosis from Pressure of Tumour on Adjacent Vessel. Aneurism of Transverse Arch pressing upon Innominate, which was itself dilated (Mr. C. Heath).

obtained from a patient under the care of Mr. Heath. The tracings from both radials are highly aneurismal in their characters, that from the right being most so. A diagnosis was made of aneurism of the innominate involving the arch. At the *post mortem* examination, however, an aneurism of the transverse arch was discovered, compressing the innominate, which ran in its posterior wall, but was not itself aneurismal.

Again, the accidental plugging of a vessel beyond the aneurism may lead to error. The tracings exhibited in fig. XVI were obtained from a case in St. George's Hospital under the care of Mr. Rouse. The

FIGURE XVI.—*Fallacy in Diagnosis from Accidental Plugging of a Vessel beyond the Aneurism (?). Case of Aneurism of Root of Right Common Carotid (Mr. Rouse).*

physical signs in this case—that of a young woman aged 18—indicated aneurism of the right common carotid. The tracings show a great diminution in, and aneurismal character of, the left radial pulse, which, if taken alone, would have led to a diagnosis of aneurism of the transverse arch, or about the origin of the left subclavian. No pulsation was discoverable, however, in the left brachial; and it is probable that this vessel had become plugged by an embolic clot. There does not appear any probability of an opportunity of examining the actual condition in this case; which, therefore, cannot be considered as altogether certain.

Diminution in calibre of a vessel, due either to endarteritic occlusion or to a tumour outside the vessel, may cause a diminution in the radial pulse resembling that produced by aneurism. Fig. XVII illustrates.

FIGURE XVII.—*Arteritis partially closing Subclavian Artery and simulating Aneurism. Left Subclavian Contracted to size of Radial (Dr. Moxon).*

trates the radial pulses in a case of this description under the care of Dr. Moxon—one which I have already quoted in a former paper on this subject. The tracings, together with a *bruit* heard over the origin of the left subclavian, led to a suspicion of aneurism. Dr. Moxon nevertheless always regarded the case as one of angina pectoris, with aortitis: a diagnosis which proved to be correct, the difference in the radial pulses being well explained by endarteritic thickening found about the origin of the left subclavian, which reduced its lumen to that of the radial.

Other causes of fallacy might be enumerated. Among them are certain nervous conditions, affecting the vaso-motor nerves of one side and often accompanying hemiplegia. Anatomical abnormalities in the vessels of a limb are frequent causes for a diminution in the size of a radial pulse; but these can generally be detected by careful examination. By far the most abundant cause of error will be found, by the inexperienced, to be inaccuracy of observation from an imperfect application of the instrument. This practice alone can prevent; and that, combined with patience, will reduce it to an extremely rare mistake.

Time will permit but few remarks to be made on the indications for treatment afforded by the sphygmograph. If the relation of the condition of arterial tension to aneurism be considered, the value of the sphygmograph, which is undoubtedly the best and surest gauge we possess of this condition, cannot be overlooked. The amount of fullness or distension of the arterial system is necessarily of the first importance in the treatment of aneurism. Our aim should always be to reduce it as much as possible: in other words, to reduce the arterial tension. This is, in fact, the practical result of the admirable treatment laid down by Mr. Tufnell. By tracings taken at intervals during the treatment of a case, it is possible to estimate the effect of our treatment in this direction with an exactness not often obtainable in medicine.

The methods which prove most efficacious in reducing tension under all conditions are as follows: a carefully regulated and but slightly nitrogenous diet; free purgation; free sweating by hot-air baths and other means; in some cases diuretics; and, under all circumstances, rest. Certain drugs, such as jaborandi, nitrite of amyl, and chloroform, have the property of reducing arterial tension. They do not, however, act in the same manner as the methods just mentioned, which actually reduce the volume and alter the character of the blood. These drugs act in a more or less temporary manner by relaxing the muscular coat of the arteries, and thus reduce their fullness by making more room for the blood they contain. Such remedies as these are especially indicated when temporary relief from an exacerbation of pain is required. Sudden reduction of tension is a certain method of relieving this, the most severe pain of aneurism, as surely as a sudden increase of tension, from exposure to cold or partaking of a heavy meal, will produce it. Other drugs are employed in the treatment of aneurism from their action on the circulatory system. Of these, aconite and veratria may occasionally be employed with advantage to diminish the force of the cardiac pulsations. This is an effect which can be well demonstrated by the aid of the sphygmograph; but I have been unable to detect any effect on arterial tension produced by them. On the other hand, certain other drugs sometimes employed as vascular depressants are, I believe, fraught with the greatest danger, from the great increase of arterial tension produced by them; such especially are ergot and digitalis. Ergot, by contracting the muscular coat of the arteries, increases the tension as surely as others already mentioned decrease it; while digitalis not only increases the tension in a similar manner, but also so greatly increases the force of the cardiac contractions that an aneurism with thin walls might very readily be ruptured by its use. I have seen a pulse not only greatly increased in tension, but actually doubled in volume, by this drug. It is true that, when pressed rapidly to produce its extreme effect, the heart may be greatly slowed, and reduced pressure on the sac be possibly obtained; but I think the experiment too dangerous to be often justifiable. The drug which appears to produce beneficial effect in many cases of aneurism—I mean iodide of potassium—does not produce, as far as I have observed, any effect on the circulation appreciable by the sphygmograph; but there can be no doubt that it is most likely to act with advantage when the arterial tension has been reduced as low as possible. There appears to me, therefore, but little doubt that the most hopeful and rational treatment of aneurism is first to reduce arterial tension; to enforce absolute rest; and then to employ iodide of potassium with a view of causing contraction of, and therefore coagulation in, the sac. If these methods be not successful, appeal must then be made to the surgeon, and the questions of galvano-puncture and distal ligature be discussed.

