—the recognition, I mean, of the inherent power of the individual to resist, against the heaviest odds, the convection of disease—a power evidently immeasurably greater than that either of the *soi-disant* omnipresent microbe or of the artificial bacillus, however carefully it may be cultivated. I cannot but think, with every respect for the praiseworthy efforts of the bacteriologist to track the morbid particle to its lair, and to master it there with its own weapons, that room still exists for a larger faith in those provisions of Nature for our individual protection than we are altogether willing to accord to them. If it is really a fact that, with every drop we drink and every mouthful we eat, we are taking in enough of the active principle of disease to destroy a regiment, and that, notwithstanding, we not only escape infection but are perpetually diminishing the zymotic death-rate, I find myself, with Dr. Poore, obliged to accord a far greater value to this beneficent endowment of personal immunity than is commonly conceded to it.

NOTES AND REFERENCES.

¹ Mittheil. a. d. k. Gesundheitsamte, 1881. ² Klein, *Micro-organisms and Disease*, ch. xi, pp. 155, 156, Macmillan, 1886. ³ Haden, *Congress of Hygiene and Demography*, London, 1891. ⁴ It is to be remembered in this connection that as all things which have lived die and return to the earth, so the amount of decay which the earth is thus continuously and insensibly disposing of is exactly equal to the whole sum of life which is present upon its surface. ⁵ Since writing the above I see an announcement in the *BRITISH MEDICAL JOURNAL* of March 25th, that "at no distant period" and possibly by means of a limited liability company it is proposed to erect a completely equipped crematorium in the near neighbourhood of London.

A CLINICAL LECTURE

ON

SOME CASES ILLUSTRATING THE SURGERY OF THE STOMACH.

Delivered at University College Hospital, May 6th, 1899.

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DURING the last few months it has fallen to my lot to have to do surgically with a group of cases of stomach disease which have taught me much, and it appears possible that a brief review of them may be of use to you. They arrange themselves as follows:

1. Gastrocolic gastroenterostomy, uneventful recovery
2. " " " " death
3. " " " " uneventful recovery
4. " " " " "
5. " " " " "
6. Pylorotomy " " "
7. Perforated gastric ulcer " " "

These are consecutive, and include all the gastric cases in which I have operated completely during the period named. Two other cases were admitted under my care in a moribund condition from perforated ulcer. In one I simply let out the abdominal gases to give immediate temporary relief; in the other the patient died within an hour of admission untouched.

Glancing at the gastroenterostomies in the first place, they were all done for carcinoma of the pylorus on patients of 55, 49, 29, 52, and 55 years of age respectively. The first two have already been briefly recorded elsewhere, and I will only say of them now that when last heard of they were well, and No. 2 had increased his weight from 8 st. 6 lbs. to 12 st. 4 lbs., and was following his calling in comfort. No. 3 made a perfectly uneventful recovery until the eleventh day, when he was seized with a sudden pain in the abdomen; the pulse was rapid, but the temperature did not rise but rather fell until death, which occurred the next (twelfth) day. The necropsy revealed a peritonitis of low intensity with a small amount of turbid fluid in the flanks and some in the pelvis. The surgical registrar, after the most careful search, failed to find any perforation. The gastroenterostomy opening was firm, perfectly watertight, and all that could be desired. The button lay in the stomach. The only suggestion which the surgical registrar could make in regard to the cause of the sudden peritonitis was that it had perhaps started from a

patch of congested colon which was found at the spot at which the latter would be likely to lie upon the button. His theory was that the compression of the colon between the abdominal wall and the button, as the latter rested on the vertebral column, had inflamed the coats of the viscus and thereby allowed of the passage of the septic organisms through its coats. This may be so; but I think the cause of the peritonitis must be admitted to be still doubtful. It does not, however, appear to have started from the anastomosis itself in any way.

In Case iv the only complication in an otherwise perfect convalescence was an aggravation of some bronchitis, from which the patient suffered at the time of operation. He had not passed the button when he left the hospital at the end of five weeks, but seemed to be none the worse for its sojourn. But yesterday he returned saying that it was giving him much trouble in the rectum, and I removed it with my finger. It had, therefore, been in the bowel forty-three days.

