This patient has never been troubled with the old symptoms since the operation, and is a healthy, happy young woman. From this history we see that over four years of suffering was endured before it was possible to determine the true seat of disease.

The second case is one with more purely gastric symptoms.

CASE II.

Mrs. D., aged 36, came to me on October 13th, 1910, giving a history of epigastric pain and discomfort, and constant vomiting after meals for the past two years. She had not been able to eat any solid food, and subsisted upon milk and broths. She has had eight children, the youngest of whom is 3 years old. She had not menstruated for the past two years. She has suffered from obstinate constipation.

There was considerable epigastric tenderness, also some tenderness on deep pressure over the right iliac fossa. There was a slight amount of gastroptosis, and splashing could be elicited. There was no pelvic trouble of any consequence. Upon repeated careful questioning, I found that for the first eighteen months of her illness the attacks of vomiting and pain were often ushered in by pain and discomfort in the right iliac fossa, but that this had not been the case during the past six months.

I explored the abdominal cavity, and removed a diseased appendix with immediate and so far permanent relief of the symptoms.

The histories of these cases are all much alike, so I will only trouble you by relating one more.

CASE III.

Miss S., aged 40, came to me March 24th, 1910, complaining of epigastric pain and vomiting, which usually occurred about two hours after taking food. She had been troubled in this manner for many years, and had lost flesh and was sallow and old-looking. In this case, also, I could elicit tenderness on pressure over the right iliac fossa. By careful questioning I found that two years previously she had to remain in bed for a few days on account of severe abdominal pain accompanied by tenderness over the right iliac fossa.

Upon opening this abdomen I found a diseased and adherent appendix, together with numerous adhesions between the caecum and ascending colon and neighbouring parts. The symptoms from which this patient suffered have completely disappeared.

When making a diagnosis one must eliminate other causes of reflex pain and vomiting, especially causes arising from the pelvic organs, kidneys, or gall bladder, etc. The gall bladder and bile ducts are the most difficult pitfalls to guard against as far as my experience has taught me.

We must remember that the fact of proving the presence of a diseased appendix does not exclude the presence of organic gastric or duodenal disease. Last year I removed a diseased appendix from a young man just convalescent from a typical attack of acute appendicitis. During the previous few years he had been treated on two occasions by another surgeon for gastric ulcer. I was rather inclined to think that this might have been a mistake in diagnosis, but two months after my operation I was called to see the patient as he was suffering from severe haematemesis and melaena. I opened the abdomen and found a large chronic ulcer of the first stage of the duodenum.

Some well-known surgeons go so far as to say that even copious haematemesis may be caused by chronic disease of the appendix, apart from any organic lesion of the stomach or duodenum, but personally I have not yet met with a such case and I am rather inclined to be sceptical.

Amongst the many signs of improvement in a patient after the removal of a chronically diseased appendix none are more marked than the disappearance of melancholy thoughts and the alteration in the colour and texture of the skin.

There is a second subject which I wish to mention, not because I have any original form of treatment to advocate, but chiefly to recant some statements made by me several years ago.

At that time I used to advocate thorough flushing of the peritoneal cavity with saline solution in all forms of perforative peritonitis. In that advocacy I was not alone, some surgeons at that period even advising "evisceration" of the abdomen in order to cleanse it thoroughly. To explain the attitude of surgeons at that time it is necessary to mention a few items in the history of the treatment of perforative peritonitis in this country. I have no fear of contradiction when I say that about twelve years ago the mortality following perforation of an abdominal viscus was appalling. Then, chiefly owing to the work of Mayo

Robson and Moynihan, perforations of the stomach were successfully treated. In carrying out this treatment many surgeons used flushing of the abdominal cavity, with subsequent closure of the abdominal incision without drainage. This method gave excellent results and is still the best method in many cases of gastric perforation.

It was a natural mistake to apply this treatment to peritonitis following perforation of the appendix, but few went so far as to advocate closure of the abdomen without drainage. The results were extremely bad.

I think that the credit of giving the death-blow to this heroic and mistaken treatment is chiefly due to Murphy in America, whilst the scientific work of Dudgeon and Sargent in England firmly nailed the lid on its coffin. Before I had read the work of these and other opponents of flushing I was much impressed by the fact that some very advanced cases which I had to operate upon in the country, reluctantly dispensing with flushing, recovered, whilst less advanced cases treated in hospital showed a heavy mortality.

For several years now my practice has been to open the abdomen by the ordinary oblique incision, remove the gangrenous or perforated appendix, and pass large "cigarette" drains from the wound to the bottom of the pelvis and to one or both kidney pouches, according to the diffusion of the purulent exudate. Silkworm-gut stitches are then placed in position, but not all tied, and the patient is nursed in the "Fowler" position, whilst plenty of saline solution is administered by the rectum. I do not find it necessary, even in the most diffused cases, to make counter openings in the loin or elsewhere. The drains are removed in from thirty-six to forty-eight hours and more of the sutures are tied, but the wound is not completely closed.

