other over the tendon of quadriceps extension, and the flap thus formed turned downwards. In one case the flap was turned upwards the incision running over the ligamentun patellæ, while in the 6th case the incision was vertical along the middle.

In all cases the capsule was found to be considerably torn and the tags intervening between the fragments, while in every case a fair amount of blood clot was found to be occupying the sub-patellar space and the neighbourhood.

The fracture was in all cases transverse, with the lower fragment very much smaller than the upper about $\frac{1}{3}$: $\frac{2}{3}$. In one case the lower fragment was in two pieces with a vertical fissure, while in another both the fragments were in two pieces by a median longitudinal fissure. Both these cases had a history of direct injury. In one case the lower fragment was tilted forwards, while in three cases, the lower fragment was bevelled at the expense of the anterior surface with a corresponding bevelling of the upper fragment posteriorly.

The subpatellar cushion of fatty synovial membrane was not injured.

The clots were removed in all the cases, and in one case the whole cavity was washed out with warm saline. In the others they were only sponged clean. The fracture surfaces were freshened in all cases. In each case two borings were made in each fragment and in four cases, two strands of silk-worm gut were used for each hole to bring the fragments together. In the other two cases alumino-bronze wire was used. The borings went through the substance of the patella leaving the lactolaginous surface uninjured. The capsule was stitched with fine silk sutures and the skin incision closed as usual in all the cases. In four cases a silk-worm gut drain was left for the first 48 hours after which it was removed.

Four cases were dressed and then put up in a box splint with foot piece, the lower end of the limb being elevated on pillows and sand bags. The other two cases were put up in plaster of Paris at once. The plaster of Paris was removed on the 7th day when the stitches were taken out and another put on again to be removed a week later. In the other four cases, the temporary drain was removed at the end of 48 hours, the stitches removed at the end of the seventh day and the splints taken off about the fifteenth day. Of the latter all the cases did well except one which gave deep stitch trouble.

Passive movement was begun soon after the splints were taken off and massaging the knee with some stimulating liniment was done. The patient was then made to sit on the edge of the bed and dangle his leg forwards and backwards. In about a week's time he was able to walk about with the aid of a stick.

The average stay in hospital after operation was 44 days which being added to the 18 days the patient waited for the operation makes the whole of his stay in hospital amount to 62 days. This figure is somewhat exaggerated by the fact that two cases remained an unusually long time, one case which gave stitch trouble remained in hospital for about 4 months and the other which had a simultaneous fracture of the olecranon and which was wired successfully at a subsequent date remained in hospital a little over 3 months.

NOTES ON EARLY TUBERCULAR DISEASE OF THE CÆCUM.

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THERE is nothing so chastening to the self-esteem of a Surgeon engaged in abdominal work as the after-history of some of his operation cases. More especially is this so as regards hospital patients; for the most part with these cases as soon as the first few days discomfort, following the operation, are over, the convalescence is easy and quick, and at the end of a month or so the patient leaves the ward in good health, relieved of his pain and symptoms. It is not till the patient is seen again some months later, when the stress and toil of every-day life has again been encountered, that it is discovered that certain operations thought at the time to be brilliantly successful have proved to be of doubtful value or even failures, as far as the ultimate condition of the patient is concerned, and this latter point is after all the *raison d'être* of the operation. We are far from suggesting the above is the usual course with abdominal operations or that operative work of this nature should be more restricted, than is at present the tendency, but we think it is necessary for the Surgeon to consider more carefully than is, perhaps, at present the case what is the exact condition of the patient that has given rise to the pain and discomfort, to leave nothing in the technique of the operation undone, than can possibly benefit the patient hereafter, and not to be content with merely dealing with the most obviously diseased condition found, unless he is convinced that this is the one and only cause of the trouble complained of.

Of late these considerations have been forcibly impressed on the mind by the after-history of certain cases operated on for chronic appendicitis. We quote four cases which may be taken as typical of others.

No. 1.—A European, male, aged 30 years, complained of chronic pain in the right iliac fossa with tenderness over McBurney's spot. He had never had an acute attack of appendicitis, but the constant pain became worse on exercise and he was unable to follow his occupation. He was invalided to England, where appendectomy was performed, but on his return to Burma a few months

later his pain had returned, and he was incapacitated from work. On this occasion the cæcum was again cut down on: it was found free of all adhesions but containing an indurated ulcer, the size of an almond, which was excised. No enlarged glands were to be felt in the mesentery. The patient convalesced rapidly and being sent to a warm dry climate enjoyed good health for about 18 months. The pain then again recurred and he was once more sent to England, where, it is understood, the cæcum was excised; but his health is now poor, and he has since been pronounced unfit for further service in his firm.