Since this paper was written, I have employed another aid to the sphygmographic diagnosis of aneurism, which will, I think, prove of very great value. I have long desired a simple and effectual method of obtaining simultaneous tracings of the heart and pulse, by which it would be possible to measure "delay" in transmission of the pulse wave. Mr. Garrod, some years ago, made an ingenious modification of the sphygmograph, by which it was possible to obtain such tracings for physiological purposes; but, owing to the constrained position of the arm and for other reasons, his method was not well adapted for clinical observations. Dr. Burdon Sanderson has lately had constructed a miniature tambour, exactly similar to that which Marey employs for his polygraph; this can be attached to the frame of the sphygmograph, and made to record the movements of its lever on the slide immediately above those of the sphygmographic lever. The tambour is connected by a piece of India-rubber tubing with one of Dr. Sanderson's cardiographic air-pads, which is applied over the point of cardiac impulse and transmits the cardiac movements to the writing lever of the tambour. By this means, very excellent simultaneous tracings of the heart and pulse can be obtained.

Frequently, in cases of aneurism, the pulse is so slightly affected that it is impossible to state with any degree of certainty that its characters are due to the presence of an aneurismal sac, or that it has in any way been modified by it. If, however, we can demonstrate a greater delay occurring in the transmission of the pulse-wave on one side than on the other, it will go far towards establishing a diagnosis of aneurism.

There are several other interesting points in cardiac pathology upon which I have already obtained fresh light by this means; an account of these, however, I must reserve for a future occasion, that they may meanwhile be confirmed by further observations.

CLINICAL MEMORANDA.

MICROSCOPIC ORGANISMS IN MEASLES AND OTHER DISEASES.

IN reference to Dr. Braidwood's interesting paper on the microscopic characters found in tissues affected by measles, I wish to state that I observed bodies probably similar to those which he describes in the aqueous vapour of the breath of two cases of measles, and the same organism, which I called a "small-celled conferva", in the breath of a case of whooping-cough. A straight-celled confervous growth was also found in the breath of a case of diphtheria. These bodies were described in a paper "On the Organic Matter of Human Breath", read before the Literary and Physiological Society of Manchester in the year 1869, and published in their *Transactions* for that year. The paper was also published in the *Journal of Anatomy and Physiology* for May 1870. I did not venture to assert that there was anything specific in these organisms; but Dr. Braidwood's discovery of similar bodies in the lungs and liver would tend to prove that they have some important relation to the diseases in question.

ARTHUR RANSOME, M.D., Manchester.

CHOLECYSTOTOMY.

IN the BRITISH MEDICAL JOURNAL of June 8th is the record of a remarkable case in which Dr. J. Marion Sims performed an operation for the relief of an obstructed gall-bladder. Dr. Marion Sims says, in his report of the case: "The question of surgical interference has more than once been raised, and recently Dr. Handfield Jones has revived the question in the *Medical Times and Gazette*, March 9th, 1878, page 247." It will interest Dr. Sims to know that "the advisability of an operation for the removal of gall-stones" was raised in the case of a lady seen by Mr. Maunder, in consultation with me, in October 1875, a full account of which will be found in the *Transactions of the Clinical Society of London*, vol. x, 1877, in a paper by me, which Mr. Maunder communicated on this very subject. Mr. Maunder had, previously to seeing the patient, practised the operation on the dead subject after the method which he had some time previously made known to the profession under the name of gastroenterotomy, or artificial anus in the small intestine. On the occasion upon which Mr. Maunder saw the patient with me, no tumour could be found in the region of the gall-bladder; and he, therefore, declined to operate at that time. I had frequently felt the gall-bladder in this case, containing some large hard substance—the stone found after death; but, on the day of Mr. Maunder's visit, it could not be felt. Others besides myself had felt it. To those interested in this subject, the whole history of my case, the *post mortem* examination, the description of his proposed operation by Mr. Maunder, and the discussion upon it at the Clinical Society, will be found at length in the BRITISH MEDICAL JOURNAL of November 4th, 1876, page 604.

