An Address

ON THE

DIAGNOSIS AND OPERATIVE TREATMENT OF DISEASES OF THE STOMACH.

DELIVERED TO THE SWANSEA DIVISION OF THE BRITISH
MEDICAL ASSOCIATION.

By BERTRAND DAWSON, M.D., B.Sc., F.R.C.P.,

PHYSICIAN EXTRAORDINARY TO HIS MAJESTY THE KING; PHYSICIAN
AND PATHOLOGIST TO THE LONDON HOSPITAL, ETC.

MR. PRESIDENT AND GENTLEMEN,—The only criticism which can be directed against the choice of subject which I have the honour of bringing before you is that it is too wide for the time at my disposal. I selected the subject, however, in conjunction with your President because it is one which appeals to both the medical and surgical branches of the profession, because at the present time it is pregnant with interest, because it is one on which our opinions have not taken any final form, and, therefore, one in which discussion is profitable. It is a subject, moreover, in which I take considerable interest and to which I have given special attention. The question of the adoption of surgical treatment in any given case of stomach disease belongs to the province of the physician, but it is needless to say that with operative methods and technique he has neither the knowledge nor competency to deal, and these will form no part of my paper.

That surgery has achieved great things in the treatment of diseases of the stomach every thoughtful man will acknowledge with admiration and gratitude. It will achieve more and more if the conditions which make for and mar its successful employment are from time to time passed under review.

To judge of a treatment fairly, sufficient length of time must have elapsed since its inception. In the earlier cases methods are imperfect, and time and experience have not yet produced good judgement. Again, it is important that cases which have been operated upon should be followed for a sufficient length of time, so that benefits which are lasting may be distinguished from those which are transitory. In studying the results of a treatment no data are so satisfactory as the records of a hospital. Here you can see all the results, whether they be good, bad, or indifferent, whereas if you only read results published in the journals you get a picture which is too much *couleur de rose*. It is only human nature that good results should hold a more prominent place in publications than bad ones; it is hard lines enough to have to face a failure at the time it occurs without having to reconstruct it at a later date in print.

The numerous cases I have studied do not go back further than the year 1902, and in the large majority the diagnosis was confirmed either by operation or by *post-mortem* examination. The operations were performed by surgeons of position and experience, so that their technique may be safely assumed to have been perfected. In judging of results it is the cases classified as "relieved" which are so difficult to estimate fairly. People adjudge relief so variably. Some account mere prolongation of life as relief, without regard to the quality of the life. That, in my judgement, is not the true criterion of relief. We should not look at the quantity of life detached from its quality. If an operation will add to the comfort as well as to the length of life, by all means perform it, but if not, to prolong the life is to prolong the suffering, and it is far better to let Nature take its course.

GASTROSTOMY FOR MALIGNANT DISEASE OF THE OESOPHAGUS.

This point is well illustrated by the operation of gastrostomy for malignant stenosis of the oesophagus. Gastrostomy may prolong life, but prolongs misery also. Unless and until there is some definite urgent symptom like thirst calling for relief, the operation should be avoided. Contrary to what is taught in some textbooks, insatiable thirst is not a frequent feature of this distressing illness; in most cases the body is able to obtain enough water. The disease deprives the patient of appetite, and sufficient nourishment can usually be taken to avoid the pangs of hunger. In 34 consecutive fatal cases at the London Hospital, only 5 could not readily

swallow water, and in only one of these was thirst a distressing symptom. In 25 of the 34 cases the causes of death were ascertained as follows:

Causes of Death.		
Bronchopneumonia	...	8 cases
Perforation into a neighbouring viscus	...	8 "
Secondary deposits	...	4 "
Gangrene of lung	...	1 case
Exhaustion	...	3 "
Death under anaesthetic	...	1 case

To do gastrostomy on most of these patients is not to do them a service.

MALIGNANT DISEASE OF THE STOMACH.

