which were subsequently proved to be due to pneumococcus infection, that I do not hesitate to add the case to the others of the series. The patient was a strong, healthy woman. She was seen almost immediately after the development of her first symptoms, and vigorous treatment was commenced at once. No development of further symptoms occurred, but there was definite illness and prostration, which lasted until the seventh day.

In conclusion, it is interesting to note the length of the incubation period in each case. Of the source of infection in Case I we know nothing. She could not have infected Case II, as far as we know, before the night of May 8th. He recognized his first symptoms on rising on May 11th—roughly, say, fifty-eight hours. Case II and Case III were in contact for a short time between 10 a.m. and 1 p.m. on May 11th. The first symptoms were exhibited during breakfast on May 14th—roughly, sixty-nine hours. The earliest period of infection of Case IV appears to have been about 10 a.m. on May 12th, and her first symptoms appeared at 7 a.m. on the 14th—a period of only forty-five hours. This period is, however, open to question, as this patient had already run a distinct risk of infection by washing the infected handkerchiefs used by Case I.

Case V appears to be much more definite as regards incubation. I saw the patient constantly whilst visiting Cases I and II; she was in vigorous, good health. One one occasion, and one only, was she in the sick-room for anything more than a minute or two; we may, I think, reasonably take it that she became infected between 1 and 2 a.m. on May 17th. She began to feel ill about 9 a.m. on May 19th—a period of fifty-five hours.

BIBLIOGRAPHY.

Epidemic Pneumonia at Scotter, by T. B. Franklin Eminson (H. Kimpton, London, 1902). Twentieth Annual Report of the Local Government Board, 1890-1, pp. 95 et seq. of the Supplement.

Remarks

ON

CHRONIC GASTRIC ULCER AND PYLORIC STENOSIS

AND THEIR TREATMENT BY GASTRO-ENTEROSTOMY.

Read before the Croydon Division (South-Eastern Branch) of the British Medical Association.

By HERBERT F. WATERHOUSE, M.D. EDIN.,
F.R.C.S. ENG.,

Surgeon, Charing Cross Hospital.

GENTLEMEN,—When your President, Dr. Duncan, did me the honour of inviting me to address you this afternoon he asked me for a paper on some subject of practical importance. I had little hesitation in selecting as my subject "Gastro-enterostomy in Non-malignant Affections of the Stomach," and this for two reasons. First, because I am convinced that gastric disorders form a no inconsiderable proportion of the cases you are called upon to treat in your daily practice; and, secondly, because this operation has, during the past three years especially, afforded me results so gratifying and so far exceeding my most sanguine anticipations in the treatment of these chronic, painful, and too frequently mortal diseases that I am glad of this opportunity of trying to infect you with some fraction of my enthusiasm for this, in such disorders, almost ideal operation.

The time at my disposal is, however, so short that I can only refer to gastro-enterostomy in two of the many non-malignant gastric disorders, and I naturally choose those of which I have had the largest experience—namely (1) simple ulcer of the stomach, and (2) stenosis of the pylorus, with or without chronic gastric dilatation. Before proceeding to the special consideration of these two disorders I will bring under your notice briefly a few general statements.

In almost all lesions of the stomach there is present a certain degree of dyspepsia. And here let me enter my protest against the far too common practice of treating dyspepsia as if it were a definite disease. It is merely a symptom common to a multitude of gastric disorders. So far as I, as a surgeon, am concerned, when brought face to face with a patient who complains of dyspepsia, I ask myself this question: Is the dyspepsia due (1) to abnormal gastric secretion, or (2) to interference with the movements of the stomach, especially those which are concerned with the transmission

of the food from the stomach into the duodenum through the pylorus, or (3) to these factors combined?

It is to be borne in mind that the function of the musculature of the non-pyloric part of the stomach is to move the gastric contents about so as to ensure their complete admixture with the gastric juice and not to transmit food from stomach into duodenum, this act being the function of the pyloric segment. Hence anything which mechanically hinders the contraction of the musculature of the pyloric segment tends to prevent the normal evacuation of the stomach contents into the duodenum; this also explains the fact that in the great majority of cases of pyloric stenosis the compensatory hypertrophy is limited to the pyloric segment of the stomach, a statement I have frequently verified *in vivo*.