No. 2.—Eurasian woman, aged 28 years, complained of chronic pain in the right iliac fossa, worse on exercise. She had lately had an abortion at three months, and was suffering from excessive menstruation. Examination displayed an enlarged and tender uterus, and tenderness in the right side of the pelvis without there being any obvious thickening or induration. For this she was curretted but without relief, and as the pain in the right iliac fossa was no better, two months later an exploratory laparotomy was performed and the appendix removed, though, truth to say, beyond slight thickening there was no obvious disease of this organ; the cæcum appeared normal as also did the uterus and its appendages, and there were no enlarged mesenteric glands. After the operation the temperature remained normal, the pain disappeared, and the patient left hospital apparently cured. Whilst in hospital, the patient was tested with tuberculin by the conjunctival reaction with negative results. Six months later, news has been received that the patient had developed signs of pulmonary tuberculosis, and gave a positive Von Pirquet's reaction and the pain in the right iliac fossa has returned.

No. 3.—A Burman, male, aged 40 years, was admitted into hospital in December 1910 for a painful lump in the right iliac fossa, for which appendectomy was performed. No note is available as to the condition then found, but presumably removal of the appendix was all that was considered necessary. He left hospital of six weeks later greatly improved in health, but the wound was not completely healed; one month later, however, he came back with a fæcal fistula. Rest in bed and careful dieting was persevered in for three months but without improvement, cæcum was then excised, the operation being performed in two stages, an anastomosis of the ileum to the colon being first made and the cæcum and fistulous track being excised on a second occasion. The immediate results of the operation were satisfactory, but three months later pulmonary tuberculosis appeared which rapidly killed the patient.

Case 4.—A Hindu woman, aged 24 years, was admitted with symptoms of chronic appendicitis. There was no history of any acute attack, but chronic pain and discomfort in the right iliac fossa made her seek hospital treatment. On examination the lungs and other organs were apparently healthy, but vaginal examination disclosed some fulness and tenderness about the cæcum. Tuberculin reaction was negative and there was no cough or expectoration. The patient, however, looked thin and in poor health. On operating, the cæcum was found thickened and indurated over a patch, the size of a rupee, situated at the base of the appendix, there was also some enlarged glands about the size of almonds in the ilio-cæcal mesentery. The cæcum with about 6 inches of the ileum and 4 inches of the ascending colon was excised, and the ends of the bowel brought together by lateral anastomosis, the operation being completed at one sitting. The patient has made a good recovery from the operation, but it is too early to say what the ultimate result will be.

These first three cases illustrate how fallacious the immediate results of an operation for appendicitis may be. The operation as is usual in such cases gave rise to little disturbance, and the convalescence gave promise that a speedy and successful cure had been effected, the after-results, however, proving exactly the contrary; the real cause of the improvement being we have little doubt the rest in bed and careful and suitable dieting, as soon these measures were given up, the primary disease reasserted itself practically unchanged. To Surgeons who operate not infrequently for appendicitis, we feel sure in many cases it has happened they have cut down on appendices which they have been surprised to find to all appearance normal or so little affected as to be obviously insufficient to give rise to the symptoms complained of. It is in such cases most searching investigation should be made for signs of tuberculosis in the cæcum, the small intestine, and their mesenteries, should such conditions be found an excision of the affected gut and its mesentery should be forthwith carried out. Even with an obviously diseased appendix the Surgeon should still prosecute a careful search for enlarged glands in the mesentery and consider well the possible cause of the disease present and how far simple appendectomy will really cure the patient; for it is in tubercular affections that the one hope of a successful issue is to deal radically with the disease whilst in its earliest stages.