The operative treatment comprises excision, for instance, pylorotomy and gastro-enterostomy. In the few cases where the disease is discovered early enough, the results of excision are promising, and all would agree that the operation should be recommended. With gastro-enterostomy it is unfortunately different; here statistics from varied sources fail to show an immediate mortality of less than 25 per cent. Nor does the operation materially arrest the disease. It does palliate suffering where there is pyloric obstruction, but not often otherwise. Let me quote the published statistics of Kronlein and Mikulicz,¹ and the mortality of the cases I have studied myself.

	Immediate Mortality.	Average Prolongation of Life as Compared with Cases not Operated upon.
Kronlein	24.3	3 months.
Mikulicz	25	3½ months.

The cases I have studied similarly show an immediate mortality of not less than 25 per cent.

I recently made inquiries about 8 patients who had had gastro-enterostomy done for cancer. In 7 of these the duration of life after the operation varied between six weeks and six months, and the quality of the life in every case was bad, the symptoms being unrelieved. The eighth case had gained 2 st. in weight, and was enjoying his food; he turned out to be a pylorotomy combined with a gastro-enterostomy. Thus, you can only put against the risk of 25 per cent. immediate mortality an insignificant prolongation of life and the chance of a partial relief of suffering.

I can conceive of some disagreeing with that statement and maintaining they have witnessed improvement in weight and other symptoms after gastro-enterostomy for cancer. That is true, but the improvement is transitory, and the patient drops back quickly after a short lapse of time; nor is it an infrequent experience to find malignant stomach patients improved in weight under medical treatment and after simple laparotomy. It is due to careful feeding and nursing, and due also in the case of laparotomy to the fact that hope is brought back for a time into the patient's life. Not long ago a patient with malignant disease of the stomach came into hospital for gastro-enterostomy, but improved so much in weight while waiting in the medical wards that he refused operation and discharged himself.

In stenosis of the pylorus due to scirrhus the results are better. Here life and certainly comfort are often promoted.

The conclusions, then, that I should like to urge are these: (1) In cases seen sufficiently early I should advise the radical treatment, for there is something substantial to gain in return for the risk. (2) In cases too late for this it is best, in most instances, to advise against gastro-enterostomy, because the immediate risk is great, and there is not a sufficient prospect of advantage to balance the risk. Even where an exploratory operation has been done, I should be against a gastro-enterostomy, unless there were some definite object to be gained and the conditions of success were favourable. Where, however, the pylorus is obstructed by a hard *circumscribed* growth, the advantage of providing an exit for the food outweighs the risk, but even here it is important to remember that if the stomach is very dilated and its wall thin the danger of the operation becomes greatly increased, and lavage would often be a better treatment to prevent overloading and

stagnation of contents, for lavage is less dependent on efficient motor power than is a short circuit.

In face of the much surgery can do in the early stages of cancer and the little in the later, accurate and early diagnosis becomes of increasing moment. The presence of pyloric tumour, and especially one which is movable, means cancer, and probably one too far advanced to be removed with advantage. We cannot wait for a lump to make a diagnosis.

SIGNIFICANCE OF PAIN.

Although pain is a familiar symptom of cancer, it is often not a prominent early feature. Discomfort and vomiting may both exist without it. In contrast to this the absence of actual pain in gastric ulcer is almost unknown, and if there is vomiting it follows this pain. In 60 consecutive cases of chronic ulcer which I have collected, in all but one pain was the most prominent symptom. While investigating this subject of pain I have been impressed with the fact that former views—that lesions near the cardiac end of the stomach are associated with pains soon after food, and lesions in the pyloric end of the stomach with pain a long time after food—are erroneous. I find that pyloric lesions, whether due to ulcer or malignant disease, are often associated with pain immediately after food. Out of a series of 60 cases in which both the exact time of the onset of the pain and the condition of the stomach, either at operation or at the necropsy, were plainly recorded, I found the pain was immediately after food in 23, and in these 23 the lesions found were as follows:

Limited to the pylorus, producing obstruction	... 19
Ulceration at the lesser curvature near pylorus	... 3
Many and numerous adhesions everywhere	... 1

Of the remaining 37 cases in which pain was *some time* after food, 7 showed pyloric lesions. All these 7, however, showed other lesions besides those at the pylorus.