Of the chemistry of the stomach I hardly dare to speak, as it is a subject upon which my knowledge is exceedingly small. I will content myself, therefore, with a few statements. The normal acidity of the gastric juice is due to free hydrochloric acid which is present to the extent of 0.18 per cent. It is this mineral acid which is the great microbe-destroyer and antiseptic of the stomach. When it is absent fermentative changes occur in the stomach occasioned by bacteria introduced with the food and give rise to the organic acids of decomposition, lactic, butyric and acetic. When HCl is present in excess, hyperchlorhydria exists—a condition frequently found in association with gastric ulcer. It is, of course, well known that free HCl is commonly absent in cases of carcinoma of the stomach. I have learned not to rely upon its absence as a sign of carcinoma unless three different examinations of the gastric contents after three test meals agree in proving that it is not present. A single examination has misled me more than once.

In the vomit in my cases of gastric dilatation secondary to non-malignant pyloric stenosis *sarcinae ventriculi* have always been found and yeast fungi have very frequently been present.

It may be mentioned as a matter of prime importance that seven and a-half hours after a moderate meal the normal stomach is quite empty of food and that the reaction of its mucus is neutral or nearly so. Should particles of food be present, especially in any amount, it may be assumed that the motor power of the stomach is seriously impaired. If in the morning I find that washing out of the stomach reveals the presence of distinct food particles taken at dinner the preceding evening, say twelve to thirteen hours previously, I conclude that I have to deal with pyloric stenosis. I do not deny that there may be some cases of atony of the stomach apart from pyloric obstruction, but I can definitely state that I as a surgeon have never met with such, and that reliance on this sign has enabled me, in many cases, to form a correct diagnosis whilst it has never misled me.

CHRONIC GASTRIC ULCER.

Though I am attempting to place before you the surgical treatment of gastric ulcer and of pyloric stenosis, no hard-and-fast line can be drawn between these two lesions, as in many cases the stenosis of the pylorus is not organic but spasmodic, and due to the presence of an ulcer, fissure, or erosion in the pyloric segment of the stomach, which may be of considerable size or so minute as to escape notice on hasty examination. Pyloro-spasm has been frequently present in my series of cases, and I have had two opportunities of observing in very emaciated patients that though the pylorus could be distinctly felt through the abdominal walls as a small hard tumour prior to the administration of the anaesthetic, this tumour became less palpable as the anaesthesia was in progress, disappeared entirely under complete anaesthesia, commenced to reappear after suspension of the administration, owing to respiratory embarrassment necessitating artificial respiration which allowed the patient nearly to come out of the anaesthesia, and disappeared again on the re-establishment of deep anaesthesia. I am as convinced of the existence of pyloro-spasm due to pyloric ulcer as I am of anal spasm caused by anal ulcer and fissure. From my experience I would consider pyloro-spasm almost as frequent a cause of pyloric stenosis as cicatricial contraction. In other words, I hold that, so far as non-malignant ulcers are concerned, an open ulcer is almost as frequent a cause of narrowing, spasmodic, I admit, but none the less real in its effect, as is a cicatricial ulcer.

The great indication for gastro-enterostomy in simple ulcer of the stomach is the occurrence of repeated haemorrhages. I have never operated for a first haemorrhage from the

