Fortunately a *post-mortem* examination was allowed. The parts involved, including the gravid uterus, were removed *en bloc* and hardened before dissection. The following are some of the points in the immediate pathological report by Dr. F. M. Milne. Only the main points will be mentioned.

"There is some atheroma in segment between aortic and mitral valves."

"There is a large retroperitoneal haemorrhage extending from left pelvic brim upwards to behind the spleen. It lies particularly around the kidney in the form of a large coagulum, which compresses the kidney tissue. The kidney, with the mass of blood, weighs 4 lb. (approximately). The haemorrhage extends into the left broad ligament, and also within the mesentery of the descending colon; it was found even close to lower border of pancreas. The right kidney shows hydronephrosis. Spleen normal in size, pale in colour. Liver pale and fatty; no gall stones. Stomach and intestines normal. Suprarenals normal."

When palpated during the operation the hydronephrotic right kidney must have been fairly empty, and only the lower pole of kidney substance was left, thus suggesting a small kidney.

Later I did a careful dissection of the specimen. This was rather difficult, as the clot was so hard, and I had to be very careful to avoid cutting anatomical structures which might be involved in it. Eventually, however, a small aneurysm was found on a branch of the left

Left kidney from behind. A, aneurysm; B, left renal artery; C, aorta; D, inferior vena cava; E, left renal vein; F, left kidney—small on account of pressure.

renal artery. The sac of the aneurysm was about the size of a pea and had ruptured. There was no history of trauma to account for the rupture. The presence of an aneurysm at this site must be very rare, and it would be especially unexpected in a woman of the age of the patient under consideration.

Dr. Tudhope of the pathological department of University College, Dundee, examined a section of the aorta, but he

did not find anything microscopically to suggest a syphilitic endarteritis.

Dr. Christine Thomson examined the child. Even if syphilitic, it would have been impossible to find spirochaetes after the preserving of the specimen, and there had been no opportunity for having the Wassermann test done on the mother's blood.

The following are some points noted by Dr. Thomson.

"The baby is very suspicious of syphilis; *S. pallida* not found; autolysis of viscera.

"Spleen enlargement present, also definite adhesive peritonitis. Periportal fibrosis in liver, commencing to spread, but no definite monocellular cirrhosis. Very slight fibrosis of spleen. Spleen much enlarged. Chondro-epiphysitis of femur (indefinite). Placenta suspicious of syphilis."

Thus the presence of syphilitic infection of the child is only suspected, but the signs are inconclusive.

Rowlands¹ reported the case of a married woman, aged 47, who suffered from severe haematuria for three weeks. Blood was seen coming from the left ureter. The left kidney was removed. On examining the kidney a ruptured sacculated aneurysm, the size of a large pea, was found, partly on the surface of one of the lower renal papillae and arising from an intrarenal branch of the renal artery. There was no history of recent injury or illness. The aneurysm was seen after opening the pelvis of the kidney. The patient recovered. The site of this aneurysm would, in all probability, appear to be less dangerous than that of the one under review.

It would be inferred that aneurysm of the splenic artery, although rare, is of more frequent occurrence than that of the renal artery or one of its branches.

Fitzwilliams² reports a case in which there were three aneurysms of the splenic artery, one of them having ruptured. Operation was performed, but the patient was beyond help. She was a woman of 27, with no other sign of disease. Symptoms suggested rupture of a gastric ulcer or of an ectopic pregnancy.

Baumgartner and Thomas³ give an analysis of forty examples of aneurysm of the splenic artery collected from

literature. It would appear that certain diagnosis of the condition before rupture is practically impossible, although the condition may be suspected in rare cases. Such an aneurysm may be of considerable size, and yet it may be impossible to palpate it.

Garland⁴ reports an interesting case of rupture of a splenic artery aneurysm simultaneously with paracentesis of the abdominal cavity, when 1 litre of fluid was drawn off. The trocar did not wound the aneurysm. In all probability even such moderate relief of intra-abdominal tension may have been sufficient to determine rupture of the aneurysm.

It is stated that out of some 4,100 autopsies in Massachusetts General Hospital only three cases of aneurysm of the splenic artery were found.

I am indebted to Dr. R. C. Buist for permission to publish this case.

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¹ BRITISH MEDICAL JOURNAL, November 22nd, 1924, p. 939. ² Ibid., November 1st, 1924, p. 803. ³ Lancet, November 8th, 1924, p. 976; Surg., Gynecol. and Obstet., October, 1924. ⁴ Boston Med. and Surg. Journ., 1921, vol. 184, p. 385.