Where stomach discomfort appears in an adult over 30, who has previously had a good digestion, and especially if there is no obvious cause like overwork or bad habits, further investigation is needed, and if there is occasional vomiting the case for inquiry is even stronger. That investigation should, briefly, consist of:

1. Inflating the stomach with gas to see if it is enlarged or prolapsed.
2. Passing the tube eight hours after an ordinary meal to see if the organ has emptied.
3. The analysis of stomach contents after a test meal for active hydrochloric acid.
4. The microscopic examination of the fasting stomach contents.

The search for physiologically active free hydrochloric acid should be both qualitative and quantitative. If it is done accurately and the proper conditions observed it is most valuable evidence. Hydrochloric acid is found in three forms in the stomach: (1) Free; (2) combined with proteids and other nitrogenous organic bases; (3) combined with inorganic bases. The first two forms are physiologically active and are the only ones which concern us. The relative quantities of these forms of hydrochloric acid will depend on the amount of proteid and other nitrogenous substances contained in the test meal. Both forms are of equal significance, but the free form is somewhat easier to demonstrate. The best test meal for most purposes is one without meat; then hydrochloric acid, if secreted, will be present in the free state. It should consist of a round of well-toasted bread and a pint of weak tea or thin gruel. It should be given on an empty stomach early in the morning, and should be withdrawn one and a half hours later without the addition of any water. Willcox,² who gives the best methods of analysis, examined 60 cases, and in most of them the conclusions were confirmed by operation or necropsy. Those conclusions were as follows:

In gastric and duodenal ulcer the total acidity is high, from 0.2 to 0.3 per cent.; most of the acidity was due to active hydrochloric acid and free hydrochloric is present.

In carcinoma the total acidity is low; active hydrochloric acid in the free form is absent and in the combined form present in small amount.

If these further inquiries strengthen the suspicion of malignant disease, operation should be advised without delay, in the hope that if carcinoma is present a radical operation can be performed.

GASTRIC ULCER.

The treatment of acute perforated ulcer calls for no comment. All are agreed that immediate operation is its only treatment. The operative treatment of subacute and chronic ulcer resolves itself into a study of gastro-enterostomy. To estimate what gastro-enterostomy can do for this condition we might content ourselves with judging it by the clinical results.

The Modus Operandi of Gastro-Enterostomy.

But we shall never arrive at a complete view of its virtues and limitations until its *modus operandi* is determined. If gastro-enterostomy is performed does the food select the new route in preference to the old? Do the stomach contents drain out through the stoma, or are they pushed through it gradually by muscular action? How far is the virtue of gastro-enterostomy due to modifications it effects in the quantity and quality of the gastric secretions?