stomach, though I have experience of four cases in which a really alarming first haemorrhage occurred. In one case a young man, previously in apparent health, vomited three pints of blood, and died two hours later, shortly before I arrived at his residence. On *post-mortem* examination an almost equal amount of blood was found in his stomach. All this enormous amount of blood had come from a tiny round ulcer, the size of a split pea, situated on the lesser curvature of the stomach, near the oesophageal orifice. In the three other cases I have found that absolute rest in bed, with an icebag over the stomach region, abstinence for five days from all food or drink by the mouth, the injection under each breast (they were all women) of a pint of sterilized normal salt solution repeated several times, and feeding by means of nutrient enemata, sufficed to prevent any dangerous recurrence of the bleeding, and thus obviated the necessity for surgical treatment. In such cases I cannot speak too highly of the action of morphine in quieting the stomach, the circulation, and the fear-stricken patient's mind. Had in any of these three patients a second alarming haemorrhage broken out I would at once have opened the stomach, sought for the bleeding point, and had I been successful in finding it—a by no means certain event—I would have attempted to cast a ligature around the ulcer, as these lesions which cause fulminating haemorrhage are commonly superficial and their bases non-indurated. A few Lembert sutures would then have tucked in the peritoneal coat underneath the ulcer. Had the condition of the patient permitted it—an unlikely eventuality—a gastro-enterostomy would have been done with the view of giving rest to the stomach, helping to heal the ulcer present, and tending to prevent the formation of future ulcers. In such cases the ulcers (*exulceratio simplex* of Dieulafoy) are frequently multiple and are certainly caused by pyogenic micrococci, though the exact pathology of the condition is by no means clear.

Apart from these rarer terrific haemorrhages, let us consider the question of repeated haemorrhages, commonly small or moderate in amount, which are associated with the chronic simple ulcer (*ulcus rotundum*) with which we are all so familiar.

In my experience, by far the most frequent site of the chronic simple ulcer has been the posterior wall of the pyloric segment near the lesser curvature. I am convinced that though healing of the ulcer is by no means rare, it is far less frequent in the neighbourhood of the pylorus than on either surface of the remainder of the stomach. I am also certain that many gastric ulcers supposed to be cured are not in reality. They have only reached the chronic, painless condition seen so frequently in long-standing ulcers of the leg. I have known several apparently-cured gastric ulcers perforate without the least warning that the ulcerative process was extending. I have on several occasions been in considerable doubt, even when I had the stomach between my fingers, whether I had to deal with a chronic ulcer or a carcinoma, but in every case in which I was in doubt the result proved it to be one of non-malignant ulceration. It is possible for the lymphatic glands in the lesser omentum to be enlarged from infection from a simple gastric ulcer, and I have seen one case in which I considered it certain that a general septic peritonitis had its origin in the intraperitoneal rupture of a glandular abscess in this situation. I believe that gastric ulcers are multiple as often as one case in three. In an unfortunate case seen several years ago with my late colleague, Dr. Charles Arkle, I operated in Charing Cross Hospital for perforation of a gastric ulcer on the anterior wall of the stomach near the oesophageal orifice. The patient died on the third day of general peritonitis, and Dr. Arkle found at the necropsy a second perforated ulcer on the posterior surface of the stomach. Such cases are by no means uncommon.

I believe it to be impossible to estimate with exactness the mortality of simple gastric ulcer, the more so as in many of the slighter cases a gastric ulcer is assumed rather than proved to be present. I am, however, convinced, from personal experience during the last few years, that the mortality is far greater than the profession will allow, and I am bold enough to venture the statement that the mortality direct and indirect of gastric ulcer far exceeds that of the operation of gastro-enterostomy. I am convinced, moreover, that the transition of simple into malignant ulceration is a by no means uncommon event. The relation of gastric ulcer to hyperchlorhydria is uncertain. In the great majority of my cases hyperacidity has been present, but in a few the opposite condition has obtained.

In all but two of my cases of chronic gastric ulcer haematemesis was present and in every one melaena. Vomiting was a frequent but not constant symptom. I have been surprised at the number of duodenal ulcers I have encountered—eight during the past three years. On January 9th, 1904, I had the extraordinary experience of operating upon two cases in succession of perforated duodenal ulcer in young men—one in Charing Cross Hospital, a patient of Dr. Berrill, of Woodford, the other a patient of Dr. Gregory, of South Kensington.

