of a mucous fistula after cholecystotomy, owing to complete obstruction or obliteration of the cystic duct. In the following case it was performed as a primary operation, partly to prevent the possibility of this result, and partly to rid the patient of a diseased viscus, which henceforth was functionally useless.

The patient, a married female, aged 41 years, with a family of five children, who was seen in consultation with Dr. Case, of Brinscall, gave the following history: In a period of about four years she had suffered from occasional attacks of abdominal pain, most marked in the region of the liver, and she had several times passed gall stones in her motions. The attacks, which had been unaccompanied by jaundice, had latterly become more frequent and more severe, and her general health was in consequence becoming seriously impaired. On examination of the abdomen increased resistance was felt over the gall bladder, which was somewhat enlarged and tender upon pressure. From the history of the passage of gall stones, and the presence of a swelling in the region of the gall bladder, the case was diagnosed as one of distension of the viscus, probably due to blocking of the cystic duct by a gall stone, and an exploratory operation was advised. For this purpose she was admitted into the Manchester Royal Infirmary. On June 4th, 1901, the gall bladder was exposed by an incision in the right linea semilunaris. It was found lying under the cover of the liver, and enlarged to the size of an orange, its wall, which was much thickened and indurated, being of a dull-grey colour.

An aspirator needle was introduced, and between 3 and 4 oz. of a purulent fluid were drawn off. The gall bladder was then opened, and sixty-four calculi, many of which were two or three times the size of a pea, and distinctly faceted, were removed. On attempting to explore the cystic duct, its orifice was found to be completely obliterated, so it was decided to at once proceed to remove the gall bladder, especially as its wall, in addition to being much thickened, was very rigid—in fact, almost of cartilaginous consistence.

This was effected without much difficulty, except at several spots where it was intimately adherent to the liver, small portions of which were also removed. The cystic duct, which was followed up for some distance, and then ligatured and divided, was found to be obliterated as far as it could be traced. The division of the liver substance was attended by free oozing of blood, but this was soon arrested by sponge pressure. The external wound was then closed, except at its centre, where a gauze drain was inserted.

The patient made a good recovery from the operation; on the second day the dressings were stained with bile, the origin of which must have been the divided substance of the liver, for it continued in varying amount for several weeks, and had not entirely ceased when she left the hospital on July 18th. A few days subsequently the wound closed, and since that date it has remained firmly healed, there having been no further escape of bile. At the present time she is in excellent health, having gained considerably in weight, and kept quite free from the attacks of pain from which she had suffered previously to the operation.

THE OPERATION OF JEJUNOSTOMY, WITH A REPORT OF TWO CASES.

By B. G. A. MOYNIHAN, M.S.LOND., F.R.C.S.,

Assistant Surgeon, Leeds General Infirmary; Consulting Surgeon to the Skipton and District Hospital, and to the Mirfield Memorial Hospital.

AN artificial mouth may be made into the intestinal canal at several points—in the oesophagus, the stomach, the duodenum, and the jejunum. The operation in each of these segments of the intestinal canal has its range of usefulness—widest in the case of the stomach, most restricted in the case of the oesophagus. The operation of jejunostomy is one which, judging by the reports, or rather by the absence of reports, of cases has almost fallen into disuse among British surgeons. It is certainly one of limited applicability, but the cases in which it might prove of advantage are not so infrequent as the literature would seem to show. It is with the hope of awaking remembrance of the operation, and of describing the method I have adopted that I venture briefly to record the two following cases:

T. L., male, aged 54. Seen March 3rd, 1901, with Dr Sykes, of Cleckheaton. The symptoms were chiefly those of obstruction at the lower end of the oesophagus; a bougie passed 18 in. Hour-glass stomach with a small cardiac complement was diagnosed. On opening the abdomen the stomach was found generally infiltrated with cancer—"leather bottle stomach"—at the cardiac a deep constriction separated off a small pouch from the body of the stomach. Jejunostomy was the only operation possible. Secondary deposits were found in peritoneum and liver. Death April 9th. Food was taken by the new opening in fair quantity.