The stomach is not a passive bag, but one which during digestion is constantly changing its size and shape. Its muscular fibres—longitudinal, circular, and oblique—are so arranged as to impel the contents in a definite direction. As soon as a meal has been taken peristaltic waves may be seen to travel over the pyloric region and converge on the sphincter. The muscles at the cardiac end appear rather to contract tonically, and thus exert a steady pressure on their contents, gradually pushing them into the grasp of the pyloric region. It is not to be supposed that the making of a hole in the stomach wall will alter the direction in which the food is propelled. This is incidentally illustrated by the fact that in perforated gastric ulcer stomach contents are not found in the abdominal cavity. The intragastric pressure during digestion is by no means uniform, and it has been shown by experiment that the pressure at the pylorus may be at least three or four times as great as it is at the cardiac end. Even if the pylorus is closed, the contents are still driven towards it. It almost stands to reason, therefore, that as long as the pylorus is patent the food will by preference leave the stomach by that route even if a stoma exists. If the pylorus is obstructed the contents will still be carried towards it, then will travel back to the stoma and leave by that exit. But they will do this not in virtue of anything that can be called drainage, but in virtue of muscular action. This is shown by the fact that one of the most important factors for a successful gastro-enterostomy is efficient muscular action. The spent muscular coat is one of the greatest dangers that besets operation, and accounts for a large proportion of its failures. That is one of the reasons why gastro-enterostomy does harm rather than good in cases of atonic dilatation. If anything like drainage occurred the greatest benefit would follow, making the stoma at the most dependent part of one of these large stomachs. Our knowledge of the movements of the stomach in digestion have been greatly contributed to by feeding animals and human beings with bismuth, and studying the shadows seen through the x-ray screen both before and after gastro-enterostomy. Cannon and Blake,³ Leggatt and Maury,⁴ Barclay⁵ and others have added much to our knowledge by this method of investigation. Their conclusions do not altogether agree. Cannon, judging from researches on animals, concludes that food will only travel through the stoma if the pylorus is obstructed, whereas Barclay, from his observations on human patients submitted to gastro-enterostomy, states that the contents do go through the stoma. My own experience supports that of Barclay.

In my view, the conditions after gastro-enterostomy are as follows: The food is churned by the muscular fibres of the pyloric region and impelled towards the pylorus. If the pylorus is obstructed the contents leave by the stoma; but if the pylorus is patent the major part of the contents take this route, and only a minor portion leaves by the stoma, and in both cases in virtue of muscular action. Cameron,⁶ in his exceedingly valuable paper, *Some Physiological Aspects of Gastro-enterostomy*, quotes a case of duodenal fistula, which remained open after gastro-enterostomy, but closed forthwith when the pylorus was subsequently ligatured. The advantage of the stoma where the pylorus is obstructed is obvious. Where the pylorus is patent the benefit of the stoma would seem to be that it acts as a safety valve and prevents the intragastric pressure from being too high. If

the contents are being pushed hard on to the pylorus, some will come back and escape by the stoma, and thus the stay of the food in the stomach is shortened. If, further, spasm of the pylorus occurs, as it undoubtedly does in gastric ulcer, the conditions temporarily become those of pyloric obstruction, and the stoma is an emergency exit, which, being devoid of a sphincter and a nervous mechanism, is not liable to closure from the stimulation of acid duodenal contents. It would appear, further, that gastro-enterostomy modifies the composition of the gastric secretions. One often has found evidence of bile in stomach contents after this operation. It never seems to do harm, and it probably does good. As Cameron points out, there is probably distinct advantage in the alkaline duodenal contents regurgitating into the stomach, which they are able to do when the tide of digestion is slack, for in this way the acidity of the stomach is diminished. The benefit, then, which gastro-enterostomy does on an ulcer away from the pylorus is probably due to:

1. Diminished acidity when the stomach is quiet in the intervals of digestion.
2. The evils of pyloric spasm are eliminated.
3. The intragastric pressure is kept lower, and therefore the movements and tension of the stomach wall are less.

Our knowledge, however, of gastro-enterostomy is very far from being complete.

GASTRO-ENTEROSTOMY FOR ULCER JUDGED BY RESULTS.

In addition to those in private practice, I have investigated 240 cases of ulcer treated at the London Hospital, belonging to the years 1903-1908 inclusive, and I have to thank my colleagues for permission to refer to their cases, all of which have either been operated upon, or have died and been examined *post mortem*. The results altogether are strikingly good. Sixty patients have been personally interrogated not less than two years after operation in order to show their condition now as compared with their condition prior to operation. In answer to the inquiry as to which was the symptom above all others which led them to consent to operation, the almost invariable and prompt answer was "pain." To-day with most of them the pain is much less, and with some has disappeared, but many of them are unable to do heavy work like lifting or pulling; if they do, they feel pain. One man stated that if he did his work, which was rather of a heavy character, for one week, he often had to rest completely during the next. The best results seemed to be with patients whose occupations are not physically onerous. Several patients stated that they have to be careful of what they eat both as regards quantity and quality of food. Adhesions which are tough or so situated as to restrain peristalsis prejudice complete recovery, pain being liable to persist. For this reason ulcers which are found at the operation to be partly or wholly healed with adhesions round them do not seem to do as well as ulcers which are open. Ulcers on the lesser curvature, which, equally with the pylorus, seems to be a most frequent site, appear to do especially well. Either adhesions do not readily form in that position, or if they do they fail to tether the stomach in such a way as to restrain its movements, it being remembered that the cardiac portion of the lesser curve is one of the most fixed parts of the viscus. Relapses are not unknown. Thus, a laundryman had been well for three years, but was now getting periodical attacks of the old symptoms. Two patients had had attacks of haematemesis since the operation, and in one of them the pain was still great.