When one bears in mind the serious, nay, frequently mortal, complications of the so-called simple gastric ulcer, its treatment becomes a matter of prime importance. Do not let me be misunderstood when I urge gastro-enterostomy for the cure of gastric ulcer. I urge it only for such cases as cannot be cured by medical means.

I firmly believe that a diet consisting solely of milk, of which four or five pints should be taken daily, a tumblerful every second hour, with, in cases in which much pain is present, the addition of lime water and a minimal dose of morphine, will cure a large number of recent gastric ulcers, the larger the greater the loyalty with which this treatment is carried out for weeks or even months. There remains, however, a very considerable number of gastric ulcers in which the physician's aid is of no avail. In spite of the most careful dieting and medication, symptoms, for example, frequently repeated vomiting, haemorrhage, and pain, indicative of progressive, or at least persistent ulceration, are found, accompanied frequently by anaemia, marked dyspepsia, hyperacidity, headache and wasting. Now, I maintain that the conscientious physician has no justification any longer to continue the treatment of the case which has demonstrated the powerlessness of purely medical remedies. The surgeon demands, and with unquestioned right, that he shall be given the opportunity of curing the patient before the sufferer be greatly exhausted, so that the operation of gastro-enterostomy may be performed with a minimal mortality. As to the time at which the physician should decide to hand over the patient to surgical treatment, it is difficult definitely to state a rule that shall apply to all cases. My own opinion is that unless definite improvement commence to be manifest after three months of medical treatment, or unless all serious symptoms have disappeared after six months' treatment, the case should be considered one for surgical rather than for further continued medical aid.

PYLORIC STENOSIS WITH OR WITHOUT DILATATION OF THE STOMACH.

I have met with several cases of pyloric stenosis with, and several apparently unaccompanied by, gastric dilatation. No doubt in general the longer the case lasts, the higher the degree of stenosis, and the weaker the patient becomes the greater will be the dilatation of the stomach. Organic pyloric stenosis is the most frequent cause of great gastric dilatation, but I am convinced that pyloro-spasm due to ulcer causes far greater suffering, though, owing to the hyperacidity of the gastric juice commonly present in such cases, fermentative changes are checked or prevented, and gaseous distension of the stomach leading to a high degree of dilatation does not so readily occur.

Personally I have no knowledge of dilatation of the stomach apart from pyloric stenosis, either organic or spasmodic. I need not draw any fine distinction between organic stenosis due to intrinsic causes (commonly the cicatrization of a pyloric ulcer) and the much rarer cases in which the pylorus is narrowed by extrinsic causes, such as dense adhesions, the result of cholecystitis, healed tuberculous peritonitis, etc. Should the stenosis be in the duodenum as the result of intrinsic or extrinsic causes the symptoms will be identical with those of pyloric stenosis, with the exception that should the stenosing agent be situated below the ampulla of Vater, bile and pancreatic juice will flow backwards into the stomach, appear in the vomit, and thus further add to the patient's distress. The treatment for all the above forms being gastro-enterostomy they may be considered together.

I have found that in pyloric stenosis vomiting is the most constant and definite symptom. It takes place, certainly in the dilated stomach, as a rule, once or twice a day, and commonly in the early part of the night. The amount vomited may be enormous, but I have rarely seen more than five or six pints at one time. The vomit is sour-smelling, contains much gastric mucus and a large portion of the food swallowed many hours, or even two or three days, previously. The appetite,

is almost always very small, but the thirst is excessive. Owing to the excessive amount of fluid lost in the act of vomiting, many pints of liquid have to be taken daily, and in spite of this after vomiting of a large amount no urine may be secreted for several hours. Gastric distension with gases, chiefly carbonic acid, adds to the troubles of the patient, who however, does not in general complain of much pain, though in three cases the suffering was so great at times that it was hardly controlled by hypodermic injections of morphine. Rapid wasting soon occurs, but it is remarkable how long these patients live. One patient sent to me by Dr. Montague Murray had washed out his stomach every night for twelve years, and though a living skeleton managed to conduct his business satisfactorily. An invariable complaint I have found to be constipation, owing to the fact that little or nothing passes the pylorus from the stomach, and that therefore there is nothing to start peristaltic action. *Malaise*, headache, and in the last stages tetany, a symptom of bad omen, may be present.

