under the tongue 98°; she complained of giddiness and of pain in the epigastrium just to the left of the middle line. The abdomen below the umbilicus was swollen and rounded; there was tenderness on pressure in the epigastrium; on percussion, the lower limit of liver dullness was well above the costal margin. Heart and lungs seemed normal.

Putting the history and the clinical signs together, I concluded that this was a case of latent gastric ulcer which had suddenly perforated into the peritoneal cavity. Further, the girl seemed so anæmic and so nearly dead, that I thought there must be internal hæmorrhage as well. She was put to bed, a hot bottle was put to her feet, turpentine fomentations were applied to the abdomen, she was given brandy 3ss in 3ss of water, and the following draught—R Nephenthe mx. ext. erg. liq. mxx. tr. hamamelidis mv, aq. chlor. ad. 3ss. To prepare the way for rectal alimentation, a large gruel enema was given twice but without result.

At 6 P.M., five hours after the onset, I saw the patient again. She had retched once, and she had had a slight rigor. She lay slightly on her left side, and she referred the pain to the left side of the thorax. Her pulse was 72, and fuller than before; temperature 98.4°, face flushed, abdomen evenly distended, tender to palpation, and very resonant. Now that the rectum was known to be clear, food and medicine by the mouth were stopped, and the following enema was given every four hours—R Tr. opii mx, brandy 3ss, beef-tea 3j.

At 9.15 P.M., eight hours after the onset, the patient looked paler; she lay upon her back with her knees drawn up; respiration was altogether thoracic. She complained of pain in the left shoulder; the pulse was 80 and fairly full, temperature was 99.2°; the abdomen was much more full, more tense, and more resonant. On percussion, no liver dullness was to be found.

About midnight Sir Wm. Mac Cormac kindly saw the patient in consultation. He agreed that there was peritonitis, that this was probably due to perforating gastric ulcer, but he decided that the girl was too far gone to be able to bear any operation; so the treatment of expectancy with opium and nutriment by the rectum was continued, and a trained nurse was obtained.

Next day, February 2nd, at 10 A.M., the patient still lay on her back with her knees drawn up. There was a malar flush; the face had a pinched, drawn look; the pupils were small, the patient was drowsy, and though pain had been severe early in the morning it was now absent. The pulse was 100, smaller, and harder; the temperature 100.4°, the respirations 36; the tongue was dry, flatus had been passed by mouth and anus. After slight retching patient had brought up some mucus in which were small, red shreds, and some larger, soft, white nodules of doubtful nature. The abdominal physical signs were exactly the same as on the previous night. Treatment was continued, and, in addition, small bits of ice were allowed to be sucked.

At 6 P.M. the pulse was 104, smaller, and feebler; temperature 100°, respirations 28, physical signs unchanged.

At 10 A.M. on the morning of the third day, patient was lying in the same drowsy condition; pulse was 100 and small, temperature 99.4°, respirations 28. The physical signs remained unchanged, and in this condition I handed the patient over to Dr. Waterhouse, who returned to town on that day. My notes of the case cease here, but I heard from Dr. Waterhouse that the same treatment was continued, that gradually the slight pyrexia abated, the distension and hyper-resonance of the abdomen diminished, the liver dullness reappeared—in fact, there was a progressive but slow improvement. Finally, after a sojourn at the seaside, the girl was able to resume her duties as nursemaid, and she is now in excellent health.

Austin Flint³ has laid stress on complete disappearance of the liver dullness as a sure sign of free gas in the peritoneal cavity, and therefore of perforation. It is true that this sign may also be due to the interposition of a piece of distended intestine between the liver and the diaphragm, or to the coincidence of pulmonary emphysema with increased intra-abdominal pressure.⁴ But, in the case above narrated, the latter condition was certainly not present, and the former was negatived by the sequence of signs and symptoms.

The happy issue of the case is to be attributed partly to the exceptionally favourable surroundings, and partly to the fact that at the time of perforation, four hours after a meal, the stomach must have been practically empty. It is instructive that, of the six quoted cases of recovery, Ross's case had had no food for twelve hours before perforation; Tinley's none for about four hours before perforation; while in Hughes's case the patient had had only a little gruel four hours before the sudden onset of the attack. Moreover, in the other three cases the narratives suggest that the stomach probably was empty. Further, in five of these cases it is stated that during treatment feeding by the mouth was rigorously limited.

