albus. The two organisms last named I regard as contaminations. No organism was obtained from the blood culture taken from the same case.

Without attempting to assess to the *Trichomonas* and the *Entamoeba* in this particular case their pathological value (if any) in the production of the gangrenous cholecystitis, it seems fair to regard the *B. paratyphosus* B as having been the cause of the condition. To the clinical pathologist who has had the opportunity of seeing patients with "epidemic" jaundice, the case suggests one or two points which I shall now discuss very briefly.

As is generally recognized, catarrhal jaundice commonly occurs without cholecystitis; similarly, cholecystitis is very frequently unattended by jaundice. Both facts are capable of a simple anatomical explanation. But in some cases in the Gallipoli epidemic jaundice followed a definite cholecystitis, and one hears as well of numerous cases of jaundice in which a history of troublesome spasmodic pain in the right hypochondrium, highly suggestive of an antecedent cholecystitis, was obtained. It may therefore be that the relation between the cholecystitis and the jaundice is of greater importance than has been recognized hitherto, and it is possible that cases of cholecystitis treated by operation will furnish to the bacteriologist the most hopeful material for the solution of an etiological enigma.

From this point of view the case recorded by Captains Morley and Smith may be of special value. It shows, at all events, that in a patient inoculated against typhoid fever a paratyphoid organism in the early days of infection may ascend from the intestine to the gall bladder and there settle without causing more than an initial and indefinite epigastric tenderness associated with anorexia and headache; that later its numbers and virulence may be so increased as to cause actual gangrene of the gall bladder; and that, therefore, it is not improbable that from the gall bladder, in cases of cholecystitis, a subsequent descending infection of the common bile duct with consequent jaundice may take place—an infection due to an organism which has meantime been multiplying in the bile. This may explain numerous cases of jaundice with pyrexia, especially those cases which give a history suggesting a previous cholecystitis.

It is likely, then, that a close study of those organisms whose growth is known to be favoured by bile may help to enlighten us as to the cause, or causes, of the "jaundice with pyrexia" which occurred in the Dardanelles; and, although jaundice is not a common complication of ordinary typhoid fever, it is possible that the paratyphoid infections may play a much more important part than the *B. typhosus* in the production of febrile jaundice. The possible connexion between the "carrier" problem and the occurrence of febrile jaundice suggests itself; and it would be interesting to know how many cases of "epidemic" jaundice, bacteriologically examined, have yielded a paratyphoid organism.

Be this as it may, I am for various reasons strongly of the opinion that it is highly improbable that the cases of jaundice occurring in the Gallipoli "epidemic" have, by any means, a uniform specific bacterial cause.

REMOVAL OF INTRACRANIAL FOREIGN BODY UNDER X RAYS.

BY

JOHN ROBERT LEE, M.D., B.S.MELB., F.R.C.S. EDIN.,
TEMPORARY LIEUTENANT R.A.M.C., FULHAM MILITARY
HOSPITAL, LONDON, W.

THE following case of gunshot wound of the head, with a piece of shell in the brain, illustrates the value of the use of an electro-magnet or x-ray screen for removal.

A lance-corporal received a gunshot wound on September 25th, 1915, in France. The piece of shell entered the skull about the middle of the left temporal region. He had an injection of antitetanic serum four hours after the injury. When admitted to this hospital on October 9th he was conscious, complained that he could not sleep, and that he had considerable pain. The superficial wound in the side of the head had healed. The temperature was 99° and the pulse 60. Next morning he vomited.

A skiagram taken on October 11th showed some depressed fragments of the internal table round a small hole in the middle

of the squamous portion of the left temporal bone, and the shadow of a piece of shell about $\frac{1}{2}$ in. by $\frac{1}{4}$ in. was seen on the plate 1 in. behind the hole and $\frac{1}{2}$ in. beneath the surface.

On October 13th Mr. Leslie Paton examined the eyes (pupils not dilated) and found: The right optic disc, highest point + 3 D., edges blurred, veins distended, general retina + 5, swelling 2 $\frac{1}{2}$. Left optic disc, highest point + 5 D., general retina + 1, swelling + 4. The patient had sensory aphasia, word-blindness, but no apraxia.