J. G. Male. Aged 73. Admitted to the infirmary under the care of Mr. Mayo Robson, for whom I acted. The symptoms pointed to cancer of the stomach and a hard rounded mass was felt in the epigastrium. The patient was so ill that I was afraid of giving an anaesthetic, but as all food, even in spoonfuls, was vomited, it was necessary to attempt to give relief. I opened the abdomen, found cancer affecting the whole stomach and large nodules in the liver and peritoneum. Jejunostomy was performed. Food was taken freely, the patient gained in weight about 4 lb., and was greatly relieved by the operation. The operation was performed on June 2nd, death took place on July 31st.

In the first case probably, and in the second certainly, life was prolonged and what is more important, was made tolerable: the agony of thirst and of starvation was banished.

The operation of jejunostomy may be performed in all these conditions necessitating the formation of an abdominal opening for the purpose of feeding the patient, when the stomach is not available. These conditions are:

INDICATIONS FOR OPERATION.

1. Extensive infiltration of the stomach with carcinoma, when there is little or no healthy stomach wall that can be utilized for the purpose of gastrostomy.

2. General cicatricial contraction of the stomach, simple in character, dependent upon the swallowing of caustic fluids.

3. Neumann has suggested that in cases of pronounced hyperchlorhydria jejunostomy should be performed in preference to gastro-enterostomy. He points out that the intensely acid secretion of the stomach passing into the jejunum through the new opening may produce ulceration which will rapidly destroy the intestinal wall and lead to perforation. This is to say a peptic ulcer of the jejunum results, in a manner precisely similar to that occurring when a peptic ulcer of the first portion of the duodenum develops. Peptic ulcer of the jejunum is recorded by Braun, Halm, Kausch, Körte, Steinthal, Hadra and Neumann, and a case has been observed by my friend Mr. W. H. Brown. In four cases the ulcer caused death by perforation, and in all there was a great excess of free hydrochloric acid.

4. Cackovics and others have suggested that in cases of persistent haematemesis, rest might be afforded to the stomach by an artificial mouth in the jejunum. In three cases of chronic haematemesis that I have dealt with by operation, I performed gastro-enterostomy, with complete success, and for such cases in the future I shall certainly advise gastro-enterostomy in preference to any other operative treatment.

MODE OF OPERATING.

Several methods have been recommended and adopted for the performance of jejunostomy; the jejunal loop has been stitched to an abdominal incision, and opened or brought up to the surface by means of a bone plate placed in its lumen. There are only two methods which are likely to survive; of these, one has been suggested by Maydl, and the other is based upon the method of Witzel for gastrostomy. It is the latter which I adopted in my two cases.

Maydl's Method.—Maydl has performed jejunostomy in 22 cases, with four deaths as the result of the operation. After opening the abdomen, the upper part of the jejunum is found, and is cut completely across. The proximal cut end is then implanted into the distal portion a few inches from its divided end, and the latter is stitched to the abdominal wall. The diagram will make the condition of things appreciable.

The method adopted in my own cases was as follows:

The abdomen was opened a little to the left of and above the umbilicus, through the rectus muscle, whose fibres were split. The duodeno-jejunal junction was sought, the jejunum traced downwards for 6 or 8 in., and a loop drawn out of the abdomen. On the side of this loop furthest from the mesentery, a small longitudinal incision was made, opening the bowel, and a piece of drainage tube about the size of a No. 12 catheter was introduced, and fixed by a single catgut stitch, which included the cut edge of the bowel and the side of the tube. The tube was then laid along the bowel upwards towards the duodeno-jejunal flexure. A continuous stitch was

now passed from side to side of the groove made by the tube, so that the tube, when the stitch was tightened, was buried by the overlapping of the edges of the groove. The stitch was begun about $\frac{3}{4}$ in. below the opening in the jejunum, so that any leakage there might be effectually prevented. About 2 in. of the tube was covered by the stitch, which was then

Fig. 1.—Jejunostomy; Maydl's operation, at *a* the jejunum is stitched to the abdominal wall.

tied and cut short. The line of suture in the bowel was then made fast to the anterior abdominal wall by a stitch at each extremity, and the abdominal incision was tightly closed round the tube, which projected for about 10 in.

