himself dries the vagina out immediately before its division with sterile swabs on long-handled forceps. This not only necessitates the surgeon desisting from the operation for a few valuable minutes, but it is not so certain of securing an absolutely dry vagina, and is objectionable owing to the operator taking part in an unnecessary septic procedure during the performance of the operation. The area about the uterus is surrounded with two large gauze packs soaked in salt solution just previous to division of the vagina, and immediately after its division these are folded round so as to enclose the uterus while it is lifted out of the pelvis.

An equally important consideration is the technique to be adopted for the pelvic wound; the most important points here are:

1. Securing perfect haemostasis if possible.
2. Leaving no foreign bodies, such as ligatures, in the wound, of which I shall speak directly.
3. Discarding of gauze for drainage purposes.

Where I have secured perfect haemostasis—that is, in nearly all cases—I employ no drainage whatever. The only cases in which gauze is employed are the quite exceptional ones in which venous oozing is impossible to arrest, at all events without much loss of time. Such cases have occurred to me. In these I have employed gauze for haemostatic but not for drainage purposes, and it is removed in twenty-four hours. Formerly following the practice recommended by Wertheim, and, I believe, still adopted by him and others, I used to leave gauze packing in the pelvic wound for five or six days. On withdrawal it was invariably exceedingly foul, and I cannot believe, notwithstanding Wertheim's high authority for it, that it is a sound practice to follow.

The second conspicuous danger in Wertheim's operation is shock or exhaustion. For this, again, there are favouring conditions—for example, the low state of nutrition owing to loss of appetite, wearing pain, and frequent losses of blood and discharge from the ulcerating growth. These we have to take generally as we find them. We are not dealing with a disease in which we can afford to spend much time in building the patient up. At the same time in inoperable cases patients will improve so strikingly for a short time from the simple operation of curetting away the soft growth, and so arresting the discharges, that in some operable cases, where the general condition is unfavourable owing to constant losses, and in which it is doubtful whether the patient will stand the operation, this step should, I think, be resorted to as a preliminary measure, and the operation may with advantage be postponed for two or three weeks, when the patient will frequently be found to be in a much better condition to go through it. Usually, however, the operation is performed without any delay, and inasmuch as even in the easiest cases it is a severe and prolonged one, any steps are desirable which facilitate it and make for the saving of time, provided that they are surgically sound. Formerly finding a ureter, especially the left ureter in a fat subject, was sometimes a difficulty to me and a cause of delay, but, if the ureters are not exposed at once on opening up the broad ligament, they can always be readily felt between the forefinger and thumb, and no time need therefore be wasted over this step.

In my experience the most prolonged part of the operation is dealing with the parametrium and vagina—that is, applying the ligatures to the sections of parametrium in a fat subject, or one with a deep pelvis, or where the uterus is fixed and cannot be drawn up, and stitching round the vaginal wall after it has been divided. Now, there is a quicker, and, I believe, a better, way of dealing with these steps of the operation, and latterly I have only employed four ligatures in the operation—one for each ovarian and one for each uterine artery (of silk). The round ligament contains no large vessel, and is crushed and divided without ligature. The parametrium, after the uterine arteries have been tied, contains no large vessel. It is clamped in sections with strong crushing clamps, divided, and the divided surfaces are seared with Paquelin's cautery before the clamps are removed. Haemorrhage from the vaginal wall is easily arrested by applying Wertheim's vaginal forceps, furnished with augmented crushing power, to the portion of the vagina to be divided for a moment before division. This, after division, is also seared with Paquelin's cautery. By these measures

perfect haemostasis is secured, and the pelvic wound is perfectly dry. Additional advantages of this method are that the cauterizing of the parametrium will destroy any cancer cells which may be present in the seared portion, and that no ligatures which may act as sources of irritation or infection are left in the pelvic wound. Wertheim's forceps, which are only intended for securing these structures preparatory to ligaturing them, have little crushing power, and are unsuitable. The instruments, which I have

