months later, and she lost 13lbs. in weight. She was readmitted October 4th, 1890, with softening tubercle in the left upper lobe, no extension of the disease on the right side.

These cases are not to be regarded in any sense statistically. They are merely examples of a numerous series of instances of a similar character which have come under my notice at the Manchester Hospital for Consumption. Not one of them can be recorded as a distinct and undoubted instance of reinfection, for in each there is the possibility that the subsequent outburst of disease has had an internal source; but the repeated occurrence of such cases, viewed in connection with the *a priori* considerations which have been mentioned, has left a profound impression on my own mind, and has led me to affirm the strong probability of reinfection upon a patient's return to previous conditions of life. It also leads to the inquiry as to the best means of preventing such an occurrence, especially in the numerous class of cases in which removal to another dwelling cannot be carried out, and I venture to think that the practical lessons to be drawn from the facts are: 1. The need either of change of residence or the thorough disinfection of premises occupied or frequented by consumptive persons. 2. The duty of constantly destroying by fire or corrosive sublimate the sputum from these patients. These measures have hitherto been chiefly advocated on the plea that they are necessary for the protection of other members of the family or of the public, but if it be true that in many cases of phthisis the primary lesions would entirely heal unless fresh infection takes place, it becomes a part of our treatment for the cure of these cases to take care that these measures are carried out.

REMARKS ON THE USE OF GLASS TUBES FOR DRAINING THE BOWEL IN COLOTOMY, EXCISION OF THE RECTUM, INTESTINAL OBSTRUCTION, AND COLECTOMY.

By F. T. PAUL, F.R.C.S.,
Surgeon to the Liverpool Royal Infirmary.

In July, 1891, I published in the BRITISH MEDICAL JOURNAL some cases of inguinal colotomy in which the bowel was opened at once, and contamination of the wound and peritoneum guarded against by securely ligaturing into the opening a large glass draining tube. Such a proceeding, perhaps, seems somewhat rough and crude, and met with adverse criticism from Messrs. Harrison Cripps, Herbert Allingham, and Mayo Robson. But during the past year I have had the opportunity of repeating it under various conditions, and have met with such uniform success, that my colleagues at the Royal Infirmary have approved and adopted it, as well as surgical friends practising at other hospitals. I, therefore, feel more confidence in bringing it again under the notice of the profession generally.

In the three cases previously published in the JOURNAL I adopted the form of inguinal colotomy practised by Mr. Jessett, and though it yielded admirable results I was quite willing to accept the opinion of the two former of the above-mentioned surgeons, that this operation is less safe than the plan advocated by them. In all subsequent cases I have used their operation. It is certainly easier and quicker, and therefore should be safer. The steps of this glass tube method as at present practised are (1) to make the incision and withdraw the bowel as described by Mr. H. Allingham; (2) to pack round the bowel with aseptic gauze, make a longitudinal opening on its convex border just large enough to admit the bent glass tube (Fig. 1) previously plugged with wool, and to insert this tube, and securely fix it with a tight ligature; (3) if deemed necessary to apply any of the further sutures employed by Mr. Allingham, and to dress the wound, covering the dressing with jaconet, through which the tube projects. When a great rush of motion is expected it is simply caught in basins as it flows from the curved tube; but when the previous obstruction has not been severe a jaconet bag containing wood-wool or other absorbent is tied on to the end to receive the discharge. The tube gives rise to no inconvenience, and always remains secure for three days. Sometimes it does not

slough out for a week or more, apparently owing to a subsequent relaxation taking place in the ligatured tissues, which permits a partial re-establishment of the circulation. That this does occur has been shown by the presence of a little blood oozing from the cut in the bowel an hour afterwards, though the ligature was tied tightly at the time. The operation is not longer than Mr. Allingham's, as the catgut sutures used by him to fix the bowel to the wound are unnecessary, and I rarely employ them. At present the series of cases is too small to afford any useful statistical information; but I have not yet heard of any death within the fourteen days' limit fixed by Mr. Allingham. One died shortly after that date from the shock of the supplementary operation, performed not with his special clamp, but with the thermo-cautery.