Case v made a perfectly straightforward recovery except for some stitch abscesses, and passed the button on the tenth day. In all these cases Murphy's button was employed, and gave considerable satisfaction. It was retained in one case, but appeared to give no inconvenience. In the four remaining cases it was passed on the fourteenth, twelfth, tenth, and forty-third days respectively. In all 5 cases posterior gastroenterostomy was employed (or, as it is perhaps better named, retrocolic gastroenterostomy), and contrasting them with half a dozen cases in which I have done the anterior operation of Woelfler I must say that the retrocolic seems to be preferable. At first sight it looks the more difficult procedure, but I cannot say that it appears to me now to be so after the experience of these cases. And the condition *qua* the emptying of the stomach without kink of the intestine is undoubtedly superior to that resulting from the anterior operation. When done with the button it takes but a short time, and there is not the same likelihood of the latter falling back into the stomach as when the opening is made in the anterior wall of the organ. But whether the use of the button is in all respects a distinct gain I confess appears to me still an open question. In the hands of a surgeon who has become familiar with its use, and also with the best methods of simple nature, I do not think there will be much difference in the time spent over the two methods; and undoubtedly the presence of such a large foreign body in the intestine or stomach is, to say the least of it, undesirable. In one case, as I have told you, it caused at all events much pain in the rectum, and in another it may possibly have been the cause of death. But this is not all. The largest button which can be used with safety in the jejunum leaves an opening which has been known to contract subsequently to a dangerous extent, while in the case of simple lateral anastomosis by suture the opening can be made as large as desired. Probably an incision of 2 inches is the best length for both stomach and intestine if the opening is to be large enough to allow of a certain amount of subsequent contraction.

In Case v, as you have seen, I performed pylorotomy five weeks after the gastroenterostomy. The patient is now, seventeen days after operation, before you, and gives every hope of a good recovery. She is eating solids with relish, and is steadily gaining the ground lost before the operation. I was induced to remove the pyloric end of the stomach in this case by the fact that at the first operation I found a very limited carcinoma of the pylorus with no adhesions and very little glandular infection. And as there was now a new gastroenterostomy opening of five weeks' standing from the stomach into the jejunum, which was working well, I felt that the simple removal of the end of the stomach and closure of the opening of the latter and of the duodenum without the lengthy and delicate operation of adaptation of the divided viscera to one another would not make too large a demand upon the patient's resources. Again, the patient and her husband were very anxious for the removal of the growth, and I knew from a study of the results of a large number of other operations that the duration of life after successful pylorotomies, even where recurrence ultimately takes place, is incomparably longer, as a rule, than where relief has been given by a gastroenterostomy. It is too soon to decide in this case whether recurrence will be early or late, but this much I have learned, namely, that to remove the end of the stomach when gastro-

enterostomy has been previously done is relatively easy and fairly rapid. In this case it took an hour and ten minutes, which I consider reasonable when we recall the fact that many successful pylorotomies without the previous operation have lasted over two, or even three, hours.²

But whether it will ever become the rule to do a gastro-enterostomy as a preliminary to pylorotomy is quite another matter. I fancy that this is hardly likely to be the case. A patient who has gone through the first operation, and feels well, will find it difficult, I imagine, to face the second and more severe operation in time to really benefit himself. But it is quite possible that posterior gastroenterostomy may come to be combined with pylorotomy in one sitting as indeed is practically done in Kocher's method—which has given such good results (8 cases, no deaths) or including his last series 23 cases with 2 deaths.

The last of these 7 cases is this patient, now strong and quite well, who was brought here over two months ago in an almost desperate condition from a perforation of the stomach, which had taken place at the base of an ulcer eighteen hours before I operated on her. This is the tenth case of this condition in which I have sutured the stomach, and is the fourth I have saved by the operation. This is a small percentage of recoveries, but when we consider the nature of the lesion and the delay which usually takes place before the cases are placed in our hands, it is, at all events, encouraging. The case now before you is briefly as follows:

E. B., aged 24, a domestic servant, had suffered from indigestion for twelve months, which became much aggravated during the last week. She had vomited occasionally after food for the last twelve months, but never blood.

Onset.—On February 26th, 1899, at 8 P.M., a sudden sharp pain was felt in the epigastrium. Vomiting began soon after, and lasted all night and up to admission into University College Hospital at about 12.30 P.M. on the next day. All this time pain was intense. The last solid meal, consisting of mutton, potatoes, and parsnips, was taken at 1 P.M. on February 26th, and only a cup of tea at 5 P.M. The perforation therefore occurred seven hours after the last solid meal.