It seems to be a fair inference from these facts that, when perforation has occurred while the stomach is empty, one gives the patient the best chance by keeping the stomach empty, administering opium and nutriment by the rectum, and ensuring complete rest. On the other hand, when perforation of a presumably full stomach has occurred, laparotomy affords probably the only chance.

³ Medical News, February 11th, 1882.

⁴ Graham Brown, Medical Diagnosis, 2nd ed., p. 70.

A MODIFICATION OF THE OPERATION OF INGUINAL COLOTOMY AND ENTEROSTOMY.

By A. W. MAYO ROBSON, F.R.C.S.,

Honorary Surgeon Leeds General Infirmary; Professor of Surgery in the Yorkshire College of the Victoria University.

WHILST performing enterostomy about five years ago in a case of acute intestinal obstruction, it occurred to me that if I punctured the bowel already stitched to the side with a large trocar and cannula, and then fixed a tube on the cannula, I should be able to run off the liquid fæces into an antiseptic

(a) A large cannula oval on transverse section with two openings at the side, one to allow the passage of the fæces if the end of the cannula happens to reach the other side of the bowel; the other higher and projecting from the side in order to allow a tube to be fixed on it to convey the fæces away from the bowel. The end of the cannula within the bowel is rounded off so as to avoid a sharp end. The distal end has a short india-rubber tube fixed in it, which embraces the trocar, and which is securely closed with a ligature, which is tightened as the trocar is withdrawn.

(b) The cannula with its clastic tubes fixed, the upper one closed by a ligature.

(c) The trocar, with a lancet-shaped end, which incises the bowel, and does not make a jagged wound, thus rendering it easy to close the aperture if the time comes that such an operation is required. In the diagram the cannula is on the trocar. The instrument has been made for me by Messrs. Wood, of York, and Mr. Rauschke, of Leeds.

solution placed by the side of the patient, and so prevent fouling of the peritoneum or wound.

After twice successfully employing this method, I adopted

SALE OF ANTIPYRIN.—By a new regulation of January 1st, antipyrin may no longer be sold without a medical prescription.

a slight modification by fixing the tube on the cannula first, and then pushing the trocar through it. I found that when the trocar was withdrawn the slit in the elastic tubing immediately closed, and prevented anything passing through. A further experience led me to devise the instrument represented in the annexed sketches, which I have employed both in enterostomy of the small intestine and in inguinal colotomy when it was necessary to immediately open the bowel.

I have now used it sufficiently frequently to speak of its utility. After its insertion in the bowel, an ordinary antiseptic dressing is applied to the wound, and the cannula is held in position by strapping applied over the dressing. In two or three days it may be removed, as union between the parietal and visceral peritoneum will then be sufficiently firm to prevent fouling of the peritoneal cavity, but if it be thought desirable it can be retained *in situ* for several days longer, although after the third day a little moisture will escape by the side of the cannula.

In the BRITISH MEDICAL JOURNAL for July 18th, 1891, is a paper by Mr. Paul, in which he describes his method of performing inguinal colotomy in cases where it is necessary to immediately open the bowel, and in a letter to the BRITISH MEDICAL JOURNAL for September 26th, 1891, he states: "So far as I am aware no other safe method has been suggested for this purpose." Mr. Paul's suggestion of dividing the colon, inserting a glass drainage tube into its upper aperture and closing and returning within the abdomen the lower end, after Madelung's method in lumbar colotomy, has to my mind the disadvantages—first, that it involves an extensive operation in a patient ill fitted to bear it; secondly, the resection and enterorrhaphy, if required later in order to close the aperture, would involve both a serious and difficult operation; and thirdly, if the lower bowel be completely closed by the disease, and foul secretion should collect in the *cul-de-sac*, it may ultimately burst into the peritoneum, producing fatal peritonitis. That this last accident is not imaginary I have distinct proof, in that it occurred in two cases within a month where Madelung's operation had been performed by one of my colleagues.

Inguinal colotomy performed either in the way suggested by Mr. Herbert Allingham, or after the method of Mr. Harrison Cripps, and immediately opened by the method here shown, need occupy no longer than from fifteen to twenty minutes, and I have myself performed enterostomy by this means on one occasion in ten minutes, cocaine being the anæsthetic, the patient being too ill to bear general anæsthesia.

