men, and were followed by a linseed-meal poultice; and a common enema was given.

7 P.M. The leech-bites had bled freely, and he said he felt relieved thereby. The bowels acted once since the injection, but he had passed no urine.

11 P.M. The catheter was introduced, and about two ounces of urine were withdrawn. He afterwards felt faint and in much pain.

℞ Ætheris chlorici, tincturæ opii, āā ℥xv; aquæ camphoræ ad ℥iss. M. Fiat haustus statim sumendus.

April 13th. He slept pretty well, and expresses himself as feeling somewhat better. There is rather less pain and tenderness in the abdomen, and less dulness in the region of the bladder. He passed nearly a pint of urine in the night, of a high colour, but otherwise natural. The bowels have not been again relieved. He was ordered to have half an ounce of castor oil.

11 A.M. He was attacked with severe pain in the abdomen, which is very tender. The knees are drawn up in the bed; his countenance is anxious; the pulse small and frequent; the breathing short and hurried. The leeches were repeated, and he was ordered to have a grain of calomel and a grain of opium every two hours.

1 P.M. He appears much worse, and is evidently sinking. His face is pale, and bedewed with a cold clammy sweat; the countenance is very anxious; the pulse very small and feeble. He vomited a quantity of green bilious fluid, devoid of stercoraceous odour.

3.30 P.M. He raised himself up in the bed a little to pass a stool in the bed-pan; and, before he had finished, he sank back, and expired in a few minutes. An hour or so before he died, he was throwing himself about in the bed, from the great pain he was suffering.

It was given in evidence at the inquest, that when he was struck, he immediately vomited, throwing up at the same time a little blood.

AUTOPSY, eighteen hours after death. A yellowish brown fluid, not having a fæculent odour, escaped from the mouth. On opening the abdomen, a large quantity of brown fluid with strong fæcal odour escaped; and lying on the intestines at the upper part of the abdomen, was some fæcal matter, in a semi-solid state. The peritoneal coat of the whole of the intestines was inflamed; and, in the right iliac and lumbar regions, they were matted to each other and to the abdominal walls by recently effused lymph. The omentum in this part was thickened and adherent, one portion of it forming a small pyriform mass attached to the intestine. On gently withdrawing the intestine from the right iliac fossa, a small quantity of grumous blood escaped from it, and was followed by flatus and fæcal matter. A small round opening, of about two lines in diameter, was immediately discovered in the lower portion of the ileum, about three or four inches from its termination in the cæcum. Whilst the perforation was being examined *in situ*, a thin pointed substance protruded through it from the interior of the bowel, which, when withdrawn, was found to be a minute chip of wood, three-fourths of an inch in length, a line in breadth, and becoming thinner towards each end; it resembled much the small portions of woody fibre often seen in coarse brown sugar. The interior of the alimentary canal, from the commencement of the stomach to within a few inches of the anus, was carefully examined; and, with the exception of the lower end of the ileum, it was perfectly healthy. This portion presented a circular opening, with thickened and rounded edges; it had the appearance of being punched out. The intestine was greatly inflamed in the neighbourhood of the perforation, and blood was effused on the part immediately surrounding it. The stomach contained a quantity of greenish brown fluid and half-digested food, with some oil floating upon its surface. The finger could be passed down the inguinal canal on the right side for about one inch; there was nothing whatever (intestine or omentum) in it on first inspection. The hernia appeared, in fact, to have been cured, and a short *culde-sac* left. Beneath the integument of the right groin was some recent ecchymosis. The bladder was empty and contracted. The apex of the heart was bound down to the pericardium by a strong band of fibrous tissue, an inch in length and as much in breadth, of old standing; the interior was not examined. The other organs were healthy.

It was further learned from the lad's parents, after the autopsy, that a rupture was discovered when he was one year old, from which time he wore a truss up to fourteen, when he discarded it altogether, and had never worn one since, nor suffered from symptoms of hernia. He had cholera in 1849, but never to their knowledge at any other time had pain in the body, or diarrhœa, or any symptoms of typhoid fever. He considered himself quite well before he met with the injury.

REMARKS. It was very evident, before the patient's death, that he was suffering from severe peritonitis, probably caused by the rupture of some internal organ. The fact of there being little or no urine in the bladder suggested at first the possibility of that organ being the one injured, but all doubt upon this point was afterwards set at rest. The appearances observed in the intestine—viz., the presence of the chip of wood before mentioned—were most remarkable and unexpected. How that got into the bowel, it is impossible to say—probably during a meal. However, it is tolerably evident that it acted as a great instrument in the cause of death; for the sequence of events was most probably as follows:—The chip of wood became obstructed in the lower part of the ileum, caused inflammation and ulceration of the bowel, and ultimately perforation, through which the intestinal contents were prevented from escaping by the simultaneous adhesion of it to a neighbouring organ or part. This adhesion I presume to have been disturbed and separated more or less at the time of the injury; thereby the perforation, which had been closed, was reopened; and so resulted the escape of the intestinal contents, peritonitis as an inevitable consequence, and death.

