splenic arteries, or even of the aorta, and cancer in many instances, are simply the result of leaving things alone, of what is called expectant treatment; of allowing, in other words, the ulcer steadily to grow larger and the patient grow weaker. What proportion of cases die from these complications is difficult to estimate, but it is not a small one. Haemorrhage alone, as Dr. Wall has shown at the London Hospital, is responsible for the deaths of 6 per cent. of the women, and $12\frac{1}{2}$ per cent. of the men over 30 years of age admitted into the wards for haematemesis from ulcer of the stomach. The essential point is that hardly one escapes. It is no exaggeration to say that chronic ulcer of the stomach always leads to some complication or other, whether it continues to spread, or whether it heals and cicatrizes; and that even if these complications do not prove directly fatal, they only too often succeed in rendering life miserable.

On the other hand, excision of such an ulcer, so long as it is confined to the mucous membrane and does not greatly involve the sero-muscular coat, is comparatively simple. I have operated upon five such, three by excision and two by ligature of the whole thickness of the wall, and in each repair was rapid and complete. There is no reason why the operation should be followed by a higher rate of mortality than that which follows interval operations for inflammation of the appendix. Later, when the strength of the patient is broken down by years of chronic starvation, and all sorts of complications are present, the same operation may easily become one of the most difficult in surgery, so that not infrequently it has had to be abandoned. But this is not an argument against operation, but against delay.

The details of the operation and the mode of dealing with the ulcer I need not go into now as I have already fully described them elsewhere. The only thing I wish to say is that I am strongly in favour, wherever it is possible, of dealing with the ulcer itself, whether this is done by excision or by ligature.

Gastro-enterostomy should be reserved for cases in which this is impracticable, in which, for instance, the ulceration is multiple, or in which it obstinately recurs, or in which there is already some degree of stenosis at the pylorus or in the walls of the stomach. It places the stomach at rest, it is true, and so often enables the ulcer to heal; but it cannot stop bleeding (there are at least two cases on record in which the haemorrhage has continued and proved fatal, and I have been told of a third), and it is at best only a way of evading difficulties which are better met directly, before they have attained dimensions which render this impossible.

CASE OF PARTIAL GASTRECTOMY, WITH REMARKS UPON THE TREATMENT OF MALIGNANT DISEASE OF THE STOMACH.

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In a paper read before the Clinical Society on November 8th, 1901, I described an operation that seemed to me to fulfil certain requirements in the radical treatment of cancer of the pyloric portion of the stomach. By means of this operation I hoped that it would be possible to remove—

(a) The primary growth, and all the area likely to be involved in its increase.

(b) The lymphatic vessels draining the area in which the primary growth occurred.

(c) The lymphatic glands into which these vessels drained.

The need for some more scientific method of dealing with cancer at or near the pylorus was obvious when the records of published cases were considered. In these the performance of "pylorectomy"—removal, that is, of the pylorus, and a margin of healthy stomach around the growth—had resulted in the experience that in the great majority of cases the patients eventually died of a local recurrence—a recurrence, that is, in the walls of the stomach. In order to discover the lines which an operation should follow if local recurrence were to be avoided, it was necessary to inquire into, first, the mode of invasion of the stomach by the growth, the lines of spreading of the cancer from the original point affected, and the rapidity with which growth occurred along these lines; and secondly, the anatomy of the lymphatic system of the stomach, the direction in which the lymphatic

vessels ran, and the position of the glands in which they terminated. The result of the investigations, so far as the first point was concerned, resulted in the following conclusions:

1. That malignant disease of the stomach begins in the majority of instances near the pylorus just below the lesser curvature.

2. That from this point it spreads most rapidly and most widely in the submucosa.

3. That the rate of growth towards the cardiac orifice is rapid, towards the duodenal side extremely slow. The duodenum is rarely affected extensively.

4. That the tendency of the growth is to drift towards the curvatures.

So far as the second point is concerned it was found that the lymphatic system of the stomach was comparatively simple. There are three chief lymphatic areas of the stomach (Fig. 1).

Fig. 1.—The lymphatic vessels and glands of the stomach. c is the "isolated area."

1. An area along the lesser curvature from which the lymphatic vessels pass upwards and to the left into the coronary glands. The coronary glands lie along the artery of the same name. At the coeliac axis they become continuous with the glands along the upper border of the pancreas.

2. An area along the greater curvature from which the lymphatic vessels pass downwards and to the right into the glands lying along the greater curvature. These glands are more numerous near the pylorus, and from here pass to the head of the pancreas and become continuous with the hepatic group of glands which lie along the hepatic artery, and in part along the pyloric artery.