Fig. 2.—Jejunostomy; showing the tube lying in a groove, on tightening the stitch the tube is buried.

When the patient is fed through such a tube, a funnel is fixed on to the end and food poured in slowly. At the first only 6 oz. are introduced, but after the first few days up to a pint may be given in the space of ten minutes.

The opening in the jejunum is made, therefore, at approximately the point where Schlatter made the oesophago-

intestinal anastomosis in his case of complete gastrectomy. It is clear from this case, and well shown by my second case, that enough food can be taken by the jejunum to enable weight to be gained and the general well-being of the patient to improve. If a jejunostomy were performed for any non-malignant condition of the stomach, the probability would be that, as in Schlatter's case, a decided increase in the capacity of the jejunum would be demonstrable, affording a reservoir for the food.

The same variety of food may be given in jejunostomy as in gastrectomy; the staple article of diet should be peptonized milk. In some cases a duodenostomy may be preferred to a gastrectomy. Hartmann has recently reported an example of duodenostomy for a cicatricial narrowing of the stomach following upon the swallowing of a caustic fluid. A duodenal mouth may be considered as more efficient than one opening into the jejunum, in that the food is introduced into the bowel at a point higher than the orifice of the ampulla of Vater.

If a duodenal opening is to be made, the method that I have described is probably better than any other.

LOCALIZED PERITONITIS IN ENTERIC FEVER WITH MARKED SYMPTOMS OF ONSET: LAPAROTOMY: RECOVERY.

By W. A. MACKAY, M.D. GLASG.,
Southport.

THE early performance of laparotomy in the perforative peritonitis of enteric fever admittedly offers the greatest, and generally the only, chance of recovery. The difficulties in the way of prompt diagnosis are often great. Some of them are exemplified in the following case, where definite symptoms were associated with a very limited lesion.

History.

G. B., aged 44, sickened of enteric fever on October 19th, 1901. The primary attack was mild, the temperature falling under 99° F. on the fourteenth day, and only once exceeding that figure thereafter until the beginning of the fourth week, when a relapse occurred. Widal's reaction was sought at the end of the first week and again at the end of the second. The bacteriologist did not return an account of the dilution used or the time taken to ascertain the reaction. After the first examination the report was "suspicious" after the second "negative." The diagnosis was confirmed at this stage by the presence of blood in the motions. During the relapse the symptoms were not at all severe until November 20th, the thirty-third day counting from the beginning of the illness. At 6 a.m. on this day the patient awoke complaining of pain in the abdomen, but did not summon help until 9 a.m. He was then excited, shivering, and complaining of pain in the abdomen. The expression was anxious and the whole aspect suggested the onset of serious trouble. The temperature was 102° F., the pulse was 100, of fair size and of good tension considering the duration of his illness. After an injection of morphine the pulse fell to 80, and did not exceed 100 until after the operation. Unfortunately the last previous record (70 per minute) was two days before the onset of peritonitis.

Diagnosis.

There was tenderness in the right iliac fossa, and relative rigidity of the right rectus muscle. In the right iliac region there was a distinct area of dullness on light percussion, and this increased in extent during the forenoon. At the operation this was found to be due to the contracted and empty state of the ileum. There was a fair-sized liver dullness.

I thought it probable that an ulcer had ruptured into a part of the peritoneal cavity which was shut off by adhesions, and communicated with Mr. Paul of Liverpool, who saw the patient with me in the afternoon. In the meantime the latter had a small hypodermic of morphine, and was forbidden to swallow anything. Mr. Paul agreed with the presumptive diagnosis as such, and also that the abdomen ought to be opened.

Operation.

This was accordingly done by him at 4.30 p.m. Chloroform was given at first, followed by ether. A median incision was made, and the lower part of the ileum pulled out. No perforation was discovered, but over a thickened and congested Peyer's patch about 6 in. from the ileo-caecal valve the peritoneum was roughened and there was an inflammatory exudation. No appreciable fluid exudation was present in the peritoneal cavity. The lower part of the ileum was contracted and empty. As viewed from the peritoneal surface there were one or two small reddened portions of bowel evidently