In the large and valuable series of cases published by Mr. Allingham in the BRITISH MEDICAL JOURNAL for May 14th, he has the good fortune to have to record only two deaths during the first fourteen deaths. Certainly such results are very creditable and encouraging, but the accident to which he attributes death in each instance would have been practically impossible if the tube had been used. In the one the bowel could not have slipped back into the abdomen, and in the other the obstruction and distention would have been at once relieved, and the small intestine would not therefore have been forced out of the wound. In his former communication he expressed the opinion that distended bowel could not be opened at the time of the operation without risk of contaminating the peritoneum. I may assure him that his opinion is a mistaken one. The piece of bowel outside the wound, no matter how distended, can be controlled by clamp or assistant, whilst the operator makes the small incision necessary for the insertion of the tube. There is really no difficulty and no danger in any part of this simple proceeding, and I hope before Mr. Allingham abandons the inguinal to return to the old lumbar operation in cases of prolonged obstruction he will allow me to persuade him to give the tube a trial.

Another class of case in which the larger tube has proved serviceable is in extensive excision of the rectum by Kraske's, or, as we call it here, Alexander's, method. In such cases the peritoneum is invariably opened, and a rush of faeces usually follows the operation. In the three in which I have tied the tube into the cut end of the rectum, we have experienced no difficulty in keeping the immense wound quite aseptic during the first four or five days, notwithstanding that no preliminary colotomy was done, and quantities of motion escaped daily.

Intestinal Drainage Tubes. 1. For use in the cæcum, colon, and rectum; measures 5 inches in length by 1 inch in diameter. 2. For use in small intestine; measures 2½ inches in length by ½ inch in diameter.

The smaller tube is intended for use in those cases of acute intestinal obstruction in which it is imperative to relieve the distended and paralysed bowel. Even when the original cause of obstruction has been entirely removed, the paralysed intestines are often quite unable to help themselves, and the operation is without avail. It is then necessary to give a very free and easy vent for the thin faecal matter and gas with which they are distended. I have on three occasions inserted one of the smaller tubes into the bowel above the obstruction in such cases; but, unfortunately, though the patients all experienced great relief, none of them ultimately recovered. One was a robust man with septic peritonitis from sloughing appendix. Another was a previously healthy but collapsed individual with acute intestinal obstruction. And the third was a delicate consumptive man with obstruction of nine days' duration, due to adhesions nipping a coil of ileum. The

first two died within thirty-six hours, but the third lived five days. In his case the distension disappeared, the tube was removed, and he was taking nourishment; but the bases of his lungs had given out during the previous collapse, and he died from congestive pneumonia. In these cases, as soon as the glass tube is tied into the bowel, the latter is returned to the abdomen, and fixed to the wound with fine catgut sutures, in order that a faecal fistula and not an artificial anus should be formed. In a successful case the fistula ought not to be difficult to close. The thin fluid motion is conducted to a bottle of some disinfectant fluid by means of an india-rubber tube.

Finally, I have used the faecal drainage tube successfully in a case of excision of a portion of the colon for cancerous stricture. Altogether I have performed this operation four times. In the first three cases I attempted to establish the continuity of the bowel at once, and they all died. In this, the fourth, I drained off the rush of motion which follows the operation with the tube, and the patient has experienced nothing more severe than if colotomy alone had been done. In the first case I excised a malignant stricture of the sigmoid flexure, and sutured the ends of the bowel together. The operation was followed by copious stools, and a little faecal matter forced its way through to the peritoneum, and was rapidly fatal. In the second case I first relieved the distension by a right lumbar colotomy, and some weeks later excised the growth in the descending colon. The patient unfortunately died from the shock of the second operation. The third case occurred quite recently. It was one of a very large mass of cancer in the caecum under the care of my colleague, Dr. Glynn. After exploring it, I doubt if I should have proceeded further but for the fact that I had the advantage of the assistance of Mr. Mitchell Banks. We removed the mass as quickly as possible, and I restored continuity by my bone tube operation, and we were at any rate successful in getting the patient back to the ward in very good condition. He did well for a couple of days, but failed on the second, and died on the third, owing to sloughing of the cut end of the colon from loss of nutrition, I suppose owing to ligation of the ileocolic artery. Had I used the glass tube here, this patient's life would, I believe, have been saved.