As to medical treatment, something may be done to relieve the condition; nothing, however, to cure it. First and foremost is lavage of the stomach, which should be carried out every evening, using pint after pint of tepid normal salt solution until every particle of food debris be washed away and the fluid returns clear. Creasote and sulphocarbolates I have found of little service, but I have known real help derived from the administration of dilute HCl just prior to meals. This artificial gastric juice helps more than anything else in restraining the fermentative changes. The only rule of diet is the employment of easily-digested nourishment—for example, peptonized milk, Benger's food, clear soups, etc.—and the avoidance of all starches and sugars, as being prone to fermentative changes. In such a pitiable condition, in marked contradistinction to the failure of medical treatment, surgery is at its best, as it possesses a safe and reliable cure. The results which I have obtained in these cases by gastro-enterostomy have proved so eminently satisfactory that I urge the operation strongly. Let me mention one case only, as it illustrates well the advantages that can be gained by gastro-enterostomy.

Mr. T. H., aged 41, was operated upon by me on October 18th, 1903, with the assistance of Drs. Plumbé and Montgomery, his medical attendants. The man was emaciated to a terrible degree, his appetite was gone, pain occurred regularly two hours after taking any food, and, as the stomach became distended with gases of fermentation, the agony grew intense until he washed out his stomach, as he had done daily for thirteen years. He assured me that he had consulted more than twenty physicians, none of whom had afforded him any relief. He said he felt "played out," and wished to die. His weight when fully dressed was 6 st. 6 lb. Gastro-enterostomy was performed. In less than six weeks' time the patient, who had never once vomited since the operation, called to see me on his way to Eastbourne. He had put on 2 st. in weight, and had eaten beefsteak and kidney pudding for breakfast that day with enjoyment and immunity from any untoward result. Six weeks later I again saw Mr. H.; his weight was then 9 st. 10 lb.—that is, an increase of 3 st. 4 lb. in less than three months. He reported himself in excellent health, he could eat anything, and said as he left my consulting room, "I am a resurrection."

This is a striking but by no means an uncommon result of gastro-enterostomy in non-malignant pyloric stenosis. Why is it, gentlemen, that you will not let us cure these patients? Many of you have doubtless such cases under treatment, but how many of you look upon gastro-enterostomy as the sole treatment of any avail in benign pyloric stenosis? Surgeons can show many such results, and our complaint is that you will not give us the chance of showing more.

The Operation.

As regards the operation itself I have employed five methods.

1. Anterior gastro-enterostomy.
2. Posterior gastro-enterostomy (Hacker).
3. Inferior antecolic gastro-enterostomy (Kocher).
4. Retrocolic gastro-enterostomy by the "Y" method of Roux.
5. Antecolic gastro-enterostomy by the "Y" method.

The last I consider to be the best. It has certainly yielded me results which leave nothing to be desired. I have thrice after gastro-enterostomy had the complication of vicious circle, that is, the entrance of bile and pancreatic fluid in large quantity into the stomach, whence they are ejected by vomiting. In two cases this occurred after posterior gastro-enterostomy, in one after the inferior antecolic method. The method which I now always adopt is the antecolic "Y" method, a modification of the well-known method of Roux. The jejunum is seized between two fine long-bladed forceps placed almost touching one another at right angles to the