I imagine that a similar amount of injury from any other cause would have been followed by a like result.

Original Communications.

THE PATHOLOGY, DIAGNOSIS, AND TREATMENT OF CARDIAC DISEASES.

By W. O. MARKHAM, M.D., F.R.C.P., Physician to St. Mary's Hospital, London.

IX.—THE CONSEQUENCES, AND SYMPTOMS, AND SIGNS OF VALVULAR DISEASES.

WHEN the pathological changes of the valves of the heart, above described, have reached a certain stage of progress, they occasion impediments to the circulation of the blood through the heart, and in two different ways. They prevent the valves duly coming together so as properly to close their respective orifices; the consequence of which is, that the blood regurgitates through them. Thus, when the mitral valves are defective, the blood regurgitates into the left auricle during the ventricular systole; and when the aortic valves are defective, from the aorta into the left ventricle, during the ventricular diastole. Then, again, the onward current of blood is obstructed by the narrowing of the orifices of the heart, and by the contractions, etc., of its valves.

Defects of the Valves are occasioned in many various ways; thus they result from their softening, ulceration, rupture, and perforation; through the deposit within them, of fibrinous, atheromatous, and calcareous matters, whereby contraction, hardening, thickening, and rolling up of their edges, is occasioned; and through the deposit, upon them, of fibrinous vegetations. The action of the valves, also, is rendered imperfect by contractions, rupture, adhesions, and thickenings of their tendinous chords; and by all those diseases also, which interfere with the action of the papillary muscles, and muscles of the heart—by rupture, and fatty and fibrinous degenerations of the papillary muscles, and by extensive dilatation of the ventricles.

The most common causes of *obstructive diseases* are, rigidity of the valves, and of the tissues around their base, arising from various deposits within the endocardium and the valves, coalescence of the valves to each other and the parts around them, and cretification of the coats of the arteries.

Thus, then, the effect which immediately results from these valvular diseases—viz., impeded circulation of blood through the heart—is much the same, whether it depend upon insufficiency or upon obstructive disease of the valves. The degree of obstruction which the circulation suffers depends upon the amount of change of structure which the valvular apparatus has undergone; and also upon the particular valve which is affected. The injury of the valve—indicated by a permanent cardiac *bruit*—may be so slight as to betray, to the subject of it, no symptoms of its existence; or it may be such as only to

indicate its presence when the heart's action is much increased by mental or bodily exertion; or, again, it may be so extensive as to render prolonged existence impossible. Then, also, defective states of the auriculo-ventricular valves are of more serious importance—more immediately prejudicial to life—than such states of the semilunar valves. Defective circulation, for instance, resulting from diseased aortic valves, may be compensated for by hypertrophy of the left ventricle; and, under such circumstances, so long at least as the mitral valves remain sound, life may be preserved. But when the mitral valves are seriously defective, then congestions, etc., of the lungs, which are its most immediate and necessary consequence, arise, and so render life very precarious.

What are usually known as symptoms of heart disease, are in reality symptoms of the general disorders which result from the obstruction of the circulation here spoken of. These disorders, indeed, often indicate to us, by their severity, the importance of the valvular disease much more than the auscultating signs do. They are manifested in the heart itself, in the lungs, the brain, the abdominal organs, and generally in the different parts and organs of the body.

Pulmonary Symptoms. The intimate anatomical and functional relations, existing between the lungs and the heart, explain why the effects of an impeded circulation of blood through the left side of the heart should be immediately resented by the lungs. The blood no longer passes freely from these organs, along its wonted channels, into the left auricle of the heart, its passage being obstructed, either by the constricted valvular opening, or by the blood which regurgitates through the defective mitral or defective aortic valves. Thus obstructed in its course, the blood accumulates in the lungs, whose functions are in consequence deranged. Breathlessness is, in fact, often one of the first symptoms which indicate the presence of heart-disease. Congestions, pneumonia, bronchitis, pulmonary apoplexy, and hæmorrhage, œdema, and emphysema of the lungs, are all of them the more or less frequent immediate or secondary results of valvular diseases of the heart; the extent of the particular disorder usually corresponding with the degree and amount of the valvular lesion. These congestions of the lungs are apt to take place very suddenly in heart-diseases; and often also disappear very rapidly, under care and appropriate treatment. The pulmonary hæmorrhage, the abundant bronchial secretion, the pulmonary œdema, and the pleuritic effusions, which so often accompany these diseases, are all more or less natural efforts of the lungs to free themselves from the congestions of their blood-vessels.

Abdominal Symptoms. The abdominal organs, and the brain, likewise suffer from the consequences of the valvular disease; indeed, there is no organ or part of the body which may not, in extreme cases, be brought, more or less, under its disturbing influence.

