The sickness improved, but recurred on June 16th, when a mixture containing bismuth and soda with nux vomica was ordered. On this day also the administration of the autogenous vaccine was started, 250 million being given; only a slight general reaction followed (evening rise of temperature to 100°). The pyrexia had altogether subsided by June 20th, but culture of the urine still revealed the presence of staphylococci; the general condition showed signs of slow improvement. The autogenous vaccine was continued at weekly intervals, in gradually increasing doses, till a dose of 1,000 million was reached on July 28th, and repeated on August 2nd; the vaccine treatment was then discontinued.

As on June 28th patient still complained of left lumbar pain, and the sickness had disappeared, he was again ordered hexamine gr. x, with acid sodium phosphate gr. xv. This was continued till the end of July, when the patient had completely recovered, and was able on August 6th to begin work in the curative workshops of the hospital.

Since that date the renal symptoms have not recurred; the urine has remained free from pus. The left ulna has firmly united and the patient has full use of the forearm.

Although the diagnosis of this condition was for some days very difficult, I think there can be no doubt, in view of the laboratory findings and the few physical signs which eventually developed, that the diagnosis finally reached was correct. During the later period of the patient's illness it was of interest to note the correspondence which started in the *Lancet* of June 7th, 1919, and continued for the three following weeks, on "Epidemic perinephric suppuration"; and in some ways this case resembled cases instanced in that correspondence. But, as in the cases of perinephric abscess, it was stated that it is rare to find pus in the urine, and as in my case there was no evidence of any abscess in the loin, that diagnosis could almost certainly be ruled out; and the symptoms and signs of my case were practically identical with those of acute haematogenous pyelonephritis described by Thomson Walker in Choyce's *System of Surgery*. The primary focus of infection was undoubtedly the sepsis in the forearm, and the metastasis followed operation on this site. But it is remarkable that the pyelonephritis should have followed only after the second operation, and that, by the time the pyelonephritis developed, the primary focus, never clinically of great intensity, had cleared up. Horder, in the correspondence referred to, states that "the point of primary infection may be easily overlooked" (apparently owing to its slight character) in cases of perinephric abscess, so that staphylococcal metastasis in or around the kidney is known to arise from a primary focus so slight that its discovery may require careful investigation. Pasteur, in the same correspondence, states that "staphylococcal infection of this type (*S. aureus*) never seems to give rise to staphylococcal septicaemia." Though there was no evidence of septicaemia in my case, it is unfortunate that cultural examination of the blood was not made when the pyelonephritis developed, nor of the pus from the forearm at the time of operation. A blood count might also have been of assistance in the diagnosis.

Finally, it is interesting to note how well the condition cleared up on treatment with an autogenous vaccine. Thomson Walker (*loc. cit.*) states that such treatment is suitable only for chronic cases, but in this acute case it answered remarkably well. Herringham (*Kidney Diseases*, p. 302) describes a case of acute pyelonephritis due to a coliform bacillus (which, he states, is the commonest causal organism of such conditions) treated by an autogenous vaccine which produced gradual improvement; but three months after the onset there was still a slight amount of pus in the urine, and a considerable number of bacilli; so that the patient could not be considered cured. The cases, however, are scarcely analogous, and there is no doubt that in this staphylococcal case the vaccine treatment produced a complete cure.

I have to thank my Commanding Officer, Lieut.-Colonel D. Wells Patterson, O.B.E., R.A.M.C.(T.), for permission to publish this case; and Dr. P. C. W. Laws, bacteriologist to this hospital, for the bacteriological investigations, and the preparation of the vaccine.

PROFESSOR AUGUST BIER has addressed a memorandum to the Prussian authorities pointing out that as the abolition of compulsory military service robs the growing generation of beneficial physical training, compulsory physical training for all young men should be enforced, beginning, if possible, in early boyhood. He advocates the inclusion of physical exercises by the University of Berlin as a compulsory subject.

VOLVULUS OF THE CAECUM: DOUBLE OBSTRUCTION.

BY

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IN view of the recent article by Sir Arbuthnot Lane¹ on the evolution of disease, I think the following case worthy of note by reason of its rarity, the unusual way in which it was produced (only fully recognized at autopsy), the surprising condition of obstruction of the small and large bowel at two distinct sites, and the associated atypical gastric symptoms over a period of years.

Lieutenant R.N.R., aged 33, gave a history which was a little meagre owing to his general condition. For a period of some years he had had attacks of "indigestion," never sufficient to cause him to report sick. Associated with this was a marked intestinal stasis and obstinacy of the bowels; pain and discomfort after meals, with occasional vomiting, were quite common features. One night he was suddenly seized with acute abdominal pain, at first spasmodic and later continuous, with vomiting of everything taken. He was transferred to me twenty hours after the onset of the attack.

Condition on Admission.

He was in extreme pain, with all the symptoms and signs of an acute abdominal catastrophe. The abdomen was full, rigid, distended, and tender. Fluid in the flanks and the complete absence of liver dullness suggested, in view of the prior gastric symptoms, perforation of a viscus. The bowels had been relaxed prior to the sudden onset of the acute pain.

The vomit on arrival was not faecal, but consisted of stagnant stomach contents. The temperature was 100°, the pulse 120 to 130, feeble and thready.

Operation.

A right paramedian incision was made in the epigastrium. The stomach and duodenum were found to be normal. The incision was enlarged downwards, and a large black balloon emerged from the abdomen. This consisted of the much distended caecum and ascending colon, which were turned over towards the middle line as on a hinge at the inner border, forming a definite volvulus. The transverse colon was empty, the small gut was moderately distended. The hepatic flexure, being obviously the seat of obstruction, was explored. There was an acute "kink," and on the inner side of the "kink" a mass, first thought to be malignant, but on section found to be a calcareous gland outside the lumen of the gut. Further exploration and interference being impossible, a Paul's tube was tied into the caecum, the contents of the colon drained, and the abdomen closed.

After-Treatment and Result.

The colon drained freely, and the patient's general condition improved for the first twenty-four hours. The liver dullness returned immediately. Then symptoms of further obstruction came on, the abdomen became distended, vomiting returned and became faecal. In spite of all treatment the patient died forty-eight hours after operation.

Post-mortem Examination.

The caecum and ascending colon were completely deflated. The caecum was very mobile, and had a definite mesentery. The small gut was distended in its entirety, a condition not present at the operation.

The hepatic flexure was a potential tube by virtue of the pull from outside at the site of the gland noted, rather than by any organic obstruction. From the calcareous gland there stretched a thick, organized adhesion passing across and adherent to the anterior leaf of the mesentery, and fixed firmly to the ileum about two inches from the ileo-caecal valve. At this point the small gut was acutely kinked in a similar manner to that at the hepatic flexure. All other organs were apparently normal.

There is no doubt that the original lesion in this case was a tuberculous affection of the mesenteric glands leading to a strong adhesion between the hepatic flexure and the last two inches of the ileum. The early stages of this were noted in the atypical gastric symptoms due to an ileal "kink" and obstruction to the ileal efflux, so often mentioned in the literature. Some indiscretion of diet, followed by decomposition of the contents of the caecum produced a "balloon" of this viscus, which, being mobile, rose up, turned on a hinge and became a volvulus, producing further obstruction at the already kinked hepatic flexure.

Relief of this obstruction and the replacing of the caecum away from the ileum brought into force the second kink—that in the ileum from which ensued the intestinal obstruction. I think that this was not a paralytic distension of gut, but originated from the ileal obstruction.

¹ *Lancet*, December, 1919.