long axis of the gut and 14 in. to 16 in. below the duodeno-jejunal flexure, the bowel being then divided between the two forceps, the upper end of the distal segment is implanted into the anterior aspect of the stomach as near to the pylorus as possible and just above the attachment of the great omentum to the lower border of the stomach. This accomplished, the distal end of the upper segment is implanted after division of the mesentery at right angles to the long axis of the bowel, the mesentery into the antimesenteric border of the distal portion of the jejunum as far as possible (commonly 4 in. to 5 in.) from the gastro-jejunal junction already made. With a little practice this operation takes hardly longer than the simpler methods. It has the great advantage that vicious circle, the commonest cause of death after gastro-enterostomy, cannot occur. The fact that two junctions, (1) gastro-jejunal, the other (2) jejuno-jejunal, are made instead of one only is urged as a strong objection against the "Y" method, but as a matter of fact, leakage with subsequent peritonitis has never occurred to me in any of my cases of gastro-enterostomy. I fear vicious circle exceedingly, as I have had one death from this and two patients who came very near to dying, but were saved by the reopening of the abdominal incision and the formation of a lateral anastomosis between the afferent and efferent segments of the jejunum some 4 in. below the gastro-jejunal opening. Both these patients made an excellent recovery, and one of them, who at the time of operation was in a very exhausted condition from continued vomiting of bile, owes her life in no small measure to the encouragement and valued help I received from my friend and colleague, Mr. Herbert S. Clogg, who has rendered me much assistance in many of these operations.

Whilst I do fear vicious circle I have no fear of leakage. I never insert more than two rows of sutures—an inner one involving all coats of the viscera, an outer limited to the peritoneum alone. Fine silk No. 00 or No. 000 is used on an ordinary sewing needle or special intestine needle. The sutures need not be inserted closer than five or six to the inch, but must be continuous; no interruption should be permitted. In cases where rapidity of operating is of prime importance I have contented myself with a single row of continuous suture involving all coats of the viscera, and have never seen any reason to regret having done so. In fact incisions into the stomach heal with wonderful certainty. I generally feed the patient by the mouth within twenty-four hours of the operation.

Results.

Let me now direct your attention to the results of gastro-enterostomy in gastric ulcer and pyloric stenosis, for this is the crucial point upon which it appears to me I have to satisfy you.

I can speak of an experience of 31 cases with 2 deaths, a mortality of 6.45 per cent.* I hold it to be unsportsmanlike to attempt to minimize one's mortality, but I think in justice to the operation I recommend to you I ought to say that one patient, an extremely emaciated man, whom I operated upon for my friend and colleague, Dr. F. W. Mott, F.R.S., and who died from exhaustion and vicious circle, was in a terribly emaciated and feeble condition when I performed gastro-enterostomy, to which he only consented three months after Dr. Mott had first urged it. The other, a young man, died of profuse hæmatemesis three hours after gastro-enterostomy performed for repeated hæmorrhage from a gastric ulcer. He was intensely anaemic when I operated upon him, and on necropsy it was found that he had three gastric ulcers, one on the anterior gastric wall and two on the posterior gastric wall. From one of the latter, undiscovered at the operation, the fatal hæmorrhage had occurred.

The subsequent history of the remaining 29 cases is as follows: 27 can eat anything that is placed before them; 2 state that they have to be careful in their diet, and one of these, a very neurotic lady, says that she still suffers much from indigestion; 28 have remained free from vomiting, 1 vomits a little bile every month or so. She has, however, no discomfort from the presence of bile in the stomach. She is very constipated, and vomits, as a rule, only after an enema is given.

With one exception in all the cases pain and the feeling of distension have entirely disappeared. In 26 no dilatation of the stomach can be made out. Three are too recent to enable a definite statement to be made on this point, but I may say that I have never known dilatation of even the most dilated stomach to persist for six months after gastro-enter-

* Since the above was written three additional cases have been operated upon successfully, thus reducing the mortality to 5.88 per cent.

ostomy. In many cases I have been disappointed to find that when the patients, three or four weeks subsequent to operation, passed from my care, the stomach still remained dilated, but in every case this symptom has disappeared by the end of the sixth month. In no case has hyperacidity persisted beyond five weeks.

In every case but one the bowels, almost always constipated prior to operation, have become normal in action. In all cases the general health has improved marvellously and weight has increased in every instance but one from 20 lb. to 66 lb. In the one exception, a highly neurotic maiden lady with retroverted uterus, only 12 lb. have been gained.

