to a similar cause? If so, can we call the mode of death syncope, or shall we attribute the contracted condition of the heart to the want of blood-supply? These are interesting questions, and I do not presume to offer an opinion. Dr. Campbell Brown gave as his opinion at the trial, that the man Higgins had been taking arsenic for several days before death. His reason was that he found six times as much arsenic in a given weight of spleen as in an equal weight of liver. This condition would indicate relatively large hepatic elimination, and this elimination would involve the element of time. I gave a similar opinion, and the pathological reason that I assigned was the uniform distribution of the inflammatory patches throughout the intestinal canal. On this point, see Dr. Harley's note (*Lancet*, November 23rd, 1861, p. 499). Messrs. Lowndes and Davies declined to give an opinion on the point with regard to any of the cases. I shall only make a few remarks regarding the exhumed bodies. The absence of any indication of kidney-congestion, or of marked inflammation of duodenum, contrasts strongly with the condition in the case of Higgins, and resembles the "Atlee Family" case. The nature of this yellow pigment is a matter of much interest, and the profession is indebted to Dr. Campbell Brown and Mr. Davies for the trouble they have taken. It appears strange that a biliary pigment should be absent from the duodenum and upper part of the jejunum, and present in the remaining portion of the bowel. Possibly the pigmentary matter is a product of the intestinal juices and the hepatic secretion; and, as we know the glandular structures vary in the different parts of the tube, we may account for the pigmentary distribution in the two bodies. Further, as arsenic is stored up in the hepatic cells and the intestinal glandular structures, we can readily understand an alteration in the character of their respective secretions, and thus account for the pigment being present in cases of arsenical poisoning. It evidently requires a considerable time to produce these chemical changes, for the pigment is not present until the body has been buried for a considerable period. Possibly an atmosphere developed by putrefactive changes may determine the combination which results in the formation of the yellow pigment.

ON THE YELLOW PIGMENT FOUND IN THE INTESTINES IN CASES OF ARSENICAL POISONING.

By J. CAMPBELL BROWN, D.Sc., AND
EDWARD DAVIES, F.C.S.

It has frequently been recorded that a yellow colour has been obtained in the stomach and intestines of persons who have died from arsenical poisoning, after long interment. It is not always stated to what this yellow colour is due; but it has sometimes been attributed to the formation of sulphide of arsenic. Thus, in Taylor on *Poisons*, the following passages occur. "White arsenic slowly becomes changed to yellow sulphide by the evolution of sulphuretted hydrogen in the decomposition of the stomach or of its contents. It then forms a deep yellow stain through the coats, and appears on the external surface." "In Mrs. Smith's case, the sulphide of arsenic was discovered in the stomach fourteen months after interment." "In the case of the Cheshams, the coats of the stomach were in both instances deeply dyed with large patches of yellow sulphide nineteen months after interment." "In some cases, the coats of the stomach and intestines, the liver, diaphragm, and even the bones of the spinal column, may be thus deeply stained of a yellow colour."

In *Reports of Trials for Murder by Poisoning*, by Lathom Browne, and Stewart, the following passage occurs. "In bodies long buried, the arsenic is often converted into sulphide by putrefaction, and then appears as a yellow coating."

No proof has ever been adduced, so far as we are aware, that the yellow substance is really sulphide of arsenic. We have recently had an opportunity of examining a yellow substance found in the circumstances referred to, in two bodies exhumed in January last, and think it desirable to place our observations on record.

One of the bodies was that of a young man, aged 22, which had lain in the grave upwards of three years. It was in a state of good preservation, the stomach, intestines, and viscera having decreased in size without losing their usual form and appearance. From the whole of the abdominal viscera, three and a quarter grains of arsenic were extracted. The whole of the small intestines were coated internally with a bright yellow pigment resembling mustard, as were also the greater part of the mesenteric vessels. The colour was visible through the walls of the intestines. It reminded one of orpiment, and in some places of realgar. It was not present near the gall-duct.

The other body was that of a girl, aged 10 years, which had been in the grave more than thirteen months. The viscera were in a good

state of preservation, although contracted. From the abdominal viscera one grain of arsenic was extracted. The bright yellow pigment was distinctly present in the intestines and mesentery, although the quantity was not so great as in the previous case.

In another body, which had not been buried, no yellow pigment was found, although there was more than a grain of arsenic in the viscera.

In a fourth body, which had been in the grave less than a year, but in which the quantity of arsenic was probably not more than half a grain, the yellow pigment was perceptible, but the quantity was very small.

We collected a considerable quantity of the yellow pigment, weighing in the moist state between twenty and thirty grains. It was carefully tested for arsenic, and was found to contain no appreciable quantity of arsenic. It certainly was not sulphide of arsenic. Nitric acid produced a play of indistinct colours similar to those produced in bile by nitric acid.