Condition on Admission.—February 27th. There was intense abdominal pain; breathing was shallow; pulse 120, temperature 102.2°. There was little distension, but great rigidity and tenderness. Liver dullness was gone in the front, but was normal in the nipple line.

Operation at 2 P.M. eighteen hours after the perforation. Median incision was made and the left rectus transversely divided. No gas escaped on opening the peritoneum. The liver was glued to the stomach and colon by lymph, which came away in large flakes. On releasing the stomach from the liver and drawing it forward a hole the size of a goose-quill was found in the middle of the anterior surface. There was a large quantity of fluid round the spleen and in the flanks, less in the pelvis. After cleansing the whole abdomen with sponges and sterile gauze the hole in the stomach was closed with two rows of silk stitches by Lembert's method. After a final cleansing of the whole abdominal cavity the abdominal wound was nearly closed, strips of iodoform gauze being left in various directions for drainage. An apron of omentum had been previously thrown up over the line of suture in the stomach. The patient bore the operation well, and the pulse was 140 on removal to bed. The patient was fed by the mouth from the second day on.

After-History.—From this time improvement was steady. The upper part of the abdomen was soon quiet, and except for several stitch abscesses in the transverse wound, there was but little discharge. But in the lower part of the abdomen there was distension on the tenth day, and the temperature rose to 102.8° and the pulse to 158. The next day the pulse was 132 and the temperature 102.4°. I now felt sure that there was some localised collection of pus deep in the pelvis, and hoped it would burst into the vagina or rectum. On March 22nd there was blood-stained discharge from the vagina with fall of temperature, and this went on for some days. The mucus and pus began to come away from the rectum. With this the fever disappeared, and the general condition improved greatly. Until now the patient looks healthy and fat, and is eating plenty of solid food in considerable variety, and is getting up daily.

A few years ago all these cases would have been left to die without any surgical interference, but now we have reached a point at which we can hope for relief from operation in quite a large group of gastric lesions. I have so recently³ lectured upon the subject of stomach surgery that I need not enumerate all these again; but taking only the utterly hopeless cases of gastric carcinoma and perforation from those just referred to, you may easily see that when the surgeon is appealed to in time much may be done in many cases at all events. There are, of course, risks, but without wishing in any way to minimise these, I should like to say that, after an extensive study of the best consecutive series of such operations, I have satisfied myself that they are not so great as to forbid surgical interference. If we take the best results of the last few years from gastroenterostomy, we shall find that the mortality from the operation is probably under 10 per cent. The history of all great operations teaches us that their mortality has always steadily declined as diagnosis, technique, and after-treatment

have improved hand in hand. Improvement in one alone will not very materially alter our statistics. It is only when all together become more perfect that we see the latter grow better and better. It is here that the physician, who is almost invariably the first to see cases of gastric carcinoma, can do so much. The diagnostic powers of our physicians are splendid; and when they have been reassured as to the risks of surgical procedures, I feel certain they will hesitate less to place these cases in our hands, and ultimately we shall be called to them not when they are already moribund, as has been hitherto too frequently the case, but at a time when the risks are comparatively small and the relief of suffering great. For, after all, it is hard to imagine a more painful kind of death than that of slow starvation, to which most of these wretched cases are infallibly doomed unless a successful surgical operation is performed. But even in the hands of the best physicians such cases are hard to diagnose in many cases, at all events in their early stages. But here again a knowledge of the fact (for a fact it is beyond question) that a small exploratory incision carries with it hardly any risk at all while it clears up the diagnosis at once will help enormously. The nature of the pyloric obstruction, the presence or absence of adhesions, the infection of glands can all be ascertained through an incision only large enough to admit of one or two fingers being introduced, an incision which can be made under local analgesia if desired.

In any doubtful case of pyloric obstruction, which is a condition as a rule easily diagnosed, there ought to be no hesitation as to such an exploratory incision, which is almost certain to heal without the slightest trouble if not carried further. And if this hesitation be generally overcome, not only will many patients be relieved of a terrible dread with practically no risk, but the mortality of the palliative operation of gastroenterostomy for the more serious cases will be enormously reduced, and the results of the radical operation of pylorotomy will be immensely improved.