In no case operated upon for gastric ulcer has there been any return of haematemesis except in the one fatal case three hours after operation, that is, before the beneficial effect of the operation had had time to manifest itself.

Such, then, is the record of my cases. Is it sufficient to justify you in recommending your patients, victims of intractable gastric ulcer or pyloric stenosis, to submit themselves to surgical intervention? I have no fear of your answer.

Take then, gentlemen, your courage in both hands; tell your patients candidly of the perils of intractable gastric ulcer and of the hopelessness of the outlook in pyloric stenosis; ask them in no uncertain terms whether or no they are prepared to face the former or to resign themselves to the latter. Decide not rashly nor precipitately upon surgical intervention; but when once you have made up your minds that your treatment by medicinal means—potent and all-sufficient as I admit it to be in many maladies—is powerless in these disorders, then I ask you in the name of justice to hand over your patient to the surgeon, placing reliance upon one of the most beneficent, pain-saving, and life-preserving of operations—gastro-enterostomy—and not delay until the patient is a living wreck and the hour of dissolution is at hand, for such cowardly hesitation is unworthy of your calling, and gives surgery but small chance of demonstrating one of the greatest of its modern achievements—gastro-enterostomy.

HAEMORRHAGE FROM A CHRONIC GASTRIC ULCER: OPERATION: RECOVERY.

By C. FIRMIN CUTHBERT, M.R.C.S.Eng.,
Gloucester.

In a paper read before the Gloucestershire Branch of the British Medical Association in April, 1903, on the surgery of dyspepsia, I dwelt upon the importance of not accepting this term otherwise than as the name of a symptom. I also pointed out how often this symptom depended upon conditions which required surgical treatment. Further, that without a careful examination the real cause of the trouble might be overlooked. Affections of the teeth and of the alimentary canal, together with diseases inside and outside the abdominal cavity, were considered, especially acute and chronic ulcers, and pyloric obstruction due to simple adhesions or malignant disease. Some diseases of the kidney, and in particular movable or "dropped" kidney, accompanied by urgent gastric symptoms (described by Diethl as gastric crises) were alluded to, and in addition biliary colic, ovarian and uterine diseases, and diseases of the appendix. Special stress was laid upon gastric haemorrhage. I said that in no other condition was haemorrhage allowed nowadays to go on to such a narrow margin between life and death as in gastric ulcer, and I advocated that an operation should be undertaken to allay this haemorrhage. I detailed the case of a young man who nearly died of bleeding from the stomach, and upon whom I operated in December, 1901. He made a good recovery, and has been well ever since.

The following is another case of similar urgency:

I have known W.T.H. for about 17 years. When first seen he was 24 years old, and it was probable that he then had a gastric ulcer.

History.

During the past two-and-a-half years he has had four illnesses, with attacks of haematemesis and melaena. On the morning of August 10th, 1903, he vomited blood in his shop, and then walked about half a mile to his home, and I saw him about two hours afterwards. He had vomited a quart of blood. He was blanched, restless, and throwing himself about the bed.

The usual remedies, such as egotine, strychnine, and digitaline hypodermically were used, together with saline solution by the rectum, and turpentine capsules given by the mouth. He was fed by the rectum

with peptonized milk, and saline rectal injections were also given. No bleeding ensued for four days. Feeding by the mouth with 2 oz. of peptonized milk every four hours was then commenced. This was followed in twenty-four hours by another serious haemorrhage.

The hypodermic injections were again resorted to, with the same temporary good result, but were followed in another twenty-four hours by copious haemorrhage, although nourishment by the mouth had been stopped. These recurrences of bleeding took place at intervals of two or three days, and it was very evident that they could not be allowed to go on. He was removed on the evening of August 21st to the Nursing Home about half a mile distant, with a view to operation. He had no haemorrhage that night or on the following morning.

Operation.