In the last and still more recent case I decided to employ the safest proceeding, and to defer the question of re-establishing the continuity of the bowel to a future date. In her distended condition it was quite impossible to say certainly where the stricture was situated, but, with the help of her physician, Dr. Peirce of Hoylake, I explored first over the sigmoid flexure, and luckily dropped down on it at once. Some adhesions were ligatured and divided, and the bowel, including the malignant growth, brought out of the wound. It was carefully packed round with gauze, and the larger sized tube inserted into the upper distended end through a small opening, the bowel above being clamped. As soon as the tube, plugged with wool, had been securely tied in, the bowel was cut through below it just above the cancerous stricture. Then the mesentery was ligatured in portions, and it and the bowel below divided, a small glass tube being tied into the latter. As soon as this was done the operation was completed, for it was unnecessary to suture the bowel to the wound. When dressings had been applied, the plug of wool was removed from the upper tube, and many pints of motion came away during the next few hours. The plug was left in the smaller tube, as scarcely anything appeared in it. From the time of the operation the patient was in comfort. The tubes remained secure until the fourth day, when they were removed, at which time the ends of the bowel were thickly coated with lymph and firmly adherent everywhere. The subsequent improvement has been quite satisfactory. The two openings are to be seen side by side, but whether it will ever be wise to attempt to restore continuity is, I think, very doubtful. My opinion has always previously inclined to the double operation of first opening the caecum or ascending colon, and subsequently excising the malignant growth; but, on the whole, I have come to the conclusion that, wherever situated, the operation employed in the above case will prove to be the most successful method of removing malignant strictures of the colon.

The patient has now (July 12th) been well for some time. The lower end of the bowel has retracted out of sight. The upper end makes an excellent artificial anus.

TUBAL GESTATION: RUPTURE INTO PERITONEAL CAVITY: ABDOMINAL SECTION: RECOVERY.

By W. GIFFORD NASH, F.R.C.S.,
Bedford.

WHILST working Dr. Image's practice at Bury St. Edmunds, I was called to see a farmer's wife, aged 40, who had been married seventeen years, and had had eight children, but no abortions or miscarriages. Her youngest child was 5 years old. All her confinements had been natural, and never followed by any inflammatory trouble. For two years she had noticed a movable lump on the right side of her abdomen, which caused dragging pain and abdominal discomfort, increased at her periods.

When I saw her on January 13th, she complained of the movable lump and pain in the left lower abdomen. The movable lump was the right kidney, which could be displaced downwards into the iliac fossa, across the spine over the front of the left kidney, and upwards under the ribs. The uterus was retroverted, and to the left of it could be felt a small tender lump about the size of a dove's egg. On placing the patient in the genu-pectoral position, the lump could be pushed up out of reach. I diagnosed this as a congested, prolapsed, left ovary.

On January 17th, sexual intercourse took place, and produced violent pain and sickness. Next morning the abdomen was very tender, and the supposed prolapsed ovary rather larger. On January 21st, at 11 p.m., she was suddenly seized with violent pain on the left side of the abdomen—sickness, diarrhoea, cold sweats, and faintness. I saw her early on January 22nd, and found her extremely collapsed. She was blanched, and the pulse was about 130. The abdomen was distended and very tender. Her last natural period had begun on November 25th, and lasted four or five days. She expected her next period on December 25th, and on that day a slight show commenced, which lasted three days. There was no pain with it, and she had no idea she could be pregnant.

On vaginal examination, there was great pelvic tenderness. The lump was not so distinct, but there was more diffused fulness in its place. The uterus was enlarged, cervix soft, and os patulous. In the night there had been bearing-down pains, and the patient thought she had had a miscarriage. In the bed I found a dried and shrivelled membrane.

I came to the conclusion that there was a rupture of a tubal gestation on the left side into the cavity of the peritoneum. The reasons for this diagnosis were:

1. A period had been missed, and it was $7\frac{1}{2}$ weeks since the last day of the last natural period—that is, she had reached the time when rupture was most likely to occur.
2. There was a tender swelling on the left side of the uterus, which had become less distinct.
3. The uterus was enlarged, cervix soft, and os patulous.
4. There was milk in the breasts.
5. There was marked collapse, signifying internal hæmorrhage.

6. There was discharge of uterine decidua.

The reasons for the rupture being intraperitoneal were:

1. The great collapse, showing a large hæmorrhage.
2. The rapid onset of peritonitis.
3. The absence of the mass fixed on one side of the pelvis, pressing on the rectum, such as I have felt in previous cases where the rupture had taken place between the layers of the broad ligament.

On January 23rd, about noon, Dr. Boxall operated; on that morning the pulse was 96, the temperature 99° F., the face flushed, and features pinched. Under ether a median incision was made about 3 inches long. The peritoneal cavity contained a large quantity of dark-coloured fluid and clotted blood. This was sponged out and the left tube sought for. The enlarged tube, containing a mass about the size of a Tangerine orange, was pulled up out of the pelvis, and in doing so the mass burst, allowing the amniotic fluid and the fetus to escape. The latter was about 3 inches long. The tube was ligatured and removed. The clots were