We found that the yellow pigment was readily soluble in chloroform, forming a bright and clear yellow solution; less soluble in alcohol; slightly soluble in strong ammonia, reprecipitated by hydrochloric acid; and insoluble in water. The chloroform-solution left on evaporation a deep yellow residue. This yellow residue was reddened by strong hydrochloric acid, while nascent hydrogen from zinc and hydrochloric acid discharged the colour and dissolved the residue. Nitric acid converted it into a purple, then red, then brown substance. Sulphuric acid gave a temporary violet colour, quickly becoming brown. Sulphuric acid and pure sugar gave the violet purple tint characteristic of Pettenkofer's test.

THE TREATMENT OF GONORRHOEA BY OPEN WIRE BOUGIES.

By D. C. M'VAIL, M.B.,

Lecturer on Medicine, Western Medical School, Glasgow.

GONORRHOEA is a specific catarrh of the mucous lining of the urethra—a condition in which there is rapid inflammatory cell-proliferation, and exudation of fluid from the mucous surface. These catarrhal changes necessarily begin at the anterior extremity of the urethra, and travel backwards. The fossa navicularis suffers early and severely, and backwards along the course of the passage, another part that is severely affected is the sinus of the bulb. These two parts are wider than the parts of the canal immediately behind each, and so small portions of fluid are apt to lodge more persistently there than in other parts of the canal.

In the local treatment of this affection, it is obviously very desirable to keep separate the inflamed mucous surfaces. The condition is in many respects analogous to a moist eczema intertrigo, where cure is indefinitely postponed unless the surfaces are, by suitable dressing, maintained apart. The injections in gonorrhoea that have been most successful are those that have best fulfilled this indication of treatment, and lately Mr. Cheyne's medicated bougies of cacao-butter have given further aid in this direction. To carry out more effectually the keeping separate the secreting surfaces, I have had made open wire bougies. These are of two forms.

The first form (Fig. 1) is for the effective administration of injection.

Fig. 1.

The part *a* is a short length of catheter-tube, to which are soldered the wires of the open bougie, part *b*, and to the part *a* is also attached a short piece of India-rubber tube *c*. This instrument being introduced until the part *a* is well within the meatus of the urethra, the solution to be injected is introduced by a syringe, and, when quite full, the India-rubber tube *c* is compressed by a spring clip, to prevent the escape of the fluid. Within from twenty to thirty minutes, the injection will be almost wholly absorbed by the urethral walls, and then the instrument may be withdrawn. By this means, the injection is applied to, and kept applied to, any part of the urethra that may require it until entirely absorbed. By the ordinary method at present in use, the contact is at best but very brief; and, as the part of the passage that is most in need of treatment is usually the most irritable, the injection is, by the instantaneous reflex contraction of that part, at once driven from it into other portions of the canal.

The second form (Fig. 2) is an open wire arrangement throughout, and is constantly worn by the patient, so that the discharge may drain

freely away, and not lie in the passage and give rise to renewed secretion, as constantly goes on in the ordinary treatment at present. These instruments are well borne in the urethra, and the patient pursues his ordinary avocations while wearing the second form.

Fig. 2.

The length of the wire bougies is of course in proportion to the distance up the canal to which the catarrhal affection has travelled; in recent cases, an inch and a half may suffice; in older cases, it may be necessary to have it greatly longer.

Mr. Hilliard, of Renfield Street, Glasgow, can supply them to any member of the profession who may be inclined to put this method of treatment to the test.

CLINICAL MEMORANDA.

ONE CAUSE OF MANY TROUBLES.

THE sphygmograph is not a trustworthy instrument for clinical investigations of the more delicate and precise characters. It is impossible to determine how much of any particular form of tracing is due to the instrument, and how much to the pulse; but there is an indication which it gives that cannot be too highly valued, if only it be rightly interpreted. I will ask your leave to state the facts very briefly. Practitioners do not need to be reminded that the primary purpose of the muscular contractility of the arteries is to convert the pulsatory current of the blood, as it is pumped into the vessels by the systole of the left ventricle of the heart, from a series of jets or waves to a steady flow, before it reaches the capillary area, where function and nutrition take place. We know, by the old familiar observation of the web of a frog's foot, that, if the blood pulsate in the capillary area, nutrition is disturbed or arrested, and inflammation is imminent. Now, the sphygmograph always shows the state of the arterial contractility, as compared with the arterial dilatation caused by the cardiac impulse; and, by this indication alone, we can judge whether the vaso-motor centre is doing its work. In practice, I find this one of the most valuable tests of the state of the organism, especially in relation to "irritability" and impairment of brain and nerve nutrition. The indication for nerve-tonics, more particularly such as nux vomica, phosphorus, and the red cinchona bark, is significant when the arterial wave-marking on the tracing is abnormally slight, or, as often happens, scarcely discernible. This may seem a rule-of-thumb method of selecting a remedy, but it works excellently well in practice; and, whether the patient be depressed or irritable, whether he appear to suffer from capillary congestions of the atonic sort, or from disturbance almost amounting to local "inflammations," the tonic plan of treatment nearly always affords relief. On the other hand, a very high arterial wave-marking—if only its subsidence be sharp—indicates both want of tone and excessive excitability of the vaso-motor centre, calling for a combination of some sedative with the tonic. The best, in my experience, is a few drops of tincture of opium. I use neither morphia, nor chloral, nor bromide of potassium, nor bromide of ammonium, nor strychnia, in these cases; and I believe that, if practitioners would employ nux vomica, etc., and opium, more directly and precisely, they would find it easier to relieve cases of nervous and general disturbance quickly and permanently. J. MORTIMER GRANVILLE, 16, Welbeck Street.