EXPERIMENTAL PASSAGE OF THE OOCYSTS OF FISH COCCIDIA THROUGH THE HUMAN INTESTINE.

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IN THE BRITISH MEDICAL JOURNAL of February 13th (p. 282) the authors pointed out that three coccidia described in man—*Eimeria wenyoni* Dobell, 1919, *Eimeria oxyspora* Dobell, 1919, and *Eimeria snijdersi* Dobell, 1921—were not true human parasites, but corresponded morphologically to the oöcysts of two species common in the liver and testis respectively of certain fish. *Eimeria sardinae* Thélohan, 1890 (of which *E. oxyspora* and *E. snijdersi* become synonyms), is present in the "soft roes" (testes) of about 100 per cent. of herrings, occurs in enormous numbers in the soft roes of sprats, and is somewhat less frequent in the testes of mackerel. It is interesting to note that, since the previous communication was published, this parasite has been found in tinned sardines (*Clupea pilchardus*) exported to this country from Portugal, and also in tinned soft roes of herrings from Norway. In spite of the high temperatures to which these articles of diet must have been subjected during the cooking processes at the factories, the oöcysts were in a remarkable state of preservation, and their contents were easily differentiated. *Eimeria clupearum* Thélohan, 1894 (synonym *E. wenyoni*), is confined to the livers of the same group of fish, and its oöcysts are especially numerous in the livers of herrings. These coccidia provide a striking example of two distinct, but closely allied, species selecting different organs of the same fish for their development. Wenyon (1915), in his original description of the oöcysts of this coccidian in the faeces of man, compared them with those of *Eimeria falciformis*, which is parasitic in the intestine of the mouse, and he obviously suspected that man derived the infection from some animal source. Brug (1922) mentioned in the literature that these *Eimeria* might simply be ingested with the food, basing his suggestion on the fact that natives frequently eat insects and also the intestines of animals. Brug also suspected that the distorted forms of an *Eimeria* seen by Snijders (*E. snijdersi* Dobell, 1921) in a case in Sumatra might be the result of cooking.

It will be noted that up to the present no one suspected fish as the source of these *Eimeria*, and, further, that until the authors undertook this investigation and actually found the oöcysts in herrings, there was no mention or suggestion in the published literature of the possibility of fish being incriminated. The salient fact is that the discoveries of Thélohan made over thirty years ago have remained more or less buried in the literature, and it is almost inexplicable

that these parasites should only now be traced to the herring.

To prove that the oöcysts could pass through the human intestine the following experiment was undertaken. A volunteer was given a strong saline soon after the midday meal, which resulted in a copious evacuation about 6 p.m. A pound by weight of herring soft roes heavily infected with *E. sardinae* was cooked by frying in butter and seasoned with salt, pepper, and lemon, and about three-quarters of these were eaten at 8 p.m. No other food was taken until the following morning, when, at 10 o'clock, a semi-fluid motion was obtained, and this, on examination, was found to contain the oöcysts. In the stool they were relatively numerous, two or three on the average to each cover-slip preparation, and these corresponded in every way with oöcysts previously seen by the authors in human stools. The next stool passed by the volunteer showed no oöcysts, and he suffered no ill effects.

This experiment places beyond doubt the origin of these *Eimeria* in human faeces, and, although an experimental meal of herring's liver (with *E. clupearum*) has not been given yet, there is no reason to suppose that the result would be any different from the above. These oöcysts of *E. sardinae* and *E. clupearum* must be eaten every day by large numbers of individuals.

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Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

THREATENED GANGRENE OF THE ARM DUE TO INJURY OF THE MAIN ARTERY.

I HAVE read with interest Mr. Peter McEwan's communication on this subject in the *JOURNAL* of January 30th (p. 186), and should like to offer a few suggestions on the treatment of similar cases, as the result of experience gained during the war.

In the first place, rupture of the main artery in a patient under 45, even if unassociated with damage to the accompanying vein or venae comites, is unlikely, of itself, to cause gangrene in the upper extremity, where the collateral circulation is notoriously free. When gangrene occurs in such circumstances it is probably due to the tension of a haematoma, which seriously impedes the arterial flow and the venous return, by compressing not only the main vessels but also those concerned in the collateral circulation.

