thorax, one before and one behind, where the skin was uninjured. They were left attached at their ends and dressed underneath with glass slides for a fortnight (Croft's method). The arm was then separated from the side right up to the axilla; each flap was next cut across at the end farthest from the axilla; a bed was made for each in the armpit; they were turned and sutured together, so as to form a broad tape of healthy skin at the fold of the axilla. In cutting the arm from the side the incisions were not made where they joined, but at some little distance on the thorax, so as to get covering for the arm at the expense of the skin of the trunk; indeed, when sutured the arm was entirely covered in. Angular incisions were next made in the normal skin round the thoracic cicatrix; a good deal of subcutaneous dissection was done near these incisions, and they were sutured from the apex towards the base. This method utilised the natural elasticity of the normal skin to remove tension from the cicatrix, so that when the bare area in the mid-axillary line was drawn together with sutures a very small surface was left uncovered (Fig. 1). In two months the whole thing was

Fig. 1.—A diagrammatic scheme of the various incisions for transplanting and liberating skin: the dark lines representing incisions, the dotted lines the position subsequent to suturing. Back and front were almost identical.

nearly healed. She had a free arm with a fixed elbow. During the next two years she occasionally reported herself at hospital; her arm remained pretty much in the same condition. It was usually entirely healed, but occasionally the cicatrix broke down at the elbow. The limb was much hidebound, and as it grew in length became more so; the elbow was quite rigid.

The third stage of the treatment was then undertaken; this consisted in removing subperiosteally an inch and a half of the shaft of the humerus at the junction of the middle and lower thirds. The reasons for this were that the bone growing normally seemed unduly to stretch the hidebound tissues, and that the operation of shortening the shaft allowed the removal of bone at the elbow (when it came to be excised) to be very small, thus giving breadth and stability to the new joint. An incision 3 inches long was also made on the outer

side of the arm near the insertion of the deltoid through the deep fascia to liberate tension. Thiersch grafts were applied but failed to take. Healing was slow but in four months it was complete, and the final stage was reached by excising the elbow, which was done by the usual posterior excision. Exceptionally little bone was removed and subsequently the case ran an average course. The condition now is as follows:

The movements of the shoulder-joint are nearly normal. The elbow admits of almost complete flexion and extension; rotation of the forearm exists to only a very small amount; the wrist has always been normal; the arm, of course, has not much power, but it is gaining in that respect, and also in freedom of movement. The cicatricial skin is gradually approaching nearer to the natural state; it is becoming less glazed and more pliable. The girl is being trained for domestic service.

Fig. 2.—From a photograph taken in January, 1898.

Fig. 2, reproduced from a photograph taken by Dr. Duncan, gives an excellent idea of her present state. It shows the amount of movement possible in one direction; it shows also the band of transplanted skin in the axilla and the extent of the cicatrix.

TWO CASES TREATED WITH INJECTIONS OF ANTISTREPTOCOCCUS SERUM.

BY

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The following cases, which have been under our care lately, are interesting, as showing the utility and harmlessness of the serum treatment:

APPENDICITIS FOLLOWED BY ACUTE PERITONITIS.

W.R., aged 32, formerly a brewer's drayman, with a previous history of dropsy (?), was first seen on February 19th; he gave

a history of pain in the stomach and chill, commencing on February 18th. The pain was gradually increasing, the pulse rapid and feeble, the temperature normal, and there was pain and tenderness in the right iliac and lumbar regions.

A preliminary diagnosis of appendicitis was made, and the patient was given a hypodermic injection of morphine (gr. $\frac{1}{2}$), and a mixture containing liquor morphinæ (m $\times$) every four hours. The bowels were constipated, but he had not vomited. The urine showed a trace of albumen, which continued throughout.

On February 20th he was much worse in the morning. The temperature was 102.4°, the pulse 112 (hard and small), the tongue dry and brown. An area of deep dullness could be mapped out in the right iliac region, and of superficial dullness extending $1\frac{1}{2}$ inch to the left of the umbilicus. (See Diagram 1.) The bowels were still obstinately confined.

Diagram 1.—Before injections; a, superficial dullness; b, dullness on deep percussion.

Diagram 2.—After first injection; a, dullness.

Diagram 3.—After last injection.

Case 1.—W. R., Temperature Chart.

Pain and tenderness were well marked, and the respirations rapid. He was in the same condition in the evening, except that the temperature was lower. An enema of olive oil (3 viij) was followed by a copious soap-and-water enema, as the oil was retained but nothing passed. The soap and water were also retained, but no faeces passed.

The following morning (February 21st) the bowels had moved and the temperature was down to 99°, but the local

symptoms and general condition were much the same. The dullness extended $1\frac{1}{2}$ inch to the left of the umbilicus, and was well marked.

In the evening the first injection of serum was given, 10 c.cm. being injected under the skin in the right iliac region. The syringe was previously sterilised and the skin rubbed over with a solution of carbolic acid; no local inflammation occurred.

On the morning of February 22nd the morphine was left off and a simple mixture of dilute nitro-hydrochloric acid and rose water given. That morning the temperature was 100°, but the pulse was only 90 and the respirations 26. There was marked improvement in the local signs, the patient bearing well deep pressure to the right of the umbilicus. Another injection of serum was given the same evening, this time on the opposite side of the abdomen.