SIGMOIDOSTOMY SIMPLIFIED.

By H. A. REEVES, F.R.C.S.Ed.

Surgeon to the Hospital for Women, and to the Royal Orthopædic Hospital; Senior Assistant Surgeon to the London Hospital.

DURING the past few months I have had occasion to perform sigmoidostomy on three patients, at the Hospital for Women, for cancer of the rectum, and this I have done by an unusual, if not absolutely novel, method. Though I have not heard or read of an exactly similar proceeding, it may be that I have been anticipated, but as to this I am indifferent, my object being to attract attention to an easy plan and one applicable to nearly all cases. In some cases of obstruction where the colon is much distended it may be difficult to get out a loop of the sigmoid and, moreover, it may be necessary to open at once, but even in such cases by carefully evacuating some of the liquid fæces through a trocar the bowel tension may be sufficiently relieved to permit of withdrawal.

The first case, a woman, aged about 36, was under the care of my colleague, Dr. R. T. Smith, who asked me during the early months of the year to see the patient on account of inability to empty her rectum. A sarcomatous mass arose from the left sacro-iliac synchondrosis, the sigmoid was pressed upon, but its lumen was not completely obstructed, so that fæces passed into the rectum, but not being evacuated collected there. Atony of the rectum seemed to be caused by interference with the propagation of the peristaltic intestinal wave through the sigmoid. At this time I thought sigmoid-

ostomy not urgently needed, and directed that the rectum should be kept evacuated and laxatives given, and watched the patient. In about a month, the tumour having increased rapidly, and pain being great, and also as obstruction was increasing, I operated in the following manner.

An incision through skin, muscles, and peritoneum is to be made in the position I recommended when introducing the inguinal or iliac operation some eleven years ago. The peritoneal opening should be just large enough to allow a loop of sigmoid to rest in it without constriction. The sigmoid is pulled out, and when the descending colon is taut, or nearly so, a pressure forceps is pushed through the mesentery about a quarter of an inch from its attachment to the bowel, and a straight piece of elastic catheter, No. 10 or 12, with the stylet inside, previously cut four inches long and thoroughly cleaned, is caught in the forceps and drawn through. This is supported on the outside of the abdominal wall at each end, by a small pad of lint; a piece of green protective smeared with carbolic oil, 1 in 60, should be applied over the intestinal loop after the skin and muscle incision has been closed. A thick roll of gauze is packed around the bowel and a layer of cotton wool placed over the protective so as to prevent undue pressure when the binder was applied. It is well to give a quarter or one-third grain of morphine immediately after the operation to check anæsthetic vomiting, or to let a nurse sit by the patient and gently press over the site of operation during vomiting, but if care be taken that the peritoneal opening be of the right size, there is no fear of the small intestine being protruded and nipped by the side of the sigmoid. However, if in any case vomiting be prolonged it is safest to explore the incision rather than be beguiled into taking the symptoms as due to prolonged anæsthetic vomiting.

At the end of a week in this case I opened the bowel longitudinally and stitched the gut edges to the skin, but have not done this in later operations. Care must be taken not to form a twist in the gut, as, apart from some risk of obstruction, fæces will pass from the lower (which is really the upper) opening, and, unless the condition be recognised, may lead to the erroneous view that there is regurgitation from the rectum. I have lately used polished vulcanite rods, which are dipped in carbolic oil, instead of the catheter.¹ They are pointed at one end to pass through the mesentery, or bevelled off as in the adjoining figure. Should the perito-

Diagram of sigmoid loop at the time of passing the rod. 1, Site of incision in bowel; 2, mesentery; 3, rod. The figure to the right shows the bowel opened. 1, Upper opening, not represented large enough; 2, lower opening; 3, rod and spur of mesenteric side of bowel over it.

neum be tough a nick may be made over the end of the rod, and, before passing it, the operator should see that no vessel is in the way. If necessary, the bowel can be opened at the end of the second day, but, unless there be urgency, I prefer to wait till the third or fourth, and I leave the rod in place two or three days longer, as it appears to form a better spur the longer it is left.

The subsequent behaviour of the bowel is interesting. In this case—and this seems to be the rule—the loop be-

¹ These are made by Messrs. Mayer and Meltzer.