The uniformly good results which all surgeons who use this simple form of operation obtain is, to my mind, one of the greatest surgical triumphs of recent years.

NOTE.—After the above remarks had been put into type, it was pointed out to me that a paper entitled "Chronic Appendicitis" was read by Dr. Blair Bell in the Section of Surgery at the Annual Meeting of the British Medical Association at Oxford in 1904, in which cases identical with those here given were described. The paper was published in the JOURNAL of October 29th, 1904, p. 1145.

DEATHS FOLLOWING GASTRO-JEJUNOSTOMY NOT DUE TO THE ANASTOMOSIS.*

By C. HAMILTON WHITEFORD, M.R.C.S., L.R.C.P.

THE following cases are unfortunately instances of what the lay press terms "a successful operation," but which is followed by the appearance of the patient's name in the obituary column, though the difference between this and an unsuccessful operation is extremely slight.

CASE I.—*Ulcer of Pylorus causing Obstruction.*

A woman, aged 28, had suffered for one year from epigastric pain soon after food, with frequent attacks of vomiting. During the six weeks prior to consultation drugs and rectal feeding had been employed without relief. Ingestion of any kind of food at once produced pain and vomiting. The vomit was sometimes brown in colour. The epigastrium was tender and the stomach resonance increased. Neither tumour nor peristalsis was demonstrable. The patient stated that "at times a lump rose in the pit of the stomach and went away with gurgling." The odour of the mouth was offensive, and during the two days which the patient took to decide on operation efforts were made to clean the mouth, but with only partial success.

Operation.

The anaesthetic used was ether. The posterior wall of the pylorus was thickened and indurated. The stomach contained a little blood. Posterior gastro-jejunostomy was performed.

After-History.

During the first twenty-four hours some bile was vomited. At the end of twenty-four hours liquid food (2 oz. an hour) was swallowed and retained, causing neither pain nor sickness. The bowels acted after saline enemata. Death occurred forty hours after operation from pneumonia.

CASE II.—*Carcinoma of Pylorus causing Obstruction and Tetany.*

A man, aged 52, had for one year experienced pain immediately after food. For five weeks there had been frequent cramps in legs, arms, and hands. One week ago, several quarts of brown

* A paper read before the South-Western Branch of the British Medical Association on April 8th, 1911.

fluid were vomited, and subsequently everything taken by mouth was vomited. Saline solution, given per rectum, caused the tetany to disappear, and reduced the pulse from 120 to 90, and the temperature from 102° to 98°.

Operation.

Ether was administered by the open method. The stomach, dilated to double its usual size, with walls of double the normal thickness was firmly adherent to the diaphragm and ribs. In the pylorus was a hard mass the size of a walnut. In the gastro-colic omentum was a globular, mobile tumour, the size of two golf balls. Posterior gastro-jejunostomy was performed.

After-History.

On recovery from the anaesthetic, right hemiplegia, with partial aphasia, was present. Coma supervened and death occurred thirty-six hours after operation. During these thirty-six hours liquids were swallowed and retained and left the stomach, which was found empty on passing a tube.

CASE III.—Carcinoma of Pylorus causing Obstruction.

A woman, aged 64, for fifteen years had passed much flatulency by mouth and rectum. At no time had there been any pain. For four months there had been intermittent vomiting, latterly as much as a quart at a time. There was a mass the size of a Tangerine orange 1 in. above and to the right of the umbilicus. In the forty-eight hours preceding operation 8 pints of saline solution were absorbed per rectum, producing a good volumed pulse of 80. The stomach, which contained foul liquid, was washed out two days before, and half an hour before operation.

Operation.

The anaesthetic used was almost entirely ether by the open method. Occupying the pylorus was a growth 3 in. by 2 in.; it extended 3 in. along the lesser curvature. In both omenta were large masses of growth. Posterior gastro-jejunostomy was performed.

After-History.

The patient, who had stood the operation well, became drowsy, with breath smelling strongly of acetone, and died comatose forty hours after operation.

These cases, which occurred within a period of three years; illustrate deaths from (1) septic pneumonia, (2) cerebral haemorrhage (or thrombosis), (3) acetonæmia.

The features common to all three cases were:

1. Operation was performed with the object of preventing death from starvation the result of pyloric obstruction.
2. The anaesthetic was ether.
3. On being returned to bed after operation the patient was at once placed, and nursed throughout, in the Fowler position, saline solution being administered per rectum.
4. The gastro-jejunostomy was that of the Mayo clinic, that is, posterior, no loop, antiperistaltic, with an opening of 2½ to 3 in.
5. During the time which elapsed between operation and death, the anastomosis acted perfectly.