3. In addition to these two areas is a third, for which I suggested the name "isolated area." This area comprises the greater tuberosity of the stomach, the lower end of the oesophagus, and an area along the greater curvature as far, approximately, as the limit of supply of the left gastro-epiploic artery. Its lymphatic vessels pass downwards to the hilum of the spleen. The term "isolated area" seems singularly appropriate for this region, for it is very rarely affected by growth spreading upwards from the pylorus. An examination of a large number of specimens of pyloric cancer will show that this area remains unaffected till the last, and that its lymphatic vessels and glands are very rarely involved in the spread of the disease. An operation therefore which aims at eradicating the primary growth, the lymphatic vessels draining the area in which the primary growth occurs, and the lymphatic glands into which these vessels drain will involve a removal of all the stomach except the "isolated area," and of the glands along the lesser and greater curvatures. On the duodenal side, the first portion of the duodenum will always have to be removed; beyond this it will very rarely, if ever, be necessary to go. The following are the notes of the first case upon which I was able to carry out this operation. As the clinical history of the case is now complete it is desirable to publish the record:

W. H. S., male, aged 31. Three years ago the patient began to have pain after food, belching, and occasional vomiting. These troubles gradually and progressively increased. During the last six or seven months he has been losing weight; during the last two months the loss has been rapid. In his present state he is quite unable to take any solid food, and can drink liquids only in small quantity. The pain is not acute at any time now, but there is a sense of constant heaviness and burning in the upper abdomen. When keeping erect, standing or sitting, he does not vomit, but within a few minutes of lying down a large quantity of brownish-coloured fluid is returned. The stomach contents were examined on

three occasions; a slight trace of free HCl was found on the first occasion only; lactic acid was always present. On examining the abdomen a large actively contracting stomach was seen: the greater curvature was 2 in. below the umbilicus. A small tumour was felt beneath the right rectus muscle. It was slightly movable, not tender, hard and rounded. The abdomen was opened on July 23rd, 1901. There was a very large stomach, which showed a slight though decided hypertrophy of its walls. There was a tumour at the pylorus about equal in size to a tangerine orange; extending from this along both curvatures, but more especially along the lesser, were hard cord-like masses of growth. There were enlarged glands along both curvatures. The growth was adherent behind to the pancreas, and in order to free it here a small portion of the head of the pancreas had to be removed.

The operation of removal of all the stomach except the "isolated area," and of the first portion of the duodenum, was carried out in the following way: A preliminary double ligature was applied to the chief vessels of supply. The coronary artery was exposed first, as it lay in the "ligament of Huschke"—the *falx coronaria*. The exposure was rendered easy by dragging the stomach downwards and to the left. The artery was then seen in a ridge of the peritoneum, which was thus upraised. The artery and vein were ligatured in two places and divided between (the vessel should be divided at a point beyond the origin of the oesophageal branches). The hepatic artery was then exposed a little above the pylorus by dragging the pylorus downwards; the pyloric and gastro-duodenal arteries, branches of the hepatic, were then ligatured and divided. The left gastro-epiploic vessels, along the greater curvature of the stomach, were similarly ligatured and divided at the junction of the "isolated area" with the body of the stomach, at a point which is near the hilum of the spleen. The lesser and greater omenta were then separated from the stomach at such a distance that the enlarged glands which they contained were left with the stomach. The middle colic artery, which is apt to be wounded in dividing the great omentum, was exposed and carefully protected. The stomach was then clamped by two pairs of Doyen's large clamps at the margin of the "isolated area" and divided between. Two smaller clamps were applied at the end of the first portion of the duodenum, and the gut was divided between. The stomach, with the involved glands and a part of the pancreas, were now removed (Fig. 2).

Fig. 2.—Showing the growth at the pylorus, the extensions along the curvatures, and the lines of incision in the stomach and duodenum.

The operation was completed by closing the cut ends of the stomach and duodenum, and by making an anastomosis between the posterior surface of the "isolated area" and a loop of jejunum pulled up through the transverse mesocolon. An end-to-end approximation was quite impossible. The operation lasted sixty-five minutes, and was attended by slight shock. No secondary nodules could be seen in the liver or elsewhere. After the operation the patient rallied well. His convalescence was uneventful, save for the fact that the abdominal wound did not heal by first intention; this was due to the fact that the Pagenstecher thread which I had used for the deep suture became septic, and caused a small abscess at the upper end of the wound. Within a fortnight the patient was taking ordinary diet, and was daily gaining health and strength. In March, 1902, the patient was shown at a meeting of the Leeds and West Riding Medico-Chirurgical Society. He was then 2st. heavier than when the operation was done, and was able to take ordinary food in full quantity.