had made for me by Down Bros., possess sufficient crushing power for the purpose. They are also made with shorter handles, which, while quite long enough for any case, render them much more handy to apply. The peritoneum is finally sewn over, and the abdominal wound is closed in layers. If any bleeding occurs, it is from veins opened in separating off the bladder at the side of the cervix, and a ligature or two may be required here; if it takes the form of general oozing, with no vessel to ligature, adrenalin will sometimes arrest it; otherwise some gauze packed into the bleeding area, with an end thrust through the vagina, suffices. This, as I have said, is removed in twenty-four hours. I have adopted the method above described in 10 consecutive cases. In none has there been any bleeding. I submit it as an easier, quicker, and better way of performing this part of the operation.

A CASE OF CARCINOMA OF THE PELVIC COLON, OVARIAN TUMOUR, AND APPENDICITIS, NECESSI- TATING REPEATED ABDOMINAL SECTION.

By LAWRIE MCGAVIN, F.R.C.S.ENG.,

SURGEON TO THE DREADNOUGHT HOSPITAL AND TO THE HOSPITAL FOR WOMEN; LECTURER ON CLINICAL SURGERY IN THE LONDON (POST-GRADUATE) SCHOOL OF CLINICAL MEDICINE.

THE case here recorded is, I think, of interest from several points of view. First, the patient has survived the removal of an intestinal cancer for a period of over four and a half years without recurrence; secondly, she has undergone successfully the operations of oöphorectomy (twice), colectomy, lateral implantation, appendicectomy, and the reposition of a colostomy combined with a proctoplasty—in all five laparotomies, besides having had a naevoid growth of her bladder cauterized; thirdly, although completely thrown out of action for so long a period, the rectum and sphincters took on their work at once on being again called into play.

History of the Case.

B. C., a married woman of the age of 38, was admitted to hospital for pain in the left side of the abdomen, in September, 1908. The pain was especially bad at her periods, and there was tenderness at a point just internal to the anterior iliac spine, and in the left vaginal fornix. She suffered from gradually increasing constipation. Her condition appears to have been diagnosed as chronic ovaritis, and her abdomen was opened by a well-known gynaecologist. The left ovary and tube were found adherent to a mass in the lower part of the pelvic colon, but were not in themselves diseased. They were, however, removed, and the mass in the sigmoid was either ignored, overlooked, or considered inoperable, and the

patient was discharged in much the same condition as on admission, although her pain was, of course, less.

At this time she came under my care through the interest of the house-surgeon, who had been present at the first operation, and who informed me of the circumstances of the case. I accordingly took her into the Hospital for Women. The abdomen was opened (for the second time) internal to the iliac spine, and the growth found to be situated in the lower third of the pelvic colon, no glands being felt. The whole of the sigmoid with the meso-sigmoid was everted after the latter had been detached, the wound being closed behind it, thus leaving the emerging and re-entering portions of the bowel fixed in the upper and lower angles of the incision respectively. More than fourteen inches of bowel was thus fixed outside the abdominal wall. On the fourth day the bowel at the upper angle was opened, and on the tenth the whole mass was cut away, leaving the patient with an iliac colostomy. She made an uneventful recovery and was discharged with a belt and plug. The growth was found to be a ring carcinoma of the columnar type, with ulcerated base and everted edges.