The immediate mortality after gastro-enterostomy in the benign cases is about 65 per cent. (Mayo). As evidence of the improvement in methods, in Bulstrode's 500 cases recorded up to 1902, peritonitis caused more than half the total mortality, whereas in 89 cases subsequent to 1902 investigated by me only 1 died of peritonitis, and of the total deaths four-fifths died of exhaustion, due, as it seemed, to the motility of the stomach wall being spent beyond recuperation. But although the results lack perfection it is abundantly clear that the ulcers heal, and the patients for the most part are placed in a secure and relatively healthy position. If the symptoms of ulcer do not abate within reasonable time under medical treatment, or if the symptoms recur and recur as soon as the patient

is up and about, or if there is repeated haemorrhage, the right advice is operation. If the stomach shows signs of failure of motor power, there should be a period of rest in bed with careful dieting and strychnine immediately prior to the operation, bearing in mind that most of the risk belongs to those cases in which muscular power of the stomach is spent.

DIAGNOSIS OF GASTRIC ULCER.

One of the greatest difficulties belonging to gastric ulcer is its diagnosis. The experience of the last ten years has made us realize that many cases which were previously diagnosed as gastric ulcer were not in reality ulcer at all. Ten years ago the patient who had pain or tenderness in the upper abdomen related to food and associated with vomiting and haematemesis, was usually thought (if hepatic cirrhosis and cancer could be excluded) to be suffering from gastric ulcer. But it has been shown by Bouveret, Hale White,⁷ Allichin, and myself,⁸ amongst others, that this is far from being the case.

Anaemic Dyspepsia.

There is first the group of young women, who are usually anaemic, have pain after food, who vomit, though not always as an immediate sequel to pain, have a diffused tenderness of the epigastrium, and sometimes vomit blood. These symptoms do not necessarily or usually denote ulcer, as has been many times proved at operations. The diagnosis of ulcer, however, may be difficult. The points to which to pay attention are in my judgement these: (1) The patients are exclusively young females; (2) the symptoms have been preceded by anaemia; (3) on the patients being put to bed, the symptoms improve much more rapidly than in the case of ulcer; and (4) solid food and iron are tolerated almost from the first. Incidentally it may be remarked that the deletion of this large group of curable cases from the older statistics of gastric ulcer presents in a less favourable light the results of medical treatment.

Haemorrhagic Gastralgia.

But when we have cut away from gastric ulcer this group of anaemic dyspepsias our difficulties are not over. There is yet another group of cases, which I have ventured to call "haemorrhagic gastralgia," in which the clinical manifestations are identical with those of ulcer, making certain diagnosis in the present state of our knowledge impossible. These cases are not confined to the young, are not necessarily associated with anaemia, and though the patients are most often women, instances amongst men are met with. It has been stated by some authorities (for example, last edition of *Albutt's System*¹⁰) that the existence of well-defined areas of deep and superficial tenderness in addition to the usual symptoms makes the diagnosis of ulcer certain. This distinction, I am convinced, is incorrect, as the two following examples will show:

1. E. W., aged 36. Symptoms four years. No anaemia. Pain localized to small area of epigastrium going through to back, following food, relieved by vomiting. Definite area of skin tenderness, and well localized area of deep tenderness in epigastrium. Haematemesis.