Let us see how this happens. The pulmonary circulation being impeded, as above described, the blood no longer flows freely out of the right side of the heart, into and through the pulmonary artery; consequently, it accumulates in the right ventricle and pulmonary artery, and thus presents an obstacle to the return of the blood from the venous system, through the venæ cavæ, into the heart. From these accumulations of blood, necessarily result congestions of blood, and their consequences, in those organs and parts to which the effects of such an obstacle are immediately communicated. The most important consequences, thence resulting, fall, in the abdomen, upon the liver, kidneys, and intestines. The liver sometimes rapidly attains, under these circumstances, a very large size; it may even be felt extending low down into the abdomen, several inches beneath the edge of the ribs. The congestion of the kidneys may give rise to temporary albuminuria, which disappears when the congestion, which occasioned it, is removed. The stomach and intestines manifest various signs of disorders resulting from impeded circulation; amongst which may be mentioned, vomiting, hæmatemesis, and discharges of serum and blood from the bowels. By such discharges, indeed, the oppressed circulation often finds much relief in these cases.

When the disease of the heart is far advanced, it renders the congested state of these organs a permanent condition, and consequently gives rise to other and secondary affections. The digestion, and therefore also nutrition and absorption, are deranged; and their permanent derangements entail conditions incompatible with the due performance of their functions. Then follow dropsies and effusions into the serous cavities; which, again, cause pressure, and so, by their mechanical effect upon internal organs, tend to destroy life. The nutrition being disturbed, the blood is no longer duly supplied with its proper materials, and defective respiration prevents it from undergoing aeration; so that not only one, but all, the vital functions, are thus, directly or indirectly, disordered, each in its derangement tending to complicate the other, and to the increase of the general disorder, and so to the destruction of life.

The disturbances of the brain do not, generally, show themselves, until the valvular disease is much advanced, and the circulation much embarrassed, except under the slight and passing forms of headaches and occasional giddiness. Of the more serious symptoms of cerebral disorders, of coma and convulsions, I shall have occasion to speak, more fully, hereafter.*

DO LEECHES DIE WHEN APPLIED TO THE SKIN IN CASES OF POISONING BY OXALIC ACID?

By HENRY HANKS, Esq., Mile End Road.

IN the first of two papers published by me, "On the Injurious Effects of Rumex Acetosa," illustrated by cases observed during my pupilage at the Bath United Hospital and at the Eastern Dispensary of that city, is a paragraph which relates to the action of oxalic acid on leeches, which acid exists in chemical combination in rumex acetosa, in the form of vinocalate of potash. The paragraph runs thus:—"Four leeches were ordered to a part of the body; the skin to which they were to be applied was cleansed; afterwards, they were retained, one at a time, by means of a wineglass. They would not adhere. After being kept in contact with the surface of the body ten minutes, they all successively died. On the ensuing day, another supply was recommended: these could not be made to perform suction, and they lived. I state this from just having read: 'In two cases, leeches have been killed by the blood drawn by them from persons who were at the time labouring under the effects of this poison (oxalic acid)' (Taylor's *Medical Jurisprudence*, 2nd edition, p. 103). And, again, Dr. Beck quotes, 'that leeches applied to the stomach were poisoned, and died: this was six hours after the poison had been taken; and, although healthy, and fastening immediately, yet they did not seem to fill; and, on touching one, it felt hard, and immediately fell off, motionless and dead. . . . They had drawn scarcely any blood.'"

I cite these facts, as they may be of importance to toxicologists; but I abstain from any comment upon them, as incontrovertible facts constitute a stable basis on which to found reliable criminal evidence, and need no periphrasis to maintain their truth. In my case, the inquiry was *not* suggested by a former acquaintance with a similar occurrence, as recorded by any author. The fact was noticed first, and the literary scrutiny was instituted afterwards, when arranging my papers for publication.

Transactions of Branches.

BIRMINGHAM AND MIDLAND COUNTIES BRANCH.

CASES OF SYPHILITIC DISEASE OF THE CRANIUM.

By JAMES RUSSELL, M.D.

[*Read Feb. 8th*, 1860.]

IT is reasonable to suppose that the dura mater, standing, as it does, to the cranial bones in the relation of an internal periosteum, should be liable to suffer from syphilitic disease; and accordingly, experience has shewn, that although such disease may be infrequent in the dura mater, as compared with its occurrence in the membranes strictly called periosteal, yet it does sometimes present itself to our notice, and occasionally in a very obscure form.

Cases of this nature have been described by my late lamented teacher Dr. Todd, by Dr. Graves, and others. Some of these cases are characterised by severe and persistent pain, localised in a particular region of the cranium, sometimes accompanied by tenderness of the scalp, in the painful part. This pain may

* I need hardly remind the student, that cardiac dropsies are of a mechanical kind. The position of the fluid varies with the position of the body. Dropsy resulting from renal disease, as is well known, usually shows itself in the first instance in the face and upper parts on the body; on the other hand, the dropsy of the heart-disease invariably exhibits its presence first of all in the lower parts of the body.