Exactly a year later she returned to me with symptoms of acute appendicitis, but as she did not appear to be in an urgent condition operation was deferred till the bowels could be fully controlled by opiates, the discharge from

rence. I therefore yielded to her request for operation after explaining the risk to her, and opened the abdomen again (for the fourth time). The right ovary and tube were found to be adherent to the floor of the pelvis and to the right broad ligament, as well as to several coils of small bowel, and, being freed, the mass turned out to be a fibro-adenoma of the ovary and non-malignant, and its removal was carried out. During the operation it occurred to me, seeing that there was no sign of recurrence, to attempt the reconstitution of the bowel; and although the risk was very considerable, her condition was so good and she had stood her previous operations so well that I determined to attempt it. The rectum was found to be very much narrowed, being of about the thickness of the forefinger and very tightly stretched. Having detached it from the abdominal wall, I succeeded with some difficulty, owing to the depth of the pelvis, in implanting it into the lowest portion of the transverse colon (Fig. 1). The colostomy opening was not interfered with lest the anastomosis should give way or become stenosed. The operation was a long and tedious one, owing to the extensive adhesions in the pelvis, but, as before, the patient made an excellent recovery, and was discharged at the end of a month, the anastomosis working perfectly and all motions being passed per rectum.

For three months her condition remained satisfactory,

Fig. 1.—a, Transverse colon; b, colostomy opening; c, anus; d, site of anastomosis; e, from hepatic flexure; f, anterior superior iliac spine; g, umbilicus.

Fig. 2.—a, b, Incision in colon and rectum; c, site of old anastomosis; d, colostomy opening; e, anus; f, from hepatic flexure.

Fig. 3.—a, Incision rendered trapezoid by b and c, tension sutures; d, colostomy opening; e, anus; f, from hepatic flexure.

her colostomy opening being fairly active. The stoma being now temporarily sealed off, the abdomen was opened (for the third time) along the margin of the rectus muscle, and the appendix was removed. It was inflamed, swollen, and adherent, and contained some soft cretaceous matter. The right ovary was examined at this time and found to be perfectly normal. Her recovery was again uneventful, and the wound remained aseptic.

Shortly after this the patient began to have frequency of micturition with the passage of blood in her water. A cystoscopy revealed a small naevoid growth just internal to the vesical orifice of the urethra; this was cauterized through a Kelly's tube, and the trouble ceased.

About eighteen months later (July, 1912) she, being then in Glasgow, wrote to me saying she was suffering agonizing pain in the right side of the abdomen, with some discharge of pus and blood from the lower opening of her colostomy and also from the vagina; her periods had been very irregular and extremely painful, and she feared a return of the growth. On my advice she consulted Sir William Macewen, who gave it as his opinion that she had recurrence, and advised against operation in view of the presence of the colostomy wound. She remained in this condition for some time, but, as her pain became much worse, she again wrote to me, and I therefore advised her to see Mr. Harold Stiles in Edinburgh. This she did, and Mr. Stiles, having kindly examined her for me, also gave it as his opinion that no operation should be done. Three months later, however, the patient came to me in London, and I examined her in company with my colleague Dr. T. G. Stevens. We found in the pelvis a very tender mass to the right of the uterus, but, in view of the absence of loss of weight and of the generally healthy appearance of the patient, we concluded it was not the result of recur-

and then she gradually began to have difficulty with her bowels, any effort at evacuation resulting in the passage of faeces by the colostomy opening, although she had the natural sensation of motion presenting in the rectum. Although this condition was not constant, it so disappointed and disheartened her that she returned to me, and begged that the colostomy opening might be closed, as she was "sure that that would compel the motion to pass the right way."

Before consenting to this, I examined the site of the anastomosis by means of the sigmoidoscope and found the opening patent but with inelastic edges and of about the same size as at the time of its formation; a hard faecal mass was presenting through it. It was clear that if any good was to come of a closure operation it must be combined with some method of enlarging the anastomotic opening. The very serious risk was again explained to the patient, but she was determined to see the matter through to the end, and accordingly entered the Hospital for Women once more (March, 1913).