The correct treatment is to remove the haematoma and deal with the artery and vein, or veins, at the injured spot. Take, for instance, the case of a wound or rupture of the axillary artery, with the formation of a diffuse traumatic aneurysm in the axilla. The third part of the subclavian artery on the affected side is controlled by firm pressure against the first rib—or better, I think, by a temporary ligature, or an arterial clamp, which compresses the artery but does not damage its inner coat. The axilla is now opened up, all clots are cleared out, and the injured vessel is sought for. A small opening in the artery may be made evident by a momentary release of the pressure controlling the subclavian. A spurt of haemorrhage immediately reveals the injured spot. If the artery is completely torn across ligatures are applied to both ends. If incompletely severed it is wise to complete the division and tie both ends. In the case of a small wound I have been able to suture the opening without occluding the artery. (This was in a patient in whom the accident happened during the removal of a breast for carcinoma.) The ideal method in all cases would, of course, be arterial suture, but, except in those cases in which the collateral circulation has been seriously interfered with, the method described is sufficient. If the axillary vein is injured it can be dealt with in the same way as the artery. Experience during the war showed that ligature of the accompanying vein or venae comites

in arterial injury, so far from increasing the risk of gangrene, actually lessened it by retaining in the limb a quantity of blood useful for its nourishment. All bleeding points having been secured, the temporary ligature or clamp is relaxed, and, if no further haemorrhage takes place, is finally removed. The wound in the axilla may be sutured without drainage, or a strip of rubber left in for twenty-four hours.

In injury to the brachial artery the procedure is even simpler, as a bloodless field can be secured by a tourniquet applied above the suspected rupture. The clots are turned out, and the artery and vein, or veins, dealt with as described.

Mr. McEwan's cases were both late cases, and my object is, not to criticize adversely his treatment, but to emphasize the importance of relieving pressure at the affected spot at the earliest opportunity. If this is done gangrene can be prevented, unless some other complication is present.

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SEPTICAEMIA DUE TO *B. AERTRYCKE*.

THE following case presents several features of interest, and seems, therefore, worthy to be put on record.

A man, aged 46, was admitted to the Devon Mental Hospital on October 1st, 1925, in a state of acute mania; in this state he remained until October 21st, when symptoms of bronchopneumonia set in, and terminated fatally the same day.

At the *post-mortem* examination the appearance of the different organs of the body suggested the possibility of septicaemia: the lungs were very congested, and there was evidence of commencing abscess formation at the left base; the intima of the aorta had a faint pink appearance; the liver and kidneys were congested and showed evidence of cloudy swelling, while the spleen was large, soft, and pulsatous, and the intestines generally injected. Cultures were accordingly made, with the usual precautions, from the interior of the left ventricle of the heart. An organism was isolated, which on further investigation gave the biochemical and serological reactions of *B. aerttrycke* (Mutton).

It was proved that, during his sojourn in hospital, the patient had been on a fluid or semi-fluid diet, but as several of the patients in the same ward had about this time partaken of brawn, this was subjected to bacteriological examination, with negative results. A point of considerable interest is that the patient came from Lynton. During the summer of 1925 there was a small outbreak of food poisoning in this area, and a strain of *B. aerttrycke* was proved to be the causal agent. Inquiry of the patient's relatives elicited no history of previous intestinal trouble; he was apparently a casual labourer, and had been in farm service for several years when a lad.

Our findings were confirmed by Dr. W. G. Savage, county medical officer of health for Somerset, and by Mr. Bruce White of the Lister Institute, to both of whom our thanks are due.

The salient features of this case are: First, the unusual source of the organism—namely, the heart blood. The patient was much too ill during life to attempt blood culture, and as the possibility of an intestinal pathogen was not contemplated at the *post-mortem* examination, the intestines were not examined bacteriologically. We cannot be certain, therefore, whether the presence of the organism in the general circulation was a terminal phenomenon or not. Secondly, the specificity of the strain obtained—a point noted both by Dr. Savage and by ourselves. The organisms included under the comprehensive heading of the "Salmonella Group" are very closely interrelated, both biochemically and serologically, and can usually only be differentiated by agglutinin-absorption procedures; in this case, however, the organism in question agglutinated with a *B. aerttrycke* serum up to a dilution of 1 in 250, and was absolutely unaffected by the serums of allied strains. The serums employed were those of the Standards Laboratories at Oxford. Thirdly, the fact that the patient came from an area in which there had already occurred an outbreak of food poisoning due to the same strain of organism.

These notes are published by kind permission of the medical superintendent, Dr. R. Eager, O.B.E., to whom our thanks are due.

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