After this the patient improved rapidly, except that there was a tendency to diarrhoea and tenderness in the right hypochondrium. He could bear deep pressure in the right iliac region without the least symptom of tenderness. The tongue, which before was dry and brown, had become quite moist, with a slight whitish fur on the surface.

On February 26th, as the tenderness in the right hypochondrium did not improve, and a definite boundary of dullness could be made out separated from the liver dullness by an area of resonance two fingers' breadth in extent, we decided to inject 10 c.cm. more of serum in the right lumbar region.

The following day, February 27th, although the temperature was still somewhat raised, he could bear pressure in the right hypochondrium well, and complained of very little tenderness. He still had some diarrhoea, but this rapidly improved under bismuth and soda and Benger's food.

On March 2nd, only twelve days from the commencement of his illness, he was able to get up for part of the day.

We found after the dullness had cleared up in the right hypochondrium that he had a cirrhotic liver, as shown by diminished liver dullness, and the hard notched edge of the liver. This we thought accounted partly for the subsequent diarrhoea, and also the irregularity of temperature.

The diagrams and chart will indicate the progress of the case.

SUPPURATIVE NEPHRITIS.

Mrs. S., aged 29 years, six months pregnant, giving an indefinite history of influenza a fortnight before, was first seen on the morning of February 24th. There was pain and tenderness in the right lumbar region, the bowels were confined, and very little urine, high coloured and giving a deposit of

Case 2.—Mrs. S., Temperature Chart.

urates, was being passed with some pain. The tongue was furred. Vaginal examination yielded negative results. The child was living. A mixture containing a little diluted nitro-hydrochloric acid was ordered, but nothing else done. At 5 p.m. she had a rigor. The following morning (February 25th) the temperature was 104°, the pulse 140, and the general condition much worse. Whisky (3 iij) was ordered to be given in the twenty-four hours. The pain and tenderness in

the right lumbar region were increased, and a definite rounded swelling could be made out. On the same day, in the evening, 10 c.cm. of serum were injected under the skin to the front of the swelling. The urine was examined on February 25th, and contained a quantity of pus and some albumen.

On February 26th in the morning her condition was much the same, except that the urine which had been passed during the night was much clearer, and contained only a small quantity of pus. In the evening the temperature had fallen to 102° and the pulse to 126. The urine passed during the day was quite clear, and contained a little albumen but no pus. Pain and tenderness in the right lumbar region had almost disappeared. Ten more c.cm. of serum were injected in the right lumbar region, but closer to the spine. This injection, for which some dried serum was used from the Pasteur Institute, was followed by some erythema and tenderness of the skin around the spot, which gradually disappeared.

On February 27th the improvement was most marked, the temperature was only 101.2°, and the pulse 126. The tongue was moist and red at the edges, with slight fur down the centre. Pain and tenderness had quite disappeared. The urine still remained clear, and the albumen had diminished.

The next day there was a still greater fall in temperature and pulse. In the evening the temperature was normal. The pulse was still rather rapid, but this was probably due to the stimulant, which was ordered to be left off.

The patient continued to improve, and on March 3rd the pulse had fallen to 80, and she was practically well. The child was living. The urine still remained clear, all tenderness and pain had disappeared.

The serum was supplied by Messrs. Burroughs and Wellcome.

A CASE OF HÆMORRHAGIC INFARCTION OF THE SMALL INTESTINE: SUCCESSFUL RESECTION.*

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THE history of the following case seems to me to possess sufficient clinical and pathological interest to justify my bringing it before you:

The patient is a woman about 45 years of age. She gave me a tolerably clear history of secondary syphilis contracted some eight or ten years ago, and she has now undoubted evidence of tertiary syphilitic ulceration of the hard and soft palate.

In November, 1896, she was operated on by Mr. Scott for strangulated femoral hernia on the right side, and she made a complete recovery. Her health continued good until the day before her readmission.

On the morning of that day—that is, August 17th—she was feeling as well as usual, and her bowels were moved. While she was having her lunch at 12 o'clock she got a sudden and most severe gripping pain in the lower part of the abdomen. She was carried to bed, and Dr. Woods, of Amiens Street, was sent for, who gave her morphine when he arrived. At about 5 o'clock on the morning of the 18th she commenced to vomit, and this symptom persisted until the time of admission. The bowels were not moved subsequent to the attack of pain. She was sent at once to the Adelaide Hospital, and placed under my care in Mr. Scott's absence.

When I saw her, she appeared to be very ill but not collapsed. The abdomen was not distended, and was sufficiently flaccid to enable me to easily detect a tumour in the right iliac region, apparently formed by a distended coil of intestine. Dr. Peacocke saw the patient with me, and both he and I thought the case one for immediate operation. We supposed that there existed some form of mechanical obstruction. I accordingly operated, being assisted by Dr. Smyly.