On May 22nd, 1902, he called to see his medical man,

Dr. J. H. Waddington, who found there was a growth in the liver, and that there were signs of pleuritic effusion. The patient said he had "caught cold" a few days before, up to that time he had been quite well.

Dr. Waddington wrote:—

He walked to my house, a distance of 20 yards, and arrived suffering from great dyspnoea. On stripping him I found that the area over the posterior parts of the lungs were quite dull, up to the scapula on the right side and a little lower on the left. The apex beat was not displaced, but was diffused. I suspected fluid. On puncture I removed a few ounces, where I expected pints, I felt the lung touch the cannula. The dullness pointed either to much fluid or to solid lung. There was no bronchial breathing; no oegophony; vocal fremitus could be felt. The sputum, which was scanty, was not coloured, simply slightly frothy.

Dr. Waddington considered that there were secondary growths in the lungs, and I have no doubt that this opinion was correct.

The patient died on May 31st, 1902, 312 days after the operation. The cause of death was secondary deposit of growth in the liver and lungs.

This case, though the ultimate result of it was disappointing, is, notwithstanding, of great importance as showing that the operation which I adopted sufficed to relieve the patient of all the local growth, and was satisfactory in so far that it was not followed by any recurrence in the stomach or duodenum. The growths in the lungs and liver were doubtless present at the time of operation, but were of so small a size as to be unrecognizable. It is clear, therefore, that even in a most unfavourable case—for in this instance the involvement of the pancreas was a serious feature—the operation fulfilled all the requirements which were necessary to ensure complete local eradication. Further than this no operation for malignant disease can possibly go.

CASE OF CHRONIC PANCREATITIS, WITH AN ACCOUNT OF THE POST-MORTEM EXAMINATION.

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IN the BRITISH MEDICAL JOURNAL for December 22nd, 1900,¹ I published an account of a case the subsequent history of which is of such interest as to appear well worth recording.

History.—Briefly, the early history of the patient was one of epigastric and right hypochondriac pain, going through to the back, of shivering, vomiting, and jaundice; in fact, his appearance to be a typical case of gall-stone colic. Operation in 1897 failed to find gall stones, but discovered a firm, somewhat lobulated mass in the region of the head of the pancreas, which it was feared would prove to be a malignant growth. A good recovery followed the operation, and, on the whole, the patient thought he was better after than before. Subsequently his attacks of pain, etc., returned as badly as ever, but by lapse of time it was clear that they were not due to malignant growth in the head of the pancreas, and the condition felt there was regarded as one of chronic inflammation. In January, 1901, nearly four years after the operation, the patient again came under my care in hospital with the same train of symptoms as before, namely, pain in the epigastrium and right hypochondrium, shivering fits, vomiting, and jaundice. He was considerably wasted, and was unable to follow his occupation of clerk owing to his feebleness and the frequency of his attacks. On January 4th, 1901, his abdomen was opened for the second time, and the gall bladder emptied of stinking bile and pus, and of two gall stones the size of small peas. From this fluid a luxuriant growth of colon bacillus and a few cocci was obtained. The head of the pancreas was still enlarged, and was very tough and leather-like to the feel. The gall bladder was drained in the usual way, and in the hope that it and the pancreas might be restored to something like a healthy condition the drainage tube was retained for ten months, and so long as there was free escape for the bile the patient was comfortable and free from symptoms. Soon after the tube was removed the opening almost closed and the old train of symptoms began to return. When the fistula reopened and discharged bile freely the patient was much relieved, but as the orifice narrowed so the pain, shivering, and jaundice recurred. On May 30th, 1902, the patient was readmitted to hospital, my intention being to anastomose the gall bladder to some part of the intestinal tract to enable the biliary fistula to close, and at the same time the bile to get round the obstruction caused by the pressure of the enlarged pancreas on the common bile duct.

Operation, June 4th, 1902.—With considerable difficulty the abdominal cavity was opened below the gall bladder. The matting of parts to the parietes and to each other was the most dense I have seen in this region, and it was with great difficulty that the walls of the colon and of the shrunken gall bladder could be found. The smallest-sized Murphy button was used to approximate the cavities, as suturing was inapplicable.