One of the most important—and at the same time most difficult—functions of the surgeon in all serious operations is undoubtedly the selection of cases; and this in the instance of gastric carcinoma is almost impossible unless he is allowed to see it at a very much earlier stage than has hitherto been the case. Of course, selection will not exclude error, but it will reduce it very materially, and only those surgeons who have had the opportunity of making such a selection of cases from a large number which they have seen have hitherto had encouraging results. Let me give an instance of what I mean. I shall take the experience of one who has furnished us with one of the best consecutive series of pylorotomies yet recorded; and I cannot help thinking that his results have been as much influenced by the careful selections he has made for operation from a very large number of cancers of the stomach, as by his undoubted mastery of the technique of the operation. Professor Krönlein, of Zurich, to whom I refer, has recently placed on record all his pylorotomies, without exception, up to date. Of these—24 in number—he lost 3 out of the first 4, and only 2 out of the last 20. But what makes his record of particular value, to my mind, is the fact that he gives a review of all the cases of carcinoma of the stomach, without exception, which during the same period have been placed in his hands for operation. This gives us an opportunity of judging as to about the proportion of cases of the kind which may be considered by a competent observer to be within the range of operations as they come to us at present. Writing in 1896 he says that his whole experience of gastric carcinoma placed in his hands for operation consisted of 67 cases. Of these, 26 were considered, for one reason or another, unsuited for any operation.

In 22 an exploratory operation alone was done, and nothing further; all recovered from the operation. In 4 gastroenterostomy was completed, and in 15 pylorotomy. There were, therefore, only 19 cases considered suitable for any palliative or remedial operation out of 67, a very small proportion, you will say; but how many of these 48 not relieved might have been kept alive and in comparative comfort by an earlier surgical interference is not known, but probably a considerable number. For Professor Krönlein's success in those cases in which he performed pylorotomy has been very considerable, and has probably been greatly influenced by this careful selection. Writing in 1898 he records 24 consecutive cases of

removal of carcinoma of the stomach, all that had been done by him at the time. Out of the first 4, as I have told you, he lost 3, while out of the last 20 only 2 had died; in other words, he has only lost 2 cases of pylorotomy since the year 1888 out of 20 cases. Considering that in the history of all great operations the first cases are always defective both as regards diagnosis and technique, his figures give, I venture to think, a good omen for the future. And when we look to the ultimate results of this group of cases alone we have also reason for encouragement. Two cases died between the first and second month of pneumonia and paralysis of the heart; 8 died of recurrence, 2 in the third year after operation, 4 in the second year after operation, 2 in the first year after operation, an average duration of life of 507 days; 8 cases were alive at the time of writing, without obvious recurrence, 2 in the fourth year after operation, 6 in the first year after operation, and 1 had obvious recurrence. If these results are compared with those of cases left to themselves or treated by gastro-enterostomy the contrast is striking. The 7 cases who refused operation show an average duration of life of 209 days; the 19 who were declared beyond the reach of operation 77 days, and 19 cases on whom only an exploratory operation was done an average of 139 days, an average duration of 110 days for the cases traced up to the time of death=36. This shows pretty well the gain to those who were operated on, and yet died ultimately of recurrence, without counting those who are still alive with no apparent disease.

But, besides these cases of Krönlein there are, of course, many others to which I could refer you, in which the duration of life after operation was even longer, and in which a microscopical examination of the parts removed left no doubt as to the carcinomatous nature of the growth. Kocher, for instance, records a case alive and well nine years after pylorotomy for carcinoma.

Next to the early recognition of the condition of the stomach, for which an operation may be required, and an early decision as to whether or not the latter is admissible (which is a matter only to be determined after considerable experience), the next most important factor in success is the whole technique of the operation. This is a very large point, and admits of considerable difference of opinion in regard to detail. But there are several points of general principle upon which all surgeons of experience are agreed, and these you will do well to bear constantly in mind, whether you are acting as principals or assistants in such operations.

In the first place, in all cases in which the stomach is to be operated on a careful preparation of the patient is necessary. This not only includes the thorough cleansing of the abdomen externally but also of the stomach internally. The latter must be washed out several times for a couple of days before operation—except, of course, in cases of perforated gastric ulcer. Each washing ought not, however, to be carried to the extent of exhausting the patient. In the case of pylorotomy before you it was done only a couple of times, the last being only just before operation.