On opening the abdomen (for the fifth time) the difficulty of finding the site of the anastomosis was so great, owing to the diffuse nature of the adhesions now present, that I feared that I should be compelled to abandon the operation; at the end of half an hour, however, with the help of a bougie in the rectum as a guide, the part was isolated and packed off from the abdomen above and the pelvis below. The rectum was now clamped very low down, and the proximal and distal limbs of the transverse colon being emptied, were similarly clamped 5 in. above the anastomosis, and an incision was carried along the antimesocolic border of the colon and along the front of the rectum, 4 in. in length, and having the anastomosis as its central point (Fig. 2); the cord-like ring was thus

divided. The incision was then treated after the manner of dealing with the pylorus in a pyloroplasty; the central point of each lip being drawn out by traction sutures so as to convert the wound into a trapezium, the edges were approximated by a continuous through-and-through suture transversely to the long axis of the bowel, a continuous Lembert suture completing the closure. This suture is shown interrupted in the diagram (Fig. 3) for the sake of simplicity.

Fig. 4.—a-b, Incision sutured transversely; d, colostomy closed; e, anus; f, from hepatic flexure.

Finally, the colostomy opening was closed by detaching the colon from the abdominal wall, oversewing the edges, and inverting the stump with one layer of Lembert and one purse-string suture. The deficiency in the abdominal wall was drained by a rubber tube, and the edges of the abdominal wound, being mopped with a 2 per cent. solution of iodine, were closed throughout.

A tube was placed in the rectum as high as the anastomosis, and the patient was placed in the Fowler position. In spite of a prolonged operation and much manipulation of the bowels, the patient again made an excellent recovery. On the eighth day, however, there was some foul watery discharge from the site of the old colostomy opening, and two days later she had an obvious faecal fistula, her temperature rising to 102°. This condition rapidly cleared up, the motion passing freely per rectum, and the discharge from the fistula steadily decreasing. At five weeks from the date of operation she was soundly healed, save for a tiny pin-hole at the site of the colostomy, through which flatus passed occasionally in very small quantities.

Her condition at the present time (five months from the date of operation) is excellent; the rectum acts freely and without discomfort; there is no sign of hernia of any of her abdominal wounds; there is no sign of recurrence of her growth; she eats and sleeps well, and, in a word, her health is as good as it has ever been.

Remarks.

The question arising in one's mind to-day is, Could not all this operative interference have been avoided from the first by means of a direct end-to-end anastomosis at the time of the original colectomy? The reasons which seemed to me to contraindicate this were, first, the tension on the rectum, which even at the time of the implantation operation was so marked that as soon as the bowel was released from the abdominal wall it retracted deeply into the pelvis; secondly, I had recently had experience of the giving way of an end-to-end anastomosis of the sigmoid in the case of a patient of one of my colleagues; thirdly, with the exception of the transverse colon, the large intestine does not lend itself to such an operation with the same degree of safety as does the small intestine; and, lastly, the growth involved the bowel so low down that even an ileo-sigmoidostomy, or rather an ileo-proctostomy, seemed out of the question, to say nothing of the probability of a subsequent colliquative diarrhoea in the event of success.

That the patient has been able to weather so many operations involving the extensive opening of bowel is, I think, due, not so much to any particular skill in operative technique or to rapidity in manipulation as to the fact that in course of time much of the natural sensitiveness of the peritoneum was modified by the formation of plastic adhesions. These, while making the later operations infinitely more difficult, have, I am sure, conduced to the safety of the patient. Finally, the ultimate result is in great measure due to the splendid pluck and persistent optimism of the patient herself.

THE sectional work of the Royal Society of Medicine will be resumed in the week beginning October 6th; the Section of Obstetrics and Gynaecology will meet on October 9th, and the Clinical Section, on October 10th. The first ballot for Fellows will take place on October 21st.

THREE SUCCESSFUL OPERATIONS FOR PERFORATIVE TYPHOID ULCER.*

BY

A. B. MITCHELL, M.B., F.R.C.S.I.,

SURGEON, ROYAL VICTORIA HOSPITAL, BELFAST, ETC.

The following cases I think it desirable to place on record as they illustrate some points in the treatment of perforative peritonitis. They are the only cases of typhoid perforation on which I have operated, and I am fully aware that I have been unusually fortunate in the result:

CASE I.