Operation.

A large temporal flap was made, and the opening in the skull enlarged; pieces of depressed bone were removed, the torn edges of the membranes were opened up, and about 2 oz. of thick pus under pressure escaped. The piece of shell could not be felt with the probe, and a rubber tube was put in and free drainage established.

On October 15th another skiagram showed that the piece of shell had dropped further back in the abscess cavity into the occipital lobe. The temperature at this time varied between 97° and 99°, but on October 23rd the evening temperature was 100°, on October 24th 101°, and on October 26th 102°; it then became normal and has remained so ever since. The pulse-rate varied between 64 and 100, and after October 26th was from 72 to 80. On October 23rd the eye appearances were: Right optic disc, highest point + 3.5 D.; left optic disc, highest point + 4 D.; veins still much distended.

A probe was passed down along the abscess track, and a stereoscopic skiagram taken.¹ The fragment of shell was found to be lying in the occipital lobe, one eighth of an inch in front of the tip of the probe and half an inch mesial to it. A steel probe was then passed down the track, and an electro-magnet capable of lifting 14 lb. weight was applied to the probe and held in position for a few seconds, but the bit of shell was not drawn out by this means.

It then seemed to me that it might be possible to see the fragment, and remove it under the x-ray screen, and, after consultation with Dr. Florence Stoney, the radiologist to the hospital, the attempt was made on November 9th. The steel probe was again passed in along the track, and I was able quite clearly to see the probe and the fragment. It was found that the latter had been pulled forward by the magnet, and caught in brain tissue. A crocodile forceps was then passed along the track to the depth of four inches, and after some manipulation the piece of metal was seized and removed. The patient was not under anaesthesia and felt no pain, except just as the sharp edges of the fragment came into contact with the edges of the superficial wound.

On November 13th the patient's general condition was quite good. On November 17th the wound had healed; aphasia was less marked, but he still had some slowing of mental cerebration, and at times difficulty in naming articles, with some loss of memory in naming places and for recent events. The eye symptoms were: Right optic disc still blurred; swelling subsided very much; highest point of disc + 2 D., general retina ametropic; small linear haemorrhages especially in lower part of disc; left optic disc still all blurred; subsidence not so marked in appearance as in the right eye; swelling, highest point of disc + 2 D.; some haemorrhages.

The two practical points demonstrated are: First, the use of an electro-magnet for the removal of portions of shell which are capable of being so attracted; and, secondly, the fact that bits of metal can be demonstrated inside the skull, although the x-rays have to penetrate two layers of bone; the surgeon may thus receive very material assistance in such cases by seeing the relationship of fragment to instruments during actual removal.

My thanks are due to Dr. Florence Stoney for the excellent skiagrams and help with the screen; to Dr. Leslie Paton, who kindly worked out the eye conditions; to Major Parsons, the Officer-in-Charge, and to Colonel Peterkin, the D.D.M.S., for permission to publish this case.

¹ One skiagram was reproduced in illustration of a report of this case published in the *Journal of the Royal Army Medical Corps*, January, 1916.

DR. ALLEN WALCOTT has contributed an article on beri-beri in the Amazon basin to the *Journal of the American Medical Association* for December 18th, 1915. He has been for six years in the employ of the Madeira-Mamore Railway, which runs through a dense tropical forest along the east bank of the Madeira River 1,500 miles from the mouth of the Amazon. There is a hospital at Candelaria on the line, but no other for many hundred miles in any direction. Out of 30,430 admissions in four years, 963 cases were diagnosed as beri-beri. On the strength of his own previous experience of this disease in San Francisco and Panama, Dr. Walcott concludes that beri-beri in Brazil is of the same type as is found elsewhere, and its cause is the lack of vitamins in the food. The doctors, nurses, and labourers in the medical department have been completely free from attacks of the disease for the last three years, protected by the special precautionary measures used in other lands where it prevails. These measures are described in detail by Dr. Walcott.