On August 22nd, at 3 p.m., the abdomen was opened in the middle line above the umbilicus. The stomach and omentum were adherent to the liver at the pylorus. The adhesions were soft and easily separated. The pylorus itself looked and felt healthy. The stomach was pulled well up into the wound, surrounded with hot sponge cloths, and freely opened by horizontal incision, commencing 1 in. from the pylorus, midway between the lesser and greater curvatures, and extending 4 in. towards the fundus. This gave a good view of the interior of the stomach, which was thoroughly washed out. The pyloric opening felt quite healthy, and the finger passed easily through it. Saline solution at temperature 110° was put into the abdominal cavity, and retained as well as possible for a few minutes. My assistant pushed up the posterior wall of the stomach by passing his finger into the foramen of Winslow. On the posterior surface of the stomach, quite at the upper curvature, close to the pylorus, was a deep-cut ulcer 1 in. in diameter, the edges of the mucous membrane overhanging it, and, as it were, standing out in relief. This ulcer had entirely penetrated the mucous membrane, and had extended well into the muscular wall of the stomach. The mucous membrane around it was swollen, but not much inflamed. The ulcer was situated beneath the adhesions to the liver, and perforation was prevented by the thickening of the peritoneal coats of the stomach. In the centre of the ulcer was a projecting papilla, with a small black point on it, which was evidently a clot plugging a vessel. The whole surface of the ulcer was seared with the actual cautery, and in doing this the suspected artery started bleeding freely. From the size of the vessel it looked as if it was the main branch of the gastro-epiploica dextra, and was obviously the source of the former haemorrhages. The ulcer was pressed well up into the wound, and thereby the bleeding was controlled. A purse-string suture of No. 2 silk was passed round, ½ in. from the centre of the ulcer deep into the tissues, and tied, and the pylorus allowed to fall back. It was then seen that the ligature was effectual, and the bleeding stopped, but in order to make certain, the ulcer was again pushed up into the wound. The mucous membrane was stripped back all round the ulcer, and another purse-string suture put in, half an inch outside the first. The ulcer was by this means completely covered in, so that its seared surfaces came together. The mucous membrane of the stomach was then sewn together with a continuous suture of No. 2 silk, as I am of opinion that it is a great mistake to put in a small silk continuous suture, as it is so liable to break at the time, or afterwards tear out; No. 2 silk does no harm, is reliable, and the continuous suture saves time. The peritoneal surfaces of the stomach wound were then brought together by broad Lembert sutures and the abdominal wound closed with fishing gut.

After-history.

On the next day (August 23rd) I found that the patient had had a comparatively good night, and had vomited only some mucus, which was slightly tinged with blood, as if it had come from the cut edges of the mucous membrane of the stomach. He was fed by the rectum.

On August 29th he was going on well, and feeding by the mouth with peptonized milk and brandy was commenced. Hypodermic injections of digitalin and strychnine had been given periodically after the operation. He had had very occasional vomiting of clear mucus and gastric juice. On September 3rd the wound was quite healed, and all the stitches were removed. On September 11th he was going on well, and had a mutton chop for dinner. On September 24th he sat up in bed a little. Especial care was taken in feeding, so as to give the ulcer a good chance of getting quite sound. On October 6th he got up and sat in a chair, and on October 9th he went back to his own house, feeling very well, but still looking very pale and thin. On January 29th, 1904, he told me that he felt quite well, much better than for years.

The result of this case has been so satisfactory that I venture to publish it in support of the views which I hold, that haemorrhage from the stomach should be brought more often, and sooner, under surgical control. Mr. Mansell Moullin's excellent account of his operations in cases of erosive gastric ulcer, has done much to bring these cases into the hands of the surgeon, and has stimulated us to operate in cases which have hitherto been delayed. Although in ulceration of the strictly erosive character it is said that operation does not prevent the liability to further recurrence of haemorrhages, yet in such a case as the one I quote it gives reasonable hope of preventing such return. The treatment of gastric ulcer by gastro-jejunostomy, so as to ensure physiological rest and thereby healing of the ulcer, has been so strongly advocated, and carried out by Mr. Moynihan and other surgeons so successfully, that there is no doubt that