As regards tuberculosis of the cæcum when once a diagnosis can be made with reasonable certainty there must be no temporizing or half-hearted measures; the responsibility thrown on the Surgeon is no doubt enormously increased, but he has no more right to shirk it than he has in cases of cancer and other such deadly affections. The scope of the operation to be performed is, no doubt, completely altered, and a dangerous proceeding substituted for the comparatively harmless operation of appendectomy, but there is no middle course as far as the welfare of the patient is concerned. With these points in mind, the constitution of every patient suffering from so-called chronic appendicitis should be most carefully

examined and all available tests for tuberculosis carried out; whilst before commencing the operation the Surgeon should explain to the patient he will have to be guided by the condition found and have perhaps to perform a more serious operation than he anticipates. All necessary instruments for an excision of intestine should also be made ready so as to be at hand should they be required.

What proportion of cases diagnosed as chronic appendicitis are in reality due to tuberculosis of the cæcum, we are unable to venture an opinion, but in Rangoon where tubercular affections of the intestine are common, I think, in the past not a few cases of early tuberculosis of the cæcum have been inefficiently dealt with disastrous results to the patients following, the diagnosis of this condition, however, before opening the abdomen is a matter of great difficulty.

Whatever the nature of the infection producing chronic inflammation of the appendix, the characteristic symptoms are due to obstruction to free drainage. This obstruction may be "catarrhal" and temporary or the result of new tissue formation and more or less permanent; like other micro-organisms the streptothrix of tubercle may produce either of these changes, first catarrhal and later permanent obstruction. Tubercular infection for some reason seems in a considerable number of cases to be limited to the region of the appendix and cæcum, and in all cases of infection starting in the appendix the wall of the cæcum has doubtless become involved before the disease has progressed sufficiently to cause local symptoms.

In the case of an inflammation the result, *e.g.*, of a sub-acute bacillus coli infection with a history possibly of several recurring characteristic attacks, removal of the appendix will give permanent relief, as obviously there will not longer be obstruction to its free drainage: in the case of tubercular infection, the wall of the cæcum being already involved, removal of the appendix may temporarily relieve the symptoms, but the extension of the disease in the wall of the cæcum will shortly lead to some such result as happened in Case 3, the formation of a fæcal fistula. Hence the desirability of exact early diagnosis and immediate radical treatment.

The following points which we have noticed in the cases we have met may possibly be of some assistance in forming a diagnosis.

The onset of the pain in the right iliac fossa has been gradual and there has been, as a rule, no history of one or more acute attacks of appendicitis, the patient often being unable to tell you the exact period since the pain was first noticed. The condition of the patient is often not physically so good as is frequently met with in cases of chronic appendicitis. The lungs probably reveal no signs of tubercular infection nor are other signs of this infection to be found elsewhere, but the general condition of the patient is poor and as such the case should be looked on with suspicion. We would also suggest that a rectal or vaginal examination would in some cases disclose a thickened and indurated cæcum with enlarged mesenteric glands and so give a hint of the true condition present.

Evening rise of temperature might also suggest tuberculosis.

In short, we would urge cases of "Chronic Appendicitis" should be viewed with more suspicion than is at times usual, and an operation should not be commenced without the possibility of having to perform a radical excision of the gut being considered and all necessary preparations made.

As regards the technique of such an operation very full and excellent instructions have lately been published by Mr. Barker (*The Lancet*, September 23rd, 1911) and by Mr. W. I. Mayo (Surgery of the large intestine with review of one hundred resections. Collected papers by the staff of St. Mary's Hospital, Mayo Clinic).

A perusal of these papers would show that some of the main points in the performance of excision of the cæcum for tuberculosis are:—

1. A sufficiently large working incision.
2. Free mobilization of the large intestine by division of the outer leaf of the mesentery so that the parts operated on may be brought outside the abdomen.
3. Identification of and separation of the ureter from the affected gut.
4. Large anastomotic opening; as long as the opening is large enough, the method of anastomosis is of little real importance.
5. The desirability of completing the operation at one sitting if the condition of the patient is sufficiently good.

Attention is also drawn to the fact that though the removal of enlarged glands should be as thorough as possible large tubercular glands may be left behind with ultimate successful results, as long as the supply of infection is removed.

SURGICAL CASES.

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I.—CASE OF POPLITEAL ANEURISM.

Munisawmy, a sawyer, aged 40, was admitted into the Royapuram Hospital on 7th March 1912, complaining of a painful swelling at the lower end of the inner side of the left thigh.

History.

Past.—Definite history of syphilis ten years ago which was treated with apparently satisfactory results. Small-pox.

Family.—Nil.

Present.—Some ten days ago the patient noticed a swelling at the lower end of the left thigh on the inner side, which he attributed to eating a