I think it is only fair to add that, from the above dates, the original idea of giving this operation a practical form is evidently due to Mr. Maunder.

FREDERICK H. DALY, M.D., Dalston.

OBSTETRIC MEMORANDA.

PREGNANCY WITH UNRUPTURED HYMEN.

I WAS summoned by a midwife the other night to see a case of protracted labour. She informed me that she could not feel the presentation, though she had been in attendance nearly twelve hours, and the pains were frequent and active. The patient was a strongly built, very stout woman, aged 29, in labour with her first child. I found the vulva unusually small, and the vagina was closed at a short distance by a dense concave membrane, with a central opening just large enough to

admit the point of the finger. By steady pressure, which caused considerable pain, I passed first one and then two fingers through the opening, and so reached the os uteri, which was high up and only slightly dilated, with the head presenting. It was some time before I realised the fact that this septum was the hymen, so firm and ligamentous was its texture, and its central perforation so small and rigid. I decided to wait and see how far the natural efforts would succeed in overcoming the unusual obstacle; and I had the satisfaction of learning that the labour terminated in eight hours after my visit, the septum having yielded rapidly before the advancing head.

HENRY TAYLOR, Guildford.

NOTE ON PASSING THE UTERINE SOUND.

I HAVE seen certain cases in which it was remarked to me that "the uterine cavity was directed to the left side, and that the sound would not pass". In most instances, the difficulty has disappeared when I have turned the patient over upon her right side. Where the cavity is directed forwards, the woman is, of course, placed upon her back. This little manoeuvre has succeeded sometimes when I failed to restore the normal position by raising the fundus by my fingers in the vagina.

I think the practical bearings of this note, as regards both diagnosis and treatment, are obvious.

J. HICKINBOTHAM, M.D., M.R.C.P. Ed.,
Physician to the Birmingham and Midland Hospital for Women.

COMPLETE INVERSION OF THE UTERUS FOLLOWED BY PUERPERAL HYSTERITIS.

ON Tuesday, May 21st, I was called to Mrs. T., aged 23, multipara. She had been delivered on May 19th by a midwife of a living child. There was *post partum* hæmorrhage, which was controlled by the midwife. The patient complained of great pain until May 21st, up to which date the bowels had not acted, and the urine had only passed in small quantities. She said "something wanted to come away". On Thursday afternoon, whilst at stool, she felt something come down; the midwife, taking it for a dead child, tried to pull it away. Failing in this, she sent for me. I found the patient apparently moribund and quite blanched. On examination, I found the uterus inverted and extruded beyond the vulva. I attempted reduction, but failed. A few hours later, at a subsequent visit, after having got the vagina well on the stretch, I succeeded in effecting the reduction. I gave a grain of morphia hypodermically, and left. During the next four days, the temperature rose to 104 deg., there was great pain in the region of the bladder, and an extremely offensive discharge from the vagina. The patient is now doing well.

W. H. WRIGHT, L.K.Q.C.P.I.

SURGICAL MEMORANDA.

AURAL FURUNCULI.

THERE is a sign connected with boils in the meatus auditorius externus which, though very distinctive and highly important in a medico-legal point of view, has never, to my knowledge, been sufficiently dwelt upon by any writer upon ear-diseases, although every one conversant with these affections must have noticed it. I allude to the peculiar stain left upon the pillow-case by the thickened and comparatively scanty discharge that in some measure characterises a furunculus from an abscess. I have noticed it especially in children. The appearance presented by a pillow, the morning after a boil in the meatus has burst, is sufficiently characteristic to enable one to divine the nature of the affection from which the patient has suffered, for the pillow-case will be found studded over with stains so closely resembling linen-covered buttons, such as are worn on night-shirts, as to deceive, at a distance, the most clear-sighted. The thickened drop of discharge falls entire from the meatus upon the cover of the pillow, upon which the more liquid portion of the discharge spreads, leaving in the centre the more inspissated; this dries, and in drying gives, at a distance, an almost exact image of the shank of a button, the disposition of the surrounding stain rendering the appearance still more delusive. The subjects of the affection being rather restless in their sleep, roll their heads upon the pillow, so that by the morning it often happens that no two of the markings run together, but each one is separate, thereby rendering the resemblance to buttons additionally striking.

These umbilicated markings, especially if there be many of them, are a positive characteristic of the affection in question.

ROBERT T. COOPER, M.D. Dub.