THE CONNECTION BETWEEN MALARIOUS (NON-TROPICAL) DISORDERS AND STRICTURE OF THE URETHRA.

As an addendum to Dr. J. W. Cousins's contribution on this subject in the JOURNAL of February 23rd last, it might not be uninteresting to give some details of a case that came under my care two years ago, and puzzled me considerably at the time, as it had before in previous illnesses. Here it looked as if the converse were sometimes true, of the usual order of the pathology in such cases, i.e., the ague seizures appeared to lead up to and culminate in an acute attack of stricture of the urethra. During the three years preceding this, the patient had on four occasions consulted me on account of lumbago, accompanied with a certain degree of nephritis, more severe in every succeeding attack.

On the third occasion there was a slight paroxysm of ague, and I feel free to confess I did not recognise its nature at the time. On the next, the fourth, its character dawned on me, and my questions elicited the fact that more than forty years before, when a farmer's lad in the fens of Lincoln, he had had ague; but from that time up to the date of the attacks mentioned, he had never suffered from it in any way. Clearly Horace's saying has a very wide application:

"Quo semel est imbuta recens, servabit odorem Testa diu."

Up to this time there had been no difficulty in micturition, only a temporary suspension of the secreting power of the kidney during the attacks, non-obstructive anuria, probably arising from disturbed innervation. But in the last attack for which I attended him, symptoms of an acute stricture soon set in, and he was almost moribund before I succeeded in entering the bladder with a No. 3 metallic catheter. A flexible one was tied in, and he got well again, but rather tediously.

At no time was there any albumen in the urine, nor did catheterism provoke a paroxysm of his ague such as had ushered in the illness. The locality where the patient lived is a very bleak and exposed one. The house is thin walled, and has a northern exposure. In short, the conditions present easily accounted for this waking up of a latent susceptibility.

Of course, a different explanation of this case might be given by supposing an enlarged prostate, or a slight degree of stricture, to have been present all along undetected, bringing it under the head of urinary intermittent fever, as described by Murchison; but nothing, at the time of my attendance or after, in the symptoms or actual history, gave any colour to this assumption.

J. FARQUHAR, M.D., Harrogate.

THERAPEUTIC MEMORANDA.

MICRO-ORGANISMS IN PURPURA HÆMORRHAGICA.

As I had the honour of bringing this subject before the last annual meeting of the British Medical Association, I was interested in the report of the discussion raised at the Pathological Society, on February 20th, by Mr. Watson Cheyne's communication. If I may be allowed to do so, I shall make a few remarks on the subject.

The clinical history of cases of hæmorrhagic purpura is so distinctive, and its characteristics are of such a type, that I do not think it required more than the ordinary amount of clinical acumen on my part to prove that the phenomena, at the fully developed stage, were only explicable by assuming the presence of a micro-organism. The point of interest is that the vessels are blocked by these organisms, and, thereby, the hæmorrhages, which give the disease its distinctive name, are produced. Clinically, the disease, so far as I am acquainted with it, presents a more or less high degree of pyrexia; and it is this pyrexia which, when there is no local inflammatory condition by which to explain it, leads naturally to the consideration of the probability of the presence of a foreign and deleterious, and probably vital, element in the blood. Of course such a probability can only have weight when all other causes of pyrexia have been carefully excluded. In hæmorrhagic purpura, pyrexia is present before the hæmorrhages are numerous or become a serious element in the case, and it is at this early stage of the disease that it is possible to determine the specific or non-specific part played by the parasite, due regard being given to the possibility of the parasite being present in a less mature form, and thereby able to traverse the capillaries. And I would take the liberty of suggesting the desirability of having observations made on the blood at this early stage of the disease. From two of my own cases I sent specimens of blood to Mr. Watson Cheyne, but they were so unskillfully stained that he would not venture an opinion as to the presence or absence of a micro-organism; and I see that Dr. Angel Money has not found organisms in the blood in two cases he has examined. This is a point of much interest, and might be soon settled if those who had cases under their care at the early stage would have the blood examined by an expert; and from the ready and kind response Mr. Cheyne made to me, when I approached him on the subject, I should predict a like response to others.

It would, of course, be quite absurd to suppose that all capillary hæmorrhages, generally called purpuric, were probably due to plugging by a micro-organism; for it seems to be in accordance with fact to hold that in cardiac disease hæmorrhages are due to tension, and that in iodic purpura, upon which Dr. Stephen Mackenzie justly lays stress, there may be a chemical alteration which, under local and unknown