R. L., a girl aged 15 years, was admitted to Purdysburn Fever Hospital on the thirty-second day of her illness. The perforation occurred on April 17th, 1911, that is, the forty-third day of the disease. Dr. Robb at once recognized the condition, and I had the opportunity of operating five hours after perforation.

Operation.—A median incision was made below the umbilicus; a piece of adherent omentum guided us at once to the site of the perforation, which was situated about twelve inches above the ileo-caecal valve. It was rapidly closed by double row of catgut suture. Examination of the bowel in the immediate neighbourhood revealed three other ulcers apparently about to perforate. They were so deep that the centre of the ulcer was only separated from the general peritoneal cavity by a thin layer of peritoneum. They were each unfolded by a continuous Lembert suture transverse to the long axis of the ileum, so as to avoid the risk of stricture. All these ulcers were in the lower 2 ft. of ileum, and no more than 2½ ft. of intestine was withdrawn from the abdominal cavity during the operation. A pelvic drain was inserted. The operation lasted thirty minutes, and the anaesthetic (C.E. mixture) was well borne.

After History.—She was nursed from the first in the Fowler position, and continuous saline administered by rectum in the usual way. It was well retained. Recovery was complicated by an attack of coluria, which yielded to alkalis and vaccine treatment. The patient was shown at the annual meeting of the Ulster Branch in June, 1911.

When we consider that operation was here undertaken on a patient whose temperature for six weeks had ranged about 103°, and whose intestines were the seat of several deep ulcers, her recovery is a striking tribute to the vitality of youth.

CASE II.

W. M., aged 27, a ship's steward, was admitted to Purdysburn on April 21st, 1913. On April 29th, which, as far as could be made out, was the twenty-first day of the disease, perforation occurred at 7.30 a.m.

Operation.—The operation was undertaken at 11.45 a.m.—that is, four and a quarter hours after perforation. On opening the abdomen we went straight for the ileo-caecal valve, and, tracing the ileum upwards, quickly found the perforation 6 in. above the lower end of the ileum. It was closed by a double row of iodized catgut. The next few inches of ileum showed no signs of deep ulceration. A pelvic drain was introduced; the wound closed. The operation lasted thirty minutes.

After History.—He was nursed in the Fowler position. Continuous saline administered by rectum was well borne for thirty-six hours, after which it had to be stopped. After operation he was given sodium citrate gr. x every four hours so as to prevent the *coli* infection which had been so troublesome in the first case. Whether this was responsible or not it is impossible to say, but we had no coluria, and his recovery was uneventful.

CASE III.

Mrs. E. B., aged 37, was admitted to Purdysburn on April 23rd, 1913, on the twenty-first day of the disease. The temperature on admission was 103.6°; it fell gradually till the morning of May 1st (twenty-ninth day), when she had sudden abdominal pain, temperature shot up to 104°, and she complained of tenderness in the right iliac fossa. I saw her with Dr. Robb at 1.30 a.m. on May 2nd, fourteen hours after the onset of these symptoms. The rise of temperature and tenderness in the right iliac fossa suggested the possibility of an acute typhoid appendix. Dr. Robb, however, was convinced that perforation had occurred.

Operation.—A small perforation was quickly found 12 in. above the ileo-caecal valve, and closed by catgut suture. A further 12 in. of ileum was inspected, but no deep ulcer detected. A pelvic drain was inserted.

After History.—She was nursed in the Fowler position, and continuous saline injections of sodium citrate gr. xx were given every four hours. She made a slow but satisfactory recovery, and on June 10th, six weeks after operation, was practically well.

The cases are too few in number to justify any authoritative inferences. I think, however, I may fairly emphasize the following points:

1. The modern system of treating typhoid in well.

* Read at the annual meeting of the Ulster Branch of the British Medical Association, June 19th, 1913.