The next point of principle is the saving of time in the operation on patients already depressed by the disease and its consequences. This may be promoted in various ways. Those who assist can help by a little foresight, as well as those who actually operate. From the moment the first incision is made to the last stitch, we ought to aim at saving every possible second of time. And remember that this is of importance not only in reducing the immediate effects of shock, but also in exposing the wounded parts and abdomen for as short a time as possible to the injurious effect of germ-laden air. Again, shock may be minimised by gentle, if rapid, handling of the viscera. This is most important where we are handling the stomach so close to the great nerve plexus of the abdomen. Again, in manipulating the viscera, we must be careful, while securing asepsis, to avoid all overstimulating of serous surfaces with chemical antiseptics. Probably nothing has more contributed to the success of operations on the alimentary tract within recent years than the use of sterilisation of the materials, instruments, etc., introduced into the abdomen, rather than chemical antiseptics, which are now well recognised as capable of adding greatly to the shock of operations.

The next most important matters are the stitching, clamping, and closing of the divided viscera without loss of

time or blood, and without escape of their contents. To consider all these in detail would lead me too far now, and I can only say that the keynote of them all is thoroughness without loss of time. They must all be thought out beforehand, and seen whenever possible, and there should be no hesitation at any moment as to what is to be done.

Finally, the after-treatment of these patients is of the utmost importance. They must be kept warm from beginning to end, and if there is any prostration saline solution must be transfused either subcutaneously or into a vein, or both. It may also be necessary to inject brandy or ether subcutaneously. Rectal feeding is the rule with all my abdominal sections, and also enemata of hot water every four hours. But besides all this, patients may be fed by the mouth from the first moment after operation unless vomiting is severe. In the present cases the first food has consisted of white of egg beaten up with a little brandy and an equal part of water. Of this fluid they have had 3ij every two hours at first, and then every hour; a day or two later double the amount, and then milk. At the end of ten days they have been the better for pounded fish and meat, and then a little vegetable cautiously. The patient before you is now—on the seventeenth day—having as much food as she expresses a desire for, and is able to sit up in bed. She is putting on flesh quite visibly, and I hope she may be up and about by the end of next week.

It is, I think, plain in this case that the technique and after-treatment have been adequate. But, at the same time, I can see many points in the operation as it was done in which I should make improvements in the future, both as regards protection against contamination by the contents of the viscera and in saving of time. I have very little doubt that in another uncomplicated case I could do the two operations of retrocolic gastroenterostomy and pylorotomy in one sitting in the same time that was required for the pylorotomy alone. That this case was placed in my hands so early and in an uncomplicated stage I owe to the ability of my old house-surgeon, Mr. J. H. Cook, who lost no time, and so probably saved the patient's life.

NOTES AND REFERENCE.

¹ No. 1 has died since this lecture was delivered; his doctor tells me that he died of asthenia, and without pain or other distress during the 7½ months lived since the operation. ² This patient is now out of bed in the fourth week after operation, and is eating practically what she likes without pain or discomfort and with regular action of the bowels. ³ *Lectures on Surgery of the Stomach*, 1898.

ON OPERATIONS FOR GASTRIC HÆMORRHAGE AND PERFORATION:

WITH AN ACCOUNT OF A SUCCESSFUL OPERATION FOR PERFORATING GASTRIC ULCER.

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BEFORE deciding to operate for severe and recurrent hæmatemesis, the question must always arise, Will the chances of the patient's recovery be improved by the operation or not? It is quite likely that the surgeon will not be called in until all the usual medical measures have been tried and have failed, and then the probability of the success of the operation is lessened by the feeble condition of the patient. It is remarkable, too, how many cases recover under medical care from very severe hæmorrhage, and the possibility of such taking place in any individual case must always influence the question of surgical interference; but when, as in the first case quoted hereafter, all the usual remedies have been applied and the hæmorrhage continues, then the surgeon must act.

CASE I. *Very severe Hæmorrhage from a Gastric Ulcer: Operation: Entire Arrest of the Hæmorrhage: Death from Exhaustion Ten Days after Operation.*—J. F., aged 27, was admitted into Westminster Hospital on September 13th, 1898, under the care of my colleague, Dr. Donkin, for severe gastric hæmorrhage. He had had good health until the end of August, when he began to suffer from nausea and "heaving," but without vomiting. On September 13th he felt faint and sick. He took some whisky and water, and suddenly brought up a large amount of blood, when he was at once taken to the hospital. The usual medical remedies were applied, but on September 16th he again vomited much blood. Of this 30 ozs. were caught and measured. On September 20th he vomited 40 ozs., and on September 21st 20 ozs., so that he must have lost at least one-third of the total weight of the blood in his body, and probably much more, as no estimate of the first hæmorrhage only a part of the second was obtained.