2. A. P., a woman aged 26. Symptoms three years. No anaemia. Pain localized to epigastrium, relieved by vomiting. Haematemesis. Well-localized skin and deep tenderness, etc.

In both of these patients I thought that ulcer was present, and my surgical colleague, Mr. Eve, in each case opened the stomach, thoroughly explored its interior with electric light and speculum, found in one instance a mammillated mucous membrane, and in the other case numerous punctate haemorrhages, but in neither case any ulcer. I quoted similar examples in a previous paper.⁹ Hale White¹⁰ reports 29 *post-mortem* examinations on these cases, which he styles gastrostaxis. No ulcer was present in any of them; 12 cases occurred between 21 and 30, 11 cases between 30 and 40; the ages of the remainder were 18, 19, 41, 44, and 54. Of the 28 cases 27 were women and 2 men. Herringham,¹¹ Fredk. Smith, Mayo Robson,¹² Moynihan and Lejars¹³ have also recorded examples. It is probable that some cases reported as ulcer, and in which the stomach interior has not been explored at the operation, in reality belong to this group.

As regards treatment, if the indications are present these cases of haemorrhagic gastralgia get operated upon. As far as my experience goes at present gastro-enterostomy

may benefit them, but not to the same extent as it benefits ulcer. The chief reason why the operation benefits is apparently due to the fact that increased acidity, which is so often a feature, is diminished by the passage of alkaline intestinal contents through the stoma into the stomach. A good practical rule when one contemplates advising gastro-enterostomy in cases presenting the manifestations of ulcer is to pause longer if the patient is a woman and if she is under 30.

HAEMATEMESIS.

Stomach bleeding has already been dealt with in previous sections. It sometimes occurs, however, unexpectedly and profusely, unassociated with other manifestations, and has to be dealt with as an emergency. Should such haematemesis be operated upon with a view to ligaturing the bleeding points? In my judgement the answer is an emphatic negative, and for these reasons:

1. The operation must be a severe one, involving pulling on the stomach, and incision into its wall and a search of its interior, and all this at a time when the patient is exhausted by a loss of blood.

2. Haematemesis may have multiple points as distinct from a single point of origin, and, as has already been shown, we have no means of knowing beforehand which condition exists in any given case, nor even is there opportunity to inquire. To place sutures round numerous small bleeding points of the mucous membrane is almost a futile proceeding, for one point that is seen there are several that are unseen.

3. Medical treatment of haematemesis is successful, and the mortality is not appreciably more than 3 per cent., though it is only fair to state that Mansell Moullin puts it at 6 per cent. In first attacks of haematemesis the mortality would probably be even lower. It is surprising how near death a patient may be from haematemesis and yet recover. Fredk. Smith¹⁴ had the interesting experience of 13 cases admitted for haematemesis under his care in a little over three months. Of these 11 were women and 2 men. In 2 patients the haemorrhage was so severe that they were thought to be moribund, yet both recovered.

NON-OBSTRUCTIVE DILATATION AND GASTROPTOSIS.

Obstructive dilatation has already been dealt with. For the atonic or non-obstructive dilatation gastro-enterostomy, whether judged by the modifications in function it produces or by actual clinical results, is rarely a necessary or desirable treatment. Failure of motor power, which is its marked characteristic, not only makes the operation risky, but detracts from the chances of its success. Muscular efficiency is as essential for the stoma as it is for the pylorus; and it has been shown that, in virtue of the arrangement of the muscular fibres, the pylorus is the preferential route, and if it is not obstructed, the stomach contents having reached it will leave by it. If pyloric spasm were a feature of atonic dilatation there would be some justification for the stoma, but it seldom is. Again, atonic dilatation is more often associated with diminished rather than increased hydrochloric acid, and therefore no benefit can accrue from the passage of alkaline intestinal contents through the stoma.