In Case I the cause of the pneumonia was inhalation of septic material from the stinking mouth. Possibly the anaesthetic was an accessory cause. The patient was so emaciated, and so rapidly losing ground in spite of rectal feeding, that it was obvious that her only chance lay in operation.

In Case II, when first seen, the gastric tetany was marked and accompanied by pyrexia and a rapid pulse. As soon as these symptoms had been relieved by saline solution, given per rectum, it was felt that operation was the only rational treatment. In the absence of a necropsy it is impossible to be certain that the cerebral lesion was not a thrombosis, but haemorrhage appears the more probable. To some the fact that ether was the anaesthetic may account for the cerebral catastrophe, but that cerebral haemorrhage may take place during chloroform anaesthesia is proved by the following case, reported by Fairlie:¹

The patient, a labouring man aged 23, had been anaesthetized with chloroform three weeks previously, and artificial respiration for one minute had been necessary. On the next occasion, skin-grafting being the operation contemplated, chloroform was again administered; there was some struggling during the first stage, and death took place prior to operation. The *post-mortem* report read as follows: "Heart, normal; lungs, some engorgement at base, no oedema; brain, fresh haemorrhage extending over both cerebral hemispheres downwards towards the base, more extensive on the left side. There was no hypertrophy of lymphatic tissues."

The tendency of starved patients to develop acetonæmia is well known. Post-anaesthetic acetonæmia is far more common with chloroform than with ether. In Case III it was hoped that the gallon of saline solution absorbed per rectum in the forty-eight hours preceding operation might have obviated this risk. The acetonæmia was

treated with sodium bicarbonate, both by mouth and rectum, and by inhalation of oxygen, but without effect. The urine prior to operation contained neither sugar nor albumen. A specimen taken from the bladder immediately after death was examined by the Clinical Research Association, which reported:

This urine reduces Fehling's solution to the equivalent of 5 parts per 1,000, or 2.2 grains per ounce of glucose, but the reducing substance is not glucose, since it does not yield the characteristic glucosazone crystals. Acetone, aceto-acetic acid, and beta-oxybutyric acid are not detected.

The reducing substance was probably one of the acetone series. The acetone odour of the breath was marked and unmistakable. In a future case sodium bicarbonate and glucose might be administered per rectum prior to operation; it could do no harm, and might be of service.

Disappointing as such results must always be, it is hardly to be expected that operations for obstruction of the pylorus can escape the mortality which attends operations for obstruction in other portions of the intestinal tract, the mortality being highest in those cases in which the obstruction is complete and has existed for some time. As pointed out by the late Greig Smith, operations performed on desperate cases spoil statistics but save lives. In failing to save such a case the surgeon is in the position of a man who, seeing a runaway trap carrying its occupants towards a precipice, has made an effort to divert its course. The effort fails and the runaway dashes over the cliff. The fact that, in the event of the attempt at rescue failing, the horse moves a little faster, or the patient goes downhill a little more quickly, is not a valid excuse for shirking an obvious duty.

REFERENCE.

¹ Fairlie, *Lancet*, November 12th, 1910, p. 1415.

REMARKS ON THE PATHOLOGY AND TREATMENT OF FISTULAE.

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FISTULAE come under a branch of surgery which in a general hospital is apt to be neglected. Such cases are not, as a rule, of striking interest, and are frequently relegated to the end of the operation list, with the result that the operative treatment is not always efficient, whilst the patient is only too frequently sent out of the hospital to make room for more urgent cases before the cure is complete. Thus the post-operative treatment is not fully carried out, and the patient once more becomes the subject of chronic suppuration; for if there is one thing more than another that is essential to the healing of fistulae, it is the careful dressing and attendance after the operation.

These few notes on the pathology and treatment of fistulae are based upon observations made at St. Mark's Hospital, where the opportunity of watching the results of treatment is unique. I wish first to draw attention to a type of fistula that is commonly met with in the out-patient department of the hospital. I refer to the class known as "horseshoe fistulae." These cases present themselves with the history of having suffered from chronic discharge and attacks of pain on and off for a long period, in some instances of ten years, and have, as a rule, undergone many operations. Wearied with long attendance at hospitals, they finally meet with some one who, disappointed with the results of treatment, informs them that their case is tuberculous and incurable—an opinion that is in both directions nearly always erroneous.

The truth is that these cases have become chronic and intractable because their exact pathological conditions have not been recognized. The late Mr. Goodsall pointed out that in fistulae the internal and the external openings usually bear a definite relation to one another, and I may briefly refer to his observations, with figures to illustrate the condition of matters. His statement is that all fistulae with their external openings behind a line drawn transversely through the centre of the anus have their internal