On opening the abdomen in the middle line below the umbilicus, a considerable amount of blood-stained fluid escaped and a distended coil of very dark bowel presented in the wound. The peritoneum had not lost its polish, and, indeed, there were none of the unequivocal signs of gangrene present. There seemed to be a constriction at the upper end of the loop, and this marked off the darkened region very abruptly; below the transition to normal intestine was more gradual. The wall felt thickened, and emitted a heavy but not offensive odour. In the mesentery I found a continuation over a limited area of the same condition. I decided to resect and establish end-to-end anastomosis. I used for the latter purpose Mr. Ball's bobbin, of the smallest size I could obtain, and fixed the ends of the intestine into the groove with purse-string sutures. Over this I applied a continuous subserous suture of fine silk. For reasons already indicated I removed a considerable area of mesentery. Finally, I sponged out any fluid in the neighbourhood and closed the abdominal wound.

The amount of bowel removed measured 2 feet. It was found to contain a mass of foul-smelling blood clot. The wall was much thickened, and the constriction at the upper end proved more apparent than real. There was no stricture and no ulceration of the mucous membrane.

* Read at the Surgical Section, Royal Academy of Medicine in Ireland.

I did not discover any definite cause for the condition found. It is worth noting that some vessels in the mesentery bled freely as they were divided, and one of considerable size was cut, which may have been, in part, responsible for a complication which I must now refer to. On the third day after the operation, at 6.30 A.M., the patient complained of the most intense pain in the abdomen. The house-surgeon gave one-sixth of a grain of morphine, which relieved her, and when I arrived she did not appear to be in any great degree of danger. With the attack of pain a slight fall of temperature occurred, and the pulse was 128. By the 22nd—the fifth day since operation—the temperature reached normal, and the course of the case, until the 27th, seemed to promise an uninterrupted recovery. On that day I found, on removing the dressings, that a considerable leakage of intestinal fluid had taken place. I opened up the wound to some extent, and packed with iodoform gauze. A couple of days later (the 29th) a slough came away which seemed to represent the entire line of union, and contained a considerable length of both sutures, superficial and deep. Up to this time the bowels had not been moved satisfactorily, but there was clearly no obstruction, nor was there evidence of other than a purely local peritonitis. On the 30th I ordered a castor oil enema, which acted well. The discharge of bile-stained fluid was now so great as to necessitate very frequent change of dressings, on two occasions nine times in the twenty-four hours. On September 5th the patient passed a natural motion, and the discharge from the wound was reduced to very little, and had ceased entirely on the following day. It recurred to a very slight extent a few days later, a mere soiling of the plugging, before it finally ceased, that is, ten days after the discharge was first observed, and about three weeks from the date of operation. The subsequent history has been uneventful, and the patient now appears to be in perfect health.

REMARKS.

It is scarcely possible to form any definite opinion concerning the cause of sloughing at the suture line. The possible influence of the division of the mesentery I have already alluded to. It may, however, have been due to an extension of the pre-existing local condition, and the accident might have been avoided by a more liberal resection. Or again, the flange of the bobbin may have exerted undue pressure on the wall of the gut as it passed over it. This would have been avoided by using a smaller tube.

With some hesitation I have arrived at the conclusion that this case was one of hæmorrhagic infarction of the intestine dependent upon a sudden obstruction of some branch of the superior mesenteric vessels. The condition might conceivably have been due to:

1. Inflammation. This we can certainly exclude, for it is impossible that such a violently acute inflammation could have remained so distinctly local. The onset, too, was more sudden than could be explained on this hypothesis; and, finally, the microscopic appearances were not those of inflammation.

2. Some of the usual causes of internal obstruction. None of these were to be seen at the operation, and the appearance of the involved segment of gut was not such as one would expect to find if the cause had been, let us say, a peritoneal band. Had such been present, though overlooked, surely the delimitation of the area of strangulation would have been as marked at the one extremity as the other, and this, as we have seen, was certainly not the case. There were no evidences of previous inflammation about the hernial orifices.

3. If it is allowed that none of these extrinsic causes were at work, it follows that the cause of obstructed circulation must be looked for within the vessels themselves; must, in fact, have been either embolism or thrombosis.

The possibility of the occurrence of an infarction as the result of occlusion of the superior mesenteric vessels seems at first sight very difficult to admit. One is accustomed to find such a lesion in areas supplied by terminal arteries only. Experiments, however, as well as numerous recorded cases of intestinal infarct, place the possibility beyond doubt. The subject is dealt with in *Ziegler's Pathology* as well as by Cohnheim in a most important and convincing essay, by Coats and others. I will quote a few passages of special interest from the last-named pathologist. He writes: "It has been said that the hæmorrhagic infarction forms in the case of end arteries, but there is an apparent exception to this in the case of the superior mesenteric artery. If the superior mesenteric artery or one of its larger branches be obstructed, hæmorrhage occurs in the intestine and mesentery, and the portion of gut suffers necrosis, but it is well known that the anastomosis of the mesenteric arteries is tolerably free. The explanation of this apparent anomaly has been worked out by Cohnheim and his pupils in a very interesting manner. As a rule, it may be said that main stems have, in proportion to their size, much less considerable anastomotic communications than the smaller branches. If the main stem be obstructed, therefore, the restoration of the circulation occurs