In certain cases where dilatation is associated with marked gastroptosis, in which the contents have to be propelled, so to speak, uphill towards the pylorus, or there may even be something approaching to kinking at the exit, under these circumstances it is conceivable that the pyloric path may be so difficult that a stoma becomes of use. Further, medical treatment of dilated stomach, whether it is or is not associated with gastroptosis, is often satisfactory in its results. Mere enlargement or prolapse of stomach is not necessarily a bar to efficient motility. Such stomachs can be made to empty in spite of the mechanical disadvantages which they present, provided their motility is kept at top hole. This is done by careful dieting, which makes the work as easy as possible, by periodical massage, keeping the patient fit, drugs like strychnine, and insisting from time to time on periods of rest on a bed or couch the foot of which is raised. It is surprising how well these patients do with such treatment. I will instance two examples in my own practice:

1. A woman aged about 42. About four years ago her stomach was enlarged and prolapsed, the greater curvature was nearer the pubes than the umbilicus, and the lesser

curvature a little above the umbilicus; the pylorus was not much displaced from its natural position. She had the usual symptoms associated with this condition. They did not directly result from the stomach being too big or prolapsed, but because its motor power had failed. Under treatment the size and shape of the viscous only partially improved, but the motor power was restored in spite of the mechanical disadvantage; and the patient got well and remains well, provided she keeps fit, does not get over-tired, and is cautious with her food.

2. In this patient, a man aged 81, an even more striking case, the stomach in size and position was almost identical with the foregoing case, and the condition has been under observation for ten years. At intervals during these years, generally once or twice a year, there has to be a period of strictly suitable diet, much rest, regular massage, etc., and each night the stomach contents are rendered alkaline by a large dose of sodium bicarbonate in hot water. By these means this patient has been able to lead an active life. An operation—gastropepy (lifting and fixing) is sometimes performed. Frederick Eve has done it several times, and reported on 3 cases under his and my care. The success which follows this treatment is apt to be partial, and I doubt in the long run whether it will produce better results than the medical treatment to which I have referred above.

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An Address

ON

GASTRO-ENTEROSTOMY AND AFTER

DELIVERED TO THE SUNDERLAND DIVISION OF THE
BRITISH MEDICAL ASSOCIATION.

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

HONORARY SURGEON, LEEDS GENERAL INFIRMARY.

ON September 27th, 1881, Wölfler, then assistant to Billroth, in Vienna, was engaged in operating upon a patient suffering from carcinoma of the pyloric portion of the stomach. Resection, which it was the intention of the operator to perform, was found to be impossible, and the abdomen was about to be closed when Nicoladoni, who was acting as assistant, suggested that a new outlet from the stomach, to replace that which the disease had obstructed, might be made by attaching the jejunum to the stomach. There are few surgeons who can afford to neglect the whispered hint of a well-trained and familiar assistant, and Wölfler immediately acted upon the suggestion thus quietly made to him. In this way there was introduced to surgery an operation which has been the means of saving unnumbered lives, and of restoring to many thousands that enjoyment of perfect health which would otherwise have been for ever denied them. In surgical work the perfect method is rarely, if ever, a matter of instant accomplishment, nor is it often the work of a single individual. The very great majority of the operations practised to-day are, so to speak, composite procedures made up of details suggested here by one authority, there by another.

In the constant endeavour to find the simple and the safe method of gastro-enterostomy mechanical aids, almost beyond computation in their infinite variety, have been exploited by one surgeon after another. Happily we have at last arrived with confidence at the conclusion that nothing more is necessary to ensure the firm union of the intestine to the stomach than the simple continuous suture. But though these bobbins, buttons, elastic ligature, and strings of all kinds are relegated for ever to the museum shelves, we owe it to their inventors, and, above all, to Dr. J. B. Murphy, to say that, without the knowledge and the confidence which these things generally have given us, the progress of intestinal surgery must have been long delayed.

In the original operation of Wölfler the jejunum was attached to the anterior surface of the stomach, and it was